1. An Experimental Study on Propped Fracture Conductivity in Tight Reservoir

Accession number: 20230113345339
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2399
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012032
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 International Conference on Power System and Energy Technology, ICPSET 2022
Conference date: August 12, 2022 - August 14, 2022
Conference location: Guangzhou, China
Conference code: 185140
Publisher: Institute of Physics
Abstract: Propped fracture conductivity is a major element which will influence the stimulation effect after fracturing. To reveal the major factors affecting the propped fracture conductivity, the propped fracture conductivity with 20-40 mesh sand and ceramics of different sanding concentrations was experimentally studied. It can be concluded that, the propped fracture conductivity decreases as the closure pressure increases. For the silica sand proppant, when the closure pressure increased to 41.4 MPa, the downward trend of the conductivity became slower. For silica sand proppant, when the closure pressure is small, with the increase of sanding concentration, the fracture conductivity increases. When the closure pressure is greater than 41.4 MPa, the conductivity almost does not increase. Considering proppant costs, ceramic proppant can be used in low-closure pressure formations and silica sand proppant can be used in high-closure pressure formations. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Silica sand
Controlled terms: Ceramic materials - Fracture - Proppants - Silica
Uncontrolled terms: Ceramic proppants - Fracture conductivities - Major elements - Major factors - Pressure formation - Pressure increase - Sand proppants - Tight reservoir
Classification code: 511.1 Oil Field Production Operations - 812.1 Ceramics - 951 Materials Science
Numerical data indexing: Pressure 4.14E+07Pa
DOI: 10.1088/1742-6596/2399/1/012032
Funding Details: Number: 51774236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-411, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This research is financially supported by the Natural Science Foundation of China (No. 51774236) and the Natural Science Basic Research Project of Shaanxi Province (No. 2021JM-411).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

2. Wettability control on imbibition behavior of oil and water in porous media

Accession number: 20223212553096
Authors: Cheng, Zhilin (1, 2); Zhang, Wentong (1); Ning, Zhengfu (2); Dou, Liangbin (1); Zhan, Jie (1); Zhao, Chuang (3)
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Source title: Physics of Fluids

Abbreviated source title: Phys. Fluids
Volume: 34
Issue: 7
Issue date: July 1, 2022
Publication year: 2022
Article number: 076603
Language: English
ISSN: 10706631
E-ISSN: 10897666
CODEN: PHFLE6
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: Wettability determines the spreading or adherence behavior of fluids at the solid surface and significantly influences the displacement and entrapment of multiphase fluids in porous media. The present study sets out to determine how wettability controls the imbibition physics of oil and water in a matrix-fracture medium. The displacement and distribution characteristics of fluids, the types of flow regimes, and the fluid morphology under various conditions were revealed in depth. The influences of wettability on oil recovery and energy conversion were analyzed. Finally, the application of the conventional scaling model to simulated imbibition data was also discussed. Results show that the imbibition front is complete and stable in a water-wet medium with the one-end open boundary condition. There are three flow regimes occurring in countercurrent imbibition, depending on the wettability and Ca (capillary number) situations. Increasing θ (contact angle, the affinity of wetting phase to the solid) or Ca can shift the flow pattern from the capillary regime to the capillary-viscous regime to the viscous regime. Additionally, the imbibition oil recovery is greatly affected by wettability, and a more water-wet state does not signify a larger oil recovery. There is a power-law relationship between the oil recovery and the fractal dimension of the nonwetting phase. On the other hand, we performed the energy conversion analysis in the strongly water-wet condition. The external work is positive for both the capillary-viscous and viscous regimes and declines with the decreased Ca. Oil recovery could be linked to the surface energy ratio to some degree, which is relevant to Ca. For the capillary regime, oil recovery is proportional to the final reduced surface energy and does not have an evident relationship with the dissipation energy ratio. Through scaling the recovery factor data vs time via the linear, the power-law, and the conventional models, we find that the conventional scaling model can be used to fit the data point, and the fitting performance is good when Ca is relatively high. However, the linear model is more appropriate when scaling the data in low Ca. Overall, our pore-scale simulation study could pave the way for a further step toward investigating other influencing factors on imbibition behaviors of fluids in more complex media like natural rock materials, which exhibit strong heterogeneity of wettability and pore structure. © 2022 Author(s).
Number of references: 50
Main heading: Wetting
Controlled terms: Contact angle - Energy conversion - Flow patterns - Fractal dimension - Interfacial energy - Morphology - Pore structure - Surface morphology
Uncontrolled terms: Energy ratio - Flow regimes - matrix - Multiphase fluids - Oil recoveries - Porous medium - Scaling model - Scalings - Solid surface - Wettability control
Classification code: 525.5 Energy Conversion Issues - 631.1 Fluid Flow, General - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1063/5.0100051
Funding Details: Number: 21JY036, Acronym: -, Sponsor: -; Number: 52004219,52074221, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PRP/open-2214, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: 2020JQ-781,2022JQ-528, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors would like to acknowledge the support of the Natural Science Basic Research Program of Shaanxi (Grant Nos. 2022JQ-528 and 2020JQ-781), the Key Scientific Research Project of Education Department of Shaanxi Province (No. 21JY036), the National Natural Science Foundation of China (Grant Nos. 52074221 and 52004219), and the Open Fund of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, (PRP/open-2214).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

3. The effect of both Pt decoration and the defects on the adsorption of graphene for SO2

Accession number: 20220511577548
Authors: Qu, Yongfeng (1); Ding, Jijun (2); Chen, Haixia (2); Hu, Wenbo (1); Fan, Huiqing (3)

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Source title: International Journal of Quantum Chemistry
Abbreviated source title: Int J Quantum Chem
Volume: 122
Issue: 11
Issue date: June 5, 2022
Publication year: 2022
Article number: e26888
Language: English
ISSN: 00207608
E-ISSN: 1097461X
CODEN: IJQCB2
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: We systematically investigate the combined effect of both the defects, including single vacancy defects (SV) and Stone-Wales defects (SW), and the decoration of Pt atom on the structural, electronic, and adsorption properties of graphene for SO2 molecule using the density functional theory (DFT). The calculations reveal that Pt atom can be stably combined on both SV defected graphene (SVG) and SW defected graphene (SWG) with the high-binding energy of -7.03 and -2.61 eV, respectively. In addition, the SO2 molecule is chemically adsorbed on Pt-decorated graphene with SV defects and SW defects, their adsorption energies are -1.402 and -1.891 eV, respectively. The adsorption of SO2 can significantly change the conductivity of the adsorbed system, which shows that Pt decorated SVG and SWG have good sensitivity to SO2. Moreover, compared with Pt decorated SVG, Pt decorated SWG has better adsorption ability for SO2 gas molecules, which corresponds to larger adsorption energy, strong orbital hybridization, and the obvious increase of conductivity. These results indicate that the combination of defects and Pt atom decoration can tune the electronic and adsorption properties of graphene, and provide insight into the application of graphene-based gas sensors for SO2 gas molecules. © 2022 Wiley Periodicals LLC.
Number of references: 44
Main heading: Adsorption
Controlled terms: Platinum - Molecules - Binding energy - Atoms - Density functional theory - Graphene - Point defects
Uncontrolled terms: Adsorbed system - Adsorption energies - Adsorption properties - Combined effect - Defected graphene - Density-functional-theory - Gas molecules - Pt atoms - Single vacancy defects - Stone-Wales defects
Classification code: 547.1 Precious Metals - 761 Nanotechnology - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1.1 Crystal Lattice
Numerical data indexing: Electron volt 1.891E+00eV, Electron volt 2.61E+00eV
DOI: 10.1002/qua.26888
Funding Details: Number: 614241204021703, Acronym: -, Sponsor: -;
Funding text: This work was supported by the Foundation of Science and Technology on Low-Light-Level Night Vision Laboratory under Grant No. 614241204021703.This work was supported by the Foundation of Science and Technology on LowLightLevel Night Vision Laboratory under Grant No. 614241204021703.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

4. CoZn/N-Doped porous carbon derived from bimetallic zeolite imidazolate framework/g-C3N4 for efficient hydrodeoxygenation of vanillin

Accession number: 20223112459592
Authors: Qiu, Zegang (1); He, Xiaoxia (1); Li, Zhiqin (1); Guan, Qichen (2); Ding, Liang (1); Zhu, Yanan (1); Cao, Yueling (2, 3)
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Source title: Catalysis Science and Technology
Abbreviated source title: Catal. Sci. Technolog.
Volume: 12
Issue: 16
Issue date: July 8, 2022
Publication year: 2022
Pages: 5178-5188
Language: English
ISSN: 20444753
E-ISSN: 20444761
CODEN: CSTAGD
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The development of non-noble metal catalysts with high efficiency for the hydrodeoxygenation (HDO) of bio-oil is of great importance for the utilization of lignin biomass resources. As a crucial lignin-based platform chemical, vanillin is a promising candidate for the production of fine chemicals and polymers. Here, a promising non-noble Co-Zn/NPC catalyst (NPC: nitrogen-doped porous carbon materials) for the HDO of vanillin was prepared by pyrolysis of Co-Zn zeolite imidazolate framework/graphitic carbon nitride (Co-Zn-ZIF/g-C3N4) composites. Full vanillin conversion with 99% MMP (2-methoxy-4-methylphenol) selectivity could be achieved at 100 °C and 1 MPa H2 over 4Co-1Zn/NPC. Characterization results indicate that the presence of g-C3N4 promotes the formation of mesopores, which is beneficial for fast mass transfer. Additionally, the introduction of Zn downsizes the size of Co nanoparticles, and lowers the electron density around the Co atoms in Co-Zn/NPC catalysts, which can accelerate the hydrogenation of vanillin. More importantly, the Zn introduced in the catalyst may function as a basic site to facilitate the conversion of the intermediate HMP (4-hydroxy-3-methoxybenzyl alcohol) into MMP, thus enhancing the MMP selectivity. Moreover, Co-Zn/NPC presents excellent stability in the HDO reaction of vanillin. This work provides some useful insights into the design of novel non-noble metal catalysts with high efficiency for HDO of bio-oil. © 2022 The Royal Society of Chemistry.
Number of references: 44
Main heading: Efficiency
Controlled terms: Carbon nitride - Catalyst selectivity - Doping (additives) - Electronic structure - Indicators (chemical) - Lignin - Mass transfer - Porous materials - Precious metals - Zinc
Uncontrolled terms: 4-methylphenol - Bio-oils - Higher efficiency - Hydrodeoxygenation - Imidazolate - Methoxy - N-doped - Non-noble metal catalysts - Porous carbons -]+ catalyst
Classification code: 546.3 Zinc and Alloys - 547.1 Precious Metals - 641.3 Mass Transfer - 801 Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 811.3 Cellulose, Lignin and Derivatives - 913.1 Production Engineering - 951 Materials Science
Numerical data indexing: Force 3.00E+00N, Percentage 9.90E+01%, Pressure 1.00E+06Pa, Temperature 3.73E+02K
DOI: 10.1039/d2cy00642a
Funding Details: Number: YCS21111008, Acronym: -, Sponsor: -; Number: SPCF-SKL-2021-0013, Acronym: -, Sponsor: -; Number: 21878243,21908176,22002120, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022JQ-115, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province; Number: cstc2020jcyj-msxmX0750, Acronym: -, Sponsor: Natural Science Foundation of Chongqing; Number: 2022GY-153, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: We acknowledge financial support from the National Natural Science Foundation of China (No. 21878243, No. 22002120 and No. 21908176), the Key Research and Development Program of Shaanxi (No. 2022GY-153), the Natural Science Foundation of Chongqing, China (No. cstc2020jcyj-msxmX0750), the Natural Science Foundation of Shanxi Province (No. 2022JQ-115), the Shaanxi Key Laboratory of Special Energy Chemistry and Materials (No. SPCF-SKL-2021-0013), and the Innovation and practice ability training project for postgraduates of Xi'an Shiyou University (YCS21111008).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

5. Experimental investigation of the pressure drop and friction factor of supercritical water in a 2 × 2 rod bundle

Accession number: 20214010971338
Authors: Wu, Gang (1); Wang, Han (2); Bi, Qincheng (3)
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Corresponding author: Wang, Han(wanghan@ncepu.edu.cn)
Source title: Annals of Nuclear Energy
Abbreviated source title: Ann Nucl Energy
Volume: 166
Issue date: February 2022
Publication year: 2022
Article number: 108732
Language: English
ISSN: 03064549
E-ISSN: 18732100
CODEN: ANENDJ
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: An experiment has been performed to study the pressure drop and friction factor of supercritical water in a 2 × 2 rod bundle. A fuel-assembly simulator with four heated tubes was installed inside a square channel with round corners. The outer diameter of each heated tube is 8 mm with a pitch-to-diameter ratio of 1.18. The full length between the inlet and outlet pressure measuring holes is 550 mm. Experimental parameter covered the pressures of 23–28 MPa, heat fluxes of 200–1000 kW/m2 and mass flux of 1000 kg/m2s. The variations of total pressure drop, frictional pressure drop, gravitational pressure drop and acceleration pressure drop with bulk enthalpy were studied. It was found that the pressure drop varies notably in the pseudo-critical and high-enthalpy regions due to the strong variations of the thermophysical properties. The friction factor exhibits a local valley as the bulk temperature approaches the pseudo-critical temperature. The effect of heat flux on the frictional pressure drop and friction factor is weak, while the effect of pressure is mainly restricted to the high-enthalpy region. It was found that the friction factor of the 2 × 2 rod bundle is slightly higher than that of a smooth tube, but is significantly lower than those of sub-channel or internally-ribbed tube. Eight correlations were assessed against the current set of experimental friction factor. It was observed that the Filonenko correlation is superior to other correlations. An improved correlation for predicting the friction factor was proposed in support of the hydrodynamic analysis of rod bundles at supercritical pressures. © 2021 Elsevier Ltd
Number of references: 30
Main heading: Pressure drop
Controlled terms: Heat flux - Friction - Drops - Enthalpy - Pressure effects
Uncontrolled terms: Drop factors - Experimental investigations - Friction factors - Frictional pressure drops - Fuel assembly - Heated tubes - Outer diameters - Rod bundles - Square channel - Supercritical water
Classification code: 641.1 Thermodynamics - 641.2 Heat Transfer - 931.1 Mechanics
Numerical data indexing: Linear density 1.00E+03kg/m, Power 1.00E+06W, Pressure 2.80E+07Pa, Size 5.50E-01m, Size 8.00E-03m
DOI: 10.1016/j.anucene.2021.108732
Funding Details: Number: 11605057, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research was financially supported by National Natural Science Foundation of China (11605057).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

6. Preparation and performance evaluation of oil-tolerant and easy-wetting viscoelastic system for enhancing the stability of highly viscous oil-water lubricated flow (*Open Access*)

Accession number: 20223912783701
Authors: Yin, Ran (1); Jing, Jiaqiang (2); Yuan, Ying (3); Wang, Changyao (1); Jing, Peiyu (4); He, Peiming (4); Wang, Ziqiang (4); Chen, Jie (5)
Author affiliation: (1) Changqing Engineering Design Co.,Ltd., Shaanxi, Xi’an, China; (2) Oil & Gas Fire Protection Key Laboratory of Sichuan Province, Sichuan, Chengdu, China; (3) Xi'an Shiyou University, Shaanxi, Xi’an, China; (4) Petroleum Engineering School, Southwest Petroleum University, Sichuan, Chengdu, China; (5) CNP C xibu Drilling Engineering Company Limited, Xinjiang, Urumqi, China
Corresponding author: Yin, Ran(531374268@qq.com)
Source title: Journal of Dispersion Science and Technology

Abbreviated source title: J. Dispersion Sci. Technol.
Issue date: 2022
Publication year: 2022
Language: English
ISSN: 01932691
E-ISSN: 15322351
Document type: Article in Press
Publisher: Taylor and Francis Ltd.
Abstract: Based on the free sliding phenomenon of the monopterus albus in the cave, an oil-tolerant and easy-wetting viscoelastic system (A3B4C3E5F2) was selected and compounded as a possible lubricant to enable the transportation of heavy crude oil. In the viscoelastic system, the final floating equilibrium velocity of LD1 crude oil droplets with a diameter of about 5 mm is 0.01853 mm/s, and the floating resistance coefficient (C D) is 11067862, which shows favorable oil suspension performance. When the shear rate is approximately zero, the viscosity of the viscoelastic system is about 7000 mPa·s. However, when the shear rate is up to100 1/s, the viscosity is only about 32 mPa·s. A high viscoelastic film is formed at shutdown or low flow rates. Conversely, a low viscosity liquid ring formed at high flow rate. After being wet by easy-wetting viscoelastic system, the contact angle between LD1 crude oil and common pipe materials is wider than 160° at 30 min. The incubation time (t 0) and the wettability composite index (WCI) are shorter than 1800 s and higher than 4800, respectively. Upon stability evaluation, the system can maintain good viscoelasticity and wettability in the range of temperature (5 ~ 90 °C), oil content (0 ~ 15 wt.%), and shear rate (0 ~ 1000 1/s), respectively. © 2022 Taylor & Francis Group, LLC.
Number of references: 40
Main heading: Crude oil
Controlled terms: Contact angle - Heavy oil production - Lubrication - Petroleum transportation - Shear deformation - System stability - Viscoelasticity - Viscosity - Wetting
Uncontrolled terms: Equilibrium velocity - Heavy crude oil - Monopterus albus - Oil-water lubricated flow - Oil/water - Performances evaluation - Shear-rate - Viscoelastic systems - Viscous oil - Water lubricated
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 607.2 Lubrication - 631.1 Fluid Flow, General - 931.2 Physical Properties of Gases, Liquids and Solids - 961 Systems Science
Numerical data indexing: Capacitance 5.00E+00F, Pressure 3.20E-05Pa, Pressure 7.00E-03Pa, Size 5.00E-03m, Temperature 3.63E+02K, Time 1.80E+03s, Velocity 1.853E-05m/s
DOI: 10.1080/01932691.2022.2120891
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

7. Numerical Simulation of Proppant Transport and Placement in Hydraulic Fractures with the Hybrid Perkins-Kern-Nordgren-Carter (PKN-C) Model and Particle Tracking Algorithm

Accession number: 20231513882393
Authors: Ding, Yanan (1, 2); Yang, Daoyong (1, 2); Huang, Hai (1); Wang, Haiwen (3)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, China; (2) Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Canada; (3) College of Petroleum Engineering, China University of Petroleum (East China), China
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Source title: SPE Journal
Abbreviated source title: SPE J
Volume: 27
Issue: 6
Issue date: December 2022
Publication year: 2022
Pages: 3914-3937
Language: English
ISSN: 1086055X
CODEN: SPJRFW
Document type: Journal article (JA)
Publisher: Society of Petroleum Engineers (SPE)

Abstract: Although non-Newtonian fracturing fluids have been widely used, numerical simulation of field-scale proppant transport considering non-Newtonian fracturing fluids is far from satisfactory. In this study, a novel numerical scheme based on the Eulerian-Lagrangian (E-L) method has been developed and validated to simulate such a proppant transport and placement behavior. More specifically, hydraulic fracture propagation is characterized by the Perkins-Kern-Nordgren-Carter (PKN-C) model, and the injected proppants are described using the classic particle tracking algorithm. Proppants are vertically dragged by the gravitational force and horizontally driven by the velocity field conditioned to the fracture propagation and proppant dune packing. The settling velocity of proppants is quantified considering the in-situ shear rate and concentration, while their transport at each dune surface is quantified by performing drag/lift force analysis. The numerical model is first validated by reproducing experimental measurements inside a visual parallel plate. Subsequently, field-scale simulations are performed to identify the factors dominating proppant transport and placement under various conditions. As indicated by simulated results, the accumulated concentration at the lower region of a fracture usually results in a growing proppant dune with a "heel-biased"distribution. The non-Newtonian fluid yields a higher slurry coverage together with a longer proppant dune than the Newtonian fluid when their average viscosities are consistent. In addition to the dependence of the premature tip screenout configuration on the power-law fluid parameter n, both parameters of K and n impose a generally consistent effect (on proppant transport) with that of Newtonian viscosity (i.e., an increase of either K or n effectively improves the average viscosity and mitigates the proppant settling). A mild increase in proppant density and size significantly enhances the proppant dune formation; however, a further increase of these two factors aggravates the "heel-biased"distribution of proppants. Also, an increased leakoff coefficient improves the overall proppant concentration as well as the dune and slurry coverage. The used particle tracking algorithm enables proppant transport to be individually and accurately evaluated and analyzed with an acceptable computational cost, while such a numerical model can deal with both the Newtonian and non-Newtonian fluids at the field scale. This numerical study allows us to optimize the growth, propagation, and coverage of proppant dunes for maximizing fracture conductivity during hydraulic fracturing operations. © 2022 The Authors.
Number of references: 89
Main heading: Proppants
Controlled terms: Non Newtonian flow - Non Newtonian liquids - Numerical methods - Numerical models - Particle size analysis - Rheology - Shear flow - Tracking (position) - Viscosity - Viscous flow
Uncontrolled terms: Eulerian/lagrangian method - Field scale - Model tracking - Non-newtonian - Non-Newtonian fluids - Numerical scheme - Particle tracking - Perkins - Proppant transports - Tracking algorithm
Classification code: 511.1 Oil Field Production Operations - 631.1 Fluid Flow, General - 921 Mathematics - 921.6 Numerical Methods - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.2118/210561-PA
Funding Details: Number: 51874240, Acronym: -, Sponsor: -; Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: 2022JC-37, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: The authors acknowledge a Discovery Development Grant, a Discovery Grant, and a Collaborative Research and Development (CRD) Grant from the Natural Sciences and Engineering Research Council (NSERC) of Canada and a Mitacs Industry-Faculty Collaboration for Innovation (MIFCI) Grant awarded to D. Yang. In addition, the authors acknowledge a Grant (No.: 51874240) from the National Natural Science Foundation of China and a Grant (No.: 2022JC-37) from the Natural Science Foundation of Shaanxi Province for Distinguished Young Scientists awarded to H. Huang.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

8. Synthesis of aluminium alkylbenzene sulfonate and its behavior as a flow improver for crude oil

Accession number: 20222912363528
Authors: Zhou, Zhichao (1); Zhang, Wangyuan (1); Dong, Sanbao (1, 2); Zhang, Jie (1); Chen, Gang (1, 2)
Author affiliation: (1) Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China
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Source title: Tenside, Surfactants, Detergents
Abbreviated source title: Tenside Surfactants Deterg

Volume: 59
Issue: 4
Issue date: July 2022
Publication year: 2022
Pages: 353-361
Language: English
ISSN: 09323414
CODEN: TSDEES
Document type: Journal article (JA)
Publisher: Walter de Gruyter GmbH
Abstract: Low-molecular flow improvers for crude oil are becoming increasingly important chemical agents for crude oil production in oil fields. In this work, three alkyl benzene sulfonates were synthesized and evaluated as flow improvers for crude oil. The results show that the three flow improvers have an effect on L8401 crude oil (heavy oil). Among them, aluminium dodecylbenzene sulfonate (AlDBS) has the best effect as it reduces the viscosity rate by more than 80%. After adding 900 mg/L AlDBS, the freezing point is lowered by 15 °C. The crude oil flow improvement was proven with microphotographs. The co-crystallization behavior after addition of the agent interacts with the saturated hydrocarbons in the crude oil, which is the reason for lowering the freezing point of crude oil. Moreover, infrared spectroscopy and differential scanning calorimetry analysis (DSC) were used to illustrate the interaction mechanism between low-molecular flow improvers for crude oil and the components in crude oil. © 2022 Walter de Gruyter GmbH, Berlin/Boston.
Number of references: 33
Main heading: Crude oil
Controlled terms: Aluminum - Crystallization - Differential scanning calorimetry - Freezing - Infrared spectroscopy - Oil fields - Viscosity
Uncontrolled terms: Alkyl benzene sulfonates - Alkylbenzene sulfonates - Chemical agent - Crude oil production - Dodecylbenzenesulfonate - Flow improvers - Freezing point - Molecular flow - Synthesised - Viscosity reduction
Classification code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 541.1 Aluminum - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 944.6 Temperature Measurements
Numerical data indexing: Mass density 9.00E-01kg/m3, Percentage 8.00E+01%, Temperature 2.88E+02K
DOI: 10.1515/tsd-2021-2370
Funding Details: Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JQ-775, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YC19113078, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: Research funding: The work was supported financially by the Youth Innovation Team of Shaanxi University, the National Natural Science Foundation of China (51974252), the Natural Science Basic Research Plan in Shaanxi Province of China (2020JQ-775), and Postgraduate Innovation Fund Project of Xi'an Shiyou University (YC19113078). We also thank for the work of Modern Analysis and Testing Center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

9. One-step conversion of lignin-derived alkylphenols to light arenes by co-breaking of C-O and C-C bonds

Accession number: 20220811667815
Authors: Qiu, Zegang (1); Wang, Ying (1); Di, Yali (2); Ren, Xiaoxiong (1); Liu, Weiwei (1); Li, Zhiqin (1); Li, Guangyu (3)
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Source title: New Journal of Chemistry
Abbreviated source title: New J. Chem.
Volume: 46
Issue: 6
Issue date: February 14, 2022

Publication year: 2022
Pages: 2710-2721
Language: English
ISSN: 11440546
E-ISSN: 13699261
CODEN: NJCHE5
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The conversion of lignin-derived alkylphenols to light arenes by a one-step reaction is still a challenge. A 'shortcut' route to transform alkylphenols via the co-breaking of C-O and C-C bonds is presented in this paper. The catalytic transformation of 4-ethylphenol in the presence of H2 was used to test the breaking of C-O and C-C bonds. It was found that the conversion of 4-ethylphenol was nearly 100%, and the main products were light arenes (benzene and toluene) and ethylbenzene under the catalysis of Cr2O3/Al2O3. The conversion of 4-ethylphenol and the selectivity of the products were significantly influenced by the reaction temperature. The selectivity for light arenes reached 55.7% and the selectivity for overall arenes was as high as 84.0% under suitable reaction conditions. Such results confirmed that the co-breaking of the C-O and C-C bonds of 4-ethylphenol on a single catalyst by one step was achieved with high efficiency. The adsorption configuration of the 4-ethylphenol molecule on the catalyst played an important role in the breaking of the C-O and C-C bonds. Two special adsorption configurations of 4-ethylphenol, including a parallel adsorption and a vertical adsorption, might exist in the reaction process, as revealed by DFT calculations. They were related to the breaking of C-O and C-C bonds, respectively. A path for the hydrogenation reaction of 4-ethylphenol on Cr2O3/Al2O3 was proposed. Furthermore, the co-breaking of the C-O and C-C bonds was also achieved in the hydrogenation reactions of several alkylphenols. This journal is © The Royal Society of Chemistry and the Centre National de la Recherche Scientifique.
Number of references: 41
Main heading: Adsorption
Controlled terms: Aluminum compounds - Chromium compounds - Design for testability - Lignin - Catalysts - Hydrogenation
Uncontrolled terms: 4-ethylphenol - Alkylphenols - Benzene and Toluene - Breakings - C-C bonds - Catalytic transformation - Hydrogenation reactions - One-step reactions - Reaction conditions - Reaction temperature
Classification code: 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 811.3 Cellulose, Lignin and Derivatives
Numerical data indexing: Percentage 1.00E+02%, Percentage 5.57E+01%, Percentage 8.40E+01%
DOI: 10.1039/d1nj05793f
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

10. Preparation of Al-loaded magnetic Chinese medicine residue-derived biochar and application of it in fluoride removal

Accession number: 20222012105213
Authors: Tie, Jingxi (1); Sang, Shuo (1); Shang, Zhenya (2); Li, Yingqi (1); Xu, Zhitao (1); Lian, Molin (1); Du, Chunbao (3)
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Source title: Industrial Crops and Products
Abbreviated source title: Ind. Crops Prod.
Volume: 184
Issue date: September 15, 2022
Publication year: 2022
Article number: 115037
Language: English
ISSN: 09266690
CODEN: ICRDEW
Document type: Journal article (JA)
Publisher: Elsevier B.V.

Abstract: The development and application of new materials for the extreme fluoride pollution problem has drawn increasingly wide attention. Here, Chinese medicine residue, FeSO4.7 H2O, FeCl3.6 H2O and Al(NO3)3 were used as raw materials to create an novel Al-loaded magnetic Chinese medicine residue-derived biochar (Al/Fe3O4/CMRB) adsorbent for effective fluoride adsorption. Al/Fe3O4/CMRB was characterized and used to conduct fluoride adsorption. In the pH range of 4–11, the fluoride adsorption reduced from 37.38 mg/g to 15.84 mg/g. The pseudo-second-order equation and Freundlich equation was the ideal model to describe the adsorption. The thermodynamic study confirmed the spontaneous and exothermic nature of fluoride adsorption by Al/Fe3O4/CMRB. Chloridion, nitrate, and sulfate had no influence on fluoride adsorption when a single anion and all three anions were present. phosphate created a more significant reduction of fluoride adsorption with rising concentrations, whether or not the other three anions were present. Al/Fe3O4/CMRB was an potential composite for aqueous fluoride removal. In addition, Al/Fe3O4/CMRB showed high separation efficiency in a contactless magnetic field, which demonstrated its potential use for large-scale applications in real samples. © 2022 Elsevier B.V.
Number of references: 49
Main heading: Iron compounds
Controlled terms: Negative ions - Magnetism - Chlorine compounds - Fluorine compounds - Sulfur compounds - Adsorption - Aluminum compounds - Medicine
Uncontrolled terms: Biochar - Chinese medicine residues - Development and applications - Fluoride - Fluoride adsorptions - Fluoride pollution - Fluoride removal - pH range - Pollution problems - Pseudo-second-order equations
Classification code: 461.6 Medicine and Pharmacology - 701.2 Magnetism: Basic Concepts and Phenomena - 802.3 Chemical Operations
Numerical data indexing: null 3.738E+01null to 1.584E+01null
DOI: 10.1016/j.indcrop.2022.115037
Funding Details: Number: 22002117, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JK0839, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors thank the financial supports from the National Natural Science Foundation of China , China (No. 22002117) and the Scientific Research Program Funded by Shaanxi Provincial Education Department , China (Program No. 20JK0839).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

11. Compact-Packaged and Diaphragm-Lever Structured Fiber-Optic Temperature and Pressure Sensors for Oil and Gas Well Applications

Accession number: 20224513093291
Authors: Xu, Dongpo (1); Feng, Dequan (1); Chen, Qiang (2); Huo, Dongkai (2); Qiao, Xueguang (3)
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Corresponding author: Qiao, Xueguang(xgqiao@nwu.edu.cn)
Source title: IEEE Sensors Journal
Abbreviated source title: IEEE Sensors J.
Volume: 22
Issue: 23
Issue date: December 1, 2022
Publication year: 2022
Pages: 22670-22677
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: A small-sized sensor combined with a diaphragm structure and a lever structure is proposed for application in high-temperature and high-pressure environments. The feasibility of the structure is verified from both theory and simulation, and the relationship between the change of the Bragg wavelength and the pressure is established. Differential measurements of temperature and pressure are achieved using two fiber Bragg gratings (FBGs). The experimental data show that the pressure sensitivity of the sensor is 28.86 pm/MPa in the range of 0-30 MPa, and the correlation coefficient is 0.9969. The pressure sensitivity of the improved structure is 29.76 pm/MPa and the correlation

coefficient is 0.9999. The sensor's temperature sensitivity is 32.66 pm/°C in the range of 50 °C-200 °C. The structure can be applied to the measurement of temperature and pressure in oil and gas wells. © 2001-2012 IEEE.
Number of references: 26
Main heading: Fiber Bragg gratings
Controlled terms: Diaphragms - Fiber optic sensors - High temperature applications - Natural gas wells - Pressure measurement - Pressure sensors - Temperature measurement - Temperature sensors
Uncontrolled terms: COMSOL - Correlation coefficient - Fiber optic temperature sensor - Fibre-optic pressure sensor - Measurement of temperature - Pressure sensitivities - Sensitivity - Small-sized sensor - Structured fibers - Temperature and pressures
Classification code: 512.2.1 Natural Gas Fields - 601.2 Machine Components - 741.1.2 Fiber Optics - 944.3 Pressure Measuring Instruments - 944.4 Pressure Measurements - 944.5 Temperature Measuring Instruments - 944.6 Temperature Measurements
Numerical data indexing: Pressure 0.00E00Pa to 3.00E+07Pa, Size 2.886E-11m, Size 2.976E-11m, Size 3.266E-11m
DOI: 10.1109/JSEN.2022.3215970
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

12. Highly sensitive ethylene glycol gas sensor based on ZnO/rGO nanosheets

Accession number: 20223812773407
Authors: Ding, Jijun (1); Dai, Hangfei (1); Chen, Haixia (1); Jin, Yanxin (1); Fu, Haiwei (1); Xiao, Bing (2)
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Corresponding author: Ding, Jijun(jjding@xsyu.edu.cn)
Source title: Sensors and Actuators B: Chemical
Abbreviated source title: Sens Actuators, B Chem
Volume: 372
Issue date: December 1, 2022
Publication year: 2022
Article number: 132655
Language: English
ISSN: 09254005
CODEN: SABCEB
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: ZnO/rGO nanosheets are fabricated by combining chemical precipitation and hydrothermal method. At the same time, high temperature annealing treatment is performed to further improve the gas-sensitive performance for ethylene glycol. The response value of ZnO/rGO-based gas sensor is up to 277 for 100 ppm ethylene glycol at an optimum operating temperature of 220 . Compared with intrinsic ZnO gas sensor, the operating temperature is reduced and the response is increased by 1.1 times. The sensor has a fast response/recovery time of about 38 s/26 s and exhibits excellent cycle repeatability and stability. The detection limit is as low as 1 ppm. These excellent gas sensing properties are mainly attributed to a large specific surface and more active sites in ZnO/rGO nanosheets. In addition, based on the density functional theory (DFT), the charge transfer and the band structures are simulated. It is further confirmed theoretically our proposed gas sensing mechanism. It provides an effective research idea for real-time and ultra-rapid detection of ethylene glycol gas. © 2022 Elsevier B.V.
Number of references: 34
Main heading: Ethylene glycol
Controlled terms: Charge transfer - Chemical detection - Chemical sensors - Density functional theory - Ethylene - Gas detectors - Gas sensing electrodes - Gases - II-VI semiconductors - Nanosheets - Polyols - Precipitation (chemical) - Temperature - Zinc oxide
Uncontrolled terms: Chemical precipitation - Chemical precipitation method - Fast response - Gas-sensors - High temperature annealing treatments - Hydrothermal methods - Operating temperature - Performance - ZnO gas sensor - ZnO/rGO nanosheet
Classification code: 641.1 Thermodynamics - 712.1 Semiconducting Materials - 761 Nanotechnology - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics - 943.3 Special Purpose Instruments

Numerical data indexing: Time 2.60E+01s, Time 3.80E+01s
DOI: 10.1016/j.snb.2022.132655
Funding Details: Number: YCS21111029, Acronym: -, Sponsor: -; Number: 11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019GY-170, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant no. 11804273), Key Research and Development Projects of Shaanxi Province (Grant no. 2019GY-170), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS21111029). See Supplementary material for additional figures and corresponding discussion, including the schematic diagram of the synthesis process, the assembled gas sensor and the detection circuit, XRD patterns, Raman spectra, and the energy band structure of ethylene glycol adsorbed on ZnO/rGO.This work is supported by the National Natural Science Foundation of China (Grant no. 11804273), Key Research and Development Projects of Shaanxi Province (Grant no. 2019GY-170), Graduate Student Innovative and Practical Ability Training Program of Xi’an Shiyou University (Grant no. YCS21111029).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

13. Optimal identifying codes of two families of Cayley graphs

Accession number: 20222612269500
Authors: Feng, Min (1); Ma, Xuanlong (2); Feng, Lihua (3)
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Corresponding author: Feng, Lihua(fenglh@163.com)
Source title: Discrete Applied Mathematics
Abbreviated source title: Discrete Appl Math
Volume: 320
Issue date: October 30, 2022
Publication year: 2022
Pages: 199-210
Language: English
ISSN: 0166218X
CODEN: DAMADU
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: An identifying code of a graph Γ is a subset C of the vertex set V such that for each x#V, the intersection of its closed neighbourhood with C is nonempty and unique. If Γ is a finite graph, the density of an identifying code C is defined as [Formula presented], which naturally extends to a definition of density in certain infinite graphs which are locally finite. Denote by $\#*(\Gamma)$ the infimum of the density of an identifying code of a finite or infinite graph Γ. In this paper, we study identifying codes of an infinite Cayley graph #n, which is the Cartesian product of an infinite path and a complete graph on n vertices. We prove that d#(#3)=[Formula presented],d#(#4)=[Formula presented] and d#(#n)=[Formula presented] for n#5. As an application, we obtain $\#*(\Gamma)$ if Γ is a connected quintic Cayley graph over a generalized quaternion group. © 2022 Elsevier B.V.
Number of references: 32
Main heading: C (programming language)
Controlled terms: Graph Databases - Graphic methods
Uncontrolled terms: Cartesian Products - Cayley-graphs - Finite graphs - Generalized quaternion group - Identifying code - Infinite graph - Locally finites - Neighbourhood - Quaternion group - Vertex set
Classification code: 723.1.1 Computer Programming Languages - 723.3 Database Systems
DOI: 10.1016/j.dam.2022.05.023
Funding Details: Number: 11701281, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 11801441,11871479,12071484,BK20170817, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province; Number: 2018JJ2479,2020JJ4675, Acronym: -, Sponsor: Natural Science Foundation of Hunan Province;
Funding text: The authors would like to express their sincere thanks to the referees for their valuable suggestions which is of great help. M. Feng was supported by NSFC, China (11701281), the Natural Science Foundation of Jiangsu Province, China (BK20170817). X. Ma was supported by NSFC, China (11801441). L. Feng was supported

by NSFC, China (Nos. 11871479 , 12071484), Hunan Provincial Natural Science Foundation, China (2020JJ4675 , 2018JJ2479).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

14. Enhanced strength and ductility synergy of a CoCrFeMnNi high entropy alloy with a hierarchical structure via severe distortion

Accession number: 20214611179287
Authors: Zhang, Xiaoyong (1, 2); Lu, Yidi (1, 2); Zhang, Fan (2); Wang, Hongduo (1); Xiao, Yuehua (2, 3); Zhang, Lei (2); Wang, Hui (2)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing; 100083, China; (3) College of Metallurgy and Materials, Wenshan University, Wenshan; 663099, China
Corresponding author: Wang, Hui
Source title: Materials Letters
Abbreviated source title: Mater Lett
Volume: 308
Issue date: February 1, 2022
Publication year: 2022
Article number: 131252
Language: English
ISSN: 0167577X
E-ISSN: 18734979
CODEN: MLETDJ
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Improvement on strength and ductility synergy has always been the unremitting pursuit for structural materials. In this study, the strengthen and ductility of CoCrFeMnNi HEA were improved simultaneously via a designed continuous driven friction process. The results show that a hierarchical structure, which consists of 3 zones: the homogenously distributed ultrafine grains in fusion zone, severely distorted grains in thermal mechanical effect zone and coarsening equiaxed grains with high dislocation density in base zone, was formed in CoCrFeMnNi HEA, leads to the tensile strength enhanced from 598 to 629 MPa with the ductility increased from 27% to 38%. The findings provide new insight into solution to strength and ductility trade-off for structural materials. © 2021
Number of references: 9
Main heading: Chromium alloys
Controlled terms: Cobalt alloys - Ductility - Economic and social effects - Tensile strength - High-entropy alloys - Coarsening - Ostwald ripening - Textures - Manganese alloys
Uncontrolled terms: Effect zones - Equi-axed grains - Friction process - Fusion zones - Hierarchical structures - High dislocation density - High entropy alloys - Strength and ductilities - Thermal-mechanical effects - Ultra fine grain
Classification code: 531 Metallurgy and Metallography - 543.1 Chromium and Alloys - 543.2 Manganese and Alloys - 545.2 Iron Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 951 Materials Science - 971 Social Sciences
Numerical data indexing: Percentage 2.70E+01% to 3.80E+01%, Pressure 5.98E+08Pa to 6.29E+08Pa
DOI: 10.1016/j.matlet.2021.131252
Funding Details: Number: 51174165,51971017, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM5076, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (Nos. 51971017 and 51174165) and the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2018JM5076).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

15. A new super-elastic strain sealing technology for OCTG

Accession number: 20222412222086
Title of translation:

Authors: Wang, Xinhu (1, 2); Lyu, Yongpeng (3, 4); Wang, Jiandong (1); Wang, Peng (1); Pan, Baochang (4)
Author affiliation: (1) State Key Laboratory for Performance and Structural Safety of Petroleum Tubular Goods and Equipment Materials, Xi'an; 710077, China; (2) Tubular Goods Research institute of CNPC, Xi'an; 710077, China; (3) Xi'an Shiyou University, Xi'an; 710065, China; (4) Baoji Petroleum Steel Pipe Co., Ltd., Baoji; 721008, China
Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 42
Issue: 5
Issue date: May 25, 2022
Publication year: 2022
Pages: 80-84
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: Domestic oil and gas fields adopt various special thread tubings and casings to solve the problems of string leakage in high-temperature and high-pressure natural gas wells, but wellbore sealing cannot be guaranteed yet. The current contact compressive stress design method of connection sealing surface can not effectively block the leakage channels of sealing structures, so it is in an urgent need to research and develop a sealing design method and sealing technology for oil country tubular goods (OCTG). In this paper, an elastic strain design is proposed on the basis of the compressive stress design of sealing surface. In addition, the technical validity is verified experimentally. And the following research results are obtained. First, the elastic strain sealing design is realized by using elastic materials, and super-elastic alloy Ti-Ni-X with elastic strain of 6% is selected through a stress and strain cycle test. Second, several sealing structures are designed, which can generate enough elastic strain on the sealing surface, so as to plug the leakage channels of connections which are formed during factory manufacturing or underground service of connections. Third, a kind of sealing ring super-elastic strain sealing casing is developed, whose specimen successfully passes the make and break test and the B series sealing test of API RP 5C5 CALIV class. The maximum test load reaches 95% of the casing stress envelope, and the maximum test temperature is high up to 180 . In conclusion, as a new generation of technological reserve of OCTG and wellhead fittings sealing, this new super-elastic strain sealing technology is expected to improve the sealing capacity of strings and wellhead fittings of gas wells. © 2022, Natural Gas Industry Journal Agency. All right reserved.
Number of references: 16
Main heading: Gas industry
Controlled terms: Compressive stress - Natural gas - Natural gas well production - Natural gas wells - Proven reserves - Seals - Structural design - Wellheads
Uncontrolled terms: Elastic-strains - Oil country tubular good - Oil country tubular goods - Sealing design - Sealing ring - Sealing technology - Sealing test - Super-elastic alloys - Super-elastic sealing - Ti-ni-X
Classification code: 408.1 Structural Design, General - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 619.1.1 Pipe Accessories
Numerical data indexing: Percentage 6.00E+00%, Percentage 9.50E+01%
DOI: 10.3787/j.issn.1000-0976.2022.05.008
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

16. Experimental research on the mechanical properties of concrete column reinforced with 630 MPa high-strength steel under large eccentric loading

Accession number: 20230513535389
Title of translation: 630 MPa
Authors: Wang, Yi-Hong (1); Tian, Qiao-Luo (1, 2); Lan, Guan-Qi (3); Yao, Sheng-Fa (4); Zhang, Jian-Xiong (1); Liu, Xi (1)
Author affiliation: (1) School of Civil Engineering, Chang'an University, Xi'an; 710061, China; (2) POWERCHINA Guizhou Electric Power Engineering Co., Ltd., Guiyang; 550081, China; (3) School of Civil Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Jiangsu Tianshun Metal Materials Group Co., Ltd., Yangzhong; 212219, China
Source title: Jilin Daxue Xuebao (Gongxueban)/Journal of Jilin University (Engineering and Technology Edition)
Abbreviated source title: Jilin Daxue Xuebao (Gongxueban)
Volume: 52

Issue: 11
Issue date: November 1, 2022
Publication year: 2022
Pages: 2626-2635
Language: Chinese
ISSN: 16715497
CODEN: JDXGAH
Document type: Journal article (JA)
Publisher: Editorial Board of Jilin University
Abstract: To study the mechanical properties of high-strength steel reinforced concrete columns under large eccentric loading, and to determine the stress state and the compressive strength level of a new developed 630 MPa ribbed high-strength steel, 17 concrete columns reinforced with 630 MPa high-strength steel tested under large eccentric compression were fabricated, and the failure pattern, lateral deflection, strain of steel and concrete, and the bearing capacity were analyzed. The results show that the typical failure pattern of 630 MPa high-strength steel reinforced concrete column with large eccentric compression is the same as that of ordinary reinforced concrete column. The ultimate compressive strain of concrete compression zone is greater than 0.0033 in the current code, which is conducive to give full play to the compressive strength of 630 MPa high strength reinforcement in eccentric compression member, so that the compressive strength reaches the same value as the tensile strength. The test value of bearing capacity of each specimen is much higher than its design value, with an average value of the ratio of 1.887. It is reasonable and safe to design and calculate the 630 MPa high strength reinforced concrete column members by using the current specification. The tensile and compressive strength design values as 545 MPa of the 630 MPa high-strength steel in column member subjected to eccentricity is put forward, providing an experimental basis for the compilation of technical specification for high-strength bar in concrete structures and the promotion of 630 MPa high-strength steel in engineering application.
Number of references: 18
Main heading: Compressive strength
Controlled terms: Bearing capacity - Concrete construction - High performance concrete - High strength steel - Reinforced concrete - Specifications - Strain - Stress analysis - Structural design - Tensile strength
Uncontrolled terms: 630 MPa high-strength steel - Concrete column - Eccentric compression - Eccentric loading - High strength reinforced concrete column - High-strength reinforced concrete - High-strength steels - Large eccentric compression - Reinforced concrete column - Steel reinforced concrete columns
Classification code: 408.1 Structural Design, General - 412 Concrete - 545.3 Steel - 902.2 Codes and Standards - 951 Materials Science
Numerical data indexing: Pressure 5.45E+08Pa, Pressure 6.30E+08Pa, Size 8.382E-05m
DOI: 10.13229/j.cnki.jdxbgxb20210321
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

17. Two luminescent film sensors constructed from new lanthanide coordination polymers for ratiometric detection of Zn2+and NH3in water and their white emission properties

Accession number: 20220811673490
Authors: Wang, Hui (1); Li, Xuan (1); Cheng, Hao (1); Li, Ya-Jun (1); Song, Xue-Qin (1); Wang, Li (2, 3)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Lanzhou Jiaotong University, Lanzhou; 730070, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing; 210093, China
Corresponding authors: Song, Xue-Qin(songxq@mail.lzjtu.cn); Wang, Li(songxq@mail.lzjtu.cn)
Source title: Polymer Chemistry
Abbreviated source title: Polym. Chem.
Volume: 13
Issue: 6
Issue date: February 14, 2022
Publication year: 2022
Pages: 778-793
Language: English
ISSN: 17599954
E-ISSN: 17599962

Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: To enrich the application of luminescent lanthanide coordination polymers, three 2D lanthanide coordination polymers, [EuL(NO3)3]n·2C4H8O2 (EuL), [TbL(NO3)3]n·2C4H8O2 (TbL) and [GdL(NO3)3]n·2C4H8O2 (GdL), which feature lumpy 2D networks with Ln3+ centres and the ligand L acting as three connected angular subunits, L = 2,2′–((2-((2-(benzylcarbamoyl)phenoxy)methyl)-2-(pyridin-4-yl) propane-1,3-diyl)bis(oxy))bis(N-benzylbenzamide), were prepared and well characterized. The excellent sensitizing properties of the ligand L to Eu3+ and Tb3+ were ascertained by both experimental and theoretical methods. To enhance the thermal stability, water resistance and luminescent performance for expanding their practical applications, spin-coated films of EuL/TbL and their poly(methylmethacrylate) (PMMA) hybrid congeners (EuL/TbL@PMMA) were prepared. The photophysical investigations on EuL/TbL@PMMA indicate that they could detect Zn2+ and NH3 in aqueous media in a ratiometric mode and could be used as efficient ratiometric film sensors for Zn2+ and NH3 with lower detection limits than those allowed by the World Health Organization or the threshold limit for ammonia in the workplace set by the Occupational Safety and Health Administration. The recognition mechanisms were disclosed by a combination of experiment and DFT calculation and the results indicate that the recognition of Zn2+ could be due to metal displacement while that for NH3 could be attributed to the modulation of the triplet energy level of the antenna in lanthanide coordination polymers induced by the hydrogen bonds between L and ammonia. In addition, EuL and EuL@PMMA could afford pure white emissions with CIE coordinates of (0.33, 0.33) and (0.33, 0.32) upon excitation at 334 nm and 275 nm, respectively. The results presented herein not only enrich the ratiometric detection arsenal for Zn2+ and NH3 but also provide some support for the development of white emission film materials. © The Royal Society of Chemistry.
Number of references: 51
Main heading: Ligands
Controlled terms: Antennas - Hydrogen bonds - Film preparation - Zinc compounds - Ammonia - Rare earth elements - Luminescence
Uncontrolled terms: Emission properties - Experimental methods - Lanthanide coordination polymer - Luminescent films - Poly(methyl methacrylate) - Property - Ratiometric - Ratiometric detection - White emissions - Zn 2+
Classification code: 547.2 Rare Earth Metals - 741.1 Light/Optics - 801.4 Physical Chemistry - 804.2 Inorganic Compounds
Numerical data indexing: Size 2.75E-07m, Size 3.34E-07m, Size 7.62E-02m
DOI: 10.1039/d1py01492g
Funding Details: Number: 22161025, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (grant 22161025).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

18. Classification and Evaluation System of Oil and Gas Reservoir Based on Artificial Neural Network

Accession number: 20232014082977
Authors: Li, Mao (1); Chen, Dezhao (2); Yang, Hua (2); Ma, Yujie (2); Zhang, Xiaoming (2); Huang, Meng (2); Yang, Shasha (3, 4); Jin, Anjie (4)
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Corresponding author: Yang, Shasha(yangss20221@outlook.com)
Source title: Proceedings - 2022 International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Abbreviated source title: Proc. - Int. Conf. Artif. Intell. Things Crowdsensing, AIoTCs
Part number: 1 of 1
Issue title: Proceedings - 2022 International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Issue date: 2022
Publication year: 2022
Pages: 153-157
Language: English
ISBN-13: 9798350334104

Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Conference date: October 26, 2022 - October 28, 2022
Conference location: Nicosia, Cyprus
Conference code: 188114
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In recent years, the dissemination of information technology is more and more, this industry in recent years to the unprecedented rapid development, the human elite, artificial neural network as the representative of artificial intelligence has achieved rapid development, computer vision what is good, technical college entrance examination, English language and other geosciences, especially in the field of paint address of new technologies emerge endlessly. In this paper, artificial neural network technology is applied to reservoir classification. Sedimentary microfacies, grain size, sandstone thickness, porosity, permeability, acoustic time difference and resistivity, which are closely related to reservoir classification, are taken as input variables to establish a BP neural network model. Through the actual data testing and verification, a very special and achieved ideal results, indicating that the artificial neural network technology has a good prospect in the field of oil and gas geology. © 2022 IEEE.
Number of references: 10
Main heading: Neural networks
Controlled terms: Oil field development - Petroleum prospecting - Petroleum reservoir engineering
Uncontrolled terms: Classification and evaluations - English languages - Entrance examination - Geosciences - Network technologies - Neural-networks - Oil and gas reservoir - Reservoir classification - Sedimentary micro-facies - Technical college
Classification code: 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1109/AIoTCs58181.2022.00029
Funding Details: Number: 22 gxfw0148, Acronym: -, Sponsor: -; Number: 22 jk0597, Acronym: -, Sponsor: -;
Funding text: This work was supported by the Shaanxi Provincial Ministry of Education in 2022 under the General Special Scientific Research Project (22 jk0597); Science and Technology personnel Service Enterprise Project Xi 'an Science and Technology Bureau (22 gxfw0148).ACKNOWLEDGMENT This work was supported by the Shaanxi Provincial Ministry of Education in 2022 under the General Special Scientific Research Project (22 jk0597); Science and Technology personnel Service Enterprise Project Science and Technology Bureau (22 gxfw0148).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

19. Construction of ZnO/GaN in-plane heterojunction with different contacted modes and vacancy defects for improving magnetic and adsorption properties

Accession number: 20223312578099
Authors: Ding, Jijun (1); Yang, Mingya (1); Chen, Haixia (1); Fu, Haiwei (1); Xiao, Bing (2)
Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Ding, Jijun(jjding@xsyu.edu.cn)
Source title: Applied Surface Science
Abbreviated source title: Appl Surf Sci
Volume: 604
Issue date: December 1, 2022
Publication year: 2022
Article number: 154500
Language: English
ISSN: 01694332
CODEN: ASUSEE
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: ZnO/GaN in-plane heterojunction with three contacted modes (Zn-N, Ga-O and both Zn-N and Ga-O, named He1, He2 and He3, respectively) is constructed. At the same time, the vacancy defects (VZn, VN, VGa and VO) are introduced at the interface of the in-plane heterojunction. Their electric, magnetic and adsorption properties with vacancy defects are analyzed based on density function theory (DFT). After constructing the heterojunction, the effective mass of holes obviously increases and leads to higher separation efficiency between electrons and holes.

Band structures show that VZn and VGa change the magnetism of He3 and total magnetic moment (M) are 1.69 μB and 2.73 μB, respectively. He3 exhibits semiconducting conductivity with VZn and semi-metallic conductivity with VGa. In order to explore the application in gas sensing field, the electric and adsorption characteristics of He3 (with VZn and VGa) for CO2, SO2 and NO2 gas molecules are combined to analysis. Ead of the He3 for SO2 and NO2 is higher than CO2 adsorption. In addition, the magnetic properties of He3 (with VZn and VGa) change drastically after adsorbing SO2 and NO2, which proves that He3 is more sensitive to SO2 and NO2 than CO2. These results demonstrate that He3 not only exhibits unique electrical and magnetic properties, but also has potential applications in SO2 and NO2 gas sensors. © 2022 Elsevier B.V.
Number of references: 31
Main heading: Heterojunctions
Controlled terms: Adsorption - Binary alloys - Carbon dioxide - Chemical sensors - Defects - Density functional theory - Gas detectors - II-VI semiconductors - Magnetic moments - Magnetic properties - Nitrogen oxides - Wide band gap semiconductors - Zinc oxide
Uncontrolled terms: Adsorption properties - Density function theory - Effective mass - Electric adsorption - Electric-magnetic properties - Electrons and holes - First principles - High separation efficiency - Vacancy Defects - ZnO/GaN in-plane heterostructure
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 801 Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments - 951 Materials Science
DOI: 10.1016/j.apsusc.2022.154500
Funding Details: Number: YCS20211076, Acronym: -, Sponsor: -; Number: 11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019GY-170, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundations of China (Grant No. 11804273), Key Research and Development Projects of Shaanxi Province (Grant No. 2019GY-170), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS20211076).This work is supported by the National Natural Science Foundations of China (Grant No. 11804273), Key Research and Development Projects of Shaanxi Province (Grant No. 2019GY-170), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS20211076).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

20. Kinetic study of fulvic acid on methane hydrate formation and decomposition in clay-rich silty sediments

Accession number: 20223412589596
Authors: Lv, Tao (1, 2); Pan, Jie (1); Chen, Zhaoyang (2, 3); Cai, Jing (2, 3); Li, Xiaosen (2, 3); Zhang, Yu (2, 3)
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Corresponding author: Lv, Tao(lvtao@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 217
Issue date: October 2022
Publication year: 2022
Article number: 110916
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Humic substances and salts are widely distributed in marine sediments, a phenomenon that undoubtedly increases the complexity of recovering methane from hydrate. In this work, kinetic experiments were carried out to determine the role of fulvic acid (FA) on methane hydrate formation and decomposition in marine sediments. We used the mixed clay-rich silty with pore water, containing 3.0 wt% NaCl, to simulate the sediments, with experimental pressure (12.7–14.6 MPa) and temperature (8.6–16.2 °C) conditions adopted from the hydrate reservoir of Shenhu

area, South China Sea (SHCS). Results revealed that FA has favorable/unfavorable effects on methane hydrate formation in the sediments, in a concentration-dependent manner. FA solutions, at concentrations of 6.0 and 10.0 wt%, inhibited the formation of methane hydrate, because the high-water holding capacity itself could reduce water activity. Conversely, 2.0 wt% FA solution accelerated methane hydrate formation by arranging surrounding water molecules with H-bonds. Interestingly, it was found that the addition of FA could significantly weaken NaCl's inhibitory effect on methane hydrate formation, while water conversion ratios increased ~2/3–fold relative to NaCl without FA solution containing systems. These results suggested that presence of FA in marine sediments promoted hydrate reformation during reservoir production. Besides, we found that there is a synergistic effect between FA and NaCl in the process of methane decomposition. © 2022 Elsevier B.V.
Number of references: 61
Main heading: Sodium chloride
Controlled terms: Gas hydrates - Hydration - Methane - Molecules - Organic acids - Reservoirs (water) - Sediments - Submarine geology
Uncontrolled terms: Acid solutions - Formation and decomposition - Fulvic acids - Humic substances - Hydrate decomposition - Hydrate formation - Kinetic study - Marine sediments - Methane hydrates - Silty sediments
Classification code: 441.2 Reservoirs - 471.1 Oceanography, General - 481.1 Geology - 483 Soil Mechanics and Foundations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 804.1 Organic Compounds - 931.3 Atomic and Molecular Physics
DOI: 10.1016/j.petrol.2022.110916
Funding Details: Number: 2020B0301030003, Acronym: -, Sponsor: -; Number: 51576202,51736009, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: E129kf1501, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: -, Acronym: GIEC, Sponsor: GuangZhou Institute of Energy Conversion, Chinese Academy of Sciences;
Funding text: This work is supported by the Key Laboratory of Gas Hydrate, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences (No. E129kf1501), the National Natural Science Foundation of China (51576202 and 51736009), and the Guangdong Major project of Basic and Applied Basic Research (No. 2020B0301030003).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

21. The design of heterojunctions based on boron-/phosphorus-doped graphene and ZnO monolayer to enhance adsorption properties for toxic gases

Accession number: 20220411503383
Authors: Ding, Jijun (1); Jin, Yanxin (1); Chen, Haixia (1); Fu, Haiwei (1); Xu, Chao (1); Xiao, Bing (2)
Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas wells, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Ding, Jijun(jjding@xsyu.edu.cn)
Source title: Journal of Applied Physics
Abbreviated source title: J Appl Phys
Volume: 131
Issue: 2
Issue date: January 14, 2022
Publication year: 2022
Article number: 025108
Language: English
ISSN: 00218979
E-ISSN: 10897550
CODEN: JAPIAU
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: Boron-/phosphorus-doped graphene and ZnO monolayer (B-G/ZnO and P-G/ZnO) heterojunctions are modeled. The density functional theory is performed to investigate the optimal adsorption configurations, electronic and adsorption properties of oxycarbide (CO, CO2), oxynitride (NO, NO2), and sulfide (SO2, H2S) gas molecules adsorbed on the heterojunctions. Results indicate that the adsorption characteristics of both B-G/ZnO and P-G/ZnO heterojunctions are better than those of G/ZnO heterojunction. Specifically, NO2 and SO2 gas molecules are chemisorbed on doped heterojunctions, and the adsorption energies are almost three times more than that on the G/

ZnO heterojunction. Then, the two gas molecules are simultaneously adsorbed on the two opposite terminals of the doped G/ZnO heterojunctions to evaluate the influence of gas concentration on electronic and adsorption properties of the G/ZnO heterojunction. It is found that the adsorption energy almost doubles compared with adsorbing a gas molecule, which provides a new idea to regulate the electronic and adsorption properties of the G/ZnO heterojunction. In addition, the bandgap of graphene can be opened by B and P atom doping and the p-n junction and n-n junction can be formed with the ZnO monolayer, respectively. The theoretical investigation helps us to better understand the mechanism of G/ZnO heterojunctions as gas sensors and offers the guidance for future p-n and n-n junction designs used in advanced gas sensor devices. © 2022 Author(s).
Number of references: 45
Main heading: Zinc oxide
Controlled terms: Adsorption - Chemical sensors - II-VI semiconductors - Electronic properties - Gases - Sulfur compounds - Monolayers - Nitrogen oxides - Heterojunctions - Density functional theory - Gas detectors - Graphene - Molecules
Uncontrolled terms: Adsorption characteristic - Adsorption energies - Adsorption properties - Density-functional-theory - Gas concentration - Gas molecules - Oxycarbides - Oxynitrides - Phosphorus-doped - Toxic gas
Classification code: 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801 Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments
DOI: 10.1063/5.0077149
Funding Details: Number: YCS21111024, Acronym: -, Sponsor: -; Number: 11447116,11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 16JK1601, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department; Number: 2019GY-170,2019GY-176, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province; Number: 2016JQ5037, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (NNSFC) (Grant Nos. 11804273 and 11447116), the Key Research and Development Projects of Shaanxi Province, China (Grant Nos. 2019GY-170 and 2019GY-176), the Natural Science Basic Research Program of Shaanxi Province, China (Grant No. 2016JQ5037), Scientific Research Plan Projects of Shaanxi Education Department, China (Grant No. 16JK1601), and the Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS21111024).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

22. Microstructure, Mechanical Properties and First Principles Calculations of Mo/VC Multilayers

Accession number: 20220413007
Authors: Wang, Chen (1); Xu, Wenya (1); Li, Hongfu (3); Liu, Yanming (1); Lv, Xianghong (1); Dai, Pan (1); Jin, Na (2); Tong, Lijia (4)
Author affiliation: (1) School of Materials Science and Engineering, Xian Shiyou University, Shaanxi, Xi’an; 710065, China; (2) School of Materials Science and Engineering, Sichuan University, Sichuan, Chengdu; 610065, China; (3) Oil-Gas Storage and Transportation Company, PetroChina Xinjiang Oilfield, Xinjiang, Karamay; 831100, China; (4) Collaborative Innovation Platform for Intelligent-Supercomputing, School of Mathematics and Physics, Handan University, Hebei, Handan; 056005, China
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Source title: SSRN
Issue date: October 13, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Number of references: 28
Main heading: Calculations
Controlled terms: Magnetron sputtering - Toughness
Uncontrolled terms: First principle calculations - Magnetron-sputtering - Microstructure mechanical properties
Classification code: 921 Mathematics - 951 Materials Science

Compendex references: YES
Preprint ID: 4246515
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

23. Novel insight into the mechanism of coal hydropyrolysis using deuterium tracer method

Accession number: 20221511947100
Authors: Niu, Ben (1); Niu, Menglong (1); Zhang, Juntao (1); Liu, Ruichun (1); Zhong, Hanbin (1); Hu, Haoquan (2)
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Corresponding author: Niu, Ben(wsniuben@163.com)
Source title: Fuel
Abbreviated source title: Fuel
Volume: 321
Issue date: August 1, 2022
Publication year: 2022
Article number: 124109
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this work, the mechanism of coal hydropyrolysis was investigated by using deuterium tracer method. To figure out how hydrogen reacts with coal at the temperature below 400 °C, chars from coal pyrolysis in D2 and N2 atmospheres when the pyrolysis temperature is at 150 to 400 °C were measured by isotope ratio mass spectrometry (IRMS) and electron paramagnetic resonance spectroscopy. The results show that H2 can react with stable radicals in coal during coal pyrolysis without catalyst at temperature as low as 200 °C. To obtain deep insight on which hydrogen transfer pathways affect pyrolysis product distributions of coal, IRMS combined with elemental analyzer and 2H NMR were used to obtain quantitative and qualitative date of deuterium in products. The results suggest that hydrogen atoms are introduced into tar mainly through radicals induce effect during coal pyrolysis without catalyst. And some of non-volatile radicals can abstract hydrogen atoms from H2. Hydrogen atom of H2 can incorporate all structural groups in the tar during coal pyrolysis, and it incorporates preferentially into 1-and 2-ring aromatic carbon and aliphatic carbon in the β or further positions of aromatic ring. © 2022 Elsevier Ltd
Number of references: 50
Main heading: Coal
Controlled terms: Atoms - Mass spectrometry - Catalysts - Aromatic compounds - Microwaves - Carbon - Deuterium - Atmospheric temperature - Hydrogen - Paramagnetic resonance - Pyrolysis - Electron spin resonance spectroscopy - Tar
Uncontrolled terms: Coal pyrolysis - Deuterium tracer - Hydrogen atoms - Hydropyrolyse mechanism - Hydropyrolysis - Isotope-ratio mass spectrometry - Pyrolysis temperature - Stable radicals - Tracer methods -]+ catalyst
Classification code: 443.1 Atmospheric Properties - 524 Solid Fuels - 701.2 Magnetism: Basic Concepts and Phenomena - 711 Electromagnetic Waves - 801 Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 931.3 Atomic and Molecular Physics
Numerical data indexing: Inductance 2.00E+00H, Temperature 4.23E+02K to 6.73E+02K, Temperature 4.73E+02K, Temperature 6.73E+02K
DOI: 10.1016/j.fuel.2022.124109
Funding Details: Number: 21908175, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: -, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work is supported by Youth Program of National Natural Science Foundation of China (No.21908175), Key Research and Development Program of Shaanxi (No.2021GY-134), Natural Science Basic Research Program of Shaanxi (No.2019JLM-1).
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

24. Highly efficient red-emitting carbon dots as a "turn-on" temperature probe in living cells

Accession number: 20222812351804
Authors: Wang, Qin (1); Tang, Zhihua (1); Li, Lihua (1); Guo, Jinxiu (2); Jin, Lingxia (1); Lu, Jiufu (1); Huang, Pei (1); Zhang, Shengrui (1); Jiao, Long (3)
Author affiliation: (1) Shaanxi Key Laboratory of Catalysis, School of Chemistry and Environment Science, Shaanxi University of Technology, Shaanxi, Hanzhong; 723000, China; (2) College of Science, Gansu Agricultural University, Lanzhou; 730070, China; (3) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Shengrui(zhangshr09@sina.com)
Source title: Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy
Abbreviated source title: Spectrochim. Acta Part A Mol. Biomol. Spectrosc.
Volume: 280
Issue date: November 5, 2022
Publication year: 2022
Article number: 121538
Language: English
ISSN: 13861425
CODEN: SAMCAS
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Nanothermometers, which can precisely detect the intracellular temperature changes, have great potential to solve questions concerning the cellular processes. Thus, the temperature sensors that provide fluorescent "turn-on" signals in the biological transparency window are of highly desirable. To meet these criteria, this work reported a new "turn-on" carbon dot (CD)-based fluorescent nanothermometry device for sensing temperature in living cells. The CDs that emit bright red fluorescence (R-CDs; #max = 610 nm in water) were synthesized with o-phenylenediamine as carbon precursor via a facile solvothermal method. The R-CDs in water were almost nonfluorescent at 15 °C. As the temperature increased, the fluorescence intensity of R-CDs exhibited a gradual increase and the final enhancement factor was greater than 21-fold. The fluorescence intensity exhibited a linear response to temperature and a high-sensitive variation of $_{\approx}13.3$ % °C-1 was detected within a broad temperature range of 28–60 °C. Moreover, the R-CD thermal sensors also exhibited high storage stability, excellent response reversibility and superior photo- and thermo-stability. Due to its good biocompatibility and "intelligent" response to external temperature, the nanothermometer could be applied for sensing temperature changes in biological media. © 2022
Number of references: 56
Main heading: Bioimaging
Controlled terms: Biocompatibility - Carbon - Fluorescence - Probes
Uncontrolled terms: Bio-imaging - Carbon dots - Fluorescence intensities - High quantum yield - Intracellular temperature change - Living cell - Nanothermometer - Sensing temperature - Temperature changes - Temperature probes
Classification code: 461.9.1 Immunology - 741.1 Light/Optics - 746 Imaging Techniques - 804 Chemical Products Generally
Numerical data indexing: Percentage 1.33E+01%, Size 6.10E-07m, Temperature 2.88E+02K, Temperature 3.01E+02K to 3.33E+02K
DOI: 10.1016/j.saa.2022.121538
Funding Details: Number: SXJ-2103,SXJ-2105, Acronym: -, Sponsor: -; Number: 2020KJXX-030,2021KJXX-51, Acronym: -, Sponsor: -; Number: 21775118,22177066, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KLSNFM2020007, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China; Number: 20JK0575, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors acknowledge the financial support by the National Natural Science Foundation of China (Nos. 21775118, 22177066), Innovation Capability Support Program of Shaanxi (Nos. 2020KJXX-030, 2021KJXX-51), Scientific Research Program Funded by Education Department of Shaanxi Provincial Government (20JK0575), Co-construction Project of Hanzhong city and Shaanxi University of Technology (SXJ-2103, SXJ-2105) and Open Foundation of Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of Ministry of Education (KLSNFM2020007).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

25. Modeling transient flow behavior of eccentric horizontal well in bi-zonal formation

Accession number: 20213110713524
Authors: Nie, Ren-Shi (1); Li, Jing-Shun (1); Deng, Qi (2); Chen, Zhangxin (3); Xie, Fei (4); Qu, Jianhua (2); Zhan, Jie (5, 6); Cao, Xianping (2); Lu, Cong (1); Yi, Pan (1)
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Corresponding authors: Nie, Ren-Shi(nierenshi2000@126.com); Chen, Zhangxin(zhachen@ucalgary.ca)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109261
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: In this study, an eccentric horizontal well in a bi-zonal formation and traversing the inner zone is first modeled. Three novel conceptual models are presented for three different well-placement situations: a horizontal well (i) in an inner zone, (ii) traversing partially in an inner zone, and (iii) traversing fully in an inner zone. A point source model in a bi-zonal formation is established and solved using the Laplace transform, finite Fourier cosine transform and separation of variables. The pressure solutions for a point source in the inner and outer zones are obtained by integrating the point-source solution along a horizontal well. A series of type curves is simulated to reveal the transient flow behavior of a horizontal well in a bi-zonal formation. The main flow regimes are discerned based on the type curves. Eight, six, and six flow regimes were discerned for the first, second, and third situations, respectively. The effect of different deviated distances on the type curves was analyzed. The type curves are compared among the three situations. Finally, the model is applied to a real case to validate it. This study can provide insights into the transient flow behavior controlled by an eccentric horizontal well in a bi-zonal formation. © 2021 Elsevier B.V.
Number of references: 43
Main heading: Horizontal wells
Controlled terms: Cosine transforms - Transition flow - Laplace transforms
Uncontrolled terms: Bi-zonal formation - Conceptual model - Finite Fourier cosine transform - Flow regimes - Point-sources - Separation of variables - Source models - Transient flow behaviour - Type curves - Well placement
Classification code: 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 921.3 Mathematical Transformations
DOI: 10.1016/j.petrol.2021.109261
Funding Details: Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: 52022087,U1762109, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: MOST, Sponsor: Ministry of Science and Technology of the People's Republic of China;
Funding text: The authors would like to thank the NSFC (National Natural Science Foundation of China) for supporting this research through a Fund of Excellent Young Scholars of China under Grant No. 52022087 and a Joint Fund of Petroleum and Chemical Industry under Grant No. U1762109. This research is also supported by the NSERC/Energi Simulation and Alberta Innovates Chairs. This work is also supported by a major national science and technology project with No.2016ZX05015-005 from the Ministry of Science and Technology of the People's Republic of China. The authors would like to thank Editage for the English language editing.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

26. CFD modeling analysis of a vertical gas liquid separator

Accession number: 20222612271702

Authors: Olaleye, Oluwaseun E. (1); Van Ombele, Brunela (2); Li, Xiaoxiao (3); Adeshina, Olushola A. (4)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 216
Issue date: September 2022
Publication year: 2022
Article number: 110733
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Two-phase vertical separators are conventionally used in the oil and gas industry for primary gas-liquid separation. An efficient gas-liquid separation is important to avert downstream process equipment problems and also to meet required export quality. This paper presents a compact vertical gas-liquid separator design with an inlet cyclone and a perforated baffle plate internal configuration. The effects of inlet volume fraction variation at 0.75 m/s inlet velocity on the separation performance were investigated. The evaluation was carried out for four different inlet liquid volume fractions (0.1, 0.15, 0.2, and 0.3) by means of Computational Fluid Dynamics (CFD) modeling. ANSYS Fluent 2019 R3 was used to simulate the turbulent two-phase flow, with the Eulerian mixture and Re-Normalization Group k-epsilon models used to evaluate the complex multi-flow separation process. The simulation results then revealed the effects of inlet stream fluid volume fraction variations on separation efficiency. The separation efficiency decreased with increasing inlet Liquid Volume Fraction (LVF). The highest separation efficiency is obtained as 99.9% when the inlet LVF is between 0.1 and 0.2, and 11.63% at LVF of 0.3. Hence, the optimum inlet fluid volume fraction for this study compact geometry separator was identified at the studied inlet conditions and recommendations for future work based on the result of this study computational analysis was presented. © 2022
Number of references: 28
Main heading: Two phase flow
Controlled terms: Computational fluid dynamics - Computational geometry - Cyclone separators - Efficiency - Flow separation - Gas industry - Gases - Liquids - Volume fraction
Uncontrolled terms: Computational fluid dynamic - Computational fluid dynamics modeling - Fluid volume fraction - Fraction variation - Gas liquid separator - Gas-liquid separation - Liquid volume fraction - Separation efficiency - Two phases flow - Vertical gas liquid separator
Classification code: 522 Gas Fuels - 631 Fluid Flow - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 723.5 Computer Applications - 802.1 Chemical Plants and Equipment - 913.1 Production Engineering - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931.1 Mechanics
Numerical data indexing: Percentage 1.163E+01%, Percentage 9.99E+01%, Velocity 7.50E-01m/s
DOI: 10.1016/j.petrol.2022.110733
Funding Details: Number: -, Acronym: PTDF, Sponsor: Petroleum Technology Development Fund;
Funding text: This work is supported by Petroleum Technology Development Fund (PTDF), Nigeria . The authors would also like to thank Mvou Guillaume.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

27. Mechanical properties and stress corrosion cracking behavior of a novel Mg-6Zn-1Y-0.5Cu-0.5Zr alloy

Accession number: 20221712012504
Authors: Jia, Hongmin (1); Li, Jingren (2); Li, Yingju (3); Wang, Mengrui (1); Luo, Sheji (1); Zhang, ZhiDong (4)
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Source title: Journal of Alloys and Compounds

Abbreviated source title: J Alloys Compd
Volume: 911
Issue date: August 5, 2022
Publication year: 2022
Article number: 164995
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The strengthening mechanism and stress corrosion cracking (SCC) behavior of a new Mg-6Zn-1Y-0.5Cu-0.5Zr alloy (given the name "ZWCK6100#) were investigated in this work. The results showed that the microstructure, mechanical properties and stress corrosion resistance were significantly affected by the combined addition of Cu and Y. The alloy consisted of α–Mg, Zn2Zr, CuMgZn, rod-shaped MgZn2 precipitates and I phase (Mg3Zn6Y), and displayed a balance between strength and ductility, with the yield strength, ultimate tensile strength and elongation being 320.3 MPa, 351.5 MPa and 19.8%, respectively. The main strengthening mechanisms were found to be grain refinement, second phases and texture. In addition, the stress corrosion resistance was assessed by slow strain rate testing and fractography. These tests showed that ZWCK6100 alloy exhibited improved SCC resistance and low SCC sensitivity in 3.5 wt% NaCl solution. The novel ZWCK6100 alloy may serve as a promising magnesium alloy for industrial applications. © 2022 Elsevier B.V.
Number of references: 43
Main heading: Zinc alloys
Controlled terms: Binary alloys - Copper corrosion - Sodium chloride - Stress corrosion cracking - Copper alloys - Grain size and shape - Residual stresses - Zircaloy - Fracture mechanics - Ternary alloys - Corrosion resistance - Grain refinement - Textures - Corrosion resistant alloys - Magnesium alloys - Tensile strength - Cracks - Strain rate
Uncontrolled terms: Cracking behavior - I-phase - Mechanical stress - Mg alloy - Microstructure mechanical properties - Novel mg alloy - Precipitate phasis - Rod-shaped - Strengthening mechanisms - Stress corrosion resistance
Classification code: 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 542.2 Magnesium and Alloys - 544.1 Copper - 544.2 Copper Alloys - 546.3 Zinc and Alloys - 549.2 Alkaline Earth Metals - 931.1 Mechanics
Numerical data indexing: Percentage 1.98E+01%, Pressure 3.203E+08Pa, Pressure 3.515E+08Pa
DOI: 10.1016/j.jallcom.2022.164995
Funding Details: Number: YCS21111017, Acronym: -, Sponsor: -; Number: 2020JQ-773,2021JM-412, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by Natural Science Foundation of Shaanxi Province of China (2020JQ-773 , 2021JM-412) and Xi #an Shiyou University Foundation , China (No. YCS21111017).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

28. A New Rate of Penetration Prediction Model based on the XGBoost and Explanation Method

Accession number: 20231013671228
Authors: Chen, Gang (1); Yang, Henglin (1); Yang, Dianru (2); Guo, Kaijie (1); Feng, Ming (1); Wang, Yuan (1); Fu, Li (1); Jiang, Hailong (3)
Author affiliation: (1) CNPC Engineering Technology R&D Company Limited, Beijing, China; (2) PetroChina Southwest Oil&Gasfield Company, Chengdu, China; (3) Xi'an Petroleum University, Xi'an, China
Source title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Abbreviated source title: U.S. Rock Mech./Geomech. Symp.
Part number: 1 of 1
Issue title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Issue date: 2022
Publication year: 2022
Report number: ARMA-2022-0142
Language: English
ISBN-13: 9780979497575
Document type: Conference article (CA)

Conference name: 56th U.S. Rock Mechanics/Geomechanics Symposium
Conference date: June 26, 2022 - June 29, 2022
Conference location: Santa Fe, NM, United states
Conference code: 186824
Publisher: American Rock Mechanics Association (ARMA)
Abstract: Machine Learning (ML) studies are carried on in the hydrocarbon exploration and production. The Rate of penetration (ROP) is one of the investigations related to ML. Previous studies could not fit the ultra-deep well and most of machine learning ROP prediction are black box models lacking of enough explanation. ML ROP prediction need more accurate ROP models. In this paper a new and reliable calculation method of ROP prediction for well drilling is proposed by Extreme Gradient Boosting (XGBoost) algorithm. It is compared with Random Forest Regression algorithm on ROP prediction models. According to the importance ranking, rotating torque is the most impacted factor in this dataset. The conclusion is that ROP prediction model based on XGBoost has smaller prediction mean square error and shows higher efficiency than Random Forest, showing the superiority of the XGBoost. Considering the SHAP value ranking, torque and RPM are the most important features and they are positively impacted ROP in well drilling ROP model established by XGBoost machine learning method can make reasonable use of drilling parameters and provide reference for well drilling optimization. ROP model optimization derived from XGBoost can extremely reduce the expenses by reducing the drilling time. © 2022 ARMA, American Rock Mechanics Association.
Number of references: 16
Main heading: Forecasting
Controlled terms: Infill drilling - Machine learning - Mean square error - Petroleum prospecting - Rock mechanics
Uncontrolled terms: Hydrocarbon exploration - Hydrocarbon production - Learning rates - Learning studies - Machine-learning - Model-based OPC - Penetration models - Prediction modelling - Random forests - Rate of penetration
Classification code: 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 723.4 Artificial Intelligence - 922.2 Mathematical Statistics
Funding Details: Number: 2021T-01-01, Acronym: -, Sponsor: -; Number: 52104005, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-407, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2021DJ4202,2021DJ4206, Acronym: -, Sponsor: Scientific Research and Technology Development Program of Guangxi;
Funding text: The authors are grateful to the support of The authors are grateful to the support of CNPC Scientific research and technology development project (Grant No. 2021DJ4202, 2021DJ4206) , CNPC "Research and Promotion of Deep and Ultra-Deep Well Drilling and Completion, Increasing Speed and Efficiency, and Reservoir Reformation" (Grant No. 2021T-01-01), National Natural Science Foundation of China (No.52104005), Natural Science Basic Research Plan in Shaanxi Province of China Program No. 2021JM-407.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

29. Development of Hydraulic Inflow Control Valve for Intelligent Completion Well

Accession number: 20223812766815
Authors: Wang, Jinlong (1); Liu, Jingchao (2); Xue, Xianbo (3); Bai, Ruiting (2); Wu, Yuchen (4); Wang, Yingru (5)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 629-634
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)

Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Core technology of production fluid control in intelligent completion accurately regulates rate of downhole flow control valve. Accurate monitoring of downhole flow control valve opening is crucial to realizing its intelligent closed-loop control. The absence of sliding sleeve position sensor in existing multistage hydraulic flow control valves in China leads to the inaccurate position of the sliding sleeve opening and imprecise control of production. A new hydraulic downhole flow control valve for intelligent completion that adopts innovative technologies is proposed in this study to develop a concentric structure linear position sensor, measure the position of the sliding sleeve accurately, integrate single-core cable power supply and signal transmission technology, and share single-core steel pipe cables with downhole electronic monitoring systems of intelligent completion in China. Sealing groove was added between valve holes on the inner wall of the flow trim to form a gap sealing structure with sliding sleeve and enhance the overall sealing of the tool. An elastic locking pawl structure is uniquely designed to lock the sliding sleeve. Field test results showed that the tool can achieve precise positioning of the opening of the downhole flow control valve in the target layer and the expected purpose. © 2022 IEEE.
Number of references: 5
Main heading: Cables
Controlled terms: Electric power transmission - Flow control - Locks (fasteners) - Safety valves
Uncontrolled terms: Completion wells - Core technology - Downhole flow control - Flow control valves - Flow trim - Inflow control valve - Intelligent completion - Position sensors - Production fluids - Sliding sleeves
Classification code: 619.1.1 Pipe Accessories - 631.1 Fluid Flow, General - 706.1.1 Electric Power Transmission - 731.3 Specific Variables Control - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICMSP55950.2022.9859010
Funding Details: Number: U1262105, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT The authors would like to acknowledge the financial support from the projects of the National Natural Science Foundation of China [A Study of Intelligent Well System Design and the Production Optimization of a Control Model (No. U1262105)].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

30. Unconformity-controlled bleaching of Jurassic-Triassic sandstones in the Ordos Basin, China

Accession number: 20220311486360
Authors: Zhang, Long (1, 2, 3); Liu, Chiyang (4); Zhang, Shaohua (1); Fayek, Mostafa (5); Lei, Kaiyu (6); Quan, Xiaoyuan (7)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 211
Issue date: April 2022
Publication year: 2022
Article number: 110154
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.

Abstract: Bleaching of red beds, a type of hydrocarbon-induced alteration, is generally attributed to redox reactions between ferric iron minerals and hydrocarbon-bearing solutions. Herein, we report sandstone bleaching occurs interbedded with the coal- and dark mudstone-bearing strata at shallow depths below two unconformity surfaces separating sandstone formations of Triassic-Jurassic age in the Ordos Basin, China. Field observations, petrography, and geochemistry suggest that uplift events controlled the formation of red beds via supergene alteration and bleaching via hydrocarbon circulation. The color of sandstones below the unconformities grade from red, yellow, and white colors at shallow depths (few meters to tens of meters) to dark yellow, gray-green and gray colors at deeper depths. Organic matter (carbonaceous plant debris) and pyrite in the unaltered sandstone gave rise to the gray color. The red/yellow sandstones are characterized by the presence of extensive iron oxide/hydroxide grain coatings, exhibit intense dissolution and extensive kaolinization of detrital feldspar and biotite and lithics and are mainly composed of detrital quartz. The white, bleached sandstone presents similar petrographic characteristics as the unbleached sandstone except for a lack of iron oxide/hydroxide cements. #18OVSMOW (9.8‰ to 15.8‰) and #DVSMOW (-103‰ to -119‰) values of kaolinite, and chemical indices of alteration of sandstones indicate a weathering origin for the kaolinite and the dissolution of labile minerals in the red and yellow sandstones. The original color of the bleached sandstone was gray during very early diagenesis and shifted to red/yellow due to the oxidation of pyrite and ferromagnesian silicate minerals (e.g., biotite) into hematite or goethite cements by the meteoric water circulation during regional uplift following the deposition of each formation. Supergene alteration associated with unconformities also created significant secondary porosity, and allowed later hydrocarbons to flow along the unconformities. The lithological properties of the weathered rocks below unconformities are highly heterogeneous both vertically and laterally and have a significant influence on fluid flow. This study provides direct evidence for hydrocarbon migration along unconformities and improves understanding of fluid-rock interaction in subsurface reservoirs. © 2022 Elsevier B.V.
Number of references: 54
Main heading: Mica
Controlled terms: Bleaching - Dissolution - Sedimentology - Cleaning - Feldspar - Hydrocarbons - Weathering - Pyrites - Redox reactions - Sandstone - Color - Lithology - Kaolinite - Quartz
Uncontrolled terms: Gray color - Hydrocarbon migration - Jurassic - Ordos Basin - Red bed - Sandstone bleaching - Shallow depths - Supergene alterations - Triassic - Unconformity
Classification code: 481.1 Geology - 482.2 Minerals - 741.1 Light/Optics - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.1 Organic Compounds - 811.1.1 Papermaking Processes
DOI: 10.1016/j.petrol.2022.110154
Funding Details: Number: -, Acronym: NWU, Sponsor: Northwest University; Number: -, Acronym: CDUT, Sponsor: Chengdu University of Technology; Number: 2020JQ-766, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20JK0838, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation;
Funding text: This study was supported by the Open Fund (Program No. PLC2020030) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology) , the Natural Science Foundation of Shaanxi Province (Program No. 2020JQ-766) and the Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 20JK0838). We thank Wenqiang Yang from the Northwest University for help with electron microprobe analysis, and San Liu from the Xi'an Center of Geological Survey for help with X-ray diffraction analysis.This study was supported by the Open Fund (Program No. PLC2020030) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), the Natural Science Foundation of Shaanxi Province (Program No. 2020JQ-766) and the Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 20JK0838). We thank Wenqiang Yang from the Northwest University for help with electron microprobe analysis, and San Liu from the Xi'an Center of Geological Survey for help with X-ray diffraction analysis.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

31. Analysis of accumulation conditions of lacustrine organic-rich shale oil affected by volcanic ash: a case study of the Lucaogou Formation in the Tiaohu-Malang sag, Santanghu basin

Accession number: 20221511958481
Title of translation: --
Authors: Pan, Yongshuai (1, 2); Huang, Zhilong (1, 2); Guo, Xiaobo (3); Li, Tianjun (1, 2); Fan, Tanguang (4); Xu, Xiongfei (4)
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Corresponding authors: Huang, Zhilong(huangzhilong1962@163.com); Huang, Zhilong(huangzhilong1962@163.com)
Source title: Dizhi Xuebao/Acta Geologica Sinica
Abbreviated source title: Dizhi Xuebao/Acta Geol. Sinica
Volume: 96
Issue: 3
Issue date: March 15, 2022
Publication year: 2022
Pages: 1053-1068
Language: Chinese
ISSN: 00015717
Document type: Journal article (JA)
Publisher: Geological Society of China
Abstract: A set of mixed sediments of volcanic ash and carbonate are widespread in the second Member of the Permian Lucaogou Formation (P2l2) in the Tiaohu-Malang sag, Santanghu basin. However, the conditions and main controlling factors of shale oil in the P2l2 remain unclear. So, organic/inorganic geochemical analysis, core conventional analysis (porosity, permeability, and oil saturation), X-ray diffraction (XRD), thin sections, Ar-ion milled field emission scanning electron microscopy (FESEM), high pressure mercury injection (HPMI)-nuclear magnetic resonance (NMR), and other methods were used in this study. The results showed that: The P2l2 developed a set of low-mature and mature source rocks, which were dominated by tuff, with large thickness and high abundance of type kerogen, and an average TOC value of 5%. The P2l2 reservoir was characterized by complex lithology and poor physical properties, with porosity ranging from 1.1% to 9.5% and the permeability less than 0.1×10-3μm2. Nanometer scale intergranular pores, intercrystalline pores, and dissolution pores were the main reservoir pore types. Tuff and dolomite have the best pore structure, higher oil saturation, and stronger fluid mobility, followed by tuffaceous dolomite and dolomitic tuff. Advantage lithofacies, favorable source and reservoir combination, and good fault-fracture system control the P2l2 shale oil accumulation, which has the characteristics of "source and reservoir integration, dominant facies belt control the reservoir, as well as fracture and dissolution control the sweet pot". © 2022, Science Press. All right reserved.
Number of references: 33
Main heading: Dissolution
Controlled terms: Analytical geochemistry - Dolomite - Field emission microscopes - Lithology - Nuclear magnetic resonance - Petroleum reservoir engineering - Pore structure - Porosity - Scanning electron microscopy - Textures - Volcanoes
Uncontrolled terms: Accumulation condition - Case-studies - Condition - Lucaogou formation - Oil saturation - Organic-rich shales - Santanghu Basin - Santanghubasin - Tiaohu-malang sag - Volcanic ash
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 484 Seismology - 512.1.2 Petroleum Deposits : Development Operations - 741.3 Optical Devices and Systems - 801 Chemistry - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.10E+00% to 9.50E+00%, Percentage 5.00E+00%, Size 1.00E-10m, Volume 2.00E-03m3
DOI: 10.19762/j.cnki.dizhixuebao.2021140
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

32. Finely modulated asymmetric nonfullerene acceptors enabling simultaneously improved voltage and current for efficient organic solar cells (*Open Access*)

Accession number: 20220911706504
Authors: Gao, Huanhuan (1, 2); Wan, Xiangjian (2); Xuan, Ziyi (3); Ma, Wei (3); Xin, Jingming (3); Li, Chenxi (2); Chen, Yongsheng (2)
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Corresponding authors: Ma, Wei; Chen, Yongsheng

Source title: Journal of Materials Chemistry C
Abbreviated source title: J. Mater. Chem. C
Volume: 10
Issue: 7
Issue date: February 21, 2022
Publication year: 2022
Pages: 2742-2748
Language: English
ISSN: 20507534
E-ISSN: 20507526
CODEN: JMCCCX
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: It is a great challenge to simultaneously improve the short-circuit current density (Jsc) and open-circuit voltage (Voc) of organic solar cells (OSCs) owing to the trade-off effect between the two photovoltaic parameters. Delicate chemical structure modulation of the active layer materials is always one of the effective strategies to address this issue. In this work, following a simple and efficient strategy through fine-tuning the molecular configuration in combination with the side chain modulation to address the issue, three non-fullerene acceptors (NFAs), 5T-2C8-IN, 5T-2C8-Cl and 5T-2C8-2Cl with a five-thiophene (5T) fused asymmetric molecular backbone and octyl side chains at the terminal position of the molecular backbone, have been designed and synthesized. Among them, the 5T-2C8-2Cl based photovoltaic device showed a power conversion efficiency (PCE) of 13.02% with a simultaneously improved Voc of 0.802 V and a Jsc of 24.97 mA cm-2 compared with the device of the control acceptor 6T-2C8-2Cl with a PCE of 12.43%, a Voc of 0.785 V and a Jsc of 24.40 mA cm-2 © The Royal Society of Chemistry.
Number of references: 51
Main heading: Organic solar cells
Controlled terms: Photovoltaic effects - Chains - Open circuit voltage - Modulation - Solar power generation - Economic and social effects
Uncontrolled terms: 'current - Active Layer - Open-circuit voltages - Photovoltaic parameters - Power conversion efficiencies - SC circuits - Short circuit current density - Side-chains - Structure modulation - Trade off
Classification code: 602.1 Mechanical Drives - 615.2 Solar Power - 702.3 Solar Cells - 971 Social Sciences
Numerical data indexing: Current density 2.44E+05A/m2, Current density 2.497E+05A/m2, Magnetic flux density 5.00E+00T, Magnetic flux density 6.00E+00T, Percentage 1.243E+01%, Percentage 1.302E+01%, Voltage 7.85E-01V, Voltage 8.02E-01V
DOI: 10.1039/d1tc03793e
Funding Details: Number: 2020TD-002, Acronym: -, Sponsor: -; Number: DE-AC02-05CH11231, Acronym: USDOE, Sponsor: U.S. Department of Energy; Number: -, Acronym: SC, Sponsor: Office of Science; Number: -, Acronym: BES, Sponsor: Basic Energy Sciences; Number: 21704082,21935007, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-595, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20JK0841, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by the Natural Science Foundation Research Project of Shaanxi Province (No. 2021JQ-595), the Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 20JK0841), the NSFC (21935007, 21704082) and the Key Scientific and Technological Innovation Team Project of Shaanxi Province (2020TD-002). X-ray data were acquired at beamlines 7.3.3 at the Advanced Light Source, which is supported by the Director, Office of Science, Office of Basic Energy Sciences, the U.S. Department of Energy under Contract No. DE-AC02-05CH11231. The authors thank Chenhui Zhu at beamline 7.3.3 for assistance with data acquisition.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

33. Lithotypes, organic matter and paleoenvironment characteristics in the Chang73 submember of the Triassic Yanchang Formation, Ordos Basin, China: Implications for organic matter accumulation and favourable target lithotype

Accession number: 20223012404927
Authors: Yang, Yiyao (1); Liu, Yiqun (1); Zhou, Dingwu (2); Jiao, Xin (1); Cao, Qing (3); Meng, Ziyuan (1); Zhao, Minru (1)

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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 216
Issue date: September 2022
Publication year: 2022
Article number: 110691
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Lithotypes, organic matter, and paleoenvironment characteristics are essential attributes in organic-rich lacustrine mudstone. Understanding the covariant relationship among them is significant not only for revealing the main controlling factors of organic matter accumulation but also for optimization of the favourable interval of unconventional petroleum resources. Herein, we present a systematic petrological and geochemical analysis of 24 samples collected from the Chang73 submember in the Triassic Yanchang Formation. Base on the texture, bedding, and composition of mudstone, the collected samples can be further divided into four lithotypes (Lithotype1 to Lithotype 4). Toc and rock pyrolysis data indicate that those four lithotypes mainly contain a high content of type I and II1 kerogen, good to excellent hydrocarbon generation potential, and are at the low mature to mature stage. Paleoenvironmental parameters, represented by paleosalinity (Sr/Ba, B/Ga), sediment provenance (Al2O3/TiO2 and Th/Sc–Zr/Sc), paleoclimate (C-value, Sr/Cu), paleoproductivity (P/Al, P/Ti, Ni/Al, Ni/Ti, Cu/Al, and Cu/Ti), bottom-water redox conditions (V/Cr, V/(V + Ni), and UEF-MoEF), and sedimentation rate ((La/Yb)N), indicate that the four lithotypes were all deposited in freshwater environments and sourced from felsic volcanic rocks but different in the paleoclimate, paleoproductivity, bottom-water redox conditions, and sedimentation rate. According to the ratios of C-value, B/Ga, Al2O3/TiO2, P/Ti V/Cr and (La/Yb)N with TOC, The degree of organic matter accumulation is positively correlated with the humidity of the paleoclimate, paleoproductivity, and reducibility of bottom water but negatively related to the sedimentation rate. Comparing the differences between the organic matter characteristics and paleoenvironment of the four lithotypes, we conclude that Lithotype1 is the most favourable target lithotype for developing unconventional oil resources. © 2022
Number of references: 119
Main heading: Aluminum oxide
Controlled terms: Alumina - Biogeochemistry - Biological materials - Organic compounds - Sedimentary rocks - Sedimentation - Textures - Volcanic rocks
Uncontrolled terms: Bottom water - Chang73 submember - Lithotype - Organic matter accumulation - Organic matter characteristic - Organic-rich lacustrine mudstone - Organics - Paleo-environment - Paleoclimates - Paleoproductivity
Classification code: 461.2 Biological Materials and Tissue Engineering - 481.2 Geochemistry - 482.2 Minerals - 801.2 Biochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 804.2 Inorganic Compounds
DOI: 10.1016/j.petrol.2022.110691
Funding Details: Number: 41802120, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (41802120).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

34. An improved PGC demodulation algorithm for optical fiber interferometers with insensitive to carrier phase delay and modulation depth

Accession number: 20224413017949
Authors: Ma, Teng (1); Zhao, Liguo (2, 3); Gao, Hong (1); Fu, Zhipeng (3); Qiao, Xueguang (4)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 74
Issue date: December 2022
Publication year: 2022
Article number: 103121
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: Phase generated carrier (PGC) demodulation is widely used in optical fiber interferometers due to its high sensitivity, large dynamic range and high signal fidelity. Based on the traditional PGC DCM demodulation scheme, we propose a algorithm to eliminate the carrier phase delay and compensate the modulation depth of PGC phase demodulation. The proposed algorithm provides real-time compensation for carrier phase delay and modulation depth without additional compensators. Through theoretical analysis and simulation, the performance of the improved demodulation scheme is compared with the traditional PGC-DCM demodulation algorithm. A complete demodulation system hardware is built, and the improved algorithm, the traditional PGC-DCM scheme and the traditional PGC-Arctan algorithm are tested respectively based on the Michelson interferometer. Experimental results show that the proposed algorithm is insensitive to carrier phase delay and modulation depth, its signal-to-noise ratio and distortion rate can reach 56.15 dB, and the total harmonic distortion rate is 0.13 %. © 2022 Elsevier Inc.
Number of references: 19
Main heading: Demodulation
Controlled terms: Michelson interferometers - Modulation - Optical fibers - Optical variables measurement - Signal to noise ratio
Uncontrolled terms: Carrier phase delay - Carrier phasis - Demodulation algorithms - Differential cross multiplication - Michelson's interferometer - Modulation depth - Optical fiber interferometers - Phase delay - Phase generation carrier - Phase generation carriers
Classification code: 716.1 Information Theory and Signal Processing - 741.1.2 Fiber Optics - 941.3 Optical Instruments - 941.4 Optical Variables Measurements
Numerical data indexing: Decibel 5.615E+01dB, Percentage 1.30E-01%
DOI: 10.1016/j.yofte.2022.103121
Funding Details: Number: YCS21211083, Acronym: -, Sponsor: -; Number: 61735014, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported in part by the National Major Scientific Research Instrument Development Project (New optical fiber seismic wave survey in oil and gas resources wells) under Project 61927812, in part by the Key Project of National Natural Science Foundation of China "Basic Research on Fiber Sensing for Formation Energy" under Grant 61735014, and in part by the Graduate Student Innovation Fund of Xi’an Shiyou University under Grant YCS21211083.This work was supported in part by the National Major Scientific Research Instrument Development Project (New optical fiber seismic wave survey in oil and gas resources wells) under Project 61927812, in part by the Key Project of National Natural Science Foundation of China "Basic Research on Fiber Sensing for Formation Energy" under Grant 61735014, and in part by the Graduate Student Innovation Fund of Xi'an Shiyou University under Grant YCS21211083.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

35. Study on the origin and hydrocarbon generation potential of lacustrine organic-rich dolomite affected by volcanism: A case study of Lucaogou Formation in the Malang Sag, Santanghu Basin, Western China

Accession number: 20221812048688
Authors: Pan, Yongshuai (1, 2); Huang, Zhilong (1, 2); Li, Tianjun (1, 2); Xu, Xiongfei (3); Guo, Xiaobo (4); Wang, Rui (1, 2); Zheng, Haoran (1, 2); Zhang, Wen (1, 2)
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Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 141
Issue date: July 2022
Publication year: 2022
Article number: 105699
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Lacustrine organic-rich laminated dolomites are widespread in the Permian Lucaogou Formation (P2l) of the Santanghu Basin. However, the origin of the dolomites remains controversial due to the influence of volcanism and complex sedimentary environment. Therefore, a composite analysis of mineralogical and geochemical is utilized to study the origin and hydrocarbon generation potential of the P2l dolomite. The results showed that the P2l dolomite was the product of penecontemporaneous dolomitization, burial dolomitization, and local hydrothermal dolomitization. The evidence was as follows: (1) Under microscopy, a large number of dolomites had obvious trigonal rhomboid and zonal structure, indicating the existence of metasomatism. Besides, the P2l was characterized by an arid climate, suboxic-anoxic condition, and high salinity of the lake, with some evaporite minerals and low-order degree of the dolomite (0.4–0.6), which suggested that the dolomite was formed by penecontemporaneous rapid crystallization; (2) Part of the dolomites were characterized by a high content of Fe2+ and Mn2+, a moderately positive excursion of #13CV-PDB values (2–12‰, avg. 7.4‰), a negative excursion of #18OV-PDB values (-20 to -2.3‰, avg. -10.6‰), a high-order degree (0.7–0.8), a positive anomaly of Eu, and a certain enrichment of light rare earth elements (LREEs), indicating that it was caused by burial dolomitization; (3) Most of the dolomites were ankerite, and the speckled dolomite and veins were mostly developed near the fault zone, with a lower value of #18OV-PDB (2l dolomites, with total organic carbon (TOC) values ranging from 0.8 to 7.3% (avg. 2.7%). The lower limits of the TOC of the P2l dolomite as an effective source rock were determined to be 2.1%. Moreover, the hydrocarbon potential of the P2l dolomite, with abundant oil-prone OM (Type I and II1 kerogen with hydrogen index (HI) values ranging from 142 to 975 mg/g) in the stage of early mature to mature (Peak temperature of pyrolytic hydrocarbon peak (Tmax) and vitrinite reflectance (Ro) values ranging from 430 to 451 °C and 0.3–0.96%, respectively), is considerable. The values of the oil saturation index (OSI[dbnd]S1/TOC × 100) are 6.1–479 mg/g (avg. 59 mg/g), indicating that the P2l dolomite contains producible oil. High contents of brittle minerals and TOC, and traces of clay minerals show that the P2l holds a significant hydrocarbon generation potential. © 2022 Elsevier Ltd
Number of references: 101
Main heading: Dolomite
Controlled terms: Rare earth elements - Hydrocarbons - Rare earths - Exploratory geochemistry
Uncontrolled terms: Burial dolomitization - Dolomitization - Hydrocarbon generation potential - Hydrocarbon potential - Hydrothermal dolomitization - Lucaogou formation - Penecontemporaneous dolomitization - Total Organic Carbon - Volcanism
Classification code: 481.2 Geochemistry - 482.2 Minerals - 547.2 Rare Earth Metals - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Volume 2.00E-03m3, null 1.42E+02null to 9.75E+02null, null 5.90E+01null, null 6.10E+00null to 4.79E+02null, Percentage 2.10E+00%, Percentage 2.70E+00%, Percentage 3.00E-01% to 9.60E-01%, Percentage 8.00E-01% to 7.30E+00%, Temperature 7.03E+02K to 7.24E+02K
DOI: 10.1016/j.marpetgeo.2022.105699
Funding Details: Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: MOST, Sponsor: Ministry of Science and Technology of the People's Republic of China; Number: -, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: NEPU, Sponsor: Northeast Petroleum University;
Funding text: This work is financially supported by the National Natural Science Foundation of China (No. 41702127). The authors sincerely thank the Tuha Oilfield Company of PetroChina Co. Ltd. For providing the cores and some experimental data for this study. The relevant experiments were supported by the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing) and Accumulation and Development of Unconventional Oil and Gas, State Key Laboratory Cultivation Base Jointly-constructed by Heilongjiang Province and Ministry of Science and Technology, Northeast Petroleum University.This work is financially supported by the National Natural Science Foundation of China (No. 41702127). The authors sincerely thank the Tuha Oilfield Company of PetroChina Co. Ltd. For providing the cores and some experimental data for this study. The relevant experiments were supported by the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing) and Accumulation and Development of Unconventional Oil and Gas, State Key Laboratory Cultivation Base Jointly-constructed by Heilongjiang Province and Ministry of Science and Technology , Northeast Petroleum University .

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

36. Enrichment conditions and exploration and development prospects of shallow marine shale gas in southern China

Accession number: 20231013663374
Title of translation:
Authors: Xing, Liang (1); Chang'An, Shan (2); Weixu, Wang (1); Yufeng, Luo (1); Zhengyu, Xu (3); Jianzhang, Zhao (4)
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Corresponding author: Xing, Liang(liangx85@126.com)
Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 43
Issue: 12
Issue date: December 1, 2022
Publication year: 2022
Pages: 1730-1749
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Shallow/ultra-shallow shale gas is widely distributed and abundant in southern China. Taiyang shale gas field in Zhaotong National Shale Gas Demonstration Zone is the first integrated shallow shale gas field that has achieved breakthrough and successful commercial development. Based on the sedimentary conditions, source-reservoir conditions, and tectonic preservation conditions of Taiyang gas field, this paper analyzes the enrichment and accumulation conditions of shale gas in the study area, and summarizes the "four-element" enrichment and accumulation law of mountain shallow shale gas field in Taiyang area, involving good sedimentary source rock, high quality shale gas reservoir, good engineering conditions for reservoir volume fracturing, and good preservation conditions. The main shale lithofacies with high-quality gas production is biogenic (organic-rich)siliceous shale, which was deposited by shelf fades in deep water. By deeply analyzing the tectonic geology and accumulation geological conditions of Taiyang shale gas field, combined with the understanding of gas reservoir engineering, the self-sufficient and exogenous supply composite pattern of shallow/ultra-shallow shale gas accumulation controlled by the coupling of lithofacies, reservoir pores, natural fractures, tectonic stress, late hydrocarbon expulsion and accumulation has been established for Taiyang anticline and Haiba anticline. This model is the inheritance and development of the shallow shale gas accumulation model of "three-dimensional storage system" in the Taiyang anticline work area. Furthermore, based on optimizing favorable areas and identifying the resources, the paper looks forwards to the prospect of shallow shale gas resources in southern China. In Zhaotong National Shale Gas Demonstration Zone, Type I and II reservoirs from Wufeng Formation to sub-member 1 of Member 1 of Longmaxi Formation are relatively thick as a whole (with an average thickness of 30. 1m). Based on the distribution of high-quality shale reservoirs, the optimized favorable area is more than 550 km2, and the proven geological reserves of shale gas are more than 2 500 × 108m3. In addition, in other residual structural depressions to the eastern and southern margins of Sichuan Basin, more than 20 boreholes exhibit good shallow shale gas potential, and the total resource is expected to reach 10% × 1012m3, which indicates that shallow shale gas has a very good exploration and development prospect in the residual depressions f complex structural area at the periphery area of Sichuan Basin, southern China. © 2022 Science Press. All rights reserved.
Number of references: 34
Main heading: Demonstrations
Controlled terms: Energy resources - Fracture - Gas industry - Gases - Hydrocarbons - Offshore gas fields - Petroleum geology - Petroleum reservoir evaluation - Petroleum reservoirs - Proven reserves - Sedimentology - Shale gas - Tectonics
Uncontrolled terms: Development prospects - Enrichment and accumulation ondition - Enrichment and accumulations - Exploration and development - Exploration prospects - Gas fields - Shallow shale gas - Taiyang gas field - Zhaotong - Zhaotong national shale gas demonstration zone

Classification code: 481.1 Geology - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 525.1 Energy Resources and Renewable Energy Issues - 804.1 Organic Compounds - 951 Materials Science
Numerical data indexing: Percentage 1.00E+01%, Size 1.00E00m, Size 1.20E+01m, Size 5.50E+05m, Size 8.00E +00m
DOI: 10.7623/syxb202212005a
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

37. Modeling and simulation of behind-casing reservoir detection based on line source

Accession number: 20223812766592
Authors: Dang, Bo (1); Fang, Xiangteng (1); Dang, Jingxin (2); Hao, Xining (3)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 541-545
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to monitor the changes of oil and gas reservoirs in different development stages and meet the requirements of high resolution and long-distance detection for reservoir detection, a three-dimensional radial stratification model based on line source is established in this paper. The effects of radial distance and formation conductivity at different times on the magnetic field strength around the line source, as well as the line source current and relative magnetic permeability of the line source on the detection distance are studied by finite element analysis. The results show that the signal intensity of secondary field at different time has a certain law and corresponding relationship with reservoir conductivity and radial distance. Within a certain range, the larger the current applied to the line source with smaller relative permeability, the stronger the secondary field signal obtained. The research results have certain reference value for the online monitoring of behind-casing reservoir. © 2022 IEEE.
Number of references: 10
Main heading: Finite element method
Controlled terms: Low permeability reservoirs - Magnetic field effects - Magnetic permeability - Petroleum reservoir engineering
Uncontrolled terms: Development stages - Distances detections - Finite elements simulation - Formation resistivity - High resolution - Line sources - Model and simulation - Oil and gas reservoir - Radial distance - Reservoir detection
Classification code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 701.2 Magnetism: Basic Concepts and Phenomena - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859234
Funding Details: Number: YCS22113114, Acronym: -, Sponsor: -; Number: 51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;

Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250, in part by CNOOC Limited Scientific Research Project, under Grant YXKYZX082021 and in part by Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University, under Grant YCS22113114.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

38. Quantitative characterization of salting out during development of deep high temperature gas reservoirs (*Open Access*)

Accession number: 20220511581949
Authors: Jiang, Haiyan (1, 2); Li, Tianyue (1); Liu, Shuai (1); Tang, Yong (3); Yuan, Shibao (1)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 211
Issue date: April 2022
Publication year: 2022
Article number: 110125
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The formation water evaporates seriously because of the drastic pressure change in near-well zone during the exploitation of deep high temperature gas reservoir. The crystallization salt precipitates in the formation when the salt concentration of formation water increases to solubility limit, which results in the decrease of reservoir porosity and permeability. At present, there is a lack of the prediction and process design of salting out in deep high temperature gas reservoirs. The evaporation salting out experiment of formation water was carried out firstly in this paper, and the volume model of salting out zone was established based on the water content model of natural gas, the porosity and permeability model of reservoir, and the kinetics model of salting out. And the characterization method of predicting porosity and permeability of high temperature gas reservoir after salting out was established by fitting and modifying the model finally, which could provide a theoretical basis for salting out plugging formation in depressurization production of gas reservoirs and laid a foundation for the efficient development of deep high temperature gas reservoirs. © 2022 Elsevier B.V.
Number of references: 15
Main heading: Porosity
Controlled terms: Produced Water - Gases - Petroleum reservoir engineering - Petroleum reservoirs
Uncontrolled terms: Formation water - Gas reservoir - High temperature gas - High temperature gas reservoir - Model fitting - Reduction rate - Salting out - The reduction rate of permeability - The reduction rate of porosity
Classification code: 452.3 Industrial Wastes - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.petrol.2022.110125
Funding Details: Number: YCS21211002, Acronym: -, Sponsor: -; Number: -, Acronym: CDUT, Sponsor: Chengdu University of Technology; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: The authors would like to thank the project supported by Open Fund (PLC2020056) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology) and the project supported by Postgraduate Innovation and Practical Ability Training Plan (YCS21211002) of Xi'an Shiyou University .
Compendex references: YES
Open Access type(s): All Open Access, Hybrid Gold
Database: Compendex
Data Provider: Engineering Village

39. Logging characteristics of Cretaceous sequence stratigraphy and the genesis and distribution of low-resistivity oil and gas layers in Bongor Basin, Chad

Accession number: 20220611595263
Title of translation: Bongor,
Authors: Mao, Zhiqiang (1); Jiang, Zhihao (2); Li, Changwen (3, 4); Linghu, Song (3, 4); Zhang, Lili (3, 4)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing), Beijing; 102249, China; (2) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) CNPC Logging International Division, Beijing; 102206, China; (4) Well Logging Key Laboratory, CNPC, Xi'an; 71007, China
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Source title: Shiyou Diqiu Wuli Kantan/Oil Geophysical Prospecting
Abbreviated source title: Shiyou Diqiu Wuli Kantan
Volume: 57
Issue: 1
Issue date: February 15, 2022
Publication year: 2022
Pages: 212-221
Language: Chinese
ISSN: 10007210
CODEN: SDWKEP
Document type: Journal article (JA)
Publisher: Science Press
Abstract: After multi-stage structural evolution of faults and depressions in Bongor Basin, differences occur in oil-bearing properties of different fault depressions, and there are also unconventional oil and gas reservoirs. The resistivity of oil and gas reservoirs varies widely, and it is difficult to identify oil and gas reservoirs with low resistivity and low contrast. Therefore, according to the data of core, logging, oil test and geochemical analysis, this paper analyzed the logging characteristics of Cretaceous sequence stratigraphy, as well as the genesis and distribution of low-resistivity oil and gas reservoirs, with Baobab Block and Daniela Block in Bongor Basin as the main research objects. The results show that: The logging responses of R-K, M and P Formations are obviously different. The mudstone of M-P Formation develops source rocks with thin organic matter layers, and its logging characteristics are typical and easy to distinguish. M Formation in Baobab, Daniela and other blocks exhibit rapid sedimentary and overpressure logging. Self-generation and self-storage P Formation is the main oil-bearing formation of Cretaceous system. There are two types of low-resistivity oil and gas reservoirs in M-P Formation (The first type is the thin sand layer or thin argillaceous sand layer, and the second type is the unconventional oil and gas reservoir.) and one type of low-contrast oil and gas reservoir. The low-resistivity oil and gas reservoirs are mainly developed at the bottom of M Formation or the top of P Formation, showing inside source or near source accumulation and possessing extremely high natural productivity under formation overpressure. The low-contrast oil and gas reservoirs are mainly developed in the middle and lower part of the main oil layer of P Formation. The water layer of the corresponding formation is marked with flooding, and the resistivity is generally high, close to or even higher than the that of adjacent oil layer.
Number of references: 25
Main heading: Oil bearing formations
Controlled terms: Petroleum reservoir engineering - Gases - Analytical geochemistry - Digital storage - Stratigraphy - Petroleum prospecting - Petroleum reservoirs - Oil well logging
Uncontrolled terms: Bongor basins - Gas layers - Logging response - Logging response characteristic - Low contrast - Low resistance - Low-contrast oil and gas reservoir - Low-resistance oil and gas layer - Oil and gas - Oil and gas reservoir - Response characteristic - Sequence stratigraphy
Classification code: 481.1 Geology - 481.2 Geochemistry - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 722.1 Data Storage, Equipment and Techniques - 801 Chemistry
DOI: 10.13810/j.cnki.issn.1000-7210.2022.01.023
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

40. Magnetic quantum dots-stabilized foam fluid for enhanced oil recovery

Accession number: 20223212544302

Authors: Du, Chunbao (1); Chang, Zixi (1); Yu, Hongjiang (1); Zhu, Yanan (1); Ma, Yonghong (4); Ma, Guoyan (1); Yan, Yongli (1); Wang, Chengjun (1); Wang, Wenzhen (1); Cheng, Yuan (2, 3)
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Source title: Chemical Engineering Journal
Abbreviated source title: Chem. Eng. J.
Volume: 450
Issue date: December 15, 2022
Publication year: 2022
Article number: 138334
Language: English
ISSN: 13858947
CODEN: CMEJAJ
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Nanoparticle-stabilized foam fluid provided excellent efficiency in tertiary oil recovery, and a more appealing technique is to exploit reusable low-dimensional nanomaterials, which can achieve better oil-displacement efficiency during the period of global decarbonization. Herein, the magnetic quantum dots (MQDs) were synthesized and then modified by a silane-coupling ionic liquid (SIL) to produce unique quantum dots MQDs@SIL. A series of characterizations and foaming measurements reveal that MQDs@SIL with an average surface grafting density of 1.01 functional chains nm-2 at an ultra-low concentration (0.005 wt%) demonstrated distinct foam stability and salt resistance capability, as well as a unique defoaming performance in a constant magnetic field for regulated foam performance at high temperature. The stretched-straight functional chains and adequate hydrophilic-hydrophobic surface of MQDs@SIL substantially favor the nonreversible adsorption of MQDs@SIL on the gas–liquid interface, leading to an increased surface elasticity, and thus an enhanced foam stability. MQDs@SIL-stabilized foam liquid demonstrated exceptional plugging performance and achieved an enhanced oil recovery of 18.2 % in the stage of foam fluid flooding, exceeding most nanoparticle-stabilized foam fluids ever reported. Furthermore, MQDs@SIL with the unique magnetic property provided unique recycling and reusing benefits, emphasizing their potential applications for enhanced oil recovery. © 2022 Elsevier B.V.
Number of references: 64
Main heading: Semiconductor quantum dots
Controlled terms: Efficiency - Enhanced recovery - Grafting (chemical) - Hydrophobicity - Ionic liquids - Magnetism - Nanocrystals - Phase interfaces - Recycling
Uncontrolled terms: Enhanced-oil recoveries - Foam fluids - Foam stability - Low dimensional - Magnetic quantum dots - Performance - Plugging action - Recycling - Silane coupling - Tertiary oil recovery
Classification code: 452.3 Industrial Wastes - 511.1 Oil Field Production Operations - 701.2 Magnetism: Basic Concepts and Phenomena - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1 Crystalline Solids
Numerical data indexing: Percentage 1.82E+01%
DOI: 10.1016/j.cej.2022.138334
Funding Details: Number: 22002117, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-585, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 22002117) and the Natural Science Foundation of Shaanxi Province, China (No. 2021JQ-585). Moreover, C. Du would like thank the Modern Analysis and Testing Center of Xi'an Shiyou University, and Shiyanjia Lab (www.shiyanjia.com) for characterizations.This work was supported by the National Natural Science Foundation of China (No. 22002117) and the Natural Science Foundation of Shaanxi Province, China (No. 2021JQ-585). Moreover, C. Du would like thank the Modern Analysis and Testing Center of Xi'an Shiyou University, and Shiyanjia Lab (www.shiyanjia.com) for characterizations.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

41. Controlling Raman gain with atomic coherence

Accession number: 20224613103718
Authors: Che, Junling (1); Xu, Wenqi (1); Wang, Hui (2); Gao, Yuhang (1); Wang, Li (1); Lan, Huayan (3); Wei, Zhaoying (4); Hu, Ming-Liang (1)
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Corresponding author: Hu, Ming-Liang(mingliang0301@xupt.edu.cn)
Source title: Infrared Physics and Technology
Abbreviated source title: Infrared Phys Technol
Volume: 127
Issue date: December 2022
Publication year: 2022
Article number: 104449
Language: English
ISSN: 13504495
CODEN: IPTEEY
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Raman gain is the optical gain generated by stimulated Raman scattering, which makes weak light amplify possible and can play an important role in weak light communication as well as related field. In this paper, experimentally and theoretically, we have observed the controllable Raman gain under the dressing effects in a coherently prepared N-type four-level atomic configuration. By controlling the detuning of the signal field and the coupling field, the electromagnetically induced transparency (EIT) window can be observed in the signal field. With the incidence of a strong pump laser into the atomic system, the two-photon ultranarrow fluorescence signal can overlap with EIT window by changing the frequency detuning of the pump field, meanwhile, a Raman gain can be induced by placing the signal field at possible large detuning. Such Raman gain can be effectively regulated and optimized by tuning the power of the signal field, pump field and the temperature of the atomic system so as to achieve higher contrast. The multi-parameter regulated higher contrast Raman gain with atomic coherence in atomic thermal system has potential applications in optical communication, superluminal laser and biophotonics. © 2022 Elsevier B.V.
Number of references: 33
Main heading: Pumping (laser)
Controlled terms: Fluorescence - Optical communication - Photonics - Quantum optics - Transparency
Uncontrolled terms: Atomic coherence - Atomic configuration - Atomic system - Detunings - Electromagnetically-induced transparency - High contrast - Pump fields - Raman gain - Signal fields - Weak lights
Classification code: 717.1 Optical Communication Systems - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 744.1 Lasers, General - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1016/j.infrared.2022.104449
Funding Details: Number: 2020GGJS008, Acronym: -, Sponsor: -; Number: 2020J0725, Acronym: -, Sponsor: -; Number: 11675129,61705182, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JQ6024,2020JM-537, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by National Natural Science Foundation of China (61705182 and 11675129), Scientific Research Fund project of Yunnan Education Department (2020J0725), Young Teacher Foundation of Pu'er University (2020GGJS008), and Natural Science Foundation of Shaanxi Province (2020JM-537 and 2017JQ6024).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

42. Numerical investigation of the effect of jet intensity from internal jet tube on detonation initiation characteristics

Accession number: 20221011756470
Authors: Wang, Zhiwu (1); Qin, Weifeng (1); Huang, Jingjing (2); Wei, Lisi (1); Yang, Yuxuan (1); Wang, Yaqi (3); Zhang, Yang (4)
Author affiliation: (1) School of Power and Energy, Northwestern Polytechnical University, Xi'an; 710072, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China; (3) AECC Sichuan Gas Turbine Establishment, Si Chuan, 610000, China; (4) Science and Technology on Combustion and Explosion Laboratory, Xi'an Modern Chemistry Research Institute, Xi'an; 710065, China
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Source title: International Journal of Hydrogen Energy
Abbreviated source title: Int J Hydrogen Energy
Volume: 47
Issue: 28
Issue date: April 1, 2022
Publication year: 2022
Pages: 13732-13745
Language: English
ISSN: 03603199
CODEN: IJHEDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Detonation initiation is one of the key problems in the application of pulse detonation engine (PDE). In recent years, the experimental research and numerical simulation results of multi-point jet initiation show that multi-point jet initiation can expand ignition energy and accelerate Deflagration-to-Detonation Transition (DDT) process. However, it will bring some difficulties to the actual implementation process due to the increase in the number of jet tubes. In order to reduce the number of ignition sources and keep multiple jets, this paper proposed a new structure of jet tube, in which the jet tube was inserted into the detonation tube, and multiple jets were generated by opening holes at the jet tube wall. The effect of the jet intensity propagated from the jet tube through the jet hole on the detonation initiation characteristics was studied by changing the initial pressure of the ignition zone. Stoichiometric hydrogen-air mixture was used. The simulation results indicated that the jet intensity had a great influence on the characteristics of detonation wave. When the initial pressure was 0 or 0.2 MPa, the stable detonation wave could not be initiated due to the jet intensity was weak. When the initial pressure of ignition zone reached 0.4 MPa, the intensity of the jet propagating from the jet tube was obviously strengthened. Then, a local detonation point was generated near the center axis of the jet tube at about x = 20 mm and developed into detonation wave. The detonation wave attenuated into quasi-Chapman-Jouguet (C-J) detonation wave, and the coupling of pressure and temperature gradually declined through the transversal jet hole. Finally, high pressure points were formed near the wall of the detonation tube, interacted at the center of the detonation tube, and a plane detonation wave was generated through reflection from the wall of the detonation tube. As the initial pressure of ignition zone continued to increase to 0.6 MPa, the development process of detonation wave was similar to that of 0.4 MPa, but the jet intensity was further improved, which made the distance and time of DDT significantly shortened. In addition, multi-stage jets could obviously reduce DDT distance and time compared with the transverse jet. © 2022 Hydrogen Energy Publications LLC
Number of references: 43
Main heading: Pulse detonation engines
Controlled terms: Shock waves - Combustion - Jet engines - Tubes (components)
Uncontrolled terms: Detonation engines - Detonation initiation - Detonation tubes - Detonation waves - Jet structure - Multi-stage jet structure - Multi-stages - Numerical investigations - Pulse detonation - Pulse detonation engine
Classification code: 619.1 Pipe, Piping and Pipelines - 653.1 Aircraft Engines, General - 654.2 Rocket Engines - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Pressure 2.00E+05Pa, Pressure 4.00E+05Pa, Pressure 6.00E+05Pa, Size 2.00E-02m
DOI: 10.1016/j.ijhydene.2022.02.114
Funding Details: Number: 91741116, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: CX2020129, Acronym: NPU, Sponsor: Northwestern Polytechnical University; Number: 2022JZ-20, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 3102020OMS702, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was financially supported by the National Natural Science Foundation of China through Grant No. 91741116 , the Natural Science Foundation of Shaanxi Province of China through Grant No. 2022JZ-20 , the Fundamental Research Funds for the Central Universities through Grant No. 3102020OMS702 and the seed Foundation of Innovation and Creation for Graduate Students in Northwestern Polytechnical University (CX2020129).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

43. Quantification of gas exsolution and preferential diffusion for alkane solvent(s)–CO2–heavy oil systems under nonequilibrium conditions

Accession number: 20213410804239
Authors: Shi, Yu (1, 2); Zhao, Wenyu (2); Li, Songyan (3); Yang, Daoyong (1, 2)

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Petroleum Systems Engineering, Faculty of Engineering and Applied Science, University of Regina, Regina; SK; S4S 0A2, Canada; (3) School of Petroleum Engineering, China University of Petroleum (East China), Qingdao; Shandong; 266580, China
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109283
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The in-situ formation of foamy oil has been found to be a crucial mechanism accounting for the better-than-expected production performance in heavy oil reservoirs under solution gas drive. Not only have the physical laws dominating gas exsolution in foamy oil not yet been well understood, but also the different contributions of each component in a gas mixture to the generation of foamy oil associated with an extremely complicated dynamic process has not been quantified. In this study, a novel and pragmatic technique has been proposed and validated to quantify the gas exsolution and preferential diffusion for alkane solvent(s)–CO2–heavy oil systems under nonequilibrium conditions by taking gas bubble size distribution and preferential mass transfer of each gas component into account. Experimentally, constant-composition expansion (CCE) tests with various constant-pressure decline rates are utilized to describe gas exsolution behaviour of alkane solvent(s)–CO2–heavy oil systems under nonequilibrium conditions, during which not only pressure and volume are simultaneously monitored and measured, but also gas samples were respectively collected at the beginning and end of experiments to perform compositional analysis. Theoretically, a mathematical model has been formulated to quantify gas exsolution and preferential mass transfer between each gas component and the liquid phase in alkane solvent(s)–CO2–heavy oil systems under nonequilibrium conditions. More specifically, quasi-equilibrium boundary conditions, real gas equation, and Rayleigh distribution function are combined with the classical equation of motion, continuity equation, and mass transfer equation to form a novel equation matrix for quantifying gas bubble growth in foamy oil. Considering gas bubble size distribution and preferential diffusion of each component in a gas mixture, the total number of gas bubbles and individual diffusion coefficient of each gas component are determined by minimizing the discrepancy between the measured and calculated volume of alkane solvent(s)–CO2–heavy oil systems. More importantly, the dynamic composition of the gas phase and the amounts of both entrained gas and evolved gas can also be obtained simultaneously during the gas exsolution processes. Excellent agreements between the experimentally measured parameters (i.e., volume of foamy oil, composition of evolved gas, and volume of free gas) and the calculated ones have been respectively achieved. Compared with the individual diffusion coefficient for each component in a gas mixture determined under the traditional equilibrium conditions, a relatively large value has been found during mass transfer processes in a supersaturated oleic phase. Moreover, pseudo-bubblepoint pressure and gas exsolution rate are found to be two main mechanisms dominating the volume-growth rate of the evolved gas. © 2021 Elsevier B.V.
Number of references: 71
Main heading: Carbon dioxide
Controlled terms: Bubbles (in fluids) - Diffusion - Paraffins - Size distribution - Petroleum reservoir engineering - Petroleum reservoirs - Binary mixtures - Crude oil - Gas mixtures - Distribution functions - Heavy oil production - Solvents
Uncontrolled terms: Alkane solvent(s)–CO2–heavy oil system - Bubble growth - Exsolution - Gas bubble - Gas exsolution - Gases mixture - Nonequilibrium conditions - Nonequilibrium phase behavior - Oil system - Preferential diffusion
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1.2 Gas Dynamics - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 922.1 Probability Theory - 922.2 Mathematical Statistics
DOI: 10.1016/j.petrol.2021.109283
Funding Details: Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: 52074222, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 51774306, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: PTRC, Sponsor: Petroleum Technology Research Centre;
Funding text: The authors acknowledge a Discovery Development Grant, a Discovery Grant and a Collaborative Research and Development (CRD) Grant from the Natural Sciences and Engineering Research Council of Canada

of Canada and an innovation fund from the Petroleum Technology Research Centre (PTRC) and financial support from EHR Enhanced Hydrocarbon Recovery Inc. , Thermal Recovery Technologies Inc. , and China University of Petroleum (East China) to D. Yang, a research grant (No.: 51774306) from the National Natural Science Foundation of China to S. Li, and a research grant (No.: 52074222) from the National Natural Science Foundation of China to Y. Shi, respectively.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

44. Infrared and visible image fusion algorithm based on a cross-layer densely connected convolutional network

Accession number: 20221611965390
Authors: Yu, Ruixing (1); Chen, Weiyu (2); Zhu, Bing (3)
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Corresponding author: Yu, Ruixing(yrxgigi@nwpu.edu.cn)
Source title: Applied Optics
Abbreviated source title: Appl. Opt.
Volume: 61
Issue: 11
Issue date: April 10, 2022
Publication year: 2022
Pages: 3107-3114
Language: English
ISSN: 1559128X
E-ISSN: 21553165
CODEN: APOPAI
Document type: Journal article (JA)
Publisher: Optica Publishing Group (formerly OSA)
Abstract: To preserve the saliency of targets in infrared images and the textures in visible images, a novel infrared and visible image fusion method, to the best of our knowledge, is proposed. First, we design a densely connected convolutional network that contains an encoder, fusion, and decoder to minimize the omission of source image effective information. Then, a loss function based on the variational model is designed to retain the thermal radiation information of the infrared image and the details of the visible image to the greatest extent. The experimental results show that the proposed method outperforms state-of-the-art methods in terms of six metrics and better preserves the clear target and textures of infrared and visible images. © 2022 Optica Publishing Group.
Number of references: 31
Main heading: Textures
Controlled terms: Image fusion - Image texture - Infrared imaging - Convolution - Multilayer neural networks
Uncontrolled terms: Convolutional networks - Cross layer - Image fusion algorithms - Image fusion methods - Infrared and visible image - Loss functions - Radiation information - Source images - Variational modeling - Visible image
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 746 Imaging Techniques
DOI: 10.1364/AO.450633
Funding Details: Number: 62001388, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 17JK0599, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: 2020GY-047,2020JM-102, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: Funding. Key Research and Development Projects of Shaanxi Province (2020GY-047, 2020JM-102); National Natural Science Foundation of China (62001388); Natural Science Foundation of Shaanxi Provincial Department of Education (17JK0599).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

45. Lithofacies types, reservoir characteristics, and hydrocarbon potential of the lacustrine organic-rich fine-grained rocks affected by tephra of the permian Lucaogou formation, Santanghu basin, western China

Accession number: 20214111001595
Authors: Pan, Yongshuai (1, 2); Huang, Zhilong (1, 2); Guo, Xiaobo (3); Li, Tianjun (1, 2); Zhao, Jing (1, 2); Li, Zhiyuan (1, 2); Qu, Tong (1, 2); Wang, Boran (1, 2); Fan, Tanguang (4); Xu, Xiongfei (4)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109631
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Volcanisms were widespread during the Permian periods in the Santanghu Basin. However, information on the classification of the lithofacies of the Lucaogou Formation (Lucaogou Fm) is still lacking, and the hydrocarbon potential of the organic-rich fine-grained rocks (FGRs) remains uncertain. Therefore, this study determines the lithofacies classification standard of the Lucaogou Fm FGRs, clarifies the advantageous lithofacies types, and evaluates the unconventional resource potential based on organic geochemical analysis, macroscopic core observation, core routine test, rock mineral identification, and pore structure characterization. The Lucaogou Fm FGRs are mainly composed of felsic minerals and dolomite, which can be divided into four rock types with high organic matter (OM) content and laminated structure. Based on TOC, rock type, and sedimentary structure, ten types of lithofacies were determined: organic-rich massive tuff (ORMT), organic-medium massive tuff (OMMT), organic-medium massive dolomite (OMMD), organic-poor massive dolomite (OPMD), organic-rich laminated tuffaceous dolomite (ORLTD), organic-medium laminated tuffaceous dolomite (OMLTD), organic-poor laminated tuffaceous dolomite (OPLTD), organic-rich laminated dolomitic tuff (ORLDT), organic-medium laminated dolomitic tuff (OMLDT), organic-poor laminated dolomitic tuff (OPLDT). There is a large amount of algal OM in the Lucaogou Fm FGRs because of the deposition of tephra, but they seriously hinder the development of pore space and the flow of pore fluid due to the relatively low maturity, resulting in poor pore structure and fluid mobility. Among them, ORMT, OPMD, OMMT, and OMMD have been transformed by diagenesis, with various types and scales of pore space, and obviously good physical properties, oiliness, pore structure, as well as fluid mobility. Followed by OPLTD, ORLTD, and OMLTD, while OPLDT, OPLDT, and OMLDT are the worst. The advantageous lithofacies of the Lucaogou Fm FGRs are influenced by both rock types and OM abundance, and are also related to sedimentary structures. In addition, the Lucaogou Fm FGRs have a large thickness, high-quality OM, high content of brittle minerals, low content of clay minerals, developed micro-nanopores network, and certain producible oil, indicating that they have significant hydrocarbon potential. © 2021 Elsevier B.V.
Number of references: 51
Main heading: Dolomite
Controlled terms: Pore fluids - Hydrocarbons - Pore structure - Analytical geochemistry - Classification (of information) - Resource valuation - Sedimentary rocks - Sedimentology
Uncontrolled terms: Advantageous lithofacies - Fine grained - Hydrocarbon potential - Laminated - Lithofacies - Organic media - Organics - Pores structure - Unconventional resources - Volcanism
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 631.3 Flow of Fluid-Like Materials - 716.1 Information Theory and Signal Processing - 801 Chemistry - 804.1 Organic Compounds - 903.1 Information Sources and Analysis - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.petrol.2021.109631
Funding Details: Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CUP, Sponsor: China University of Petroleum, Beijing;
Funding text: The authors thank the National Natural Science Foundation of China (No. 41702127) for its support, the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing) for providing experimental analysis and testing equipment for this study, and the relevant experts from the exploration and

development research institute of Tuha Oilfield of PetroChina for their positive suggestions. In addition, we would like to thank the editor and the anonymous reviewers for their constructive comments, which are of great significance in improving the quality of this paper.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

46. Wellbore Stability Analysis of Horizontal Wells for Shale Gas With Consideration of Hydration

Accession number: 20225213317650
Authors: Mao, Liangjie (1); Lin, Haoyu (1); Cai, Mingjie (1); Zhang, Juan (2, 3)
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Source title: Journal of Energy Resources Technology, Transactions of the ASME
Abbreviated source title: J Energy Resour Technol Trans ASME
Volume: 144
Issue: 11
Issue date: November 2022
Publication year: 2022
Article number: 113003
Language: English
ISSN: 01950738
E-ISSN: 15288994
CODEN: JERTD2
Document type: Journal article (JA)
Publisher: American Society of Mechanical Engineers (ASME)
Abstract: With the wide application of extended reach wells and horizontal wells, the geological conditions faced during the drilling process have become increasingly complicated, and the resulting wellbole collapse problem has become serious. Based on an L-1 horizontal well, this study provides a method for calculating collapse pressure considering the influence of formation hydration. This method is used to obtain the stress distribution around the well and collapse situation at 4100 m underground. The wellbore stability can be evaluated by the method. The factors affecting the stress and collapse of the well are analyzed by changing the construction parameters and geological parameters. Studies have shown that the rock near the well has collapsed to a certain extent and shale hydration increases the formation Poisson's ratio, resulting in more serious collapse. The study also found that hydration, drilling fluid density, and borehole size have the greatest impact on the stability of the borehole wall, followed by the well deviation angle, and the bedding angle the least. Carefully exploring the situation of the shale gas reservoir in the drilling design stages, considering the impact of hydration, and selecting appropriate construction parameters are necessary to avoid the collapse of the shaft wall and affect the shale gas production process. This study can provide a reference for ensuring the stability of the wellbore. Copyright © 2022 by ASME.
Number of references: 37
Main heading: Horizontal wells
Controlled terms: Boreholes - Drilling fluids - Gases - Gasoline - Geology - Hydration - Infill drilling - Oil field equipment - Oil well drilling - Oil wells - Petroleum reservoir engineering - Petroleum reservoirs - Stability
Uncontrolled terms: Borehole collapse - Construction parameter - Oil/gas reservoir - Petroleum well-drilling/production/construction - Petroleum wells drilling - Shale hydration - Unconventional petroleums - Well stress - Wellbole stability - Wellbore stability analysis
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels
Numerical data indexing: Size 4.10E+03m
DOI: 10.1115/1.4054018
Funding Details: Number: 2020D-5007-0210, Acronym: -, Sponsor: -; Number: 2020CX040204, Acronym: -, Sponsor: -; Number: 52174006, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PLN2020-15, Acronym: SWPU, Sponsor: Southwest Petroleum University; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation; Number: 21SYSX0054,21ZDYF3109, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;

Funding text: The Key Research and Development Programs of Sichuan (Grant Nos. 21ZDYF3109 and 21SYSX0054). Science and Technology Cooperation Project of the CNPCSWPU Innovation Alliance (Grant No. 2020CX040204). National Natural Science Foundation of China (Grant No. 52174006). CNPC Innovation Foundation (Grant No. 2020D-5007-0210) Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Southwest Petroleum University) (Grant No. PLN2020-15).• CNPC Innovation Foundation (Grant No. 2020D-5007-0210)• Science and Technology Cooperation Project of the CNPC-SWPU Innovation Alliance (Grant No. 2020CX040204).• National Natural Science Foundation of China (Grant No. 52174006).• Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Southwest Petroleum University) (Grant No. PLN2020-15).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

47. A comparative study of gas transport in dry and moisturized shale matrix considering organic matter volume fraction and water distribution characteristics

Accession number: 20213710891260
Authors: Lyu, Fangtao (1, 2); Ning, Zhengfu (1, 2); Wu, Xiaojun (3); Wang, Qing (1, 2); Gu, Keming (1, 2); Cheng, Zhilin (1, 2, 4); Mu, Zhongqi (1, 2)
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Corresponding author: Ning, Zhengfu(ningzhengfu313@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109483
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Understanding gas transport in shale matrix is of great significance for reservoir evaluation and gas well productivity. Up to now, numerous transport models were developed based on the hypothesis of homogeneous confined cylindrical nanopores by coupling with multiple mechanisms. In this work, a new transport model is proposed by coupling different transport mechanisms employing the volume fraction of organic matter (OM) instead of the total organic carbon content (TOC). The signature that the OM density is generally lower than the bulk matrix is also considered. The porosity of OM and inorganic matter (iOM) is determined by rock pyrolysis analysis, respectively. Water distribution in OM and iOM pores in the form of water clusters and adsorbed water films is quantified by water adsorption experiments. Gas transport model in moisturized shale matrix pores is then established considering the difference in water distribution. Meanwhile, both of the proposed models are analytical solutions with the hypothesis that the OM and iOM are arranged parallelly. The impacts of different factors on gas transport capacity are analyzed and discussed. Results indicate that the apparent permeability of the shale matrix decreases with the decline of pore radius. For the same pore diameter, the gas transport capacity of OM pores is much greater than that of iOM pores. The apparent permeability decreases with the increasing OM fraction. The irreducible water within the shale matrix can reduce the gas flow capacity considerably, and the apparent permeability is more sensitive to the change of irreducible water saturation at low pressure comparing with that at high pressure. This study sheds fundamental light on the gas transport distinctions in dry and moisturized shale matrix, which provides insights into the development of water-bearing shale gas reservoirs. © 2021 Elsevier B.V.
Number of references: 69
Main heading: Organic carbon
Controlled terms: Water supply - Biogeochemistry - Shale gas - Flow of gases - Petroleum reservoirs - Volume fraction - Water supply systems - Nanopores - Gases
Uncontrolled terms: Adsorption experiment - Gas transport - Gas transport model - Inorganics - Irreducible water saturation - Organic and inorganic pore - Organic matter volume fraction - Organics - Transport modelling - Water adsorption - Water adsorption experiment

Classification code: 446.1 Water Supply Systems - 481.2 Geochemistry - 512.1.1 Oil Fields - 512.2 Natural Gas Deposits - 522 Gas Fuels - 631.1.2 Gas Dynamics - 641.1 Thermodynamics - 761 Nanotechnology - 801.2 Biochemistry - 804.1 Organic Compounds - 933 Solid State Physics
DOI: 10.1016/j.petrol.2021.109483
Funding Details: Number: 51774298,51974330,U19B6003-03-04, Acronym: NNSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant Nos 51774298 and 51974330) and the Joint Funds of the National Natural Science Foundation of China (Grant No. U19B6003-03-04).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

48. Ni nanoparticles embedded in nitrogen doped carbon derived from metal-organic frameworks for the efficient hydrogenation of vanillin to vanillyl alcohol

Accession number: 20222512246429
Authors: Qiu, Zegang (1); He, Xiaoxia (1); Ma, Shaobo (1); Li, Zhiqin (1); Xiong, Yu (2); Cao, Yueling (2, 3)
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Source title: New Journal of Chemistry
Abbreviated source title: New J. Chem.
Volume: 46
Issue: 21
Issue date: May 3, 2022
Publication year: 2022
Pages: 10347-10356
Language: English
ISSN: 11440546
E-ISSN: 13699261
CODEN: NJCHE5
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The selective hydrogenation of oxygen containing functional groups is of great importance for the high value utilization of biomass resources such as lignin. However, it remains a great challenge to design and synthesize non-noble metal catalysts with high efficiency for the hydrogenation of lignin derivatives under mild reaction conditions. Here, a promising non-noble Ni@CN (CN: nitrogen doped carbon) catalyst was fabricated by direct pyrolysis of Ni metal-organic frameworks (Ni-ZIF). Characterization results reveal that the Ni nanoparticles (NPs) are embedded in nitrogen doped carbon, and the size of Ni NPs increases with the rising pyrolysis temperature. The severe aggregation of the particles of the Ni@CN composite occurs when the pyrolysis temperature is higher than 525 °C. The as-prepared Ni@CN catalysts were tested for selective hydrogenation of the aldehyde group of vanillin (lignin monomer molecule) for the purpose of producing vanillyl alcohol. The Ni@CN-425 catalyst obtained at a pyrolysis temperature of 425 °C exhibits the highest catalytic performance for the selective hydrogenation of vanillin to vanillyl alcohol. A vanillin conversion of 99.5% and vanillyl alcohol selectivity of 98.3% are achieved under a low temperature of 80 °C. In addition, Ni@CN-425 presents excellent stability in the hydrogenation reaction of vanillin. This work provides some useful insights into the design of novel non-noble metal catalysts with high efficiency for selective hydrogenation of oxygen containing functional groups in lignin derivatives. © 2022 The Royal Society of Chemistry
Number of references: 43
Main heading: Hydrogenation
Controlled terms: Carbon - Catalysts - Doping (additives) - Efficiency - Lignin - Metal nanoparticles - Nickel - Nitrogen - Organometallics - Oxygen - Precious metals - Pyrolysis - Temperature
Uncontrolled terms: Carbon catalysts - Higher efficiency - Lignin derivatives - Metalorganic frameworks (MOFs) - Ni Nanoparticles - Nitrogen-doped carbons - Non-noble metal catalysts - Oxygen-containing functional groups - Pyrolysis temperature - Selective hydrogenation

Classification code: 547.1 Precious Metals - 548.1 Nickel - 641.1 Thermodynamics - 761 Nanotechnology - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 811.3 Cellulose, Lignin and Derivatives - 913.1 Production Engineering
Numerical data indexing: Percentage 9.83E+01%, Percentage 9.95E+01%, Temperature 3.53E+02K, Temperature 6.98E+02K, Temperature 7.98E+02K
DOI: 10.1039/d2nj01110g
Funding Details: Number: cstc2020jcyj-msxmX0750, Acronym: -, Sponsor: Natural Science Foundation of Chongqing; Number: YCS21111008, Acronym: -, Sponsor: -; Number: XN2021052, Acronym: -, Sponsor: -; Number: 2022GY-153, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 202110699068, Acronym: -, Sponsor: -; Number: 21878243,22002120, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: We acknowledge financial support from the National Natural Science Foundation of China (No. 21878243, 22002120), the Natural Science Foundation of Chongqing, China (No. cstc2020jcyj-msxmX0750), the Key Research and Development Program of Shaanxi (No. 2022GY-153), and the Innovation and practice ability training project for postgraduates of Xi'an Shiyou University (YCS21111008), the National Undergraduate Training Program for Innovation and Entrepreneurship (No. 202110699068), and the Undergraduate Training Program for Innovation and Entrepreneurship of Northwestern Polytechnical University (No. XN2021052).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

49. Intermediate Phase-Assisted Sequential Deposition Toward 15.24%-Efficiency Carbon-Electrode Cspbi2br Perovskite Solar Cells

Accession number: 20220911706450
Authors: Zhu, Weidong (1); Ma, Junxiao (1); Chai, Wenming (1); Han, Tianjiao (1); Chen, Dandan (2); Xie, Xiaoping (3); Liu, Gang (3); Dong, Peng (3); Xi, He (1); Chen, Dazheng (1); Zhang, Jincheng (1); Zhang, Chunfu (1); Hao, Yue (1)
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Source title: Solar RRL
Abbreviated source title: Solar RRL
Volume: 6
Issue: 6
Issue date: June 2022
Publication year: 2022
Article number: 2200020
Language: English
E-ISSN: 2367198X
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: All-inorganic perovskite CsPbI2Br is emerging as a promising absorber material for perovskite solar cells (PSCs) due to its superior photophysical properties and thermal stability. However, there are still many great challenges to obtaining high-quality, phase-stable, thick CsPbI2Br films in ambient air to promote further development of the PSCs. Herein, for the first time, an intermediate phase-assisted sequential deposition for desired CsPbI2Br films is proposed. It is carried out by sequentially spin-coating PbBr2 and CsI precursors onto the substrate in ambient air, during which a Ruddlesden–Popper (R–P) perovskite intermediate phase film composed of a Cs-Pb-I-Br complex is produced. After annealing, the intermediate phase film is transformed into a CsPbI2Br film consisting of CsPbI2Br grains and CsBr species through a spinodal decomposition reaction. The as-obtained CsPbI2Br film holds full coverage, micro-sized grains, and excellent phase stability. Moreover, the CsBr species located at grain boundaries can effectively passivate the defects. Therefore, a carbon-electrode PSC with such a desired CsPbI2Br film yields the optimized efficiency of 15.24%, coupled with a remarkable photovoltage of 1.312 V and excellent stability in ambient air with relative humidity of 60–70%. The efficiency achieved herein is among the record efficiencies for carbon-electrode PSCs based on various all-inorganic perovskites reported currently. © 2022 Wiley-VCH GmbH.
Number of references: 62
Main heading: Perovskite

Controlled terms: Bromine compounds - Cesium iodide - Lead compounds - Perovskite solar cells - Efficiency - Electrodes - Iodine compounds - Carbon - Reaction intermediates - Grain boundaries - Deposition - Spinodal decomposition
Uncontrolled terms: Absorber material - All-inorganic perovskite - Ambient air - Carbon electrode - Carbon-electrode perovskite solar cell - High quality - Inorganics - Intermediate phasis - Photophysical properties - Sequential deposition
Classification code: 482.2 Minerals - 702.3 Solar Cells - 802.3 Chemical Operations - 804 Chemical Products Generally - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics
Numerical data indexing: Percentage 1.524E+01%, Percentage 6.00E+01% to 7.00E+01%, Voltage 1.312E+00V
DOI: 10.1002/solr.202200020
Funding Details: Number: -, Acronym: NSF, Sponsor: National Science Foundation; Number: 61804113,61874083,62004151, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020GXLH-Z-014, Acronym: NPU, Sponsor: Northwestern Polytechnical University; Number: 2017JM6049,2018ZDCXL-GY-08-02-02, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: ShanXi Science and Technology Department;
Funding text: W.Z., J.M., and W.C. contributed equally to the work. The authors gratefully acknowledge the financial support from the National Natural Science Foundation of China (61804113, 61874083, and 62004151), the National Natural Science Foundation of Shaanxi Province (2018ZDCXL-GY-08-02-02 and 2017JM6049), and the Joint Research Funds of the Department of Science & Technology of Shaanxi Province and Northwestern Polytechnical University (No. 2020GXLH-Z-014).This research was funded in part under award CBET1804770 from National Science Foundation (NSF). The authors would like to thank University of Central Florida for all the support for their research.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

50. Geochemical characteristics of crude oil from coal measure source rocks and fine oil-source correlation in the Pinghu Formation in Pingbei slope belt, Xihu Sag, East China Sea Shelf Basin

Accession number: 20221211817022
Title of translation: -
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Source title: Oil and Gas Geology
Abbreviated source title: Oil Gas Geol.
Volume: 43
Issue: 2
Issue date: April 28, 2022
Publication year: 2022
Pages: 432-444
Language: Chinese
ISSN: 02539985
Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: The properties and distribution of crude oil from the coal measure source rocks are complex in Pingbei slope belt of Xihu Sag, East China Sea Shelf Basin. In addition, the sedimentary environment and organic matter origin of coal measure source rocks are highly variable in both vertical and horizontal views. The oil reservoirs in this area are characterized by hydrocarbon supply from multiple sources including western subsag and the slope zone. A combination of geological and geochemical analyses is applied to study crude oil types and fine oil-source correlation. Finally, the relationship between crude oil distribution and hydrocarbon-generating subsag is clarified. The results show that the crude oil in Pingbei area is mainly condensate oil, accompanied by a small amount of light and normal crude oil, and it can be grouped into three types (i.e. Type, 1 and2) based on biomarker compound features. Typecrude oil mainly sourced from coniferales resinites of gymnosperms of terrestrial higher plants, is mainly distributed in Kongqueting area, and is obviously related to the source rocks in the lower member and lower submember of middle

member of Pinghu Formation in the western subsag. Type1 crude oil mainly occurs in the upper member and upper submember of middle member of Pinghu Formation in Wuyunting area and the NB8 subsag. It is speculated that both terrestrial gymnosperms and ferns, together with high-maturity marine organic matters from lower slope belt and western sabsag, have made contributions to the generation of Type1 crude oil, with the contribution of ferns even greater, and this type of crude oil is obviously related to the source rocks in the upper member and upper submember of middle member of Pinghu Formation. In addition, Type2 crude oil is mainly distributed in Wuyunting area and Baoyunting-Tuanjieting area, with greater contributions made by coniferales resinites of terrestrial gymnosperms; and it is obviously related to the source rocks in the lower member and lower submember of middle member of Pinghu Formation. The research results are of guiding value to the new understanding of oil source, reservoir prediction and hydrocarbon exploration in Pingbei slope belt.
Number of references: 37
Main heading: Crude oil
Controlled terms: Petroleum geology - Resins - Coal - Petroleum reservoir engineering - Analytical geochemistry - Petroleum reservoirs - Biomarkers - Biogeochemistry - Hydrocarbons
Uncontrolled terms: Crude oil from coal measure source rock - East China Sea - East china sea shelf basin - Genetic type - Genetic type of crude oil - Geochemical characteristic - Oil-source correlation - Pingbei slope belt - Pinghu formation - Source rocks - Xihu sag
Classification code: 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 524 Solid Fuels - 801 Chemistry - 801.2 Biochemistry - 804.1 Organic Compounds - 815.1.1 Organic Polymers
DOI: 10.11743/ogg20220215
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

51. Nitrogen addition increases the ecological and human health risks of PAHs in different fractions of soil in sewage-irrigated area

Accession number: 20214611150381
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Source title: Science of the Total Environment
Abbreviated source title: Sci. Total Environ.
Volume: 811
Issue date: March 10, 2022
Publication year: 2022
Article number: 151420
Language: English
ISSN: 00489697
E-ISSN: 18791026
CODEN: STEVA8
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Nitrogen (N) is one of the most important nutrients required by soil and crops. N addition improves soil quality and fertility. However, long-term N addition changes the soil environment, which may affect the adsorption and accumulation of organic pollutants in soil. The adsorption of pollutants by the light fractions (LF) and heavy fractions (HF) of soil, and their resulting risks, might differ. In addition, several organic pollutants, especially PAHs, accumulate in farmland soil under long-term sewage irrigation. However, few studies have examined the response of PAHs to N addition in soil in sewage-irrigated areas, including whether there is a difference in the response of the LF and HF of soil. Here, a long-term experiment was carried out in farmland soils in typical sewage-irrigated areas to reveal the adsorption and accumulation of PAHs in bulk soil, LF, and HF, and the human health and ecological environment risks posed by PAHs under different levels of N addition. Under long-term N addition, the concentration of PAHs in soil increased and fluctuated from 7598 μg kg-1 to 10,414 μg kg-1. Significant differences in the PAHs concentration in the LF (5048 μg kg-1 to 1889 μg kg-1) and HF (2536 μg kg-1 to 8521 μg kg-1) and the human health and ecological risks of soil with N addition in typical sewage-irrigated areas were observed. The HF of soil was characterized by

low carcinogenic and ecological risks. The results of our research provide insight into possible management actions that could be taken to enhance the environmental protection and safety of agricultural production activities, such as sustainability fertilization. © 2021 Elsevier B.V.
Number of references: 72
Main heading: Polycyclic aromatic hydrocarbons
Controlled terms: Health risks - Risk assessment - Sewage - Sustainable development - Farms - Soils - Agricultural pollution - Adsorption - Nitrogen - Soil pollution - Health - Irrigation - Organic pollutants
Uncontrolled terms: Ecological risk assessment - Ecological risks - Farmland soils - Heavy fraction - Human exposure risks - Human health risks - Light fraction - Nitrogen additions - Nitrogen input - Sewage irrigation
Classification code: 452.1 Sewage - 454.2 Environmental Impact and Protection - 461.6 Medicine and Pharmacology - 461.7 Health Care - 483.1 Soils and Soil Mechanics - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.1 Organic Compounds - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 821.3 Agricultural Methods - 914.1 Accidents and Accident Prevention
Numerical data indexing: Mass 1.00E-09kg to 1.0414E-05kg, Mass 1.00E-09kg to 1.889E-06kg, Mass 1.00E-09kg to 8.521E-06kg, Mass 2.536E-06kg, Mass 5.048E-06kg, Mass 7.598E-06kg
DOI: 10.1016/j.scitotenv.2021.151420
Funding Details: Number: 41977030, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 8212040, Acronym: -, Sponsor: Natural Science Foundation of Beijing Municipality; Number: 2017YFA0605003, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: This work was financially supported by the Beijing Natural Science Foundation (No. 8212040), the National Natural Science Foundation of China (No. 41977030), and the National Key Research and Development Program of China (No. 2017YFA0605003).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

52. Mechanical properties evaluation of diamond films via nanoindentation

Accession number: 20224012835739
Authors: Xiong, Jiaji (1, 2); Liu, Lusheng (1); Song, Haozhe (1); Wang, Mengrui (1, 3); Hu, Tianwen (1); Zhai, Zhaofeng (1); Yang, Bing (1); Jiang, Xin (1); Huang, Nan (1, 2)
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Source title: Diamond and Related Materials
Abbreviated source title: Diamond Relat. Mat.
Volume: 130
Issue date: December 2022
Publication year: 2022
Article number: 109403
Language: English
ISSN: 09259635
CODEN: DRMTE3
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Diamond film is considered ideal tool coating material for processing difficult-to-machine materials due to the high hardness and wear resistance. However, precisely evaluating the mechanical properties of diamond films has been a considerable obstacle, which hinders further design and application. In this work, various diamond films were deposited on cemented carbide substrates ranging from 0.1 to 1.0 kPa in CH4/H2 by hot filament chemical vapor deposition. The mechanical properties of diamond films were systematically and rigorously evaluated by nanoindentation adopting a series of loads. However, it is found that hardness calculated at different loads has a significant deviation, although all obey the well-known 10 % rule of thumb. On basis of the massive nanoindentation on polished diamond film with roughness 3 carbon content. © 2022
Number of references: 41
Main heading: Hardness
Controlled terms: Carbides - Carbon films - Chemical vapor deposition - Diamond films - Elastic moduli - Nanoindentation - Wear resistance

Uncontrolled terms: Coating material - Design and application - Diamonds films - Difficult to machine materials - High hardness - Hot filament CVD - Mechanical property evaluation - Nano indentation - Rule of thumb - Tool coating
Classification code: 761 Nanotechnology - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.1 Ceramics - 813.2 Coating Materials - 931.2 Physical Properties of Gases, Liquids and Solids - 943.2 Mechanical Variables Measurements - 951 Materials Science
Numerical data indexing: Percentage 1.00E+01%, Percentage 5.00E+00%, Pressure 1.00E+02Pa to 1.00E+03Pa, Pressure 7.55E+10Pa, Pressure 8.73E+10Pa, Size 2.00E-08m
DOI: 10.1016/j.diamond.2022.109403
Funding Details: Number: L2020E08, Acronym: -, Sponsor: -; Number: 2020T3001, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: We sincerely acknowledge the support from the STS project of the Fujian Province and Chinese Academy of Sciences (No. 2020T3001) and the Instrument Development Project of Shenyang National Laboratory for Materials Science (L2020E08).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

53. The diagnostic criteria of borehole electrical imaging log for volcanic reservoir interpretation: An example from the Yingcheng Formation in the Xujiaweizi Depression, Songliao Basin, China

Accession number: 20214311084229
Authors: Nian, Tao (1, 2); Wang, Guiwen (3); Cang, Dan (3); Tan, Chengqian (1); Tan, Yuhan (4); Zhang, Fengsheng (4)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109713
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Electrical image log can be used to establish volcanic facies sequences, and thus used for reservoir interpretation, while the key is to set up available diagnostic criteria to guide lithology, structure and facies interpretation. A total of 50 datasets of borehole image logs, combined with wireline logs and cores, have been collected in the Yingcheng volcanic reservoir in the Xujiaweizi Depression, Songliao Basin, providing an opportunity for repeated image interpretation in the volcanic strata. The interpreted lithology includes rhyolite, dacite, andesite, basalt, welded ignimbrite, tuff, volcanic breccia and agglomerate, sedimentary tuff, sedimentary volcanic breccia and agglomerate. The volcanic structures are calibrated in terms of fluidal and deformed fluidal structure, vesicular and amygdaloidal structure, and massive structure. Based on the lithology and structures, volcanic facies including volcanic sedimentary facies, effusive facies, explosive facies and volcanic conduit facies, have been further determined. Layered structures of the weathered volcanic crusts are shown in borehole images and mainly developed at the top of the Yingcheng Formation. Borehole images indicate that SHmax direction in the area is consistent with the regional SHmax direction, with a preferable trending of 88°. Four sets of filled/open tectonic fractures are developed with approximately north, south, NNE and NW dipping. It infers that different volcanic facies can be well correlated between wells, and tectonic movements have a slight influence on the Yingcheng volcanic strata. The proposed diagnostic criteria and the workflow can be referred for a direct image interpretation in volcanic reservoirs or ocean drilling programs when cores are unavailable. © 2021 Elsevier B.V.
Number of references: 62
Main heading: Lithology
Controlled terms: Volcanoes - Well logging - Boreholes - Image analysis - Sedimentology - Tectonics

Uncontrolled terms: Borehole electrical image - Diagnostic criterion - Electrical images - Image interpretation - Reservoir characterization - Songliao basin - Volcanic facies - Volcanic reservoirs - Volcanics - Yingcheng formation
Classification code: 481.1 Geology - 484 Seismology
DOI: 10.1016/j.petrol.2021.109713
Funding Details: Number: PRP/open-2102, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: 2016ZX05056, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This study was co-funded by the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum , Beijing (No. PRP/open-2102) and National Major Science and Technology Projects of China (serial numbers: 2016ZX05056). It is based on work conducted by a large group of participants. The authors particularly wish to thank Chunyan Wang in the Daqing Oilfield for data preparation and Prof. Pujun Wang in Jilin University for thin sections.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

54. A review of experimental studies on the proppant settling in hydraulic fractures

Accession number: 20212910663641
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109211
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The hike of hydraulic fracturing in North America and beyond leads to significantly enhanced hydrocarbon production especially in low-permeability geological formations. Proppant settling is one of the most important particle motions during a hydraulic fracturing process, which to a large extent determines the created fracture's conductivity. This paper provides a critical review of the proppant settling in hydraulic fractures, with an emphasis on the experimental studies published in the past several decades. Six factors are identified out of a proppant/fracturing-fluid/fracture system: wall retardation, fluid rheology, proppant non-uniformity, proppant surface wettability, proppant concentration, and fracture complexity. Influences of these factors on the proppant settling are summarized based on the analysis of published experimental data, images, and correlations. Notwithstanding the extensive experimental studies, more experiments are in demand to systematically investigate proppant settling behavior in various kinds of fracturing fluids confined by hydraulic fractures. In addition, a gap is found to exist between the experimental studies of proppant transport and the application of the experimental findings to numerical simulations of hydraulic fracturing. © 2021 Elsevier B.V.
Number of references: 207
Main heading: Proppants
Controlled terms: Fracturing fluids
Uncontrolled terms: Critical review - Fracture conductivities - Geological formation - Hydraulic fracturing process - Hydrocarbon production - Low permeability - Particle motions - Proppant settling - Proppant transports - Unconventional reservoirs
Classification code: 511.1 Oil Field Production Operations
DOI: 10.1016/j.petrol.2021.109211
Funding Details: Number: 51874240, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The fourth author would like to acknowledge the financial support provided by the National Natural Science Foundation of China (No. 51874240).
Compendex references: YES
Database: Compendex

55. Laser induced breakdown spectroscopy combined with hybrid variable selection for the prediction of the environmental risk Nemerow index of heavy metals in oily sludge

Accession number: 20221812063919
Authors: Li, Maogang (1); Fu, Han (1); Du, Yao (2); Huang, Xuan (3); Zhang, Tianlong (1); Tang, Hongsheng (1); Li, Hua (1, 2)
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Source title: Journal of Analytical Atomic Spectrometry
Abbreviated source title: J Anal At Spectrom
Issue date: 2022
Publication year: 2022
Language: English
ISSN: 02679477
E-ISSN: 13645544
CODEN: JASPE2
Document type: Article in Press
Publisher: Royal Society of Chemistry
Abstract: Oily sludge is an associated pollutant in crude oil exploitation, transportation, processing and subsequent treatment, which contains a large number of toxic components, including heavy metals, aromatic hydrocarbons, aged crude oil, bacteria, etc. Therefore, the prediction of the environmental pollution risk level of heavy metals in oily sludge is of great scientific significance for the prevention of environmental pollution and the management of the ecological environment by the petroleum industry. A risk level prediction method of heavy metals in oily sludge is proposed derived from laser induced breakdown spectroscopy (LIBS) and hybrid variable selection in this work. LIBS spectra of 30 oily sludge samples were obtained, and then the corresponding Nemerow index was calculated. The effects of different data processing methods on LIBS spectra were explored. A filter-wrapper hybrid variable selection method called mutual information-variable importance measurement (MI-VIM) was proposed for LIBS spectra, in which mutual information (MI) underwent preliminary variable selection, and then, variable importance measurement (VIM) was employed for further variable screening. Finally, the random forest (RF) model was established on the basis of the optimized model parameters and selected feature variables to predict the environmental risk caused by heavy metals in oily sludge. 10-fold cross validation (CV) was used for the spectral preprocessing method, mutual information threshold, variable importance threshold and parameter optimization in the process of model construction. With the purpose of further verifying the prediction performance of MI-VIM, the results of the RF models based on different methods were compared, which show that the combination of LIBS and MI-VIM-RF is a feasible method for the prediction of the Nemerow risk index of heavy metals in oily sludge. Compared with the original LIBS spectra based RF model, the determination coefficient of the prediction set (Rp2) increased from 0.9564 to 0.9681, the root mean square error of the prediction set (RMSEP) reduced from 0.7920 to 0.6009, and the modeling time decreased from 103.1 to 16.7 s. In conclusion, LIBS combined with MI-VIM-RF is an effective method to predict the Nemerow index of oily sludge, and can provide some new ideas or strategies for environmental risk estimation and restoration of the petroleum industry. © 2022 The Royal Society of Chemistry
Number of references: 47
Main heading: Heavy metals
Controlled terms: Crude oil - Mean square error - Forecasting - Risk perception - Petroleum industry - Petroleum transportation - Decision trees - Data handling - Pollution - Gasoline - Aromatic hydrocarbons
Uncontrolled terms: Environmental pollutions - Environmental risks - Hybrid variables - Laserinduced breakdown spectroscopy (LIBS) - Mutual informations - Oily sludges - Random forest modeling - Spectra's - Variable importances - Variables selections
Classification code: 512.1 Petroleum Deposits - 523 Liquid Fuels - 531 Metallurgy and Metallography - 723.2 Data Processing and Image Processing - 804.1 Organic Compounds - 914.1 Accidents and Accident Prevention - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
Numerical data indexing: Time 1.031E+02s to 1.67E+01s
DOI: 10.1039/d2ja00048b
Funding Details: Number: 21873076,22073074,22173071, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: This work was supported by the National Natural Science Foundation of China (no. 22173071, 22073074, and 21873076).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

56. Coupling effect of delamination cracks and vertical cracks on local phase transition of ceramic topcoat in thermal barrier coatings

Accession number: 20230513472528
Authors: Dong, Hui (1); Xu, Long (1); Zhou, Pan-Hu (1); Yang, Guan-Jun (2); Wang, Li-Shuang (1); Yao, Jian-Tao (1)
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Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
Source title: Ceramics International
Abbreviated source title: Ceram Int
Volume: 49
Issue: 8
Issue date: April 15, 2023
Publication year: 2023
Pages: 13176-13184
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The phase transition of atmospheric plasma-sprayed yttria-stabilized zirconia (APS YSZ) coating over delamination cracks in thermal barrier coatings (TBCs) was addressed by gradient thermal cycling test at 1150 °C to illustrate the coupling effect of delamination cracks and vertical cracks in TBCs on the phase transition. Phase structure of 15 dot-matrix micro-regions across YSZ thickness was examined by Raman spectroscopy. Three two-dimensional models were built to elaborate the local temperature evolution in the YSZ coating. The phase transition of YSZ had a markedly time-space characteristic with application duration, depending on the temperature increment. The phase-transition quantity decreased radioactively from the delamination crack center to its tip and gradually decreased from the YSZ free surface to the YSZ/bond coat interface. Compared with YSZ coating only containing delamination cracks or only vertical cracks, the temperature in the YSZ coating was significantly elevated by the combination of vertical cracks and delamination cracks. The increment was in 75 °C–295 °C when the delamination crack propagated from 0.5 mm to 4.0 mm. Consequently, due to the coupling effect of delamination cracks and vertical cracks, serious sintering and phase transition of the YSZ coating would occur once the delamination crack length was beyond 0.5 mm. © 2022
Number of references: 50
Main heading: Thermal barrier coatings
Controlled terms: Plasma jets - Plasma spraying - Sintering - Yttria stabilized zirconia - Yttrium oxide
Uncontrolled terms: Atmospheric plasmas - Ceramic topcoats - Coupling effect - Delamination crack - Local phase transition - Plasma-sprayed - Thermal cycling test - Vertical crack - YSZ coatings - Yttria stabilized zirconia coatings
Classification code: 804.2 Inorganic Compounds - 813.1 Coating Techniques - 932.3 Plasma Physics
Numerical data indexing: Size 5.00E-04m to 4.00E-03m, Size 5.00E-04m, Temperature 1.423E+03K, Temperature 3.48E+02K to 5.68E+02K
DOI: 10.1016/j.ceramint.2022.12.196
Funding Details: Number: YS37020203, Acronym: -, Sponsor: -; Number: YCS22212028, Acronym: -, Sponsor: -; Number: 51901181,52001254, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JQ-771, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20200427, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology; Number: 2020210, Acronym: -, Sponsor: State Key Laboratory for Mechanical Behavior of Materials; Number: 2017-VII-0012-0107, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: The research was funded by the National Science and Technology Major Project (2017-VII-0012-0107), the National Natural Science Foundation of China (No. 52001254, No. 51901181), State Key Laboratory for Mechanical Behavior of Materials (No. 2020210), Natural Science Foundation of Shaanxi Province (No. 2020JQ-771),

Materials Science and Engineering of Provincial Advantage Disciplines in Xi'an Shiyou University (No. YS37020203), Young Talent fund of University Association for Science and Technology in Shaanxi, China (No. 20200427) and Xi'an Shiyou University Postgraduate Innovation and Practice Ability Training Project (No. YCS22212028).The research was funded by the National Science and Technology Major Project (2017-VII-0012-0107), the National Natural Science Foundation of China (No. 52001254 , No. 51901181), State Key Laboratory for Mechanical Behavior of Materials (No. 2020210), Natural Science Foundation of Shaanxi Province (No. 2020JQ-771), Materials Science and Engineering of Provincial Advantage Disciplines in Xi'an Shiyou University (No. YS37020203), Young Talent fund of University Association for Science and Technology in Shaanxi, China (No. 20200427) and Xi'an Shiyou University Postgraduate Innovation and Practice Ability Training Project (No. YCS22212028).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

57. Personalized city region of interests recommendation method based on city block and check-in data

Accession number: 20224413024043
Title of translation:
Authors: Liu, Jiping (1); Zhang, Zhiran (1, 2); Yang, Chaowei (3); Xu, Shenghua (1); Chen, Cai (4); Qiu, Agen (1); Zhang, Fuhao (1)
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Corresponding author: Zhang, Zhiran(zrzhang@xsyu.edu.cn)
Source title: Cehui Xuebao/Acta Geodaetica et Cartographica Sinica
Abbreviated source title: Cehui Xuebao
Volume: 51
Issue: 8
Issue date: August 2022
Publication year: 2022
Pages: 1797-1806
Language: Chinese
ISSN: 10011595
CODEN: CEXUER
Document type: Journal article (JA)
Publisher: SinoMaps Press
Abstract: Using the historical user data of social media to analyze the preferences of users'spatial activities and region of interest (ROI) is of great value for city commercial planning,people's urban life and needs.The ROI obtained by existing methods has big ambiguity and vague in content,and lack actual geographical scope and accurate geographical description for users.We propose a personalized ROI mining and recommendation method combing city block and check-in data (CBCD) that introduces the concept of city blocks to solve the problem of vague ROI boundaries.Specifically,the large number of check-in points are mapped into city blocks generated by the road network,followed by modeling of user geographical and categorical preference.Finally,we integrate geographical and categorical activity preference models to recommend ROIs to users.Experiments on real datasets show that this method has high recommendation accuracy and is of great value for mining and recommending city blocks of interest to users.
Number of references: 27
Main heading: Image segmentation
Controlled terms: User profile
Uncontrolled terms: Check-in - City block - Location-based social networks - Recommendation - Recommendation methods - Region-of-interest - Regions of interest - Social media - Spatial regions - User data
DOI: 10.11947/j.AGCS.2022.20210094
Funding Details: Number: 42071384, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019YFB2102503, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: State Key Laboratory of Geo-Information Engineering and Key Laboratory of Surveying and Mapping Science and Geospatial Information Technology of MNR,CASM (No.2021-04-13);The National Natural

Science Foundation of China (No.42071384);The National Key Research and Development Program of China (No.2019YFB2102503)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

58. Visual Detection of Mine Filling Pipeline Based on Ect

Accession number: 20220314042
Authors: Qin, Xuebin (1); Liu, Ziyu (1); Li, Mingqiao (1); Yutong, Shen (1); Liu, Lang (2); Wang, Xiaoxin (3)
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Source title: SSRN
Issue date: August 13, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: In mine filling pipelines, agglomeration and waste rock mixed in filling slurry can cause serious safety accidents such as pipe blockage or pipe bursting. Visual detection of the internal conditions of the filling pipeline is of great significance to the safety and stability of mine filling. Based on electric capacitance tomography (ECT) technology, this paper studies the detection method of mine filling pipeline. Aiming at the low imaging accuracy of traditional ECT reconstruction algorithms, an ECT image reconstruction method based on improved residual neural network was proposed. The RIR-RepVGG residual network structure is proposed and a nonlinear mapping network is designed. The improved residual network is used to establish the mapping relationship between the capacitance vector and the two-phase flow image. Through filling pipeline simulation experiments and static experiments, it is proved that the ECT image reconstruction method proposed in this paper can reduce the artifacts and deformation of the reconstructed image, improve the reconstruction accuracy, and has a better reconstruction effect for complex flow patterns. application is of great significance. © 2022, The Authors. All rights reserved.
Number of references: 15
Main heading: Filling
Controlled terms: Capacitance - Electric impedance tomography - Image enhancement - Image reconstruction - Mapping - Pipelines - Two phase flow
Uncontrolled terms: Electric capacitance tomography - Electrical Capacitance Tomography - Filling pipelines - Image reconstruction methods - Mine backfilling - Reconstruction algorithms - Residual network - Safety accidents - Visual detection - Waste rocks
Classification code: 405.3 Surveying - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 691.2 Materials Handling Methods - 701.1 Electricity: Basic Concepts and Phenomena
Compendex references: YES
Preprint ID: 4189209
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

59. Effects of Microplastic Exposure on Crucian Growth, Liver Damage, and Gut Microbiome Composition

Accession number: 20222612281114
Title of translation: ,
Authors: Hu, Jia-Min (1); Zuo, Jian-E (1, 2); Li, Jin-Bo (1); Zhang, Yan-Yan (1); Ai, Xiang (3); Gong, Da-Hui (3); Zhang, Ji-Wen (3); Sun, Ding-Ming (4)
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Source title: Huanjing Kexue/Environmental Science
Abbreviated source title: Huanjing Kexue
Volume: 43
Issue: 7
Issue date: July 15, 2022
Publication year: 2022
Pages: 3664-3671
Language: Chinese
ISSN: 02503301
CODEN: HCKHDV
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Microplastics (MPs), which are widely present in the natural environment, may be harmful to the growth and health of aquatic organisms, though studies in this area are lacking. In this study, the crucian carp (Carassius carassius), a type of omnivorous freshwater fish, was chosen as the target, which was fed with fish food containing different concentrations of MPs for a 30-day food exposure experiment to study the effects of MPs on crucian growth, liver damage, and gut microbiome composition. Compared with that in the control group, the body length of the crucians in the environmental groups did not change significantly. The weight of the crucians in the low PE-MPs group increased significantly, but the weight of crucians in the medium and high PE-MPs groups decreased markedly. The liver tissues of the low PE-MPs group of crucians were basically normal, whereas crucians in the medium and high PE-MPs groups had varying degrees of liver damage, and crucians in the high PE-MPs group had the most serious liver damage. At the phylum level, Proteobacteria, Fusobacteria, Firmicutes, and Bacteroides were the dominant species in the gut of the crucians. Pathogens such as Staphylococcus and Ralstonia were present in the crucian gut of environmental groups. Alpha diversity results showed that the gut microbiome of crucians in the high PE-MPs group was the most abundant. PCoA results indicated that the gut microbiome of crucians in the control and environmental groups had obvious clustering characteristics. © 2022, Science Press. All right reserved.
Number of references: 45
Main heading: Fish
Controlled terms: Microplastic
Uncontrolled terms: Carassius carassius - Control groups - Crucian - Crucian carp - Environmental groups - Gut microbiome - Liver damage - Microbiome - Microplastics - Natural environments
Classification code: 453 Water Pollution - 454.2 Environmental Impact and Protection - 454.3 Ecology and Ecosystems
DOI: 10.13227/j.hjkx.202108002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

60. Effects of secondary polyethylene microplastic exposure on crucian (Carassius carassius) growth, liver damage, and gut microbiome composition

Accession number: 20213510837864
Authors: Hu, Jiamin (1); Zuo, Jiane (1, 2); Li, Jinbo (1); Zhang, Yanyan (1); Ai, Xiang (3); Zhang, Jiwen (3); Gong, Dahui (3); Sun, Dingming (4)
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Source title: Science of the Total Environment
Abbreviated source title: Sci. Total Environ.
Volume: 802
Issue date: January 1, 2022
Publication year: 2022
Article number: 149736
Language: English

ISSN: 00489697
E-ISSN: 18791026
CODEN: STEVA8
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Microplastics (MPs) have been found in the natural environment and even in the organs of fish, which is attracting worldwide attention. In this study, agricultural film was milled to simulate secondary polyethylene microplastics (PE-MPs) to evaluate their effect and toxicity on the growth, liver damage, and gut microbiome composition of crucian (Carassius carassius), a common freshwater fish, after 30 days of feed exposure. Three fish feed treatments with different PE-MPs concentrations, low, medium, and high, whose PE-MPs intake was 6.38, 12.18, and 22.33 mg MPs/fish/day, respectively, were used. The results indicated that crucian growth was promoted in the low and medium PE-MPs groups due to the increase in Firmicutes and decrease in Bacteroidetes, probably resulting in obesity and lipid accumulation, while the growth rate of crucians in the high PE-MPs group showed a clear downward trend. Severe liver damage was observed in PE-MPs-treated groups. Disordered liver tissue and necrosis of pancreatic acinar epithelial cells were observed in the medium and high PE-MPs groups compared with those of the control group. The gut microbiome composition of crucians showed significant alteration, and some harmful bacteria were found in the gut following PE-MPs exposure. Alpha diversity indices revealed that the diversity of the gut microbiome rose markedly in the low, medium, and high PE-MPs groups. This study suggests that MPs adversely affect crucian growth and health, with increased disease risk. © 2021 Elsevier B.V.
Number of references: 46
Main heading: Polyethylenes
Controlled terms: Cell death - Growth rate - Fish - Microplastic - Health risks
Uncontrolled terms: Carassius carassius - Crucian - Freshwater fishes - Gut microbiome composition - Liver damage - Low-high - Microbiome - Microplastics - Natural environments - Secondary polyethylene microplastic
Classification code: 453 Water Pollution - 454.2 Environmental Impact and Protection - 454.3 Ecology and Ecosystems - 461.7 Health Care - 461.9 Biology - 815.1.1 Organic Polymers
Numerical data indexing: Age 8.22E-02yr, Mass 2.233E-05kg
DOI: 10.1016/j.scitotenv.2021.149736
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

61. Long-Distance Crosswell EM Logging of Copper Ore Using Borehole-Surface Current Injection in Slim Holes (*Open Access*)

Accession number: 20222912380484
Authors: Dang, Jingxin (1); Zhao, Qing (1); Guo, Cheng (1); Li, Jiadai (1); Zhang, Lei (1); Tang, Tianzhi (2); Dang, Bo (3); Yang, Ling (3); Liu, Changzan (3)
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Corresponding author: Zhao, Qing(zhaoq@uestc.edu.cn)
Source title: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Abbreviated source title: IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.
Volume: 15
Issue date: 2022
Publication year: 2022
Pages: 5559-5569
Language: English
ISSN: 19391404
E-ISSN: 21511535
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Crosswell electromagnetic (EM) methods are widely used in subsurface geophysical prospecting because they can achieve more effective long-distance detection than single-well methods. However, a large-diameter borehole is required to increase the magnetic moment of the magnetic dipole source. For the long-distance detection of copper ores, which is usually performed in slim holes, we present a borehole-surface current-injection-based crosswell EM logging method. Considering the cost of deploying casing, we inject a low-frequency ac directly into the ground,

and converging current is formed around low-resistance anomalies in the formation. Then, the distribution of the anomalies can be inferred by detecting the low-frequency alternating magnetic field of the converging current in the receiver well. Moreover, to further improve the detection performance, we design a placement scheme for the grounding electrode for multianomaly crosswell detection based on the Gauss-Newton inversion algorithm, where the EM responses for different grounding electrode locations are analyzed. Field experiments are conducted using two slim open holes spaced approximately 1000 m apart for the detection of two copper ores. Through the processing and interpretation of measured EM signals, the conductivity imaging results of the crosswell EM method indicate that the measured distribution of anomalies is consistent with prior knowledge obtained from numerous single-well loggings, demonstrating the feasibility of the proposed application for long-distance crosswell EM logging in slim open holes. © 2008-2012 IEEE.
Number of references: 51
Main heading: Magnetic fields
Controlled terms: Electric grounding - Geophysical prospecting - Iterative methods - Magnetic moments - Ore deposits - Ores
Uncontrolled terms: Conductivity - Copper ore - Cross-well - Crosswell electromagnetic method - Current injections - Electromagnetic methods - Long distance - Magnetic-field - Open holes - Receiver - Slim open hole
Classification code: 481.4 Geophysical Prospecting - 701.2 Magnetism: Basic Concepts and Phenomena - 921.6 Numerical Methods
Numerical data indexing: Size 1.00E+03m
DOI: 10.1109/JSTARS.2022.3189817
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

62. Cu-boosted one-pot nanoarchitectonics for synthesis of polydopamine membranes as reusable laccase mimic

Accession number: 20223512645405
Authors: Gao, Fan (1); Xiong, Zhuzhu (1); Jia, Yi (2); Li, Hong (1); Li, Junbai (2, 3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Beijing National Laboratory for Molecular Sciences, CAS Key Lab of Colloid, Interface and Chemical Thermodynamics, Institute of Chemistry, Chinese Academy of Sciences, Beijing; 100190, China; (3) University of Chinese Academy of Sciences, Beijing; 100049, China
Corresponding author: Jia, Yi(jiayi@iccas.ac.cn)
Source title: Journal of Colloid and Interface Science
Abbreviated source title: J. Colloid Interface Sci.
Volume: 628
Issue date: December 15, 2022
Publication year: 2022
Pages: 935-942
Language: English
ISSN: 00219797
E-ISSN: 10957103
CODEN: JCISA5
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: As a good alternative for natural enzyme, enzyme mimics with artificial functional materials have attracted considerable attention. However, it remains a great challenge to develop a facile method to design laccase mimic with high catalytic activity, long-term stability and reusability. In this report, we propose the one-pot synthesis of reusable paper filter templated Cu-doped polydopamine membranes (PF@PDA/Cu) with laccase-like activity. Compared with the natural laccase, the PF@PDA/Cu membrane exhibits enhanced catalytic activity for the chemical conversion of hydroquinone into benzoquinone. Interestingly, these membranes present good tolerance to high temperature and the catalytic activity increases with the increase of temperature. Moreover, these membranes could be stored for 7 days and recycled for 5 times with negligible loss of catalytic activity. This work provides a promising paradigm for rational design and practical applications of metal-loading PDA materials based on one-pot synthesis methodology. © 2022 Elsevier Inc.
Number of references: 33
Main heading: Catalyst activity

Controlled terms: Enzymes - Functional materials - Membranes - Reusability
Uncontrolled terms: Cu - Enzyme mimics - Facile method - Laccase mimic - Laccases - Long term stability - Natural enzyme - One pot - One-pot synthesis - Polydopamine
Classification code: 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 951 Materials Science
Numerical data indexing: Age 1.918E-02yr
DOI: 10.1016/j.jcis.2022.07.167
Funding Details: Number: 2021KJXX-39, Acronym: -, Sponsor: -; Number: 21872151,21961142022,22172174, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020036, Acronym: YIPA CAS, Sponsor: Youth Innovation Promotion Association of the Chinese Academy of Sciences;
Funding text: We acknowledge the financial support from the National Natural Science Foundation of China (Project Nos. 21872151 , 22172174 and 21961142022), the Youth Innovation Promotion Association of CAS (No. 2020036), and the Scientific Research Plan of Shaanxi Province of China (No. 2021KJXX-39).The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Junbai Li reports financial support was provided by National Natural Science Foundation of China. Yi Jia reports financial support was provided by National Natural Science Foundation of China.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

63. Study on the pore structure, fluid mobility, and oiliness of the lacustrine organic-rich shale affected by volcanic ash from the Permian Lucaogou Formation in the Santanghu Basin, Northwest China

Accession number: 20213310761095
Authors: Pan, Yongshuai (1, 2); Huang, Zhilong (1, 2); Guo, Xiaobo (3); Liu, Baichuan (1, 2); Wang, Guangqiu (1, 2); Xu, Xiongfei (4)
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Corresponding author: Huang, Zhilong(huangzhilong1962@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109351
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Lacustrine organic-rich shale with extremely heterogeneous pore structure is widespread in the second member of the Permian Lucaogou Formation (P2l2) of the Santanghu Basin. However, information on the pore structure, fluid mobility, and oiliness characteristics is still lacking, as well as the interaction between them in the organic-rich shales remains controversial. To address these problems, this study analyzed the influencing factors of pore structure, oiliness, and fluid mobility of the P2l2 shale and constrained the lower limit of movable fluid pore throat radius based on thin sections, routine core analysis, whole rock X-ray diffraction (XRD), scanning electron microscopy (SEM), high-pressure mercury injection (HPMI), nuclear magnetic resonance (NMR), constant-rate mercury injection (CMI), and nano-CT scanning data. The P2l2 shale was characterized by fine-grained minerals of felsic (tuffaceous material) and carbonate (dolomite), with poor reservoir physical properties and strong oil-bearing heterogeneity. Micro- and nano-scale pores are the main type of storage space. Among them, most of the microfractures emit green to yellow hydrocarbon fluorescence regardless of whether they are filled or not, as do the edges of dolomite grains. While the edges of the felsic minerals are characterized by stronger orange yellow fluorescence of organic matter. According to the morphology and parameters of HPMI and NMR curves, the pore structure can be divided into four types. From type 1 to type 4 pore structure, the maximum mercury saturation decreases from 95 to 47 % (avg. 70 %), indicating poor pore connectivity, and the pore throat radius that mainly contributes to permeability is > 0.04 μm. Meantime, the NMR T2 spectrum gradually transitions from right unimodal to left unimodal behavior, with a gradual decrease in the saturation of movable fluid and a transition of the mineral type from carbonate to felsic. Fluid mobility is not only

influenced by macropores, but also related to the content of small pores (T2 2l2 organic-rich shale is finally determined to be 40 nm. © 2021 Elsevier B.V.
Number of references: 58
Main heading: Pore structure
Controlled terms: Scanning electron microscopy - Fluorescence - Nuclear magnetic resonance - Oil bearing formations - Digital storage - Hydrocarbons - Nanotechnology - Computerized tomography - Shale - Dolomite - Volcanoes
Uncontrolled terms: Fluid mobility - Low limit of movable fluid pore throat radius - Mercury injection - Movable fluid - Oiliness - Organic-rich shales - Permian - Pore throat radius - Pores structure - Santanghu Basin
Classification code: 482.2 Minerals - 484 Seismology - 512.1.1 Oil Fields - 722.1 Data Storage, Equipment and Techniques - 723.5 Computer Applications - 741.1 Light/Optics - 761 Nanotechnology - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 7.00E+01%, Percentage 9.50E+01% to 4.70E+01%, Size 4.00E-08m, Time 1.00E-03s, Volume 2.00E-03m3
DOI: 10.1016/j.petrol.2021.109351
Funding Details: Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CUP, Sponsor: China University of Petroleum, Beijing;
Funding text: This work is financially supported by the National Natural Science Foundation of China (No. 41702127). The authors sincerely thank the Tuha Oilfield Company of PetroChina Co. Ltd. for providing the cores and some experimental data for this study. The relevant experiments were supported by the State Key Laboratory of Petroleum Resources and Prospecting , China University of Petroleum (Beijing) and Suzhou Testniumag Company LTD . in China.This work is financially supported by the National Natural Science Foundation of China (No. 41702127). The authors sincerely thank the Tuha Oilfield Company of PetroChina Co. Ltd. for providing the cores and some experimental data for this study. The relevant experiments were supported by the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing) and Suzhou Testniumag Company LTD. in China.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

64. A Novel Method to Enhance Oil Recovery by Inter-Fracture Injection and Production Through the Same Multi-Fractured Horizontal Well

Accession number: 20221411885778
Authors: He, Youwei (1, 2); Qiao, Yu (1); Qin, Jiazheng (1); Tang, Yong (1); Wang, Yong (1); Chai, Zhi (3)
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Source title: Journal of Energy Resources Technology, Transactions of the ASME
Abbreviated source title: J Energy Resour Technol Trans ASME
Volume: 144
Issue: 4
Issue date: April 2022
Publication year: 2022
Article number: 43005
Language: English
ISSN: 01950738
E-ISSN: 15288994
CODEN: JERTD2
Document type: Journal article (JA)
Publisher: American Society of Mechanical Engineers (ASME)
Abstract: Conventional enhanced oil recovery (EOR) approaches are inefficient in unconventional reservoirs. This paper provides a novel approach to enhance oil recovery from unconventional oil reservoirs through synchronous inter-fracture injection and production (SiFIP) and asynchronous inter-fracture injection and production (AiFIP). The compartmental embedded discrete fracture model (cEDFM) is introduced to simulate complex fracture geometries to quantitatively evaluate the performance of SiFIP and AiFIP. EOR performances using multiple producing methods are investigated (i.e., depletion, fluid flood, fluid Huff and Puff, SiFIP, and AiFIP). Higher cumulative oil production rates can be achieved by AiFIP and SiFIP. AiFIP yields the highest oil recovery factor, two times higher than depletion.

Compared with SiFIP, AiFIP may be a preferred method when CO2/water resources are short. The impacts of fracture and injection parameters on oil production are discussed. The feasible well completions for AiFIP and SiFIP are provided. AiFIP (CO2) achieves the best EOR performance among different producing methods. This paper demonstrates the feasibility of SiFIP and AiFIP to improve oil recovery. The proposed methods improve flooding performance by transforming fluid injection among wells to among hydraulic fractures from the same multi-fractured horizontal well (MFHW), which is a promising EOR approach in unconventional oil reservoirs. The proposed EOR method (AiFIP-CO2) can improve oil recovery and mitigate the emission of CO2 as well as reduce the waste of water resources. © 2021 by ASME
Number of references: 54
Main heading: Fracture
Controlled terms: Reservoirs (water) - Injection (oil wells) - Carbon dioxide - Horizontal wells - Floods - Petroleum reservoir engineering - Petroleum reservoirs - Oil well flooding - Water resources - Secondary recovery - Enhanced recovery - Well completion
Uncontrolled terms: Co 2 injections - Discrete-fracture models - Embedded discrete fracture model - Enhance oil recoveries - Enhanced-oil recoveries - Inter-fracture injection and production - Multi-fractured horizontal wells - Oil reservoirs - Unconventional oil - Unconventional oil reservoir
Classification code: 441.2 Reservoirs - 444 Water Resources - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.2 Inorganic Compounds - 951 Materials Science
DOI: 10.1115/1.4051623
Funding Details: Number: SPE-193924-MS, Acronym: -, Sponsor: -; Number: 52004238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019M663561,XSTS-202003, Acronym: -, Sponsor: China Postdoctoral Science Foundation;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 52004238), China Postdoctoral Science Foundation (Grant No. 2019M663561), and Open Fund (Grant No. XSTS-202003) of Xi’an Key Laboratory of Tight oil (Shale oil) Development. This paper was revised based on a conference paper (Grant No. SPE-193924-MS) presented at the SPE Reservoir Simulation Conference. We also thank the technical support from Landmark.This work was supported by the National Natural Science Foundation of China (Grant No. 52004238), China Postdoctoral Science Foundation (Grant No. 2019M663561), and Open Fund (Grant No. XSTS-202003) of Xi'an Key Laboratory of Tight oil (Shale oil) Development. This paper was revised based on a conference paper (Grant No. SPE-193924-MS) presented at the SPE Reservoir Simulation Conference. We also thank the technical support from Landmark.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

65. Multi-element Quantitative Analysis of Single Micro-sized Suspended Particles in Air with High Accuracy Based on Random Forest and Variable Selection Strategies

Accession number: 20225013248419
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Source title: Analytical Chemistry
Abbreviated source title: Anal. Chem.
Volume: 94
Issue: 50
Issue date: December 20, 2022
Publication year: 2022
Pages: 17595-17605
Language: English
ISSN: 00032700
E-ISSN: 15206882
CODEN: ANCHAM
Document type: Journal article (JA)

Publisher: American Chemical Society
Abstract: The chemical compositions of atmospheric particles have been studied for several decades, and the traditional techniques for particle analysis usually require time-consuming sample preparation. Within this study, simultaneous quantitative detection of multiple metallic species (Zn, Cu, and Ni) in single micro-sized suspended particles was investigated by combining random forest (RF) and variable selection strategies. Laser-induced breakdown spectra of 15 polluted black carbon samples were applied for establishing the RF model, and the movmean smoothing spectral pretreatment method and variable selection methods [variable importance measurement (VIM), genetic algorithm (GA), and variable importance projection (VIP)] were proposed. Finally, the optimized RF calibration model with the evaluation indicators of mean relative error (MRE), root-mean-square error (RMSE), and coefficient of determination (R2) was constructed based on the optimal input variables and model parameters. Compared with the univariate regression method, the VIP-RF (Zn) and VIM-RF (Cu and Ni) models showed a better correlation relationship (Rp2= 0.9662 for Zn, Rp2= 0.9596 for Cu, and Rp2= 0.9548 for Ni). For Zn, Cu, and Ni, the values of RMSEP (RMSE of prediction) decreased by 116.44, 68.94, and 102.10 ppm, while the values of MREP (MRE of prediction) decreased by 67, 55, and 48%, respectively. The values of ratio of prediction to deviation (RPD) of VIP-RF (Zn), VIM-RF (Cu), and VIM-RF (Ni) models were 5.4, 5.0, and 4.7, respectively. The performance of this combined approach displays a notable accuracy improvement in the quantitative analysis of single particles, suggesting that it is a promising tool for real-time air particulate matter pollution monitoring and control in the future. © 2022 American Chemical Society. All rights reserved.
Number of references: 32
Main heading: Genetic algorithms
Controlled terms: Forecasting - Forestry - Mean square error - Pollution control - Regression analysis
Uncontrolled terms: Atmospheric particles - Chemical compositions - High-accuracy - Mean relative error - Multielements - Random forests - Suspended particles - Traditional techniques - Variable importances - Variables selections
Classification code: 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 4.80E+01%
DOI: 10.1021/acs.analchem.2c04163
Funding Details: Number: 21873076,22073074,22173071,61805200, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JS144, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China [no. 22173071, 22073074, 21873076, and 61805200] and a Scientific Research Program funded by the Shaanxi Provincial Education Department [20JS144].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

66. Molecular insights into supercritical methane sorption and self-diffusion in monospecific and composite nanopores of deep shale

Accession number: 20221912100870
Authors: Lyu, Fangtao (1, 2); Ning, Zhengfu (1, 2); Yang, Shanshan (1, 2); Mu, Zhongqi (1, 2); Cheng, Zhilin (3); Wang, Zhipeng (1, 2); Liu, Bei (4)
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Source title: Journal of Molecular Liquids
Abbreviated source title: J Mol Liq
Volume: 359
Issue date: August 1, 2022
Publication year: 2022
Article number: 119263
Language: English
ISSN: 01677322
CODEN: JMLIDT
Document type: Journal article (JA)
Publisher: Elsevier B.V.

Abstract: Up to now, a large number of studies have utilized various representative materials to approximate the replacement of shale and investigate the gas adsorption and diffusion behavior in various shapes of nanopores by means of molecular simulations. However, the study of methane sorption and self-diffusion behavior under high temperature and pressure reservoir conditions in deep shale is not clear. In this study, we first established montmorillonite (MMT), kerogen and MMT-kerogen composite slit nanopores using representative shale components of MMT and kerogen. On this basis, we investigated the methane sorption and self-diffusion characteristics employing the grand canonical Monte Carlo (GCMC) and equilibrium molecular dynamics (EMD) simulations. The results show that the differences in the molecular composition and structure of MMT and kerogen surfaces lead to stronger adsorption performance of MMT surface than kerogen in a single nanopore for the same conditions, which results in the inhomogeneity of spatial distribution of methane molecules in the pores. While the sorption capacity of the kerogen matrix is more potent than MMT due to its larger specific surface area (SSA). The smaller pores have stronger adsorption capacity compared to the larger pores. At the same time, the methane density profiles indicate that the adsorption of the MMT and kerogen in smaller pores is less differentiated. The methane sorption energy distribution and isosteric heat of sorption also mutually corroborate the more stable methane sorption at a higher pressure and smaller pores. The self-diffusion coefficient of methane in nanopores gradually decreases with increasing pressure, with a more pronounced variation at lower pressure. Pore surface roughness will hinder the diffusion of gas, and the closer the distance is, the more noticeable the effect will be. This study sheds light on the sorption and self-diffusion phenomena and difference of gas in monospecific and composite nanopores, which provides insights into the reserve evaluation and development of the deep shale gas reservoirs, and is further expected to furnish ideas for exploring the occurrence and transport characteristics of supercritical fluids on other composite nanomaterials. © 2022 Elsevier B.V.
Number of references: 84
Main heading: Methane
Controlled terms: Diffusion in liquids - Supercritical fluids - Surface roughness - Molecular dynamics - Nanopores - Kerogen - Monte Carlo methods - Gas adsorption - Gases - Transport properties - Effluent treatment - Petroleum reservoir engineering - Petroleum reservoirs - Shale gas
Uncontrolled terms: Diffusion behavior - Gas Sorption - Inorganic matters - Molecular insights - Molecular thermodynamics - Monospecific and composite nanopore - Organic and inorganic matter - Organics - Self-diffusions - Shale gas sorption
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 761 Nanotechnology - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics
DOI: 10.1016/j.molliq.2022.119263
Funding Details: Number: 51774298,51974330,U19B6003-03-04, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant Nos 51774298 and 51974330) and the Joint Funds of the National Natural Science Foundation of China (Grant No. U19B6003-03-04). Moreover, the authors would like to thanks all anonymous reviewers for their extremely helpful suggestions and comments.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

67. Monadic NM-algebras: an algebraic approach to monadic predicate nilpotent minimum logic

Accession number: 20224913217870
Authors: Wang, Juntao (1); He, Pengfei (2); Yang, Jiang (3); Wang, Mei (4); He, Xiaoli (1)
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Source title: Journal of Logic and Computation
Abbreviated source title: J Logic Comput
Volume: 32
Issue: 4
Issue date: June 1, 2022
Publication year: 2022
Pages: 741-766

Language: English
ISSN: 0955792X
E-ISSN: 1465363X
CODEN: JLCOEU
Document type: Journal article (JA)
Publisher: Oxford University Press
Abstract: In this paper, we further study the variety of monadic nilpotent minimum (NM)-algebras and their corresponding logic. In order to solve the drawback of monadic NM-algebras, we review some well-known classes of monadic t-norm-based fuzzy logical algebras and then revise the axiomatic system of monadic NM-algebras. Then we show that the variety of monadic NM-algebras is the equivalent algebraic semantics of monadic predicate fuzzy logic $\textbf {mNM}_{\forall }$, which is equivalent to the modal fuzzy logic $\textbf {S5(NM)}$. Moreover, we show that the propositional case of the modal fuzzy logic $\textbf {S5(NM)}$, which is $\textbf{S5}^{\prime}\textbf{(NM),}$ is also complete with respect to the variety of monadic NM-algebras in the sense of Blok and Pigozzi and obtain a necessary and sufficient condition for this logic to be semilinear. Finally, we give some representations of monadic NM-algebras. In particular, we give some characterizations of representable and directly indecomposable monadic NM-algebras. © 2021 The Author(s). Published by Oxford University Press. All rights reserved.
Number of references: 40
Main heading: Algebra
Controlled terms: Computer circuits - Fuzzy logic - Semantics
Uncontrolled terms: Algebraic approaches - Mathematical fuzzy logic - Modal fuzzy logic - Monadic nilpotent minimum-algebra - Monadic predicate logic - Nilpotent - Nilpotent minimum logic - Predicate logic - Representation - T - Norm
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 721.3 Computer Circuits - 921.1 Algebra
DOI: 10.1093/logcom/exab076
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

68. The effect of thermal fluid derived from mud diapir on sandstone reservoirs in the Yinggehai Basin, South China Sea (*Open Access*)

Accession number: 20224313013641
Authors: Lv, Xiaowei (1, 2, 3); Fu, Meiyan (1, 2); Zhang, Shaonan (4); Liu, Yi (5); Ding, Xiaoqi (1, 2); Meng, Xianghao (1, 2); Yin, Shuai (6); Sun, Tengjiao (1, 2)
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Source title: Energy Geoscience
Abbreviated source title: Energy Geosci.
Volume: 3
Issue: 4
Issue title: SI: Tight Reservoirs
Issue date: October 2022
Publication year: 2022
Pages: 473-484
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Abstract: The underground thermal fluid is one of the significant factors controlling the formation and quality of reservoirs. The Huangliu Formation (N1h) in YF1 area of the central depression belt in the Yinggehai Basin, South China Sea, is characterized by intense thermal fluid activities related to mud diapir and large-scale shallow-water gravity flow deposits. The multi-episodic invasion of high-temperature and CO2-rich thermal fluid into the formation induces complex water-rock reaction during diagenetic process, providing a preferable investigation opportunity

for revealing how thermal fluid affects reservoir quality. This study characterizes the reservoirs in the formation through core and thin section analyses as well as physical property test. The reservoirs are dominated by fine-grained sandstone characterized by medium porosity (15.2–21.3%) and lower permeability (0.56–15.75mD). Based on an analysis of casting thin section, cathode luminescence (CL), scanning electron microscope (SEM), carbon and oxygen isotope, inclusion test, and electron-probe microanalysis (EPMA), we systematically investigate the diagenetic patterns and pore evolution process for the reservoirs in the formation. The episodic invasion of thermal fluid occurred approximately 0.4 Ma ago plays an important role in controlling reservoir development: The CO2-rich formation water induces massive late-stage dissolution, resulting in a higher proportion of dissolved pores (38.7–46.4%), which improves the porosity of reservoirs at a depth of 2600–3100 m. Nevertheless, the late dissolution together with carbonate cementation occurred in closed diagenetic system blocks most seepage channels. Furthermore, the relatively high level clay mineral transformation in the YF1 area leads to a higher content of authigenic illite (44–62%) in the formation. Massive authigenic illite severely blocks the pore throats in fine sandstone, reducing permeability. This study offers an insight to the understanding of mud diapir-derived thermal fluid affecting and controlling the quality of reservoirs in some areas of the Yinggehai Basin. © 2022 Sinopec Petroleum Exploration and Production Research Institute
Number of references: 53
DOI: 10.1016/j.engeos.2021.10.001
Funding Details: Number: -, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: We are grateful to CNOOC Zhanjiang Branch Company for helping with the sample selection and analysis. We appreciate the support from Jinghuan Liu, Li You, Zhanjie Zhao, Wei Li, Zehong Zhong, and other colleagues from the research institute of Zhanjiang Branch Company. We also want to thank editors and anonymous reviewers for their constructive suggestions.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

69. Exposure risk assessment to organic compounds based on their concentrations in return water from shale gas developments

Accession number: 20220611610764
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Source title: Science of the Total Environment
Abbreviated source title: Sci. Total Environ.
Volume: 822
Issue date: May 20, 2022
Publication year: 2022
Article number: 153586
Language: English
ISSN: 00489697
E-ISSN: 18791026
CODEN: STEVA8
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Because of shale gas operations, significant amounts of return water from hydraulic fracturing are stored in tanks and/or ponds on the surface. These waters contain varying concentrations of toxic organic compounds; hence, there is reasonable concern about the occurrence of hypothetical leakages, which would cause adverse environmental effects and pose a risk to human health. In this study, the chronic and acute carcinogenic and non-carcinogenic risks from exposure to these pollutants by inhalation, ingestion and dermal contact have been assessed for an affected area. The first part of this study focused on estimating the concentrations of organic compounds in the water–soil–atmosphere system. These models are of a general nature and can be applied to any site. In this study, they are applied to the Marcellus shale formation. The analyses developed in this work show that the risks - both carcinogenic and non-carcinogenic - regarding the inhalation of volatile organic compounds (VOCs) increase rapidly and exceed the acceptable thresholds by several orders of magnitude in all scenarios, irrespective of the different recharge rates

considered. Given that the hypothetical leakage under consideration occurs at a depth of 50 cm, in the buried part of a semi-buried tank-type reservoir, the direct contamination via wastewater of the most superficial parts of the soil is less likely, and soil particles are generally widely dispersed in air before inhaling. Moreover, the sensitivity analysis indicated that the variable contributing the most to the determined risk levels was the pollutant concentration, followed by the exposure time. Therefore, using appropriate technology to reduce pollutant concentrations in storage ponds is the best strategy to minimise the associated risk to human health. © 2022 Elsevier B.V.
Number of references: 43
Main heading: Risk assessment
Controlled terms: Volatile organic compounds - Risk perception - Lakes - Gases - Sensitivity analysis - Shale gas - Tanks (containers) - Health risks - Soils - Water pollution
Uncontrolled terms: Affected area - Carcinogenic risk - Carcinogenics - Dermal contacts - Gas development - Pollutant concentration - Return water - Risk to human health - Risks assessments - Toxic organic compounds
Classification code: 453 Water Pollution - 461.7 Health Care - 483.1 Soils and Soil Mechanics - 512.2 Natural Gas Deposits - 522 Gas Fuels - 619.2 Tanks - 804.1 Organic Compounds - 914.1 Accidents and Accident Prevention - 921 Mathematics
Numerical data indexing: Size 5.00E-01m
DOI: 10.1016/j.scitotenv.2022.153586
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

70. Performance evaluation of silicon-chip-based mid-infrared Kerr optical frequency combs with ridge cross section

Accession number: 20222712329921
Authors: Wen, Jin (1, 2, 3, 4); Qin, Weijun (2); Sun, Wei (2); He, Chenyao (2); Xiong, Keyu (2); Liang, Bozhi (2)
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Source title: Optik
Abbreviated source title: Optik
Volume: 266
Issue date: September 2022
Publication year: 2022
Article number: 169575
Language: English
ISSN: 00304026
Document type: Journal article (JA)
Publisher: Elsevier GmbH
Abstract: We present a complementary metal-oxide-semiconductor (CMOS) compatible platform for on-chip frequency comb generation in the mid-infrared region based on a silicon-on-insulator (SOI) microring resonator with ridge cross section. Flat dispersion tailoring is performed with dispersion variation of 4.04 × 10-6 ps/nm/km by adjusting the geometry parameter and the low-loss SOI microring resonator with total quality factor (Q) up to 106 can be realized at wavelengths from 3.3 to 3.6 μm. Furthermore, the thresholdless frequency combs consisting of 50 comb lines spanning from 3.1 to 4.0 μm (over 900 nm) can be realized using SOI microring resonator with 50 mW pump power. Besides, the study shows that the frequency interval of the comb is related to the selection of the dual-pumped wavelength. The influences of the coupling coefficient and the radius of microring on the bandwidth of mid-infrared OFC are also investigated numerically which shows that remarkable enhancement of mid-infrared OFC bandwidth can reach 449 nm when the coupling coefficient varies from 0.012 to 0.05. This research work is instructive for realizing highly integrated photonics and achieving the experimental generation of mid-infrared optical frequency combs, which could enable substantial progress in spectroscopy applications. © 2022 Elsevier GmbH
Number of references: 42
Main heading: Bandwidth
Controlled terms: CMOS integrated circuits - Dispersion (waves) - Four wave mixing - Infrared devices - Metals - Natural frequencies - Optical materials - Optical resonators - Silicon on insulator technology

Uncontrolled terms: Cascaded four-wave mixing - Coupling coefficient - Frequency combs - Kerr frequency comb - Microrings - Midinfrared - Optical frequency combs - Optical-frequency combs - Silicon on insulator - Silicon-on-insulator microring resonator
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 716.1 Information Theory and Signal Processing - 741.3 Optical Devices and Systems
Numerical data indexing: Power 5.00E-02W, Size 4.49E-07m, Size 9.00E-07m, Time 4.04E-18s
DOI: 10.1016/j.ijleo.2022.169575
Funding Details: Number: YCS19211035, Acronym: -, Sponsor: -; Number: 2018KJXX-042, Acronym: -, Sponsor: -; Number: 61505160, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: SKLST202108, Acronym: SKLTOP, Sponsor: State Key Laboratory of Transient Optics and Photonics; Number: 2019JM-084, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China under Grant No. 61505160, the Innovation Capability Support Program of Shaanxi (Program No. 2018KJXX-042), the Natural Science Basic Research Program of Shaanxi (Program No. 2019JM-084), the State Key Laboratory of Transient Optics and Photonics (SKLST202108), the Graduate Innovation and Practical Ability Training Project of Xi'an Shiyou University (YCS19211035).This work was supported by the National Natural Science Foundation of China under Grant No. 61505160 , the Innovation Capability Support Program of Shaanxi (Program No. 2018KJXX-042), the Natural Science Basic Research Program of Shaanxi (Program No. 2019JM-084), the State Key Laboratory of Transient Optics and Photonics (SKLST202108), the Graduate Innovation and Practical Ability Training Project of Xi’an Shiyou University (YCS19211035).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

71. Design and Performance Analysis of Toothless Slip Type Magnetic Rotary Oil Well Pipe Tong (*Open Access*)

Accession number: 20221611964522
Authors: Zheng, Jie (1, 2, 3, 5); Bi, Cheng (1); Lu, Heng (1); Li, Zhenzhen (2, 3); Yang, Xu (1); Yang, Yushan (1); Lu, Yuan (1); Dou, Yihua (2, 3); Zhang, Yarong (4)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2218
Part number: 1 of 1
Issue: 1
Issue title: 2021 3rd International Conference on Computer, Communications and Mechatronics Engineering, CCME 2021
Issue date: March 29, 2022
Publication year: 2022
Article number: 012047
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2021 3rd International Conference on Computer, Communications and Mechatronics Engineering, CCME 2021
Conference date: December 17, 2021 - December 18, 2021
Conference location: Virtual, Online
Conference code: 178207
Publisher: IOP Publishing Ltd
Abstract: Although the current hydraulic power pipe tong can improve efficiency and reduce strength, there are still some deficiencies. Among them, the inevitable defects are a low degree of automation, high labor intensity, complex mechanical mechanisms, and high maintenance costs. In order to improve its performance, the principle of permanent

magnet motor is applied to the processing of shackle of oil pipe tong, and a new type of magnetic rotary oil pipe tong is proposed. The design eliminates the complex planetary gear train transmission mechanism and hydraulic circuit in the traditional tightening device, simplifies the mechanism of the tightening device, reduces the size of the device, saves the manufacturing cost, improves the automation degree of the power tong and reduces the labor intensity of the workers. The triangular chuck is suitable for clamping pipe strings with different diameters. In addition, due to the use of toothless slips, the damage of the tightening device to the sleeve is reduced, the sleeve is protected and the service life of the sleeve is prolonged. Therefore, this new type of magnetic rotary tubing tong has a good application prospect in the up and down operation.
Number of references: 12
Main heading: Magnetism
Controlled terms: Oil wells - Manufacture - Hydraulic machinery - Permanent magnets
Uncontrolled terms: 'current - Design Analysis - Labour intensity - Magnetic rotation - Oil pipes - Oil well pipe tong - Performances analysis - Permanent magnet motor - Slip - Triangle chuck
Classification code: 512.1.1 Oil Fields - 537.1 Heat Treatment Processes - 632.2 Hydraulic Equipment and Machinery - 701.2 Magnetism: Basic Concepts and Phenomena - 704.1 Electric Components - 913.4 Manufacturing
DOI: 10.1088/1742-6596/2218/1/012047
Funding text: This project was supported by the National Natu 12101482, 51674199).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

72. Instance and Feature Selection Using Fuzzy Rough Sets: A Bi-Selection Approach for Data Reduction

Accession number: 20224513092971
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Source title: IEEE Transactions on Fuzzy Systems
Abbreviated source title: IEEE Trans Fuzzy Syst
Volume: 31
Issue: 6
Issue date: June 1, 2023
Publication year: 2023
Pages: 1981-1994
Language: English
ISSN: 10636706
E-ISSN: 19410034
CODEN: IEFSEV
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Data reduction, aiming to reduce the original data by selecting the most representative information, is an important technique of preprocessing data. At present, large-scale or huge data are very common and the development of data reduction techniques for such data has attracted much attention. As a powerful tool for handling uncertainty in real-valued data, the fuzzy rough set theory has been widely applied to data reduction including extensive feature selection methods and some instance selection approaches. Nevertheless, not much work has been devoted to the simultaneous selection of feature and instance based on fuzzy rough sets. In this article, we investigate the fuzzy rough set-based bi-selection issue for data reduction. Specifically, the unified concepts of the importance degrees of fuzzy granules are presented to select the representative instances first and then the critical features. An instance selection algorithm with a noise elimination technique is provided to firstly remove the noise and then select the representative instances according to the importance degrees of fuzzy granules. Then, the importance-degree-preserved attribute reduction is proposed, and a corresponding feature selection algorithm with a wrapper technique is given to search for a best feature subset. Last, the bi-selection method based on fuzzy rough sets (BSFRS) is presented for data reduction by integrating the instance selection and the feature selection methods. Moreover,

some numerical experiments are conducted to assess the performance of BSFRS, and the results show that BSFRS performs well in terms of the effectiveness. © 1993-2012 IEEE.
Number of references: 59
Main heading: Data mining
Controlled terms: Data reduction - Feature Selection - Genetic algorithms - Granulation - Heuristic algorithms - Heuristic methods - Rough set theory
Uncontrolled terms: Feature selection methods - Features extraction - Features selection - Fuzzy-rough sets - Heuristics algorithm - Importance degrees - Instance selection - Noise measurements - Optimisations - Rough set
Classification code: 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1109/TFUZZ.2022.3216990
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

73. Synthesis of multi-alkylpolyamines and their performance as flow improver in crude oil

Accession number: 20220611599552
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Source title: Tenside, Surfactants, Detergents
Abbreviated source title: Tenside Surfactants Deterg
Volume: 59
Issue: 1
Issue date: January 2022
Publication year: 2022
Pages: 104-110
Language: English
ISSN: 09323414
CODEN: TSDEES
Document type: Journal article (JA)
Publisher: Walter de Gruyter GmbH
Abstract: In this work, three multi-alkyl polyamines, i.e., pentahexadecyl diethylenetriamine (PHDETA), hexahexadecyl triethylenetetramine (HHTETA) and heptahexadecyl tetraethylenepentylamine (HHTEPA), were synthesized and evaluated as pure flow improvers for crude oil. Under certain conditions, PHDETA, HHTETA and HHTEPA were able to improve the flow properties of L401 crude oil samples by reducing the viscosity of the crude oil by 97.5%, 94.3% and 97.1%, respectively. The three synthesized alkyl polyamines PHDETA, HHTETA and HHTEPA were able to reduce the viscosity of L1316 crude oil to a maximum of 94.3%, 93.7% and 94.9%, respectively. The pour point of L401 crude oil could be greatly reduced by 3.1 °C, 3.3 °C and 3.4 °C with PHDETA, HHTETA and HHTEPA, respectively. The pour point of L1316 crude oil with PHDETA, HHTETA and HHTEPA was strongly decreased by 2.8 °C, 2.9 °C and 3.2 °C, respectively. Photomicrographs showed the co-crystallization of L401 and L1316 crude oil in the presence of PHDETA, resulting in the formation of a non-close-packed network of wax crystals. The multi-alkyl polyamines have multiple alkyl side chains that extend in different directions into the oil phase and can co-crystallize with the wax molecules, allowing the wax crystals to disperse. © 2021 Walter de Gruyter GmbH, Berlin/Boston.
Number of references: 24
Main heading: Crude oil
Controlled terms: Amines - Viscosity - Crystals
Uncontrolled terms: Condition - Diethylenetriamine - Flow improvers - Multi-alkyl polyamine - Performance - Polyamines - Pour points - Synthesised - Triethylenetetramine - Wax crystals
Classification code: 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1 Crystalline Solids
Numerical data indexing: Percentage 9.37E+01%, Percentage 9.43E+01%, Percentage 9.49E+01%, Percentage 9.71E+01%, Percentage 9.75E+01%, Temperature 2.758E+02K, Temperature 2.759E+02K, Temperature 2.761E+02K, Temperature 2.762E+02K, Temperature 2.763E+02K, Temperature 2.764E+02K
DOI: 10.1515/tsd-2020-2305

Funding Details: Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JQ-775, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YC19113078, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: Research funding: The work was supported financially by the Youth Innovation Team of Shaanxi University, the National Natural Science Foundation of China (51974252), the Natural Science Basic Research Plan in Shaanxi Province of China (2020JQ-775), and Postgraduate Innovation Fund Project of Xi'an Shiyou University (YC19113078).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

74. Experimental study of oil recovery from pore of different sizes in tight sandstone reservoirs during CO2 flooding

Accession number: 20214511134664
Authors: Li, Xiang (1); Xue, Junjie (2, 3); Wang, Yanqing (1); Yang, Weipeng (1); Lu, Jun (1)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109740
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The investigation of tight oil reservoirs has become a significant area of interest in unconventional oil development. CO2 flooding is considered an effective oil recovery method for tight oil reservoirs as it can significantly increase oil recovery when it reaches supercritical condition and becomes miscible with oil. Although extensive research has been conducted on CO2 flooding, the oil recovery from pore of different sizes in tight sandstone reservoirs at different pressures has not been thoroughly investigated. In this study, we analyzed the petrology features and the pore structure of a reservoir using casting section and scanning electron microscope (SEM) images. Subsequently, three cores with different permeability from the reservoir were subjected to CO2 flooding experiments at different pressures. A nuclear magnetic resonance (NMR) spectrometer was used to quantify the oil recovery. Amott-Harvey index was measured to study the effect of CO2 flooding on core wettability. Results indicate that the total oil recovery and the oil recovery of smaller pores increase as the pressure increasing. The oil recovery of the larger pores does not increase continuously. The oil recovery of the smaller pores is more dependent on pressure than that of the larger pores, and the total oil recovery is related to the oil recovery of smaller pores. Meanwhile, the supercritical and miscible CO2 has a positive effect on oil recovery. After CO2 becoming supercritical and miscible, the cores still have potential to produce more oil with the pressure increasing. As the pore structure is playing a significant role in oil recovery, the core with a higher proportion of the volume of larger pores is relatively easy to produce more oil at low pressure. Amott-Harvey index shows CO2 flooding can significantly reduce the hydrophilicity of cores. This study reveals the mechanism of pressure effect on oil recovery during CO2 flooding in tight sandstone reservoirs. The results can be used to improve the efficiency of reservoir development. © 2021 Elsevier B.V.
Number of references: 61
Main heading: Carbon dioxide
Controlled terms: Tight gas - Oil well flooding - Nuclear magnetic resonance - Petroleum reservoirs - Reservoirs (water) - Floods - Petroleum reservoir engineering - Sandstone - Hydrophilicity - Pore structure - Scanning electron microscopy - Pressure effects
Uncontrolled terms: CO2 injection - Different pressures - Different sizes - Floodings - Large pores - Oil recoveries - Oil reservoirs - Pores structure - Tight reservoir - Tight sandstone reservoirs
Classification code: 441.2 Reservoirs - 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 804.2 Inorganic Compounds - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids

DOI: 10.1016/j.petrol.2021.109740
Funding Details:
Funding text: The authors acknowledge the McDougall School of Petroleum Engineering at The University of Tulsa for the support of this research.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

75. High Temperature Oxidation Behavior of BT25Y Titanium Alloy at 600~800

Accession number: 20222012120360
Title of translation: BT25Y600~800
Authors: Liu, Yanming (1, 2); Zhao, Xingxing (1, 2); Wang, Xin (3); Li, Hongfu (4); Xin, Shewei (3)
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Source title: Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering
Abbreviated source title: Xiyou Jinshu Cailiao Yu Gongcheng
Volume: 51
Issue: 4
Issue date: April 2022
Publication year: 2022
Pages: 1332-1340
Language: Chinese
ISSN: 1002185X
CODEN: XJCGEA
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The high temperature oxidation behavior of BT25Y titanium alloy at 600, 700 and 800 was studied. The thermodynamics and kinetics laws of the alloy oxidation were calculated by the method of continuous oxidation mass gain, oxidation rate constant and oxidation activity. The phase composition, surface and cross-section morphologies and elemental distribution of the oxide scale were investigated by XRD, SEM and EDS, respectively. The results show that BT25Y titanium alloy exhibits good oxidation resistance at 600 and 700 , and the oxidation kinetics curves follow the parabolic law. The continuous oxide scale composed of fine TiO2 and Al2O3 particles can effectively prevent oxygen from infiltrating into the matrix and then remarkably reduce the oxidation rate. At 800 , the oxidation behavior of the BT25Y titanium alloy is catastrophic, and its continuous oxidation kinetics approximately follows the linear law. The oxide layer is alternately composed of Al2O3 layer and TiO2 layer, and the oxidation film is loose and porous, which cannot effectively prevent the diffusion of oxygen into the matrix. © 2022, Science Press. All right reserved.
Number of references: 26
Main heading: Thermooxidation
Controlled terms: Oxygen - Alumina - Kinetics - Rate constants - Titanium alloys - Aluminum oxide - Oxidation resistance - Titanium dioxide
Uncontrolled terms: BT25Y titania alloy - High temperature oxidation Behavior - Kinetic law - matrix - Oxidation kinetics - Oxidation rates - Oxide scale - Thermodynamic laws - Thermodynamics and kinetics - Titanium (alloys)
Classification code: 539.1 Metals Corrosion - 542.3 Titanium and Alloys - 631.1 Fluid Flow, General - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931 Classical Physics; Quantum Theory; Relativity
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

76. Pressure transient analysis of a fractured well in multi-region linear composite reservoirs

Accession number: 20213310786109
Authors: Deng, Qi (1); Nie, Ren-Shi (2); Wang, Shuhua (3); Zhang, Ying (7); Chen, Shengnan (3); Mi, Zhongrong (1); Xue, Heng (1, 6); Xiao, Yong (1, 6); Zhan, Jie (4, 5)

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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109262
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Linear composite reservoirs, which can be represented as linear assemblies of distinct homogeneous regions, are among the most common types of ideal heterogeneous reservoirs. Many types of heterogeneous reservoirs, such as conventional and unconventional (tight) fluvio-deltaic reservoirs, meandering stream reservoirs, and fault reservoirs, can be approximated as linear composite systems. However, few studies have focused on the analysis and modeling of fractured wells, which are commonly used to produce tight oil/gas in such systems. In this paper, we present an analytical solution for fluid flows in a vertical finite-conductivity fractured well at an arbitrary position with arbitrary azimuth of fracture plane and in rectangular bounded anisotropic multi-region linear composite reservoirs considering finite-conductivity (partially communicating) faults. The solution is obtained by applying the methods of equivalent transformation, Green's function, and Laplace-finite Fourier cosine transformation. The standard log–log type curves, the dimensionless pressure, and its derivative with respect to tD/CD, of the transient pressure response are plotted. Then, the behavior of two well-known linear composite systems (multi-region composite reservoirs and fault reservoirs) and a general linear composite system are examined. The effects of the relevant parameters were analyzed. It is shown that each main characteristic pressure behavior of wellbore storage and the skin, fractured well, linear composite structure, and finite-conductivity (partially communicating) faults can be identified on the type curves by their characteristic flow regimes. However, the characteristic behavior of each region may be masked by others in the complex multi-region case. It is also shown that the behavior of a fractured well in a general linear reservoir can be considered as a combinational behavior of the fault and multi-region composite reservoir. The presented solution can also be used in well testing to obtain reservoir and well parameters. © 2021 Elsevier B.V.
Number of references: 35
Main heading: Well testing
Controlled terms: Transient analysis - Fourier transforms - Cosine transforms - Oil wells - Flow of fluids - Fracture
Uncontrolled terms: Composite reservoirs - Fault - Finite conductivity - Fractured well - Heterogeneous reservoirs - Linear assembly - Multi-region linear composite - Pressure transient analysis - Pressure transient behavior - Type curves
Classification code: 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 921.3 Mathematical Transformations - 951 Materials Science
DOI: 10.1016/j.petrol.2021.109262
Funding Details: Number: G5800-20-ZS-KFGY018, Acronym: -, Sponsor: -; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PLN2021-12, Acronym: SWPU, Sponsor: Southwest Petroleum University; Number: 20JS117,52004219, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation; Number: 2020JQ-781, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province; Number: U1762109, Acronym: -, Sponsor: -;
Funding text: The authors would like to thank the National Natural Science Foundation of China (NSFC) for supporting this research through a Joint Fund of petroleum and chemical industry under Grant No. U1762109 . This study was financially supported by the Natural Science Basic Research Program of Shaanxi (Grant No. 2020JQ-781), the Scientific Research Program Funded by Shaanxi Provincial Education Department (Grant No. 20JS117), the Youth Project of the National Natural Science Foundation of China (Grant No. 52004219), the Open Fund of State Key Laboratory of Shale Oil and Gas Enrichment Mechanisms and Effective Development (Grant No. G5800-20-ZS-

KFGY018) and the Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Southwest Petroleum University) (Grant No. PLN2021-12). The authors would also like to thank the reviewers and editors, whose critical comments were very helpful in preparing this article.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

77. High-Frequency Fiber Bragg Grating Accelerometer Based on Symmetric Flexible Hinges Invited

Accession number: 20225213302381
Title of translation:
Authors: Yu, Dakuan (1); Wang, Xiangyu (1); Gao, Hong (2); Liu, Qinpeng (2); Fan, Wei (2); Qiao, Xueguang (3)
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Corresponding author: Qiao, Xueguang(xgqiao@nwu.edu.cn)
Source title: Guangzi Xuebao/Acta Photonica Sinica
Abbreviated source title: Guangzi Xuebao
Volume: 51
Issue: 10
Issue date: October 2022
Publication year: 2022
Article number: 1006003
Language: Chinese
ISSN: 10044213
CODEN: GUXUED
Document type: Journal article (JA)
Publisher: Chinese Optical Society
Abstract: Aiming at the difficulty of existing optical sensors to meet the requirements of high-frequency vibration of micro-seismic monitoring in oil and gas production field a high frequency FBG accelerometer based on symmetrical flexible hinges is proposed. The accelerometer is based on a compact structure consisting of a base double hole hinge a fiber Bragg grating and a mass block. There are threaded holes in the base to install the geophone on the vibration test table. Two small semi-circular rings are cut out on a cylindrical stainless steel material along the transverse symmetry using a line cutting technology. The upper and lower parts of the base and the mass block are engraved with 0.5 mm grooves along the axis. FBG is placed in the the upper part of the base and the mass block of the fiber trench. Both ends of FBG are glued to the mass block and base by epoxy adhesive. The FBG certain is applied to some prestress during packaging. When there is an external vibration signal the base of the detector vibrates with the measured object. The mass block vibration around the center of the hinge relative to the base under the action of inertial force driving FBG to stretch and compress leading to a wavelength drift of FBG. The principle of vibration sensing is analyzed. The sensitivity and the resonant frequency formula of the accelerometer are given theoretically and the influence of structural parameter on the sensitivity and resonant frequency of the accelerometer is discussed. The modal analysis of the geophone is carried out using simulation software. The first order characteristic frequency of the structure is 1 191 Hz the vibration direction is x direction and the second order characteristic frequency is 7 039.4 Hz. The vibration direction of the second order characteristic frequency is y direction. As the two characteristic frequencies are very different the geophone has good transverse anti-interference performance. To obtain the sensing performance of the detector the amplitude-frequency response sensitivity and lateral anti-interference of the detector are tested. The packaged fiber grating geophone and standard acceleration sensor are fixed on the vibration table PC control software controls the output signal of the vibration table fiber grating demodulator and fiber grating geophone is connected completing the signal demodulation. The demodulation signal is transmitted to the computer to complete the signal acquisition. The analysis of the experimental results shows the resonance frequency of accelerometer based on the symmetrical hinge structure is 1 200 Hz basically consistent with the resonance frequency results using the simulation software. The reason of the difference may be caused by the processing error of the sensor. The operating frequency band of the detector is 20~800 Hz. The sensitivity of the sensor is about 10.2 pm/g and the linear sensitivity is 0.999 8. The cross axis sensitivity of the detector is about 5% of the main axis. The geophone has good application prospects in oil and gas exploitation field.
Number of references: 20
Main heading: Fiber Bragg gratings

Controlled terms: Accelerometers - Adhesives - Computer software - Demodulation - Frequency response - Modal analysis - Natural frequencies - Optical variables measurement - Vibration analysis - Vibration measurement
Uncontrolled terms: Amplitude frequency response - Anti-interference - Characteristic-frequency - Fiber gratings - Flexible hinges - High frequency HF - Mass block - Second orders - Simulation software - Strain sensing
Classification code: 723 Computer Software, Data Handling and Applications - 921 Mathematics - 941.4 Optical Variables Measurements - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements
Numerical data indexing: Frequency 1.91E+02Hz, Frequency 2.00E+01Hz to 8.00E+02Hz, Frequency 2.00E+02Hz, Frequency 3.94E+01Hz, Percentage 5.00E+00%, Size 1.02E-11m, Size 5.00E-04m
DOI: 10.3788/gzxb20225110.1006003
Funding Details: Number: 61735014,61927812, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JS093,20JS122, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: National Natural Science Foundation of China Nos.61735014619278l2Scientific Research Program Funded by Shaanxi Provincial Education Department of China Nos.18JS09320JS122
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

78. Evaluation of the potential ecological risk of metals in atmospherically deposited particulate matter via laser-induced breakdown spectroscopy combined with machine learning

Accession number: 20222912372868
Authors: Feng, Ting (1); Chen, Tingting (1); Li, Maogang (1); Wang, Yang (1); Chi, Jianqiang (2); Tang, Hongsheng (1); Zhang, Tianlong (1); Li, Hua (1, 3)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecule of the Ministry of Education, College of Chemistry & Materials Science, Northwest University, Xi'an; 710127, China; (2) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an; 710069, China; (3) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
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Source title: Chinese Journal of Analytical Chemistry
Abbreviated source title: Chin. J. Anal. Chem.
Volume: 50
Issue: 10
Issue date: October 2022
Publication year: 2022
Article number: 100097
Language: English
E-ISSN: 18722040
Document type: Journal article (JA)
Publisher: Chinese Academy of Sciences
Abstract: With the acceleration of industrialization and urbanization, China faces increasingly serious urban air pollution, such as frequent haze. Heavy metals have attracted extensive attention because of their non-degradability, significant biotoxicity, and persistence. In this work, laser-induced breakdown spectroscopy (LIBS) combined with random forest (RF) was utilized to directly evaluate the potential ecological risk of metals. The LIBS spectra of 17 atmospherically deposited particulate matter samples were collected, and three metal elements (V, Cr, and Zn) were identified from the National Institute of Standards and Technology database. The influence of predictive ability with different spectral preprocessing methods on the RF calibration model was then investigated, and the input variable was selected by variable importance measurement to further enhance the accuracy of predictive ability. Under the optimized spectral preprocessing method, VI threshold, and model parameters, the mean relative error of prediction set (MREP) for potential ecological risk index analysis (V, Cr, and Zn) was calculated as 0.0206, 0.0529, and 0.2218, respectively, and the determination coefficient of prediction set (RP2) was 0.9220, 0.9458, and 0.9359, respectively. These values inferred the overall lack of significant contamination at the time of the study. In summary, a novel approach based on LIBS combined with RF provides a new idea and method to directly evaluate the potential ecological risk of air pollution. © 2022
Number of references: 38
Main heading: Decision trees
Controlled terms: Air pollution - Atomic emission spectroscopy - Heavy metals - Machine learning - Particles (particulate matter) - Random forests - Risk analysis - Risk assessment

Uncontrolled terms: Contaminating metal - Ecological risk index - Laserinduced breakdown spectroscopy (LIBS) - Particulate Matter - Potential ecological risk - Potential ecological risk index - Predictive abilities - Random forests - Spectral preprocessing - Variables selections
Classification code: 451 Air Pollution - 531 Metallurgy and Metallography - 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 914.1 Accidents and Accident Prevention - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922 Statistical Methods - 951 Materials Science - 961 Systems Science
DOI: 10.1016/j.cjac.2022.100097
Funding Details: Number: 20JS144, Acronym: -, Sponsor: -; Number: 21873076,22073074, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research was funded by the National Natural Science Foundation of China (No. 22073074 , 21873076) and Scientific Research Program of Shaanxi Provincial Education Department (No. 20JS144).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

79. Fabrication of NOTT-220 @I2 via iodine adsorption and immobilization in bismuth organic framework for efficient CO2 photo-reduction

Accession number: 20222812339200
Authors: Qin, Hengjie (1); Lv, Ying (1); Kobayashi, Hisayoshi (2); Xiao, Meixia (1); Song, Haiyang (1); Yang, Jialun (3)
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Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 920
Issue date: November 5, 2022
Publication year: 2022
Article number: 165900
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this research, a kind of bismuth-based metal-organic frameworks—NOTT-220 was investigated as an iodine gas adsorbent. NOTT-220 exhibited good adsorption performance, reaching an adsorption capacity of 955 mg·g -1 at 75 . By various characterization methods and DFT calculations, it was demonstrated that the adsorption process of NOTT-220 included both physical and chemical adsorption, the captured iodine is not only in the form of iodine molecules, but is also converted into BiOI, BiI3 and polyiodide anions. In addition, the adsorbed sample was also used for photocatalytic reduction of CO2, showing better catalytic effect than the original sample. Therefore, the results show that NOTT-220 can not only be used as a promising iodine adsorbent, but also the material after iodine adsorption can be further used for photocatalysis to achieve efficient utilization. © 2022 Elsevier B.V.
Number of references: 57
Main heading: Iodine
Controlled terms: Bismuth - Bismuth compounds - Carbon dioxide - Density functional theory - Gas adsorption - Metal-Organic Frameworks
Uncontrolled terms: CO 2 reduction - DFT calculation - Gas adsorbents - Iodine adsorption - Iodine immobilizations - Metalorganic frameworks (MOFs) - Organics - Photo reduction - Photo-catalytic - Photocatalytic CO2 reduction
Classification code: 531.1 Metallurgy - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: null 9.55E+02null
DOI: 10.1016/j.jallcom.2022.165900
Funding Details: Number: 62104191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym:

XSYU, Sponsor: Xi'an Shiyou University; Number: 2021JQ-581, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This study is financially supported by Natural Science Basic Research Program of Shaanxi (Program No. 2021JQ-581). The Young Scientists Fund of the National Natural Science Foundation of China (Grant No. 62104191). The Natural Science Foundation of Shaanxi Province , China (Grant No. 2021JZ-53). Meanwhile, this work is also funded by innovation Team Funding: Design and Application of Metal Functional Materials from Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

80. Effects of annealing temperature on microstructures and shape memory effect of Ti-19Zr-11Nb-2Ta alloy sheets

Accession number: 20214811237509
Authors: Li, Qiquan (1, 2, 3); Ma, Xiaolong (1, 3); Xiong, Chengyang (1, 4); Qu, Wentao (5); Li, Yan (1, 2, 3)
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Corresponding authors: Xiong, Chengyang(xcy@buaa.edu.cn); Qu, Wentao(wtqu@xsyu.edu.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 897
Issue date: March 15, 2022
Publication year: 2022
Article number: 162728
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The effects of annealing temperature on the microstructures, mechanical properties and shape memory effect of Ti-19Zr-11Nb-2Ta alloy sheets have been investigated. The X-ray diffraction results show that the as-received Ti-19Zr-11Nb-2Ta alloy and those annealed between 873 K and 1073 K are composed of single α''_martensite. The recrystallization temperature of the alloy is between 823 K and 873 K indicated by the optical morphologies, and the thickness of martensite variants increases with the elevating of annealing temperature as detected by transmission electron microscopy (TEM) observations. The reverse martensitic transformation start temperature (AS) slightly increases after annealing above 873 K. The as-received alloy exhibits elongation of only 4.3%, and the plasticity is remarkably improved after annealing above 873 K. The alloy annealed at 873 K exhibits the largest elongation of 21.2% and a maximum shape memory strain of 2.7% among all the samples corresponding to an ultimate tensile strength of 607 MPa. © 2021 Elsevier B.V.
Number of references: 33
Main heading: Microstructure
Controlled terms: Tantalum alloys - Zircaloy - Shape-memory alloy - Martensite - High resolution transmission electron microscopy - Niobium alloys - Tensile strength - Titanium alloys - Martensitic transformations - Annealing
Uncontrolled terms: Annealing temperatures - Effect of annealing - Martensite variants - Microstructure mechanical properties - Optical- - Recrystallization temperatures - Shape-memory effect - Ti-zr-nb-ta - Transmission electron microscopy observation - X- ray diffractions
Classification code: 531 Metallurgy and Metallography - 531.2 Metallography - 537.1 Heat Treatment Processes - 542.3 Titanium and Alloys - 543.4 Tantalum and Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 741.3 Optical Devices and Systems - 951 Materials Science
Numerical data indexing: Percentage 2.12E+01%, Percentage 2.70E+00%, Percentage 4.30E+00%, Pressure 6.07E+08Pa, Temperature 8.23E+02K to 8.73E+02K, Temperature 8.73E+02K to 1.073E+03K, Temperature 8.73E+02K
DOI: 10.1016/j.jallcom.2021.162728

Funding Details: Number: 52071261, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: HBPU, Sponsor: Hubei Polytechnic University; Number: 2018YFC1106600, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: This work is supported by the National Key R&D Program of China (No. 2018YFC1106600), the National Natural Science Foundation of China (52071261) and Hubei Polytechnic University Talent Introduction Project (20xjz14R).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

81. Enhanced Removal of Sulfonated Lignite from Oilfield Wastewater by Soft Colloidal Templated Porous-Structure of Mgal-Ldh

Accession number: 20220463080
Authors: Tang, Ying (1, 2); Bai, Bingbing (1); Lian, Yubo (3); Weng, Huatao (3); Zhao, Yifei (1, 4); Zhou, Ling (1)
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Source title: SSRN
Issue date: December 19, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: Mg/Al layered double hydroxides (LDH) with mesoporous and microstructures based on soft colloidal template were prepared by co-precipitation method, employing salicylic acid and the anionic surfactant cetyl trimethyl ammonium bromide as soft-templates. N2 adsorption-desorption isotherms, SEM and XRD were employed to describe the morphology and structure of the samples, respectively. The results showed that structrued MgAl-LDH with mesoporous and microstructures dispersed uniformly with increasing the average pore diameter and specific surface area of the samples. The absorption activity of obtained structrued MgAl-LDH to sulfonated lignite containing in wastewater of oil field has been investigated. The prepared structrued MgAl-LDH could adsorb SL and attain equilibrium in 60 minutes with better removal efficiency than MgAl-LDH. Due to its relatively special layered pore size distribution and large surface area, the adsorption capacity can reach 510.2 mg/g when the initial concentration is 600 mg/L and adsorbent dosage is 0.3 g/L at 308 K and pH 7.0. The adsorption process of sulfonated lignite is exothermic in nature and follows to the Langmuir adsorption isotherm model and the pseudo-second-order kinetic model. © 2022, The Authors. All rights reserved.
Number of references: 37
Main heading: Adsorption
Controlled terms: Adsorption isotherms - Anionic surfactants - Lignite - Magnesium compounds - Microstructure - Morphology - Pore size - Precipitation (chemical) - Salicylic acid
Uncontrolled terms: Colloidal templates - Hydrotalcites - Keyword: sulphonated lignite - Mesoporous - Mg-Al layered double hydroxide - MgAl - Oilfield wastewaters - Porous structures - Structrued hydrotalcite - Templated
Classification code: 524 Solid Fuels - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Mass density 3.00E-01kg/m3, Mass density 6.00E-01kg/m3, Temperature 3.08E+02K, Time 3.60E+03s, null 5.102E+02null
Compendex references: YES
Preprint ID: 4299880
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

82. Multi-Phase Rate Transient Behaviors of the Multi-Fractured Horizontal Well With Complex Fracture Networks

Accession number: 20221411885881
Authors: He, Youwei (1, 2); Xu, Yingjie (1); Tang, Yong (1); Qiao, Yu (1); Yu, Wei (3); Sepehrnoori, Kamy (3)
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Source title: Journal of Energy Resources Technology, Transactions of the ASME
Abbreviated source title: J Energy Resour Technol Trans ASME
Volume: 144
Issue: 4
Issue date: April 2022
Publication year: 2022
Article number: 43006
Language: English
ISSN: 01950738
E-ISSN: 15288994
CODEN: JERTD2
Document type: Journal article (JA)
Publisher: American Society of Mechanical Engineers (ASME)
Abstract: Complex fracture networks (CFN) provide flow channels and significantly affect well performance in unconventional reservoirs. However, traditional rate transient analysis (RTA) models barely consider the effect of CFN on production performance. The impact of multiphase flow on rate transient behaviors is still unclear especially under CFN. Neglecting these effects could cause incorrect rate transient response and erroneous estimation of well and fracture parameters. This paper investigates multi-phase rate transient behaviors considering CFN and tries to investigate in what situations the multi-phase models should be used to obtain more accurate results. First, an embedded discrete fracture model (EDFM) is generated instead of Local Grid Refinement method to overcome time-intensive computation. The model is coupled with reservoir models using non-neighboring connections (NNCs). Second, eight cases are designed using the EDFM technology to analyze effect of natural fractures, formation permeability, and relative permeability on rate transient behaviors. Third, Blasingame plot, log-log plot, and linear flow plot are used to analyze the differences of rate transient response between single-phase and multi-phase flow in reservoirs with CFN. For multi-phase flow, severe deviations can be observed on RTA plots compared with single-phase model. Combination of three RTA type curves can characterize the differences from early to late flow regimes and improve the interpretation accuracy as well as reduce the non-unicity. Finally, field data analysis in Permian Basin demonstrates that multi-phase RTA analysis are required for analyzing production and pressure data since single-phase RTA analysis will lead to big errors especially under high water cut during fracturing fluid flowback period, early production of unconventional gas wells or after waterflooding, or water huff-n-puff. © 2022 by ASME
Number of references: 49
Main heading: Transient analysis
Controlled terms: Oil wells - Hydraulic fracturing - Horizontal wells - Multiphase flow - Petroleum reservoirs - Complex networks - Fracture - Petroleum reservoir evaluation
Uncontrolled terms: Complex fracture network - Discrete-fracture models - Flow channels - Fracture network - Multi-fractured horizontal wells - Multi-phase flows - Rate transient analyse - Single phasis - Transient behavior - Well performance
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 722 Computer Systems and Equipment - 951 Materials Science
DOI: 10.1115/1.4053247
Funding Details: Number: -, Acronym: CMG, Sponsor: Computer Modelling Group; Number: 52004238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019M663561,XSTS-202003, Acronym: -, Sponsor: China Postdoctoral Science Foundation;
Funding text: This study was funded by National Natural Science Foundation of China (52004238) and China Postdoctoral Science Foundation (2019M663561). This work was also supported by Open Fund (No. XSTS-202003) of Xi'an Key Laboratory of Tight Oil (Shale Oil) Development. The authors gratefully thank Computer Modeling Group Ltd., KAPPA, and Sim Tech LLC for providing the CMG, Topaze, and EDFM software, respectively, for this work.This study was funded by National Natural Science Foundation of China (52004238) and China Postdoctoral Science Foundation (2019M663561). This work was also supported by Open Fund (No. XSTS-202003) of Xi'an Key Laboratory of Tight Oil (Shale Oil) Development. The authors gratefully thank Computer Modeling Group Ltd., KAPPA, and Sim Tech LLC for providing the CMG, Topaze, and EDFM software, respectively, for this work.

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

83. Thermoacoustic emission characteristics and real-time damage evolution in shales of the Lower Palaeozoic Niutitang Formation

Accession number: 20223012415346
Authors: Ge, Zhenlong (1, 2); Sun, Qiang (1, 2); Gao, Qian (3); Li, Delu (1, 2); Zhang, Yuliang (4); Huang, Hao (1)
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Corresponding author: Sun, Qiang(sunqiang04@cumt.edu.cn)
Source title: International Journal of Rock Mechanics and Mining Sciences
Abbreviated source title: Int. J. Rock Mech. Min. Sci.
Volume: 157
Issue date: September 2022
Publication year: 2022
Article number: 105175
Language: English
ISSN: 13651609
CODEN: IRMGBG
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Identifying shale geological temperatures is important for understanding the thermal maturity, thermal evolutionary history, and hydrocarbon generation stages of shale formations, and enables efficient shale gas development. This paper investigates the thermal Kaiser effect of shales under different warming rates by studying the thermoacoustic emission (TAE) characteristics of shales in the Lower Palaeozoic Niutitang Formation in the Micangshan area of China. The developmental evolution and microscopic response mechanisms of different types of fractures in shales under high-temperature conditions are explored by combining acoustic emission (AE) characteristic parameters. The memory and sensitivity of the thermal Kaiser effect were also verified by thermal fatigue tests.
The results show that there is a significant thermal Kaiser effect during the heating of shale and that its threshold temperature is approximately 180 °C, which is consistent with the palaeotemperatures based on bitumen reflectance (Rb) estimation. The heating rate does not have a significant effect on the threshold temperature. At high temperatures, the shale is dominated by small-scale tensile fractures. When the shale is heated to 300 °C, the organic matter reaction rate peaks and the proportion of shear cracks begins to increase. An increase in heating rate is beneficial to the development of large-scale tensile cracks, while inorganic minerals begin to expand due to heat and micro-cracks gradually expand and connect, thus improving the connectivity of the pore channels. In thermal fatigue tests, the shale retains its memory of the threshold temperature when heated to less than 300 °C. Above 300 °C, pyrolysis of organic matter and microcrack expansion interfere with the thermal Kaiser effect, causing the shale to lose its memory of the maximum temperature. Within the same cycle stage, the threshold temperature is significantly higher at high heating rates than at low ones, especially above 400 °C. © 2022 Elsevier Ltd
Number of references: 73
Main heading: Fatigue testing
Controlled terms: Acoustic emission testing - Biogeochemistry - Cracks - Heating - Heating rate - Organic compounds - Thermal fatigue
Uncontrolled terms: Characteristic time - Emission characteristics - Kaiser effect - Lower Palaeozoic - Niutitang formation shale - Thermal - Thermal fatigue tests - Thermal kaiser - Thermoacoustic emissions - Threshold temperatures
Classification code: 481.2 Geochemistry - 641.2 Heat Transfer - 751.2 Acoustic Properties of Materials - 801.2 Biochemistry - 804.1 Organic Compounds - 951 Materials Science
Numerical data indexing: Temperature 4.53E+02K, Temperature 5.73E+02K, Temperature 6.73E+02K
DOI: 10.1016/j.ijrmms.2022.105175
Funding Details: Number: 2021ZD0034, Acronym: -, Sponsor: -; Number: 21JK0775, Acronym: -, Sponsor: -; Number: 4210021463, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020M673443, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2020JQ-744, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;

Funding text: This research was supported by the Major Project of Inner Mongolia Science and Technology, China (Grant No. 2021ZD0034), National Natural Science Foundation of China (Grant Nos. 4210021463), Natural Science Basic Research Program of Shaanxi Province (No. 2020JQ-744), China Postdoctoral Science Foundation (No. 2020M673443), Shaanxi Provincial Education Department general special project (No. 21JK0775).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

84. Petrological and organic geochemical characteristics of the Permian Lucaogou Formation in the Jimsar Sag, Junggar Basin, NW China: Implications on the relationship between hydrocarbon accumulation and volcanic-hydrothermal activities

Accession number: 20215311410261
Authors: Meng, Ziyuan (1); Liu, Yiqun (1); Jiao, Xin (1); Ma, Litao (4); Zhou, Dingwu (2); Li, Hong (1); Cao, Qing (3); Zhao, Minru (1); Yang, Yiyao (1)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 210
Issue date: March 2022
Publication year: 2022
Article number: 110078
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The coupling relationship between volcanic-hydrothermal activities and hydrocarbon generation has been a common understanding in recent years. However, there is a lack of theoretical and practical guidance in the application hydrocarbon production. The fine-grained sedimentary rocks of the middle Permian Lucaogou Formation in the Jimsar Sag in the Junggar Basin, NW China, are critical source rocks and have been simplify regarded as a mudrocks for target for tight oil exploration. Recently studies show that rocks were deposited in an intracontinental lacustrine environment with multiple volcanic-hydrothermal activities. Their complex micro-scale lithological characteristics restrict the understanding and further exploration and development of tight oil. Hence, this study focuses on the detailed lithological and their organic geochemical characteristics of the Lucaogou Formation using microscopic thin-section observation, scanning electron microscopy, X-ray diffraction, Rock-Eval, saturated hydrocarbon chromatography and mass spectrometry. The following key conclusions were obtained. First, the massive mudrocks are sub-divided into lithofacies for hydrocarbon generation, including tuffaceous shale, calcareous shale and dolomitic shale, and, microinterval reservoirs, including dolostone and sedimentary tuff. Second, the origins of organic matter in Lucaogou Formation were mainly plankton, bacteria with minor of land plants. The depositional environment is high salinity and anoxic conditions. Materials derived from volcanic-hydrothermal activities, lacustrine precipitation, and terrestrial transportation mixed with various proportions to form this formation. Third, a mixture of carbonate minerals, felsic minerals and clay minerals is the best source rock, and the higher the mixture, the better. This research not only provides insight into the influence of volcanic-hydrothermal activities on lithology and organic matter enrichment, but also providing a potential scheme for the tight oil exploration and development in similar rifted geological settings. © 2021 Elsevier B.V.
Number of references: 141
Main heading: Mixtures
Controlled terms: Sedimentology - Shale - Lithology - Mass spectrometry - Geological surveys - Volcanoes - Biogeochemistry - Hydrocarbons - Petroleum prospecting - Scanning electron microscopy
Uncontrolled terms: Fine grained - Hydrocarbon generation - Hydrothermal activity - Lacustrine fine-grained sedimentary rock - Organics - Permian - Permian lucaogou formation - Tight oil - Volcanic-hydrothermal activity - Volcanics
Classification code: 481.1 Geology - 481.2 Geochemistry - 484 Seismology - 512.1.2 Petroleum Deposits : Development Operations - 801 Chemistry - 801.2 Biochemistry - 804.1 Organic Compounds
DOI: 10.1016/j.petrol.2021.110078

Funding Details: Number: PAG-2021-01, Acronym: -, Sponsor: -; Number: XSTS-202101, Acronym: -, Sponsor: -; Number: 41802120, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: NWU, Sponsor: Northwest University;
Funding text: This work is financially supported by the National Natural Science Foundation of China (41802120), Open Fund of Shaanxi Key Laboratory of Petroleum Accumulation Geology (PAG-2021-01) and Open Fund of Xi'an Key Laboratory of Tight oil (Shale oil) Development (XSTS-202101). We are grateful to Tu-Ha Bureau of PetroChina for providing the cores and related data. And we thank San Liu and Ningchao Zhou from the Xi'an Center of Geological Survey, Weilai Zhang from China University of Petroleum, Shuangshuang Chen and Chunyu Li from Northwest University.This work is financially supported by the National Natural Science Foundation of China (41802120), Open Fund of Shaanxi Key Laboratory of Petroleum Accumulation Geology (PAG-2021-01) and Open Fund of Xi'an Key Laboratory of Tight oil (Shale oil) Development (XSTS-202101). We are grateful to Tu-Ha Bureau of PetroChina for providing the cores and related data. And we thank San Liu and Ningchao Zhou from the Xi'an Center of Geological Survey, Weilai Zhang from China University of Petroleum, Shuangshuang Chen and Chunyu Li from Northwest University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

85. A low-computational-cost alternating switches algorithm for real-valued spatial covariance matrix reconstruction (*Open Access*)

Accession number: 20222212176967
Authors: Liu, Changzan (1); Zhou, Yan (2, 3); Dang, Bo (4)
Author affiliation: (1) School of Marine Science and Technology, Northwestern Polytechnical University, Shaanxi, Xi'an, China; (2) Xi'an Key Laboratory of Intelligent Expressway Information Fusion and Control, Chang'an University, Xi'an, China; (3) School of Information Science and Technology, Northwest University, Xi'an, China; (4) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'an Shiyou University, Xi'an, China
Corresponding author: Zhou, Yan(yanzhou@nwu.edu.cn)
Source title: Electronics Letters
Abbreviated source title: Electron. Lett.
Volume: 58
Issue: 14
Issue date: July 2022
Publication year: 2022
Pages: 557-559
Language: English
ISSN: 00135194
E-ISSN: 1350911X
CODEN: ELLEAK
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: The application of the emerging hybrid analog–digital architecture for future millimeter-wave communications has attracted significant attention. Although this architecture can reduce the hardware cost and power consumption considerably, the high-resolution direction of arrival (DOA) estimation in the architecture based on switches is still a challenge. As a solution, an alternating switches algorithm (ASA) is proposed in this paper. By appropriately adjusting the switch connected to each antenna, the real-valued spatial covariance matrix (SCM) is reconstructed with low-dimensional vector-to-vector multiplication. Subsequently, the DOA angle of each signal is estimated based on a split subspace extracted from the real-valued SCM. Finally, a set of simulation experiments are performed to verify the performance of the proposed algorithm. The results indicate that the ASA can reconstruct the real-valued SCM and realize high-resolution DOA estimation with a substantially low computational cost. © 2022 The Authors. Electronics Letters published by John Wiley & Sons Ltd on behalf of The Institution of Engineering and Technology.
Number of references: 11
Main heading: Antennas
Controlled terms: Cost estimating - Covariance matrix - Direction of arrival - Millimeter waves
Uncontrolled terms: Architecture-based - Computational costs - Covariance matrix reconstruction - Digital architecture - Direction of arrival estimation - Hardware cost - High resolution - Low dimensional - Millimeterwave communications - Spatial covariance matrix
Classification code: 711 Electromagnetic Waves - 716.1 Information Theory and Signal Processing - 911 Cost and Value Engineering; Industrial Economics - 921 Mathematics

DOI: 10.1049/ell2.12521
Funding Details: Number: 51974250,61901371, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 300102322503, Acronym: CHD, Sponsor: Chang'an University; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was sponsored in part by National Natural Science Foundation of China under grants 61901371 and 51974250, and in part by the Fundamental Research Funds for the Central Universities, CHD under grant 300102322503.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

86. The pore-scale mechanisms of surfactant-assisted spontaneous and forced imbibition in water-wet tight oil reservoirs

Accession number: 20221211829935
Authors: Cao, Bao (1, 2, 3); Lu, Xiangguo (1); Xie, Kun (1, 2); Ding, Hongna (1); Xiao, Zhongmin (3); Cao, Weijia (1); Zhou, Yanxia (1); He, Xin (1); Li, Yu (1); Li, Hongru (1)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 213
Issue date: June 2022
Publication year: 2022
Article number: 110371
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The imbibition of water with surfactants, including spontaneous imbibition and forced imbibition, is of great significance for enhanced oil recovery (EOR) in tight sandstone reservoirs. Up to now, the migration behaviors of the water and the oil in pores of different sizes, as well as the mechanisms of both spontaneous imbibition and forced imbibition with different surfactants, have not been comprehensively addressed yet. This work first measured the oil-water interfacial tensions (IFTs) and the contact angles in oil-water-rock system with two types of surfactants, namely medium-IFT (0.1–10 mN/m) and low-IFT (0.001–0.1 mN/m) surfactants, at different concentrations to comprehend the functionalities of surfactants on oil recovery. Secondly, the pore size distributions of tight sandstones were determined by the high-pressure mercury intrusion (HPMI) and the nuclear magnetic resonance (NMR) technology to characterized the pores into three types (micropores, mesopores, and macropores) according to the pore sizes. Eventually, this work presented the oil recovery results in these three types of pores for spontaneous and forced imbibition using the two types of surfactants in water-wet tight core samples. Both spontaneous and forced imbibition results showed that the oil recoveries with surfactants were higher than those with brine, which was primarily attributed to the increased oil in the mesopores and the macropores. However, the addition of low-IFT surfactants apparently reduced the oil recovery in micropores, hence resulted in a lower oil recovery in comparison with the medium-IFT surfactants. It was also found that the oil in micropores contributed more than 50% of the oil recovery in the imbibition, except for the imbibition with low IFT, due to the high initial oil volume ratios in micropores; there could be a moderate IFT value (e.g., 0.1–1 mN/m) with the use of surfactants to obtain the highest oil recovery. Moreover, in comparison with the spontaneous imbibition, the forced imbibition could enhance the imbibition of water into the micropores but prevent the oil from being extracted from the mesopores and the macropores, which consequently led to a higher contribution of the micropores on oil recovery than that of the larger pores, especially the mesopores. © 2022 Elsevier B.V.
Number of references: 62
Main heading: Pore size
Controlled terms: Nuclear magnetic resonance - Surface active agents - Petroleum reservoir engineering - Microporosity - Oil well flooding - Sandstone - Petroleum reservoirs - Enhanced recovery
Uncontrolled terms: Different size pore - Different sizes - Enhanced-oil recoveries - Forced imbibition - Macropores - Mesopore - Micropores - Oil recoveries - Oil/water - Spontaneous imbibition

Classification code: 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 5.00E+01%, Surface tension 1.00E-04N/m to 1.00E-02N/m, Surface tension 1.00E-04N/m to 1.00E-03N/m, Surface tension 1.00E-06N/m to 1.00E-04N/m
DOI: 10.1016/j.petrol.2022.110371
Funding Details: Number: XSTS-202001, Acronym: -, Sponsor: -; Number: 51574086, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: BX20190065, Acronym: -, Sponsor: National Postdoctoral Program for Innovative Talents; Number: 2016 ZX05058-003-010, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This work was supported by National Major Science and Technology Projects of China (2016 ZX05058-003-010), National Postdoctoral Program for Innovative Talents (BX20190065), SPE Nico van Wingen Memorial Fellowship , National Natural Science Foundation of China (No. 51574086), Open Fund of Xi'an Key Laboratory of Tight Oil (Shale Oil) Development (XSTS-202001).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

87. Cracking behavior and delamination mechanism of lamellar structured TBC with localized mixed oxides

Accession number: 20222312197826
Authors: Wei, Zhi-Yuan (1); Dong, Hui (2); Cai, Hong-Neng (1); Zhao, Sheng-Dun (3)
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Corresponding author: Cai, Hong-Neng(hncmat@126.com)
Source title: Ceramics International
Abbreviated source title: Ceram Int
Volume: 48
Issue: 18
Issue date: September 15, 2022
Publication year: 2022
Pages: 26206-26216
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Mixed oxide (MO) with localized growth feature and high growth rate remarkably affects the lifetime of thermal barrier coatings (TBCs), which indicates that clarifying the ceramic cracking mechanism induced by MO is critical for developing new coatings with high durability. Two kinds of TBC models involving spherical and layered mixed oxides are created to explore the influence of MO growth on the local stress state and crack evolution during thermal cycle. The growth of α–Al2O3 is also included in the model. The undulating interface between ceramic coat and bond coat is approximated using a cosine curve. Dynamic ceramic cracking is realized by a surface-based cohesive interaction. The ceramic delamination by simulation agrees with the experimental observation. The effects of MO coverage ratio and growth rate on the TBC failure are also discussed. The results show that the MO growth causes the local ceramic coat to bear the normal tensile stress. The failure mode of coating is turned from α–Al2O3 thickness control to MO growth control. Once the mixed oxide appears, local ceramic cracking is easy to occur. When multiple cracks connect, ceramic delamination happens. Suppressing MO formation or decreasing MO growth can evidently improve the coating durability. These results in this work can provide important theoretical guidance for the development of anti-cracking TBCs. © 2022 Elsevier Ltd and Techna Group S.r.l.
Number of references: 50
Main heading: Durability
Controlled terms: Alumina - Aluminum oxide - Cracks - Growth rate - Lamellar structures - Thermal barrier coatings
Uncontrolled terms: Ceramic coats - Ceramic delamination - Cracking behavior - Delamination mechanisms - Localised - Localized growth - Mixed oxide - Oxide growth - Thermal barrier coating

Classification code: 801.4 Physical Chemistry - 804.2 Inorganic Compounds
DOI: 10.1016/j.ceramint.2022.05.302
Funding Details: Number: 52001248, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021M692517, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2020JM540, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20202210, Acronym: -, Sponsor: State Key Laboratory for Mechanical Behavior of Materials;
Funding text: The present project is financially supported by the China Postdoctoral Science Foundation (Grant No. 2021M692517); the National Natural Science Foundation of China (Grant No. 52001248); the Natural Science Foundation Research Project of Shaanxi Province (No. 2020JM540); the State Key Laboratory for Mechanical Behavior of Materials (No. 20202210).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

88. Compression Method of NMR Echo Data Obtained from Complex Pore Structure Formation

Accession number: 20221411920309
Authors: Meng, Xiangning (1); Jia, Hui (1); Tian, Wenxin (2); Yu, Weigao (3); Gao, Yang (4)
Author affiliation: (1) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Shaanxi, Xi'an; 710077, China; (2) Material Equipment Company, China Petroleum Logging Company Ltd., Hebei, Langfang; 065007, China; (3) Exploration Department, PetroChina Huabei Oilfield Company, Hebei, Renqiu; 062450, China; (4) Research Institute of Petroleum Exploration and Development, PetroChina Liaohe Oilfield Company, Liaoning, Panjin; 124010, China
Corresponding author: Meng, Xiangning(mxn1680@xsyu.edu.cn)
Source title: IEEE Geoscience and Remote Sensing Letters
Abbreviated source title: IEEE Geosci. Remote Sens. Lett.
Volume: 19
Issue date: 2022
Publication year: 2022
Article number: 8026805
Language: English
ISSN: 1545598X
E-ISSN: 15580571
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: To reduce the redundancy of nuclear magnetic resonance (NMR) echo data, kernel principal component analysis (KPCA) is used in the compression. The algorithm of data compression using KPCA is introduced in detail, and the specific calculation process is given. Four commonly used kernel functions are selected: Gaussian kernel, linear kernel, polynomial kernel, and exponential kernel. The compression effect of KPCA based on these four kernel functions on the NMR echo data obtained from complex pore structure formation is compared and analyzed. The study found that: Principal component analysis (PCA) is not suitable for the compression of NMR echo data obtained from the formation with complex pore structure. Compared with PCA, KPCA based on all the four kernels has obvious advantages in computational efficiency. The compression capabilities of KPCA based on Gaussian kernel and exponential kernel are all lower than PCA. The compression capability (CA) of KPCA based on linear kernel is equivalent to PCA. KPCA based on polynomial kernel, when the kernel parameter $\sigma \geq 2$, its CA is higher than PCA. The compression accuracy of KPCA based on Gaussian kernel, linear kernel, and exponential kernel is stable in the formations with complex pore structure. KPCA based on polynomial kernel is sensitive to the kernel parameter, only when the kernel parameter $\sigma = 5$, the optimal compression accuracy can be obtained. At this time, the optimal compression effect is obtained in the complex pore formation. © 2004-2012 IEEE.
Number of references: 15
Main heading: Data compression
Controlled terms: Computational efficiency - Gaussian distribution - Pore structure - Principal component analysis - Polynomials - Nuclear magnetic resonance
Uncontrolled terms: Echo data - Eigenvalue and eigenfunctions - Gaussian kernels - Kernel - Kernel function - Kernel principal component analyses (KPCA) - Linear kernel - Pores structure - Principal-component analysis
Classification code: 921.1 Algebra - 922.1 Probability Theory - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1109/LGRS.2022.3162668

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

89. Temporary Plugging Agent System for Thermally Induced Phase Change Fracturing in Shale Gas Reservoirs

Accession number: 20222712307900
Authors: Lai, Nanjun (1, 2, 3); Chen, Yuemei (1, 2); Wang, Junqi (1); Wu, Chunping (1, 2); Zhang, Xiaochen (1, 2)
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Corresponding author: Lai, Nanjun(lainanjun@126.com)
Source title: Energy and Fuels
Abbreviated source title: Energy Fuels
Volume: 36
Issue: 12
Issue date: June 16, 2022
Publication year: 2022
Pages: 6270-6279
Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: In this study, a temporary plugging agent composed of two different types of guest molecules for thermally induced phase change fracturing was constructed for different shale formation temperature ranges. This agent, which was constructed through the screening of the host, guest, and solvent, is in a uniform solution state at room temperature. The solution became cloudy with increasing temperature, and a stable gel was formed when the respective gelling temperature was reached. However, the gel turned into a solution again upon further heating. The temporary plugging agent system developed in this paper could realize the phase transition of "solution-gel-solution"only by changing the temperature. Characterization and evaluation of the basic performance of the temporary plugging agent show that the components of this agent form a long fibrous gel through supramolecular interactions, the constructed thermally induced phase change fracturing system has good thermal stability, and the filter loss is small. These findings indicate that the temporary plugging agent system for thermally induced phase change fracturing could form an excellent temporary plugging agent suitable for formations at 90-120 °C through the unique temperature responsiveness of supramolecular gels. In addition, the gel formation process was described by the host-guest structure combined with SEM characterization. The results of physical simulation experiments reveal that the temporary plugging agent has low viscosity, good fluidity, and good injectability at room temperature. After being injected into the formation, the temporary plugging agent could form a gel with sufficient strength at the target formation temperature to plug the fractures. After the formation was further heated, the formed gel gradually broke and caused slight damage to the core. The whole temporary plugging process does not require the addition of an additional crosslinking agent and a gel breaker. This new type of temporary plugging agent has a potential application value in shale gas refracturing. © 2022 American Chemical Society.
Number of references: 34
Main heading: Supramolecular chemistry
Controlled terms: Fracture - Petroleum reservoir engineering - Petroleum reservoirs - Room temperature
Uncontrolled terms: Agent systems - Formation temperature - Guest molecules - Host:guest - Induced phase change - Plugging agent - Shale formation - Shale gas reservoirs - Temperature range - Thermally induced
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 641.1 Thermodynamics - 801.4 Physical Chemistry - 951 Materials Science
Numerical data indexing: Temperature 3.63E+02K to 3.93E+02K
DOI: 10.1021/acs.energyfuels.2c01157
Funding Details: Number: WSFRM20210402001, Acronym: -, Sponsor: -; Number: YQKF202010, Acronym: -, Sponsor: -;

Funding text: This work was financially supported by the Key Laboratory of Well Stability and Fluid and Rock Mechanics in the Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University (no. WSFRM20210402001) and the Opening Project of Oil and Gas Field Applied Chemistry Key Laboratory of Sichuan Province (no. YQKF202010).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

90. Amorphization and defect engineering in constructing ternary composite Ag/PW10V2/am-TiO2-: Xfor enhanced photocatalytic nitrogen fixation

Accession number: 20220511550701
Authors: Feng, Caiting (1); Wu, Panfeng (2); Li, Qinlong (1); Liu, Jiquan (1); Wang, Danjun (3); Liu, Bin (1); Wang, Tianyu (1); Hu, Huaiming (1); Xue, Ganglin (1)
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Corresponding authors: Liu, Jiquan(jiquan-liu@nwu.edu.cn); Xue, Ganglin(xglin707@163.com)
Source title: New Journal of Chemistry
Abbreviated source title: New J. Chem.
Volume: 46
Issue: 4
Issue date: January 28, 2022
Publication year: 2022
Pages: 1731-1740
Language: English
ISSN: 11440546
E-ISSN: 13699261
CODEN: NJCHE5
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Photo-driven nitrogen fixation involves the activation and hydrogenation processes of molecular nitrogen in producing ammonia at the photocatalyst surface. Herein, significant enhancement of the catalytic efficiency is achieved via constructing a ternary Ag/PW10V2/am-TiO2-x composite (the optimal PW10V2 and Ag NPs loadings are 14.5 wt% and 1.5 wt%, respectively) with high specific surface area of 513 m2 g-1. The well-designed Z-scheme heterojunction between divanadium substituted phosphotungstic acid (PW10V2) and amorphous TiO2-x (am-TiO2-x) combined with localized surface plasmon resonance (LSPR) of Ag NPs endowed the ternary Ag/PW10V2/am-TiO2-x composite with superior oxidation-reduction performance. Accommodated by amorphization and defect engineering, enriched surface oxygen vacancies (OVs) were produced. In the absence of a sacrificial agent, high NH3/NH4+ productions of 424.9 μmol gcat-1 were achieved under a nitrogen atmosphere when irradiating under simulated sunlight for 2 h. The results show that the enhancement of catalytic efficacy is well correlated with a Z-scheme heterojunction and Ag-am-TiO2-x interface with factors of 1.2-1.4 and 1.4-1.8, respectively. The roles of the surface OVs and amorphous structure are emphasized when compared with anatase TiO2-x and Ag/PW10V2/anatase-TiO2-x. In addition to the excellent photocatalytic activity, the composite demonstrates high photochemical stability with negligible activity decay. This work also gives some inspiration to prepare polyoxometalates-based photocatalysts with high activity for photocatalytic nitrogen fixation. This journal is © The Royal Society of Chemistry and the Centre National de la Recherche Scientifique.
Number of references: 62
Main heading: Nitrogen fixation
Controlled terms: Gold - Heterojunctions - Photocatalytic activity - Silver - Surface plasmon resonance - Titanium dioxide
Uncontrolled terms: Activation process - Amorphizations - Anatase TiO2 - Catalytic efficiencies - Defect engineering - Hydrogenation process - Molecular nitrogen - Photo-catalytic - Surface oxygen vacancies - Ternary composites
Classification code: 547.1 Precious Metals - 714.2 Semiconductor Devices and Integrated Circuits - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds
Numerical data indexing: Amount of substance 4.249E-04mol, Specific surface area 5.13E+05m2/Kg, Time 7.20E+03s, Voltage 1.00E+01V
DOI: 10.1039/d1nj05917c

Funding Details: Number: 19JK0853, Acronym: -, Sponsor: -; Number: 21673176, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This study was financially supported by the National Natural Science Foundation of China (21673176) and Natural Science Research Program Education Department of Shaanxi Province (NO. 19JK0853).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

91. A formation pressure prediction method for well drilling in the Arctic permafrost region

Accession number: 20221611986402
Title of translation:
Authors: Fan, Xizhe (1); Li, Xiao (1); Wu, Yongchuan (1); Zhang, Jugui (1); Lou, Yishan (2); Liu, Shanyong (3, 4); Zhu, Liang (2)
Author affiliation: (1) COSL Drilling Division, Tianjin; 300450, China; (2) Institute of Mud Logging Technology and Engineering, Yangtze University, Jingzhou; 434023, China; (3) Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University, Xi'an; 710065, China; (4) School of Petroleum Engineering, Yangtze University, Wuhan; 430100, China
Corresponding authors: Liu, Shanyong(liushanyong@yangtzeu.edu.cn); Liu, Shanyong(liushanyong@yangtzeu.edu.cn)
Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 42
Issue: 3
Issue date: March 25, 2022
Publication year: 2022
Pages: 99-105
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: The Arctic region is immense in oil and gas resources, but it faces the difficulties of complex geological conditions, sensitive ecological environment and narrow construction time window, and especially the formation pressure in the Arctic region can be hardly predicted, which brings a great challenge to well drilling and development in this area. Taking the Arctic Kara Sea area as the research object, this paper proposes a modified formation pressure prediction model based on the Eaton method, by considering the influence of permafrost horizon on density and acoustic migration. In addition, the three-formation-pressure profile of this area is established. And the following research results are obtained. First, in extremely cold conditions, the fillings in the rock fractures of permafrost horizon can increase the rock strength, which is helpful to increase the fracturing pressure of the formation above it. After thawing, however, the rock strength decreases, the elastic modulus reduces greatly and the plastic deformation capacity increases significantly, with the subsidence variation amplitude ranging from 49.5% to 72.3%. Second, the permafrost horizon about 500 m thick above Quaternary-Cretaceous leads to the deviation of the fitting curve of acoustic log with well depth off the normal trend line. And the formation pressure coefficient of the study area is calculated by using the established formation pressure model, which is in the range of 0.87-1.23. Third, according to the prediction results by the modified model, the safety drilling fluid density window of drilling profile ranges from 1.20 g/cm3 to 1.75 g/cm3. And the average error between the equivalent density of formation fracturing pressure predicted by the modified model and the actual value measured in the formation leakage experiment is 3.3%. In conclusion, this method can effectively predict the formation pressure in the Arctic permafrost region and meet the required accuracy of drilling engineering, which provides an important support for the subsequent drilling in the Arctic region and is of great practical significance.
Number of references: 20
Main heading: Energy resources
Controlled terms: Infill drilling - Offshore oil well production - Safety engineering - Permafrost - Drilling fluids - Well drilling - Curve fitting - Offshore drilling - Forecasting - Offshore oil wells
Uncontrolled terms: Acoustic migration - Arctic - Drilling fluid density - Formation pressure - Formation pressure prediction model - Kara Sea - Kara sea area - Permafrost area - Prediction modelling - Pressure predictions - Safety drilling fluid density window - Sea areas
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 525.1 Energy Resources and Renewable Energy Issues - 914 Safety Engineering - 921.6 Numerical Methods

Numerical data indexing: Linear density 1.20E-01kg/m, Linear density 1.75E-01kg/m, Percentage 3.30E+00%, Percentage 4.95E+01% to 7.23E+01%, Size 5.00E+02m
DOI: 10.3787/j.issn.1000-0976.2022.03.011
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

92. Controlled-release chemicals in oilfield application: A review

Accession number: 20222112157301
Authors: Yang, Jiang (1, 2); Chen, Yu (1); Zhao, Xiaolong (1); Ma, Cheng (1); Li, Yingcheng (3); He, Xiujuan (3)
Author affiliation: (1) Department of Applied Chemistry, Liaoning Petrochemical University, Liaoning, 113001, China; (2) Department of Petroleum Engineering, Xi'an Petroleum University, Shaanxi, 710065, China; (3) Shanghai Research Institute of Petrochemical Technology, Shanghai; 201208, China
Corresponding authors: Yang, Jiang(jyang98@126.com); Zhao, Xiaolong(184348285@qq.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 215
Issue date: August 2022
Publication year: 2022
Article number: 110616
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Various specialty chemicals are used from exploration and production to transmission in oil and gas industries. However, many of these oilfield chemical treatments are injected into wells that are released in full at one point upon the addition, and effectiveness lasts for a short time. Controlled-release technology can make the effectiveness of active chemicals last for an extended period in the application. Hence, it also reduces the negative impact of excess chemicals on the environment. Controlled-release technology has begun to play an important role in the oil and gas industries. This paper reviews recent advances and the application of the controlled-release techniques in enhanced oil and gas recovery, flow assurance, asset integrity management, stimulation, and chemical tracer in the oil and gas industry. Novel nanocomposite and encapsulate materials were described. The preparation for the control of released active substances and their released mechanism are also discussed. Applicability in high temperature, pressure, and salinity reservoirs was emphasized. The challenges for the field application of the controlled-release technique in the oil and gas industry are also addressed. © 2022 Elsevier B.V.
Number of references: 75
Main heading: Gases
Controlled terms: Enhanced recovery - Gas industry - Oil fields - Petroleum prospecting
Uncontrolled terms: Asset integrity - Controlled release - Enhanced-oil recoveries - Exploration and productions - Flow assurance - Oil and Gas Industry - Oil field applications - Oilfield chemicals - Specialty chemicals - Stimulation
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels
DOI: 10.1016/j.petrol.2022.110616
Funding Details: Number: XLYC1902053, Acronym: -, Sponsor: Liaoning Revitalization Talents Program;
Funding text: This work was supported by the Liaoning Revitalization Talents Program (Project No. XLYC1902053) and Sinopec Research & Development Funding.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

93. Modeling of compressed liquid viscosity of hydrofluorocarbons, hydrofluoroolefins, hydrochlorofluoroolefins, hydrochlorofluorocarbons and their mixtures

Accession number: 20221611976635
Authors: Liu, Yu (1); Zheng, Xiong (2); Liu, Chao (1); Lv, Shaohua (3)
Author affiliation: (1) Laboratory of Low-grade Energy Utilization Technologies and Systems, Ministry of Education, School of Energy and Power Engineering, Chongqing University, Chongqing; 400030, China; (2) College of Mechanical

and Vehicle Engineering, Hunan University, Hunan, Changsha; 410082, China; (3) Xi'an Key Laboratory of Wellbore Integrity Evaluation, College of Mechanical Engineering, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Liu, Yu(liu_yu@cqu.edu.cn)
Source title: Journal of Molecular Liquids
Abbreviated source title: J Mol Liq
Volume: 357
Issue date: July 1, 2022
Publication year: 2022
Article number: 119093
Language: English
ISSN: 01677322
CODEN: JMLIDT
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: In this work, a semi-empirical viscosity model for hydrofluorocarbons (HFCs), hydrofluoroolefins (HFOs), hydrochlorofluoroolefins (HCFOs), hydrochlorofluorocarbons (HCFCs) and their mixtures in the compressed liquid phase is presented based on the Modified Enskog Theory. The proposed viscosity model has 3 fitting coefficients per fluid and their values can be determined by the experimental compressed liquid viscosity data of the liquids of interest (The MATLAB code of the present viscosity model is attached in this paper). The results show that the present model can accurately reproduce the viscosities of the 18 liquids with the average absolute deviation of 1.93%. In addition, viscosities of 2 mixtures were calculated by the newly proposed model combining with a simple mixing rule, with the average absolute deviation of 2.01%. Additionally, the performance of the newly proposed scheme was compared with those of several conventional models. © 2022 Elsevier B.V.
Number of references: 75
Main heading: Mixtures
Controlled terms: Viscosity of liquids - Liquids - Fluorocarbons - MATLAB
Uncontrolled terms: Average absolute deviation - Compressed liquid - Correlation - Enskog theory - HydroChlorofluorocarbon - Hydrochlorofluorocarbon and hydrochlorofluoroolefin - Hydrofluorocarbon and hydrofluoroolefin - Hydrofluorocarbons - Semi-empirical - Viscosity modeling
Classification code: 631.1 Fluid Flow, General - 723.5 Computer Applications - 804.1 Organic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.93E+00%, Percentage 2.01E+00%
DOI: 10.1016/j.molliq.2022.119093
Funding Details: Number: 52106218, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CQU, Sponsor: Chongqing University; Number: 2021M693713, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2020JQ-774, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: We thank Prof. Qibin Li (Chongqing University, China) for reviewing this manuscript. We thank Prof. John M Prausnitz (University of California, Berkeley, USA) for discussing the manuscript and improving the quality of the paper during the author's stay in Berkeley. We thank Prof. Sayed Mostafa Hosseini (University of Hormozgan, Iran) for viscosity calculation by using his RHS model. We acknowledge the support of the National Natural Science Foundation of China (Grant No. 52106218), China Postdoctoral Science Foundation funded project (Grant No. 2021M693713) and Natural Science Basic Research Program of Shaanxi (Program No. 2020JQ-774).We thank Prof. Qibin Li (Chongqing University, China) for reviewing this manuscript. We thank Prof. John M Prausnitz (University of California, Berkeley, USA) for discussing the manuscript and improving the quality of the paper during the author’s stay in Berkeley. We thank Prof. Sayed Mostafa Hosseini (University of Hormozgan, Iran) for viscosity calculation by using his RHS model. We acknowledge the support of the National Natural Science Foundation of China (Grant No. 52106218), China Postdoctoral Science Foundation funded project (Grant No. 2021M693713) and Natural Science Basic Research Program of Shaanxi (Program No. 2020JQ-774).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

94. Molecular dynamics simulation of adsorption and diffusion of partially hydrolyzed polyacrylamide on kaolinite surface

Accession number: 20223912788038
Authors: Xu, Jianping (1, 2); Yuan, Yuanda (3); Feng, Zhen (4); Liu, Feng (1, 2); Zhang, Zhe (1)

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (2) Engineering Research Center of Ministry of Education for Development and Management of Low-permeability and Extra-low-permeability Oilfields in Western China, Shaanxi, Xi'an; 710065, China; (3) Sinopec Hainan Refining&Chiemical Co.LTD, Hainan, Yangpu; 578101, China; (4) Shaanxi Yanchang Petroleum (Group) Co., Ltd. Research Institute, 710065, China
Corresponding author: Xu, Jianping(1007662012@qq.com)
Source title: Journal of Molecular Liquids
Abbreviated source title: J Mol Liq
Volume: 367
Issue date: December 1, 2022
Publication year: 2022
Article number: 120377
Language: English
ISSN: 01677322
CODEN: JMLIDT
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: In tertiary oil recovery in oilfields, polymer solutions (partially hydrolyzed polyacrylamide) are often used for enhancing oil recovery. In view of the limitations of the current indoor flooding experiments, such as the limited scope of application and many assumptions, it is difficult to deeply reveal the mechanism of polymer flooding. In this paper, the molecular dynamics simulation method (MD) is used to establish an interaction model based on the construction of rock model, polymer molecular model and polymer solution system model to simulate the transport of polymers in nanopores from the microscopic level, and to study molecular. The interaction between them is described, and their diffusion and adsorption behaviors and viscoelastic properties are described, which provides a theoretical basis for the optimization of oil-displacing agents and the characterization of macro-rheological properties and flow parameters. © 2022
Number of references: 24
Main heading: Adsorption
Controlled terms: Diffusion - Enhanced recovery - Floods - Hydrolysis - Kaolinite - Molecular dynamics - Oil well flooding - Viscoelasticity
Uncontrolled terms: 'current - Diffusion and adsorption - Dynamics simulation - Floodings - Molecular dynamic simulation - Oil recoveries - Partially hydrolyzed polyacrylamide - Polymer flooding - Scope of application - Tertiary oil recovery
Classification code: 482.2 Minerals - 511.1 Oil Field Production Operations - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.molliq.2022.120377
Funding Details: Number: 51874241,51874241,51974247,51974247, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported financially by the National Natural Science Foundation of China (NSFC, Grant Numbers 51874241,51974247).This work was supported financially by the National Natural Science Foundation of China (NSFC, Grant Numbers 51874241 , 51974247).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

95. Experimental study on characteristics and mechanisms of matrix pressure transmission near the fracture surface during post-fracturing shut-in in tight oil reservoirs

Accession number: 20224413052349
Authors: Zhang, Yanjun (1, 2); Zou, Yi (1); Zhang, Yang (1); Wang, Luyu (3); Liu, Dunqing (4); Sun, Jian (1); Ge, Hongkui (2); Zhou, Desheng (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Shanxi, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum at Beijing, Beijing; 102249, China; (3) GeoRessources Lab., CNRS, UMR 7359, Vandœuvre-lès-Nancy; 54500, France; (4) College of Engineering, China University of Petroleum Beijing at Karamay, Xinjiang, Karamay; 834000, China
Corresponding author: Zhang, Yanjun(15010058869@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 219

Issue date: December 2022
Publication year: 2022
Article number: 111133
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Tight oil reservoirs are usually exploited using the long horizontal well and multi-stage hydraulic fracturing technique. Meanwhile, post-fracturing shut-in has become a popular procedure in improving the performance of tight reservoir wells. However, field data indicate that there are significant differences in well production due to shut-in operation in various blocks. The matrix pressure transmission near the fracture surface plays an essential role. Up to now, the characteristics and mechanisms of pressure transmission are still unclear. In this study, we conducted the pressure transmission experiment and matrix water uptake testing. Besides, X-ray diffraction (XRD), capillary suction time (CST), cast thin section observing, and mercury intrusion testing were performed. A characterization method was established to analyze the characteristics and influential factors of pressure transmission in tight oil reservoirs. The mechanism of pressure transmission and the relationship between pressure balance time and injection depth were discussed. The results show that the pressure transmission efficiency (PTE) reduces spontaneously as the initial water saturation in pores decreases. The clay expands after absorbing water and then the particles are dispersed, which damages the pore structure and reduces the PTE. The PTE decreases with the high content of clay minerals, especially the great proportion of expansive clay minerals. The PTE increases with the growing of the permeability and the capillary radius in some situations. The junction of conglomerate complex and gravel easily break up to form micro-fractures, which improves the PTE significantly. The mechanisms of pressure transmission include injection pressure, capillary force, and chemical osmotic pressure. These mechanisms of pressure transmission will be different at each stage and various situation. The time of pressure transmission increases with the large injection depth. This study helps to reveal the characteristics and mechanisms of matrix pressure transmission near the fracture surface during the post-fracturing shut-in and provides guidance for the optimization of the shut-in schedule. © 2022
Number of references: 52
Main heading: Horizontal wells
Controlled terms: Clay minerals - Fracture - Hydraulic fracturing - Low permeability reservoirs - Osmosis - Petroleum reservoir engineering - Pore structure
Uncontrolled terms: Fracturing treatment design - Fracturing treatments - matrix - Matrix near the fracture surface - Oil reservoirs - Optimisations - Pressure transmission - The optimization of shut-in - Tight oil reservoir - Treatment design
Classification code: 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2022.111133
Funding Details: Number: 51874242,51934005, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022MD713803, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: ZLZX2020-01, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: КННК, Sponsor: China National Petroleum Corporation; Number: 2021JQ-601, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was financially supported by China Postdoctoral Science Foundation (Grant No. 2022MD713803). The National Natural Science Foundation of China (Grant Nos. 51874242 and 51934005). The Strategic Cooperation Technology Projects of CNPC and CUPB (Grant No. ZLZX2020-01). Natural Science Basic Research Plan in Shannxi Province of China (2021JQ-601).This work was financially supported by China Postdoctoral Science Foundation (Grant No. 2022MD713803). The National Natural Science Foundation of China (Grant Nos. 51874242 and 51934005). The Strategic Cooperation Technology Projects of CNPC and CUPB (Grant No. ZLZX2020-01). Natural Science Basic Research Plan in Shannxi Province of China (2021JQ-601).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

96. Tunable interfacial adhesion based on orthogonal supramolecular forces

Accession number: 20224413027557
Authors: Han, Weiwei (1); Fan, Jiabao (1); Hu, Ziqing (2); Zhang, Hanwei (2); Dong, Sanbao (1); Ji, Xiaofan (2)
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Corresponding author: Ji, Xiaofan(xiaofanji@hust.edu.cn)
Source title: Polymer Chemistry
Abbreviated source title: Polym. Chem.
Volume: 13
Issue: 41
Issue date: October 3, 2022
Publication year: 2022
Pages: 5923-5930
Language: English
ISSN: 17599954
E-ISSN: 17599962
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Inspired by the adhesion phenomena in nature, many synthetic adhesive materials based on supramolecular interactions have been developed. Nevertheless, these materials generally contained a single kind of non-covalent interaction which lacked adjustability in interfacial adhesion strength, restricting their further applications. Herein, adhesive gel AG3 was prepared by mutual adhesion of supramolecular gel G3 self-assembled from polymer P3 through metal coordination between terpyridine (TPY) groups and Zn2+ as well as hydrogen bonding of 2-ureido-4-pyrimidone (UPy) groups. In order to realize the tunable interfacial adhesion, distinct competitive molecules were added into adhesive gel AG3. Adhesive gel AG6 was produced after the cyclen solutions were added into adhesive gel AG3. Due to the higher binding ability of cyclen to Zn2+, the metal coordination between TPY groups and Zn2+ was damaged, causing a decrease in the interfacial adhesion strength. Besides, upon the addition of UPy solutions into adhesive gel AG3, adhesive gel AG7 was generated. Owing to the newly formed hydrogen bonds of the added UPy monomers, the original hydrogen bonds were broken, leading to a decrease in the interfacial adhesion strength. When both two kinds of competitive molecules were added into adhesive gel AG3, then it would distintergrate on account of the destruction of the invovled supramolecular forces. © 2022 The Royal Society of Chemistry.
Number of references: 75
Main heading: Hydrogen bonds
Controlled terms: Adhesion - Adhesives - Bond strength (materials) - Molecules - Supramolecular chemistry
Uncontrolled terms: Adhesion phenomena - Adhesive gels - Adhesive materials - Interfacial adhesion strength - Interfacial adhesions - Metal coordination - Synthetic adhesives - Terpyridines - Tunables - Zn 2+
Classification code: 801.4 Physical Chemistry - 931.3 Atomic and Molecular Physics - 951 Materials Science
DOI: 10.1039/d2py01028c
Funding Details: Number: 2020MCF08, Acronym: -, Sponsor: -; Number: 2021JYBKF01, Acronym: -, Sponsor: -; Number: 21JP094,22001087, Acronym: -, Sponsor: -; Number: 22005242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: HUST, Sponsor: Huazhong University of Science and Technology; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2020kfyXJJS013, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: -, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: W. H. is grateful for support from the National Natural Science Foundation of China (No. 22005242), the Natural Science Basic Research Program of Shaanxi (Program No.2020JQ-775) and the Youth Innovation Team of Shaanxi Universities (21JP094). X. Ji. acknowledges funding from the National Natural Science Foundation of China (No. 22001087). X. Ji. appreciates the support from the Huazhong University of Science and Technology, where he is being supported by the Fundamental Research Funds for the Central Universities (grant 2020kfyXJJS013). X. Ji is also grateful for the support from the Open Fund of Hubei Key Laboratory of Material Chemistry and Service Failure, the Huazhong University of Science and Technology (2020MCF08), and the Open Research Fund (No. 2021JYBKF01) of the Key Laboratory of Material Chemistry for Energy Conversion and Storage, Huazhong University of Science and Technology, Ministry of Education. We are also thankful for the work of Modern Analysis and Testing Center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

97. Sedimentary enrichment factors of extraordinarily high organic matter in the sub-member 3 of Member 7 of Yanchang Formation, Ordos Basin

Accession number: 20231013663178

Title of translation:
Authors: Liu, Hanlin (1, 2); Zou, Caineng (1); Qiu, Zhen (1); Pan, Songqi (1); Zhang, Wenzheng (3); Jing, Zhenhua (1); Hao, Jihua (4); Yin, Shuai (5); Wu, Songtao (1); Li, Shixiang (3); Guo, Qiulei (1, 2)
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Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 43
Issue: 11
Issue date: November 1, 2022
Publication year: 2022
Pages: 1520-1541
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The Member 7 of Triassic Yanchang Formation in Ordos Basin is rich in shale oil resources. Among them, the sub-member 3 of Member 7 of Yanchang Formation (Chang 73) has deposited a set of black shale with extraordinary high organic matter content and TOC content of 35.8%. It is an important strategic substitute for "exploring petroleum inside source kitchen" onshore in China. Based on the statistical analysis of TOC content in the whole basin, the element geochemical characteristics of samples with extraordinary high organic matter content (TOC#6%) were analyzed, and the main controlling factors and enrichment mechanism of extraordinary high organic matter deposition were discussed in combination with mineral petrology and burial characteristics of micro (ultra-micro) fossils. The research results showed that the extraordinary high content of organic matter in the Chang 73 developed in a terrestrial freshwater-brackish water environment under warm and humid climate conditions, with sufficient sunlight, well-developed water systems, moderate input of terrigenous detritus. The morphology of pyrite framboids and particle size distribution characteristics indicated that the bottom water was mainly m the "dysoxic" condition, and the nutrient element content, and the burial characteristics of phosphate fossils and dormant cyst fossils of Chrysophyceae indicated that the lake basin was in a hyper-eutrophic state during the depositional period. Under the condition of high primary productivity of Chang 73 in Ordos Basin, the scale enrichment of extraordinary high organic matter deposition (TOC#6%) can be formed in both the turbulent "dysoxic-oxic" bottom water environment and the stable "dysoxic" bottom water environment.
Number of references: 125
Main heading: Pyrites
Controlled terms: Biogeochemistry - Deposition - Metamorphic rocks - Oil shale - Organic compounds - Particle size - Particle size analysis - Water
Uncontrolled terms: Controling factor of organic matter enrichment - Controlling factors - Extraordinarily high organic matter - Framboids - Framboids pyrite - High organic - Microfossils - Ordos Basin - Sedimentary environment - Yanchang Formation
Classification code: 481.2 Geochemistry - 512.1 Petroleum Deposits - 801.2 Biochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 951 Materials Science
Numerical data indexing: Percentage 3.58E+01%, Percentage 6.00E+00%, Size 7.62E-02m
DOI: 10.7623/syxb202211002a
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

98. Application of a novel amphiphilic polymer for enhanced offshore heavy oil recovery: Mechanistic study and core displacement test

Accession number: 20222212179571
Authors: Wang, Xiao (1, 2); Liu, Wanfa (2); Shi, Leiting (1, 2); Liang, Xuwei (2); Wang, Xudong (3); Zhang, Yunpeng (2); Wu, Xiaoliang (2); Gong, Yanbin (4); Shi, Xiangchao (2); Qin, Guowei (5)
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Corresponding authors: Wang, Xiao(wx228223@163.com); Shi, Leiting(wx228223@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 215
Issue date: August 2022
Publication year: 2022
Article number: 110626
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: A molecular modified polyacrylamide with Gemini surfactant monomers, named as HA1, was evaluated in this paper as an alternative to enhance the offshore heavy oil recovery. The physical properties of HA1 solution including apparent viscosity, rheological properties, static adsorption, interfacial activities (IFT, interfacial visco-elasticity and contact angle), emulsification ability, as well as oil recovery capacity were comprehensively investigated. Our results indicate that due to the hydrophobic and Gemini surfactant monomers on the acrylamide backbone, this novel amphiphilic polymer possesses more advanced functions than conventional polymers. HA1 demonstrates pronounced aqueous-phase viscosifying ability by forming 3D network in solution when the concentration is above CAC. In addition, the IFT, interfacial visco-elasticity and contact angle response illustrate that HA1 interacts strongly with the oil-phase which gives rise to its significant interfacial activity. Thereby, HA1 is able to reduce the heavy oil viscosity by emulsifying oil into water phase even at relatively low water content (20%) and also avoids dehydration difficulty by reducing the oil-brine interfacial rigidity. Furthermore, the asphaltene morphology change due to HA1 observed by SEM and AFM proves that HA1 can disperse the asphaltene aggregates in the crude oil, leading to a direct reduction of the heavy oil viscosity. At last, the coreflooding in an artificially synthesized triple-layered porous media shows that HA1 gives rise to an additional oil recovery of 27.04%, at the optimum concentration of 1600 ppm, by improving sweep efficiency, microscopic efficiency and dispersion of the asphaltene aggregates. Therefore, the potential of HA1 to enhance heavy oil recovery is comparable to traditional multi-component polymer-surfactant flooding. Since HA1 is single-component, it can also mitigate incompatibility issues like chromatography separation and surfactant-polymer interactions. Overall, this new self-assembly system shows potential for applications in heavy oil recovery. © 2022
Number of references: 73
Main heading: Crude oil
Controlled terms: Aggregates - Amides - Asphaltenes - Contact angle - Dispersions - Efficiency - Elasticity - Emulsification - Enhanced recovery - Heavy oil production - Liquid chromatography - Offshore oil well production - Oil well flooding - Porous materials - Surface active agents - Viscosity
Uncontrolled terms: Amphiphilic polymers - Asphaltene aggregate dispersion - Asphaltene aggregates - Enhanced offshore heavy-oil recovery - Gemini surfactant - Heavy oil recovery - Interfacial activity - Offshores - Surfactant monomers - Visco elasticity
Classification code: 406 Highway Engineering - 412.2 Concrete Reinforcements - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 513 Petroleum Refining - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 2.00E+01%, Percentage 2.704E+01%
DOI: 10.1016/j.petrol.2022.110626
Funding Details: Number: 2022YFSY0007, Acronym: -, Sponsor: -; Number: 52104040,52174027, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors would like to acknowledge State Key Laboratory of Offshore Oil Exploitation in China for providing amphiphilic polymer samples, oil samples and brine composition. We also thank the financial support from The National Natural Science Foundation of China (Grant number 52104040 and 52174027) and Sichuan Science & Technology Foundation (2022YFSY0007).The authors would like to acknowledge State Key Laboratory of Offshore Oil Exploitation in China for providing amphiphilic polymer samples, oil samples and brine composition. We also thank the financial support from The National Natural Science Foundation of China (Grant number 52104040 and 52174027) and Sichuan Science & Technology Foundation (2022YFSY0007).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

99. Fabricating Ag/PW12/Zr-mTiO2 Composite via Doping and Interface Engineering: An Efficient Catalyst with Bifunctionality in Photo- and Electro-Driven Nitrogen Reduction Reactions

Accession number: 20214311048588
Authors: Feng, Caiting (1); Liu, Jiquan (1); Li, Qinlong (1); Ji, Lei (1); Wu, Panfeng (1, 2); Yuan, Xiaoxiao (1); Hu, Huaiming (1); Jiang, Hai-Ying (3); Xue, Ganglin (1)
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Source title: Advanced Sustainable Systems
Abbreviated source title: Adv. Sustain. Syst.
Volume: 6
Issue: 1
Issue date: January 2022
Publication year: 2022
Article number: 2100307
Language: English
E-ISSN: 23667486
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Driven by solar power and derived electricity, ambient photo- and electrochemical nitrogen fixations are considered promising strategies to produce low-concentration NH3/NH4+. Under the principles of doping and interface engineering, a Ag/PW12/Zr-mTiO2 composite is fabricated in a one-pot synthesis, where zirconium-doped mesoporous TiO2 is co-decorated with silver nanoparticles (Ag NPs, optimal 1 wt%) and phosphotungstic acid (PW12, optimal 10 wt%). Enhanced nitrogen chemisorption is achieved owing to Zr-doping, where the mesoporous structure of Zr-mTiO2 favors nitrogen mass transfer. Ag NPs decoration leads to visible light absorption. At the interface, PW12 and Ag NPs decelerate the recombination of photo-generated charge carriers. A Z-scheme mechanism is suggested for the hetero-junction, and the surface plasmon resonance effect of Ag NPs is considered in the composite. Consequently, a NH3/NH4+ production rate of 324.2 μmol gcat-1 h-1 is achieved in the photo-driven process, together with the structure-reactivity relationship between transient photocurrent intensity and catalytic efficiency. Moreover, constructing Ag/PW12/Zr-mTiO2 heterojunction introduces a plentitude of active sites for the electrochemical process, together with enhanced charge transfer efficiency at the interface. Hence, an excellent NH3/NH4+ production rate of 55.0 μg mgcat -1 h-1 is accomplished at -0.6 V vs RHE. The robustness and superior activity of Ag/PW12/Zr-mTiO2 in both photo- and electro-driven processes may offer an opportunity for effectively utilizing sunlight. © 2021 Wiley-VCH GmbH
Number of references: 89
Main heading: Titanium dioxide
Controlled terms: Light absorption - Metal nanoparticles - Efficiency - Charge transfer - Heterojunctions - Solar energy - Ammonia - Fabrication - Surface plasmon resonance - Synthesis (chemical) - Mass transfer - Silver nanoparticles
Uncontrolled terms: Ambients - Efficient catalysts - Electrochemicals - Interface engineering - Low concentrations - Nitrogen reduction - One-pot synthesis - Photochemicals - Production rates - Reduction reaction
Classification code: 641.3 Mass Transfer - 657.1 Solar Energy and Phenomena - 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 761 Nanotechnology - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 913.1 Production Engineering
Numerical data indexing: Voltage 6.00E-01V
DOI: 10.1002/adsu.202100307
Funding Details: Number: 21673176, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ#441,2021JQ#442, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 19JK0853, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
Funding text: C.F., J.L., and Q.L. contributed equally to this work. This study was financially supported by the National Natural Science Foundation of China (21673176), Natural Science Foundation of Shaanxi Province (2021JQ441 and 2021JQ442) and Natural Science Foundation of Shaanxi Provincial Department of Education (19JK0853).
Compendex references: YES
Database: Compendex

100. Preparation of Ni-Co/SiO2 catalyst by ammonia reflux impregnation and its CH4-CO2 reforming reaction performance

Accession number: 20220511575526
Authors: Gai, XiKun (1); Yang, Dan (1); Tang, RuiYuan (2); Luo, MeiYu (1); Lu, Peng (1); Xing, Chuang (1); Yang, RuiQing (1); Ma, QingXiang (3); Li, Yin (1)
Author affiliation: (1) Zhejiang Key Laboratory of Agricultural Products Chemistry and Biological Processing Technology, College of Biological and Chemical Engineering, Zhejiang University of Science and Technology, Hangzhou; 310023, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) State Key Laboratory of High-efficiency Utilization of Coal and Green Chemical Engineering, Ningxia University, Yinchuan; 750021, China
Corresponding author: Gai, XiKun(gaixikun@163.com)
Source title: Fuel
Abbreviated source title: Fuel
Volume: 316
Issue date: May 15, 2022
Publication year: 2022
Article number: 123337
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: A series of Ni-Co/SiO2 catalysts were synthesized through a novel ammonia reflux impregnation method for application in the CH4-CO2 reforming reaction. The prepared catalysts were characterized by XRD, SEM-EDS, NH3-TPD, H2-TPR, N2 physisorption analysis, XPS, TEM, IR and TG-DSC. The activity of the catalyst was evaluated by a fixed-bed continuous reactor. The results exhibited that refluxing with ammonia water in the catalyst preparation process can regulate the particle size and dispersion of bimetallic phase, and further enhance the interaction between active metal phase and carrier. Moreover, the Ni-Co/SiO2 bimetallic catalyst can significantly improve the activity and of CH4-CO2 reforming reaction and provide high stability and carbon deposition resistance performance. The active metal phase Ni and Co with the molar ratio of 4:1 by ammonia reflux impregnation had the better reaction performance than catalysts prepared by equal volume impregnation method, with the highest conversion of CH4 (86.22%), CO2 (87.93%) and the least carbon deposition (0.88%). The improvement of the reactivity should be due to the synergistic effect of Ni and Co of the catalyst. © 2022 Elsevier Ltd
Number of references: 47
Main heading: Carbon dioxide
Controlled terms: Silicon - Particle size - Ammonia - Deposition - Impregnation - Sintering - Particle size analysis - Carbon - Catalyst activity - Cobalt - Molar ratio - Nickel - Binary alloys
Uncontrolled terms: Ammonia reflux impregnation method - Anti-sintering - Bimetallic catalysts - Carbon distribution - CH 4 - CH4-CO2 reforming - Impregnation methods - Ni-co bimetallic catalyst - Reaction performance -]+ catalyst
Classification code: 548.1 Nickel - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 801.4 Physical Chemistry - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Percentage 8.622E+01%, Percentage 8.793E+01%, Percentage 8.80E-01%
DOI: 10.1016/j.fuel.2022.123337
Funding Details: Number: 2021JLYB006, Acronym: -, Sponsor: -; Number: 2020-KF-32, Acronym: -, Sponsor: State Key Laboratory of High-efficiency Utilization of Coal and Green Chemical Engineering, Ningxia University; Number: LY21B060001, Acronym: ZJNSF, Sponsor: Natural Science Foundation of Zhejiang Province;
Funding text: This work was supported by Foundation of State Key Laboratory of High-efficiency Utilization of Coal, Green Chemical Engineering (Grant No. 2020-KF-32), the Zhejiang Province Natural Science Foundation (Grant No. LY21B060001) and the Science Foundation Project of Zhejiang University of Science and Technology(Grant No. 2021JLYB006).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

101. GLOBAL OPTIMIZATION WORKFLOW FOR OFFSHORE DRILLING RATE OF PENETRATION WITH DYNAMIC DRILLING LOG DATA

Accession number: 20224413042521
Authors: Cao, Jie (1); Ren, Hui (2); Sui, Dan (1)
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Source title: Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE
Abbreviated source title: Proc Int Conf Offshore Mech Arct Eng - OMAE
Volume: 10
Volume title: Petroleum Technology
Part number: 11 of 11
Issue title: Proceedings of ASME 2022 41st International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2022
Issue date: 2022
Publication year: 2022
Report number: OMAE2022-79747
Article number: V010T11A013
Language: English
CODEN: PIOSEB
ISBN-13: 9780791885956
Document type: Conference article (CA)
Conference name: ASME 2022 41st International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2022
Conference date: June 5, 2022 - June 10, 2022
Conference location: Hamburg, Germany
Conference code: 183473
Sponsor: Ocean, Offshore and Arctic Engineering Division
Publisher: American Society of Mechanical Engineers (ASME)
Abstract: The prediction and optimization of drilling rate of penetration (ROP) are among the most effective approaches in improving drilling efficiency. To achieve that, it calls for a well-established prediction model and a well-defined optimization methodology. With the advancement in large dataset acquisition and computational efficient machine learning methods, data-driven ROP prediction has superiority over classical physical models. Furthermore, when the ROP prediction model is trained and validated, it can be used to optimize the controllable parameters, preferably globally, given objective functions and proper constraints. The global optimization of drilling ROP is desirable in the design phase, such that the controllable parameters can be optimized for the whole planned well depth. This provides an optimum plan pushing the limit of drilling efficiency and provides valuable controlling strategies that guide the drilling operations. The main object of this research is to investigate the global optimization workflow for ROP using prediction models based on machine learning methods. We first present an automated data processing method, dealing with and taking advantage of the variety and a vast amount of the drilling dataset. Then, the deep neural network (DNN) model for ROP predictions is validated and tested. In the trained predictive model, there are three controllable parameters, weight on bit (WOB), drilling string revolution speed (RPM), and drilling fluid flow rates (Q). Next, we choose the genetic algorithm (GA) to search the global optimal parameter combination in the control parameters space. The optimization workflow can be applied for the whole well depth, various segments of depth intervals, and different formation layers, resulting in a combination of controllable parameters for the entire well, for every section of given depth intervals, and for each formation layer, respectively. In summary, the global optimization workflow incorporates end-to-end data processing and promotes improved drilling efficiency. The global optimized results push the limit of drilling efficiency and provide valuable post-drilling analysis and offset drilling design recommendations. However, the extreme optimum results may not be reached in field practice, as more constraints such as formation information need to be applied to make the operation realistic. Copyright © 2022 by ASME.
Number of references: 29
Main heading: Global optimization
Controlled terms: Data handling - Deep neural networks - Efficiency - Forecasting - Genetic algorithms - Infill drilling - Large dataset - Learning systems - Offshore oil well production
Uncontrolled terms: Controllable parameters - Drilling efficiency - Drilling rates - Global optimisation - Machine learning methods - Optimisations - Prediction modelling - Rate of penetration - Well depth - Work-flows
Classification code: 461.4 Ergonomics and Human Factors Engineering - 511.1 Oil Field Production Operations - 723.2 Data Processing and Image Processing - 913.1 Production Engineering - 921.5 Optimization Techniques

DOI: 10.1115/OMAE2022-79747
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

102. A corrosion-resistance waterborne polyacrylate coatings based on novel phosphate esters polymeric surfactant

Accession number: 20220811671921
Authors: Ma, Guo-Yan (1); Wang, Cheng-Jun (1); Du, Chun-Bao (1); Li, Xi (1); Wang, Xiao-Rong (2)
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Source title: Journal of Applied Polymer Science
Abbreviated source title: J. Appl. Polym. Sci.
Volume: 139
Issue: 22
Issue date: June 10, 2022
Publication year: 2022
Article number: 52267
Language: English
ISSN: 00218995
E-ISSN: 10974628
CODEN: JAPNAB
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Novel polymeric surfactant (MBSP) is obtained with phosphate esters monomer (PEGMAP) as the functional monomer in the presence of other acrylic monomers. The synthesized MBSP is further used as emulsifier for preparing the corrosion-resistance polyacrylate coatings (PAMBSP). Attenuated total reflection Fourier transform infrared (ATR-FTIR) and nuclear magnetic resonance results show that phosphate esters functional monomer was introduced into the MBSP molecular chains. The surface tension measurements illustrated that with the PEGMAP content 1%, the lowest surface tension 44.45 mN/m and the equilibrium concentration critical micellar concentration (CMC) 1.02 g/L of MBSP are obtained. The stability analysis of the PAMBSP emulsions demonstrates that the Turbiscan Stability Index (TSI) value decreased from 0.64 to 0.32 with the PEGMAP content increased from 1% to 3%. The electrochemical analysis displays that with PEGMAP content 3%, the biggest corrosion potential -0.02 V, smallest etching current density 2.19 × 10-9 A•cm2 and biggest impedance modulus 1.46 × 107 #·cm2 was obtained. © 2022 Wiley Periodicals LLC.
Number of references: 23
Main heading: Fourier transform infrared spectroscopy
Controlled terms: Emulsification - Etching - Plastic coatings - Corrosion resistance - Surface active agents - Esters - Corrosion resistant coatings - Electrochemistry
Uncontrolled terms: Attenuated total reflection fourier transform infrared - Equilibrium concentration - Ester monomers - Functional monomer - Molecular chains - Phosphate esters - Polyacrylate coatings - Polymeric surfactant - Surface tension measurements - Synthesised
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 801 Chemistry - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 813.2 Coating Materials - 817.2 Polymer Applications
Numerical data indexing: Electric current 2.19E-09A, Electrical resistivity 7.00E-02Ohm.m, Mass density 1.02E +00kg/m3, Percentage 1.00E00%, Percentage 1.00E00% to 3.00E+00%, Percentage 3.00E+00%, Surface tension 4.445E-02N/m, Voltage 2.00E-02V
DOI: 10.1002/app.52267
Funding Details: Number: 2020JQ#765, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 19JK0926, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This project was supported by the Scientific Research Program Funded by Shaanxi Provincial Education Department (contract grant number: 19JK0926), and the authors would also like to thank the Natural Science Basic Research Plan in Shaanxi Province of China (contract grant number: 2020JQ765) for financial support.Natural Science Basic Research Plan in Shaanxi Province of China, Grant/Award Number: 2020JQ765; Scientific Research Program Funded by Shaanxi Provincial Education Department, Grant/Award Number: 19JK0926 Funding information

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

103. Mechanism of organosilicate polymer as high-temperature resistant inhibitor in water-based drilling fluids

Accession number: 20220711617954
Authors: Zhang, Fan (1); Sun, Jinsheng (2, 3); Li, Qi (1); Lv, Kaihe (2); Wang, Jintang (2); Wang, Zhongyi (2)
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Corresponding author: Zhang, Fan(zhangfan51@xsyu.edu.cn)
Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
Volume: 641
Issue date: May 20, 2022
Publication year: 2022
Article number: 128489
Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: To meet the technical requirements of high-temperature drilling engineering, a highly inhibitive, high-temperature-resistant shale inhibitor for water-based drilling fluids (WBDFs) is crucial. This paper reports a new type of small molecule organosilicate polymer (ADMOS) was synthesized through emulsion polymerization. Its inhibitive properties were evaluated using the linear swell test and cutting dispersion test, The results were compared to those for other conventional inhibitors. The results show that ADMOS forms a hydrophobic polymer membrane through chemical and physical synergistic adsorption, which effectively increases the inhibition of clay hydration expansion and dispersion. Its performance is better than that of other common inhibitors. The chemical adsorption of Si-O-Si bonds between ADMOS and clay particles was confirmed for the first time through the 29Si NMR experiment. Further, the introduction of siloxane groups in the ADMOS molecular chain effectively strengthens the adsorption stability of polymer inhibitors in high-temperature environments (150 °C) and has potential application in high-temperature deep wells. © 2022 Elsevier B.V.
Number of references: 41
Main heading: Nuclear magnetic resonance spectroscopy
Controlled terms: Adsorption - Synthesis (chemical) - Dispersions - High temperature applications - Drilling fluids - Silicon compounds - Emulsification - Emulsion polymerization - Silicon - Shale
Uncontrolled terms: Film-forming - High temperature resistance - High-temperature resistance - High-temperature resistant - Highest temperature - Organosilicate polymer - Organosilicates - Shale inhibitors - Technical requirement - Water based drilling fluids
Classification code: 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 802.2 Chemical Reactions - 802.3 Chemical Operations - 815.2 Polymerization - 951 Materials Science
Numerical data indexing: Temperature 4.23E+02K
DOI: 10.1016/j.colsurfa.2022.128489
Funding Details: Number: 2020ZLYS07, Acronym: -, Sponsor: Key Technology Research and Development Program of Shandong; Number: U1762212, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (U1762212), the Key Technology Research and Development Program of Shandong , China (2020ZLYS07).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

104. Enhanced aquathermolysis of heavy oil catalysed by bentonite supported Fe(III) complex in the present of ethanol

Accession number: 20215111366771
Authors: Ma, Liwa (1); Zhang, Shu (1, 2); Zhang, Xiaolong (1); Dong, Sanbao (1); Yu, Tao (1, 2); Slaný, Michal (3, 4); Chen, Gang (1, 5)
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Corresponding authors: Chen, Gang(gangchen@xsyu.edu.cn); Slaný, Michal(michal.slany@savba.sk)
Source title: Journal of Chemical Technology and Biotechnology
Abbreviated source title: J. Chem. Technol. Biotechnol.
Volume: 97
Issue: 5
Issue date: May 2022
Publication year: 2022
Pages: 1128-1137
Language: English
ISSN: 02682575
E-ISSN: 10974660
CODEN: JCTBDC
Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: BACKGROUND: Previous research on the aquathermolysis of heavy oil has ignored the relationship between exogenous catalysts and in-situ inorganic minerals when the reaction temperature is high. RESULTS: A series of bentonite-supported transition metal complexes was synthesized and used in the aquathermolysis of heavy oil; among them, B@Fe(III)L was the most effective one. Under optimal conditions, 0.5% catalyst and 10% ethanol reacted at 250 ° for 4 h can reduce the viscosity of heavy oil by 84.5%. elemental analysis (EL), thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), group composition, and analysis show that the catalyst enhances the destruction process of resin and asphaltene, promotes the more complete cracking reaction of most macromolecular components, and increases the proportion of light fraction of heavy oil. Gas chromatography–mass spectrometry (GC–MS) analysis also indicated that B@Fe(III)L can help to decrease the polar substances in heavy oil and reduce the aromaticity of polar substances. CONCLUSION: The B@Fe(III)L prepared can enhance the destruction process of resin and asphaltene, promote the more complete cracking reaction of most macromolecular components, and increase the proportion of light fraction of heavy oil, thereby reducing the viscosity of heavy oil. Therefore, B@Fe(III)L can achieve efficient in-situ viscosity reduction, and this work promotes related research and applications in this field. © 2021 Society of Chemical Industry (SCI). © 2021 Society of Chemical Industry (SCI).
Number of references: 33
Main heading: Crude oil
Controlled terms: Synthesis (chemical) - Viscosity - Iron compounds - Asphaltenes - Metal complexes - Transition metals - Metal analysis - Resins - Thermogravimetric analysis - Catalysts - Ethanol - Differential scanning calorimetry - Gas chromatography - Heavy oil production - Mass spectrometry
Uncontrolled terms: Aquathermolysis - Catalytic aquathermolyse - Cracking reactions - Heavy oil - Light fraction - Polar substances - Supported metal complex - Supported metals - Viscosity reduction -]+ catalyst
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 513 Petroleum Refining - 531 Metallurgy and Metallography - 631.1 Fluid Flow, General - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 944.6 Temperature Measurements
Numerical data indexing: Percentage 1.00E+01%, Percentage 5.00E-01%, Percentage 8.45E+01%, Time 1.44E+04s
DOI: 10.1002/jctb.6997
Funding Details: Number: YJSYZX20SKF0008, Acronym: -, Sponsor: -; Number: PPC2019001, Acronym: -, Sponsor: -; Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: The work was financially supported by the National Natural Science Foundation of China (51974252), the Open Fund of Shaanxi Key Laboratory of Carbon Dioxide Storage and Enhanced Oil Recovery (YJSYZX20SKF0008), the Open Project of the State Key Laboratory for the Control and Treatment of Petroleum and Petrochemical Pollutants (PPC2019001), and the Youth Innovation Team of Shaanxi University. We would also like to thank the work of Modern Analysis and Testing Center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex

105. Research on oil exploration seismic Rayleigh wave imaging based on multi-channel analysis of surface waves and genetic-damped least squares joint inversion

Accession number: 20222112142398
Authors: Li, Xinxin (1, 3, 4); Li, Qingchun (2); Shen, Hongyan (1); Yang, Feilong (1); Zhang, Xueqiang (5)
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Source title: Journal of Applied Geophysics
Abbreviated source title: J. Appl. Geophys.
Volume: 202
Issue date: July 2022
Publication year: 2022
Article number: 104670
Language: English
ISSN: 09269851
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Rayleigh waves in oil exploration seismic records usually have strong energy and are considered as noise, but Rayleigh waves also carry information about subsurface. In this paper, we process Rayleigh waves from a set of oil seismic data to detect underground structures of shear-wave velocity (vs) using multi-channel analysis of surface waves (MASW). Fundamental mode and higher order mode dispersion curves of the Rayleigh wave were automatically extracted by a modified phase shift method. We then use the genetic and damped least squares (DLS) joint inversion algorithm to inverse the dispersion curves and obtain a one-dimensional (1D) vs structure under each shot gather. Finally, all 1D vs structures were combined to create a 3.2 km long two-dimensional (2D) section, revealing a stratum structure down to 80 m depth. The results show that MASW technology successfully improves the use of oil seismic data, the automatic dispersion extraction method based on modified phase shift improves the efficiency of data processing, and the joint inversion algorithm reduces the dependence of the Rayleigh wave dispersion inversion on initial model. © 2022 Elsevier B.V.
Number of references: 37
Main heading: Rayleigh waves
Controlled terms: Dispersion (waves) - Seismic waves - Underground structures - Wave propagation - Shear flow - Data handling - Seismic response - Shear waves - Geophysical prospecting - Inverse problems
Uncontrolled terms: Damped least squares - Dispersion curves - Energy - Inversion algorithm - Joint inversion - Modified phase shift - Multi-channel analysis of surface waves - Seismic records - Shear wave velocity - Wave imaging
Classification code: 408.1 Structural Design, General - 481.4 Geophysical Prospecting - 484 Seismology - 484.2 Secondary Earthquake Effects - 631.1 Fluid Flow, General - 723.2 Data Processing and Image Processing - 931.1 Mechanics
Numerical data indexing: Size 3.20E+03m, Size 8.00E+01m
DOI: 10.1016/j.jappgeo.2022.104670
Funding Details: Number: 33550006-20-ZC0699-0009, Acronym: -, Sponsor: -; Number: 41874150,42004110,42074164, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 300102261502, Acronym: CHD, Sponsor: Chang'an University; Number: -, Acronym: USTC, Sponsor: University of Science and Technology of China; Number: 2021YFA0716902, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2021JQ-589, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors thank Dr. Lei Yuhang from the University of Science and Technology of China for providing the genetic-DLS inversion algorithm code. This research is supported by the Fundamental Research Funds for the Central Universities, CHD (No. 300102261502), Program of Natural Science Basic Research Plan in Shaanxi Province of China (No. 2021JQ-589), Open Fund of SINOPEC Key Laboratory of Geophysics (No. 33550006-20-ZC0699-0009), National Key R&D Program of China (No. 2021YFA0716902) and the National Natural Science Foundation of China (Nos. 42074164, 42004110, 41874150).The authors thank Dr. Lei Yuhang from the University of Science

and Technology of China for providing the genetic-DLS inversion algorithm code. This research is supported by the Fundamental Research Funds for the Central Universities, CHD (No. 300102261502), Program of Natural Science Basic Research Plan in Shaanxi Province of China (No. 2021JQ-589), Open Fund of SINOPEC Key Laboratory of Geophysics (No. 33550006-20-ZC0699-0009), National Key R&D Program of China (No. 2021YFA0716902) and the National Natural Science Foundation of China (Nos. 42074164 , 42004110 , 41874150).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

106. Accelerated Inversion of Short Offset Transient em Data Using Supervised Descent Method

Accession number: 20224212967136
Authors: Rao, Liting (1, 2); Xue, Guoqiang (2); Wu, Xin (2); Dang, Bo (1); Dang, Ruirong (1)
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Source title: 2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, AP-S/URSI 2022 - Proceedings
Abbreviated source title: IEEE Int. Symp. Antennas Propag. USNC-URSI Radio Sci. Meet., AP-S/URSI - Proc.
Part number: 1 of 1
Issue title: 2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, AP-S/URSI 2022 - Proceedings
Issue date: 2022
Publication year: 2022
Pages: 838-839
Language: English
ISBN-13: 9781665496582
Document type: Conference article (CA)
Conference name: 2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, AP-S/URSI 2022
Conference date: July 10, 2022 - July 15, 2022
Conference location: Denver, CO, United states
Conference code: 182906
Sponsor: IEEE Antennas and Propagation Society; The Institute of Electrical and Electronics Engineers
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Traditional gradient descent inversion for the short offset transient electromagnetic method (SOTEM) is inefficient, since the computation of the forward modeling and Jacobian matrix is more complex and time consuming than the conventional TEM with the loop source. In this paper, the application of the supervised descent method (SDM) for accelerating the SOTEM inversion is studied. During an offline training stage, the average descent direction can be learned by a set of training models. In an online predicting stage, the inversion process is accelerated by directly using the learned descent directions instead of computing the Jacobian matrix. Numerical examples verify the feasibility and efficiency of SOTEM inversion with SDM. © 2022 IEEE.
Number of references: 5
Main heading: Jacobian matrices
Controlled terms: Gradient methods - Transient analysis
Uncontrolled terms: Accelerated inversion - Average descent direction - Descent directions - Descent method - Gradient-descent - Layered earths - Short offset transient electromagnetic - Supervised descent method - Transient electromagnetic methods - Transient electromagnetics
Classification code: 921.1 Algebra - 921.6 Numerical Methods
DOI: 10.1109/AP-S/USNC-URSI47032.2022.9886873
Funding Details: Number: 42004064, Acronym: -, Sponsor: National Natural Science Foundation of China; Number: 42074121, Acronym: -, Sponsor: National Natural Science Foundation of China; Number: 51974250, Acronym: -, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (42074121, 42004064, 51974250).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

107. Application of fracture unsupervised pattern recognition technology in y gas field

Accession number: 20221311850646
Authors: Yin, Ning (1, 2, 3); Li, Ai-Rong (1, 2); Liu, Yong-Lei (3); Wang, Qing (1, 2, 4); Yang, Xiao-Chuan (3); Zhu, Jun (3); Ren, Jiawei (3); Zhang, Yongshou (3)
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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12160
Part number: 1 of 1
Issue title: International Conference on Computational Modeling, Simulation, and Data Analysis, CMSDA 2021
Issue date: 2022
Publication year: 2022
Article number: 1216010
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510651968
Document type: Conference article (CA)
Conference name: 2021 International Conference on Computational Modeling, Simulation, and Data Analysis, CMSDA 2021
Conference date: December 3, 2021 - December 5, 2021
Conference location: Sanya, China
Conference code: 177774
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: Accurate characterisation of fracture detail is fundamental to the fine description of a reservoir's structure and the deeper understanding of the reservoir. As oil and gas reservoirs gradually enter the middle and late stages of development, there is an increasing demand for fine identification of small fractures. However, due to the influence of burial depth and surface conditions, the current seismic data is more difficult to identify small fractures in the middle and late stages of development, and the identification accuracy is low. Combined with current methods of artificial intelligence big data analysis, this paper proposes an unsupervised mode fracture identification technique under superiority frequency conditions. The frequency that can reflect different scales of fractures is preferentially selected, on the basis of which a variety of different types of geometric fracture attributes are extracted, and then unsupervised pattern recognition algorithms are applied to allow the computer to automatically set and classify certain fractures with common characteristics by learning to compare, and to portray the spreading characteristics of single-scale and full-scale fractures, so as to improve the lateral discrimination ability of fractures and effectively enhance fracture recognition Through the application in the Y area, it has achieved fine fracture mapping within the gas reservoir, saving the interpreters' effort and time in analysing data, and obtaining ideal fracture pattern results, deepening the understanding of oil and gas reservoirs, and effectively supporting the evaluation of oil and gas reservoir development potential and later well deployment. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.
Number of references: 11
Main heading: Fracture
Controlled terms: Gas industry - Wavelet transforms - Gases - Petroleum reservoir engineering - Pattern recognition - Petroleum reservoirs - Petroleum prospecting - Seismology
Uncontrolled terms: 'current - Fault - Gas fields - Late stage - Oil and gas reservoir - Pattern recognition technologies - Superiority frequency - Unsupervised pattern recognition - Unsupervised patterns - Wavelets transform
Classification code: 484.1 Earthquake Measurements and Analysis - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels - 921.3 Mathematical Transformations - 951 Materials Science
DOI: 10.1117/12.2627623
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

108. Development of Hydraulic Flow Control Valve for Intelligent Gas Well

Accession number: 20224413023761
Authors: Wang, Jinlong (1); Sun, Jiewen (2); Xue, Xianbo (3); Qu, Yue (3); Bai, Ruiting (4); Zhang, Bing (5); Wang, Yingru (6)
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Source title: ACM International Conference Proceeding Series
Abbreviated source title: ACM Int. Conf. Proc. Ser.
Part number: 1 of 1
Issue title: Proceedings of 2022 2nd International Conference on Control and Intelligent Robotics, ICCIR 2022
Issue date: June 24, 2022
Publication year: 2022
Pages: 468-478
Language: English
ISBN-13: 9781450397179
Document type: Conference article (CA)
Conference name: 2nd International Conference on Control and Intelligent Robotics, ICCIR 2022
Conference date: June 24, 2022 - June 26, 2022
Conference location: Virtual, Online, China
Conference code: 183400
Publisher: Association for Computing Machinery
Abstract: Intelligent gas wells are an important means to control water cut, gas production and efficient development for gas reservoirs with bottom water. The development of hydraulic flow control valve is the key for the core completion tool of intelligent gas wells. Compared with the hydraulic flow control valve of intelligent completion for oil and water wells, the tightness requirements between the flow trim and the sliding sleeve of the hydraulic flow control valve in intelligent gas well are higher, and the sliding sleeve positioning requires more precise. The development of hydraulic flow control valve for intelligent gas wells in this paper adopts adjustable locking mechanism that can realize accurately locate the position of the sliding sleeve by setting different numbers of springs and adjusting the elastic force of the springs to adjust the hydraulic unlocking force. The dual sealing structure of metal seal and O-ring seal is adopted between the flow trim and the sliding sleeve to solve the gas tightness of the tool. The combination of laboratory experiment and fluid simulation analysis was used to first time confirm the shape of the valve hole suitable for hydraulic flow control valve for gas wells. Through the self-developed intelligent completion simulation system experiment, it can be seen that the pressure equalization and production control effect are good in the double-segment for water control and gas production process, and the gas production of a single well is increased by 17.8%, which can be combined with the downhole hydraulic reversing control system to form a low-cost intelligent gas well system to use in gas wells above 3000m. The development of hydraulic flow control valve has filled the gaps in the research of Chinese intelligent gas wells, and it has great significance in the theoretical research and practical application. © 2022 ACM.
Number of references: 5
Main heading: Production control
Controlled terms: Flow control - Gases - Natural gas well production - Natural gas wells - Safety valves
Uncontrolled terms: Flow control valves - Flow trim - Gas productions - Gas reservoir - Gas well - Hydraulic flow control - Intelligent completion - Reservoir with bottom waters - Sliding sleeves - Water cuts
Classification code: 512.2.1 Natural Gas Fields - 619.1.1 Pipe Accessories - 631.1 Fluid Flow, General - 731.3 Specific Variables Control - 913.2 Production Control - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 1.78E+01%, Size 3.00E+03m
DOI: 10.1145/3548608.3559244
Funding Details: Number: -, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This work was financially supported by "Thirteenth Five-Year" National Science and Technology Major Special Project of China (No.2017ZX05030-005-005).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

109. Application Research of Petroleum Basic Data Mining System Based on Intelligent Computing and Decision Tree Algorithm (*Open Access*)

Accession number: 20223312565914
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Source title: Wireless Communications and Mobile Computing
Abbreviated source title: Wireless Commun. Mobile Comput.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 1326325
Language: English
ISSN: 15308669
E-ISSN: 15308677
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Recent improvements in data mining technologies, besides the IoT, enable the implementation of a strategy for boosting oil output from oil wells. As a regularly employed improved oil recovery technology, steam flood injection takes use of thermodynamic and gravitational capabilities to deploy and neutralize oil on-site to raise oil output. Instead of relying on conventional physics to model steam floods, this research proposes using a combination of a chimp optimization algorithm (ChOA) and a decision tree to better represent steam flood performance. We present a method for dealing with a particular type of petroleum time series data using ChOA in conjunction with decision trees and IoT. It is shown that the method is useful in predicting oil production in steam floods. Even more impressive is the 4.02 percent increase in oil output that may be achieved via the use of a new optimization system that offers the best possible steam allocation plan. Our objective has been to develop a cloud-based minimum viable product capable of data collection and storage and also training and deployment of a cloud ChOA model. Predictive maintenance, for example, might benefit from this workflow's ability to analyze time series data. © 2022 Xiaoyan Wang et al.
Number of references: 30
Main heading: Floods
Controlled terms: Data mining - Decision trees - Digital storage - Gasoline - Internet of things - Steam - Time series
Uncontrolled terms: Application research - Data mining system - Data mining technology - Decision-tree algorithm - Improved oil recovery - Oil output - Oil-recovery technology - Optimization algorithms - Performance - Time-series data
Classification code: 523 Liquid Fuels - 722.1 Data Storage, Equipment and Techniques - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
Numerical data indexing: Percentage 4.02E+00%
DOI: 10.1155/2022/1326325
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

110. Research on the method of locating and unwrapping the Center Point of Pipeline Inner Wall Image based on Linear projection

Accession number: 20223812766881
Authors: Zhang, Zhiwei (1); Zhang, Jiatian (1); Geng, Aoting (2); Zhao, Yao (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China; (2) School of Information Engineering of Nanchang University, Nanchang University, Nanchang, China

Corresponding author: Zhang, Jiatian(zhjt208@163.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 778-782
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to obtain a clear panoramic, unfold image of the inner wall in the video pipeline inspection system, the problems of camera center point offset and panoramic image distortion must be solved. In view of the above situation, this paper proposes an optimized unwrapping method for the undistorted estimation of string image in the case of camera eccentricity. In this method, the central coordinates of the pipe string image are located automatically by the Otsu algorithm and region marking method, and the three-dimensional pipe linear projection model is established by the proportion relationship before and after the pinhole camera imaging. Combined with the image region coordinate mapping, the panoramic image of the circular pipe is expanded without distortion. The experimental results show that the unfolded image has high definition and each pixel represents the same physical size, which provides a basis for the subjective evaluation of pipeline inner wall detection and lays a foundation for subsequent quantitative analysis. © 2022 IEEE.
Number of references: 5
Main heading: Pipelines
Controlled terms: Image fusion - Pinhole cameras - Three dimensional computer graphics
Uncontrolled terms: Center points - Central point - Central point location - Image unwrapping - Image-based - Inner walls - Linear projections - Panoramic images - Pipeline inspection system - Point location
Classification code: 619.1 Pipe, Piping and Pipelines - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 742.2 Photographic Equipment
DOI: 10.1109/ICMSP55950.2022.9858961
Funding Details: Number: YCS22113136, Acronym: -, Sponsor: -;
Funding text: This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University (YCS22113136)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

111. Excellent foaming properties of anionic-zwitterionic-Gemini cationic compound surfactants for gas well deliquification: Experimental and computational investigations

Accession number: 20223412608031
Authors: Han, Weiwei (1); Fan, Jiabao (1); Lv, Hongmiao (1); Yan, Yongli (1); Liu, Chenwei (2); Dong, Sanbao (1)
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Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
Volume: 653
Issue date: November 20, 2022
Publication year: 2022

Article number: 129944
Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Foams are often employed as an efficient and cleaner method to remove the liquid accumulated at the bottom of the gas wells and promote the production of natural gas. However, the extreme conditions (e.g., high content of condensate, high salinity, high temperature, etc.) in the wells would retard the performance of the foaming agents. Usually, mixtures of different foaming surfactants were used to achieve high performances under those extreme conditions. In this paper, foams stabilized by surfactant mixtures containing alpha-olefin sulfonate (AOS), synthesized green cocamidopropyl betaine (CAPB) and modified quaternary ammonium Gemini surfactant (CAGB) in a proportion of 0.2:0.2:0.2 (wt%/wt%/wt%) were developed to evaluate their industrial application potential in gas well deliquification. The ternary surfactant (CAPB-CAGB-AOS) foam exhibited higher stability than the other dual surfactant foams and singular surfactant foams. Additionally, the foaming efficiency (defined as the ratio of the mass of water converted into foam to the mass of the initial liquid) and liquid unloading efficiency of the CAPB-CAGB-AOS mixture could be improved with the presence of condensate. Salts and methanol had a weak influence on the performance of the CAPB-CAGB-AOS foam. The introduction of ethylenediamine tetraacetic acid disodium (EDTA2Na) can enhance the performance of the CAPB-CAGB-AOS foam against salts. The temperature (> 60 °C) favored the foaming efficiency and liquid unloading efficiency of the CAPB-CAGB-AOS mixture, which reached up to 100% and 88.5% at 90 °C. These results indicated that the synergy effect of these three surfactants on the stability and liquid unloading efficiency of the foam can be confirmed. Moreover, the synergy effect can also be confirmed by the surface tension test, the foam's microstructure observation and the computational studies on calculated binding energies and electrostatic interactions. © 2022 Elsevier B.V.
Number of references: 43
Main heading: Efficiency
Controlled terms: Anionic surfactants - Binding energy - Body fluids - Cationic surfactants - Gases - Liquids - Mixtures - Natural gas wells - Salts - Tensile testing - Unloading
Uncontrolled terms: Alpha olefin sulfonates - Cocamidopropyl betaine - Foaming efficiency - Foaming surfactant - Gas well - Gas well deliquification - Liquid unloading - Liquid unloading efficiency - Performance - Synergy effect
Classification code: 461.2 Biological Materials and Tissue Engineering - 512.2.1 Natural Gas Fields - 691.2 Materials Handling Methods - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 913.1 Production Engineering
DOI: 10.1016/j.colsurfa.2022.129944
Funding Details: Number: YCS22113096, Acronym: -, Sponsor: -; Number: 2018JM2011, Acronym: -, Sponsor: -; Number: 21JP094, Acronym: -, Sponsor: -; Number: 21773183,22005242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2020JQ-775, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was financially supported by the National Natural Science Foundation of China (No. 22005242 and No. 21773183), Natural Science Basic Research Program of Shaanxi (Program No. 2020JQ-775), Science & Technology Research Program of Shaanxi Province (No. 2018JM2011), the Youth Innovation Team of Shaanxi Universities (21JP094) and the Graduate Innovation Fund of Xi'an Shiyou University (YCS22113096). We thank the work of Modern Analysis and Testing Center of Xi’an Shiyou University.This work was financially supported by the National Natural Science Foundation of China (No.22005242 and No. 21773183), Natural Science Basic Research Program of Shaanxi (Program No.2020JQ-775), Science & Technology Research Program of Shaanxi Province (No. 2018JM2011), the Youth Innovation Team of Shaanxi Universities (21JP094) and the Graduate Innovation Fund of Xi'an Shiyou University (YCS22113096). We thank the work of Modern Analysis and Testing Center of Xi'an Shiyou University.The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Weiwei Han reports financial support was provided by National Natural Science Foundation of China. Yongli Yan reports financial support was provided by National Natural Science Foundation of China. Sanbao Dong reports financial support was provided by Natural Science Basic Research Program of Shaanxi Province. Yongli Yan reports financial support was provided by Science & Technology Research Program of Shaanxi Province. Sanbao Dong reports financial support was provided by Youth Innovation Team of Shaanxi Universities. Jiabao Fan reports financial support was provided by the Graduate Innovation Fund of Xi’an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

112. A Homomorphic Signcryption-Based Privacy Preserving Federated Learning Framework for IoTs (*Open Access*)

Accession number: 20224212897763
Authors: Du, Weidong (1, 2); Li, Min (1); Han, Yiliang (2); Wang, Xu An (2); Wei, Zhaoying (3)
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Source title: Security and Communication Networks
Abbreviated source title: Secur. Commun. Networks
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 8380239
Language: English
ISSN: 19390114
E-ISSN: 19390122
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Federated learning (FL) enables clients to train a machine learning model collaboratively by just aggregating their model parameters, which makes it very useful in empowering the IoTs with intelligence. To prevent privacy information leakage from parameters during aggregation, many FL frameworks use homomorphic encryption to protect client's parameters. However, a secure federated learning framework should not only protect privacy of the parameters but also guarantee integrity of the aggregated results. In this paper, we propose an efficient homomorphic signcryption framework that can encrypt and sign the parameters in one go. According to the additive homomorphic property of our framework, it allows aggregating the signcryptions of parameters securely. Thus, our framework can both verify the integrity of the aggregated results and protect the privacy of the parameters. Moreover, we employ the blinding technique to resist collusion attacks between internal curious clients and the server and leverage the Chinese Remainder Theorem to improve efficiency. Finally, we simulate our framework in FedML. Extensive experimental results on four benchmark datasets demonstrate that our framework can protect privacy without compromising model performance, and our framework is more efficient than similar frameworks. © 2022 Weidong Du et al.
Number of references: 30
Main heading: Benchmarking
Controlled terms: Learning systems - Network security - Privacy-preserving techniques
Uncontrolled terms: Additive homomorphic property - Ho-momorphic encryptions - Homomorphic-encryptions - Information leakage - Learning frameworks - Machine learning models - Modeling parameters - Privacy information - Privacy preserving - Signcryption
Classification code: 716 Telecommunication; Radar, Radio and Television - 718 Telephone Systems and Related Technologies; Line Communications - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing
DOI: 10.1155/2022/8380239
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

113. Two new 3D lanthanide-organic frameworks based on rod-shaped metal-carboxylate chain SBU: Synthesis, characterization and luminescent detection of Fe3+ and S2- in aqueous solution

Accession number: 20221912099753
Authors: Liu, Shuang (1, 2); Ding, Si-Rui (1); Niu, Yu-Hu (1); Sun, Pei-Jie (1); Qing, Hao-Dong (1); Li, Lei-Lei (1, 2); Wang, Wen-Zhen (1)
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Corresponding authors: Liu, Shuang(liush@xsyu.edu.cn); Li, Lei-Lei(lll@xsyu.edu.cn)
Source title: Journal of Solid State Chemistry
Abbreviated source title: J. Solid State Chem.
Volume: 312
Issue date: August 2022
Publication year: 2022
Article number: 123169
Language: English
ISSN: 00224596
E-ISSN: 1095726X
CODEN: JSSCBI
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: The study of metal-organic frameworks (MOFs) as luminescence sensors for the detection of polluting molecules and ions are of great importance to the health of all creatures in the world. In this research field, lanthanide ions, especially for Eu3+ and Tb3+, have intrinsic advantages based on their outstanding luminescent properties. To develop smart luminescence sensors towards heavy metal ions and acid anions, two new lanthanide(III)-based MOFs: {[Ln2(btpdc)3·DMF·2H2O]·2DMF·4H2O}n (Ln = Eu (1), Tb (2), H2btpdc = benzo[b]thiophene-2,6-dicarboxylic acid) were designed and synthesized under solvothermal condition based on a dicarboxylate ligand H2btpdc. Single crystal X-ray diffraction tests show the two complexes are isostructural with three dimensional (3D) porous framework structure. Notably, both of them exhibit good chemical stability in water. Under the excitation of ultra-violet light, 1 can exhibit strong Eu3+-based red light emission in both solid state and aqueous suspension while 2 doesn't show observable luminescence emission. The luminescence sensing experiments performed on 1 reveal that it can be employed as a smart "turn-off" luminescence sensor for the detection of Fe3+ or S2- in aqueous solution with high selectivity, low detection limit, good anti-interference ability and recyclability. The obtained quenching constant Ksv and detection limits are 2.316 × 104 M-1 and 0.26 μM, respectively, for Fe3+, and 1.38 × 104 M-1 and 1.05 μM, respectively, for S2-. © 2022
Number of references: 61
Main heading: Ligands
Controlled terms: Suspensions (fluids) - Light - Heavy metals - Carboxylation - Excited states - Metal-Organic Frameworks - Single crystals - Chemical stability - Crystal structure - Organic polymers - Rare earth elements - Chelation - Quenching - Luminescence - Metal ions
Uncontrolled terms: Dicarboxylate ligand - Dicarboxylates - Fe 3+ - Lanthanide-organic frameworks - Lanthanides complexes - Luminescence sensor - Luminescent sensing - Metalorganic frameworks (MOFs) - Rod-shaped metals - Water stability
Classification code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 547.2 Rare Earth Metals - 741.1 Light/Optics - 801 Chemistry - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
Numerical data indexing: Inductance 2.00E+00H, Inductance 4.00E+00H, Size 5.08E-02m
DOI: 10.1016/j.jssc.2022.123169
Funding Details: Number: S202010705099, Acronym: -, Sponsor: -; Number: 18JK0607, Acronym: -, Sponsor: -; Number: 21901200, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-489, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 095920201319,B12015, Acronym: XAST, Sponsor: Xi'an Science and Technology Association;
Funding text: This contribution was supported by the National Natural Science Foundation of China (No. 21901200), the Nature Science Foundation of Shaanxi Province, PR China (No.2019JQ-489), the Scientific Research Program of Shaanxi Provincial Education Department (18JK0607), the Young Talent fund of Xi'an Association for Science and Technology (095920201319), the 111 project (B12015) and the College Students Innovation Training Program of Shaanxi Province (S202010705099). We thank for the support from Modern analysis and testing center of Xi'an Shiyou University.This contribution was supported by the National Natural Science Foundation of China (No. 21901200), the Nature Science Foundation of Shaanxi Province, PR China (No. 2019JQ-489), the Scientific Research Program of Shaanxi Provincial Education Department (18JK0607), the Young Talent fund of Xi'an Association for Science and Technology (095920201319), the 111 project (B12015) and the College Students Innovation Training Program of Shaanxi Province (S202010705099). We thank for the support from Modern analysis and testing center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

114. A unique terbium-fluoride-oxalate metal–organic framework containing [Tb-F]n chains with bifunctions of luminescent detection of Cr(VI) and catalyzing CO2 conversion to cyclic carbonates

Accession number: 20221812067909
Authors: Li, Lei-Lei (1, 2); Fang, Yi-Fan (1); Liu, Shuang (1, 2); Chen, Shuang-Shuang (1); Wang, Wen-Zhen (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Nankai University, Tianjin; 300071, China
Corresponding author: Liu, Shuang(liush@xsyu.edu.cn)
Source title: Inorganica Chimica Acta
Abbreviated source title: Inorg. Chim. Acta
Volume: 538
Issue date: August 1, 2022
Publication year: 2022
Article number: 120979
Language: English
ISSN: 00201693
CODEN: ICHAA3
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The low cost, including material cost and energy cost, in large-scale production is an important metric for a metal–organic framework (MOF) towards real-world applications. This requires that the MOF can be efficiently synthesized in a high yield under mild enough conditions, while the employed organic ligands should be simple in structure and cheap. Motivated by such consideration, we established our work on a Tb-fluoride-oxalate framework [TbF(C2O4)(H2O)2]n2nH2O (1), which meets the requirements stated above. The synthesis of its single-crystal sample and its crystal structure are first reported here. X-ray diffraction test shows 1 has a 3D microporous framework structure constructed by 1D [Tb-F]n chains and C2O42- bridges. In fact, 1 is the unique complex that comprises [Tb-F]n chains. Though [Tb-F]n chain is of great interest in the field of molecular nanomagnets, direct-current and alternating-current magnetic susceptibilities reveal no slow magnetic relaxation behavior in 1. Luminescence investigation reveals that 1 exhibits strong green photoluminescence emission and can be used as a "turn-off" luminescent sensor for toxic Cr2O72- and CrO42- ions in aqueous solution with high selectivity and sensitivity. Besides, the strong Lewis acidity of Tb3+ also makes 1 a good heterogeneous catalyst for the cycloaddition reaction of CO2 with epoxides to cyclic carbonates. © 2022 Elsevier B.V.
Number of references: 67
Main heading: Carbon dioxide
Controlled terms: Oxalic acid - Carbonates - Chromium compounds - Magnetic susceptibility - Crystal structure - Cycloaddition - Fluorine compounds - Terbium compounds - Luminescence - Single crystals
Uncontrolled terms: Bifunctions - CO2 conversion - Cyclic carbonates - Energy cost - Large scale productions - Low-costs - Luminescent detection - Material cost - Metalorganic frameworks (MOFs) - Terbium complex
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 741.1 Light/Optics - 802.2 Chemical Reactions - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
Numerical data indexing: Inductance 2.00E-09H
DOI: 10.1016/j.ica.2022.120979
Funding Details: Number: 18JK0607, Acronym: -, Sponsor: -; Number: 21901200, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YCS20212101, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 095920201319,B12015, Acronym: XAST, Sponsor: Xi'an Science and Technology Association;
Funding text: This contribution was supported by the National Natural Science Foundation of China (No. 21901200), the Nature Science Foundation of Shaanxi Province, PR China (No.2019JQ-489), the Scientific Research Program of Shaanxi Provincial Education Department (18JK0607), the Young Talent fund of Xi'an Association for Science and Technology (095920201319), the 111 project (B12015) and the Postgraduate Innovation and Practice Training Program of Xi’an Shiyou University (YCS20212101). We thank for the support from Modern analysis and testing center of Xi’an Shiyou University.This contribution was supported by the National Natural Science Foundation of China (No. 21901200), the Nature Science Foundation of Shaanxi Province, PR China (No.2019JQ-489), the Scientific Research Program of Shaanxi Provincial Education Department (18JK0607), the Young Talent fund of Xi'an Association for Science and Technology (095920201319), the 111 project (B12015) and the Postgraduate Innovation and Practice

Training Program of Xi'an Shiyou University (YCS20212101). We thank for the support from Modern analysis and testing center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

115. Relativistic density functional investigation of the mono-lanthanum silicide clusters LaSin (n=1-6): Geometries, electronic properties and IR spectra

Accession number: 20225113276727
Authors: Yang, Aping (1); Tian, Shanshan (2); Guo, Ping (3)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Science, Xi'An University of Architecture and Technology, Xi'an; 710055, China; (3) Physics Department, Northwest University, Xi'an; 710069, China
Corresponding author: Yang, Aping(yangap@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2393
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012023
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Advanced Materials and Chemical Engineering, AMCE 2022
Conference date: September 16, 2022 - September 18, 2022
Conference location: Maoming, Virtual, China
Conference code: 184976
Publisher: Institute of Physics
Abstract: The mono-lanthanum silicide clusters LaSin (n=1-6) have been studied adopting the relativistic density functional calculation with generalized gradient approximation. Considering different spin configurations, we calculated and discussed the equilibrium geometries, charge populations, the HOMO-LUMO gaps, as well as infrared (IR) absorption spectra of LaSin (n=1-6) clusters. It is found that: the lowest-lying LaSin (n=1-6) clusters basically maintain a similar framework to the low-lying Sin+1 clusters, and the La atoms prefer the surface sites. The relative stabilities are investigated based on the calculation of fragmentation energies and, showing that LaSi2, LaSi4, and LaSi5 clusters have enhanced stabilities. Charge populations analysis shows that the charges transfer from La atom to Sin framework and the La atom acts as an electron donor. HOMO-LUMO gaps indicate that LaSi2 and LaSi5 clusters have higher chemical stabilities. IR absorption spectrum and vibrational mode analysis show that the highest frequency absorption peaks all correspond to the breathing mode of the silicon framework, and the characteristic infrared absorption peaks caused by La atom vibration, except for LaSi dimer, all appeared in the low-frequency region. © Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Atoms
Controlled terms: Absorption spectroscopy - Density functional theory - Dimers - Electronic properties - Infrared absorption - Lanthanum - Lanthanum compounds - Light absorption - Vibration analysis - Water absorption
Uncontrolled terms: Absorption peaks - Density functionals - Density-functional calculations - Equilibrium geometries - Generalized gradient approximations - HOMO-LUMO gaps - Infra-red absorption spectra - Infrared spectrum - Relativistics - Spin configurations
Classification code: 547.2 Rare Earth Metals - 711 Electromagnetic Waves - 741.1 Light/Optics - 802.3 Chemical Operations - 815.1.1 Organic Polymers - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1088/1742-6596/2393/1/012023
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

116. Fabrication of a YSZ electrolyte layer via co-pressing/co-sintering for tubular NiO-YSZ anode-supported SOFCs

Accession number: 20222412211484
Authors: Gao, Boyang (1); Liu, Zhongjun (1); Ji, Shuai (1); Ao, Qingbo (2)
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Corresponding author: Liu, Zhongjun(zjliu@xsyu.edu.cn)
Source title: Materials Letters
Abbreviated source title: Mater Lett
Volume: 323
Issue date: September 15, 2022
Publication year: 2022
Article number: 132547
Language: English
ISSN: 0167577X
E-ISSN: 18734979
CODEN: MLETDJ
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: A simple and effective method to fabricated semi-cells of tubular NiO-YSZ anode-supported electrolyte film is proposed. This method is the combination of centrifugal deposition technique, cold isostatic co-pressing and co-sintering. The X-ray diffraction patterns showed that the presence of NiO and YSZ, and YSZ grains of electrolyte film grow preferentially on (2 2 0), (3 1 1), (2 2 2), (4 0 0). The YSZ films are dense with the thickness of $_{21.4\sim27.3}$ μm. At 1400, the YSZ crystallite size in the electrolyte film is largest with the size of $_{\sim4.6}$ μm, which confirms the crystallite growth during co-sintering. The EDX mapping at the same location of EDS further reveals the presence of O, Ni, Y and Zr in the calcined powders. © 2022 Elsevier B.V.
Number of references: 6
Main heading: Deposition
Controlled terms: Anodes - Centrifugation - Crystallite size - Fabrication - Nickel oxide - Sintering - Solid oxide fuel cells (SOFC) - Thin films - Yttria stabilized zirconia
Uncontrolled terms: Centrifugal deposition - Co-sintering - Electrolyte films - Electrolyte layers - NiO/YSZ anodes - Particle - Pressung - Thin-films - Tubulars - YSZ electrolytes
Classification code: 702.2 Fuel Cells - 714.1 Electron Tubes - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 933.1 Crystalline Solids
Numerical data indexing: Size 2.73E-05m, Size 4.60E-06m
DOI: 10.1016/j.matlet.2022.132547
Funding Details: Number: YCS21212125, Acronym: -, Sponsor: -; Number: 2020PT-039, Acronym: -, Sponsor: -; Number: 2019QNKYCXTD12, Acronym: -, Sponsor: -; Number: 20JC028, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors gratefully acknowledge financial supports from the Local Service Special Project of the Education Department of Shaanxi Province (NO. 20JC028), the Young Innovation Team Project of Xi'an Shiyou University (NO. 2019QNKYCXTD12), the Innovation Ability Supporting Project of Shaanxi Province (NO. 2020PT-039) and the Graduate Students' Innovation and Practice Ability Training Project of Xi'an Shiyou University (YCS21212125).The authors gratefully acknowledge financial supports from the Local Service Special Project of the Education Department of Shaanxi Province (NO. 20JC028), the Young Innovation Team Project of Xi'an Shiyou University (NO. 2019QNKYCXTD12), the Innovation Ability Supporting Project of Shaanxi Province (NO. 2020PT-039) and the Graduate Students' Innovation and Practice Ability Training Project of Xi'an Shiyou University (YCS21212125).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

117. Gesture recognition algorithm combining ResNet and ShuffleNet

Accession number: 20222312197278
Authors: Xie, Zhengjiang (1); Lou, Li (1); Jia, Kunpeng (2); Jiao, Binbin (2)

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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12174
Part number: 1 of 1
Issue title: International Conference on Internet of Things and Machine Learning, IoTML 2021
Issue date: 2022
Publication year: 2022
Article number: 121741B
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510653252
Document type: Conference article (CA)
Conference name: 2021 International Conference on Internet of Things and Machine Learning, IoTML 2021
Conference date: December 17, 2021 - December 19, 2021
Conference location: Dalian, China
Conference code: 179365
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: Gesture is a form of non-verbal communication and has many applications, such as sign language communication between deaf and dumb people, robot control, human-computer interaction and medical applications. The commonly used acquisition equipment in gesture recognition is the visible light camera, but illumination has a great impact on the accuracy of the collected data classification processing. The whole project designed a complete end-to-end edge computing system design and deployment, the system can achieve from gesture image acquisition to gesture recognition. A dataset of 3600 thermal images was created, and each gesture had 1200 thermal images with only $4*4$ resolution. These images were upsampled by bilinear interpolation and fed into a new lightweight deep learning model combining deep residual learning with ShuffleNet V2 for gesture classification. The system achieved 98.63% accuracy on the test data set. Another advantage is that it is based on thermal imaging, so the accuracy is not affected by background lighting conditions. © SPIE.
Number of references: 22
Main heading: Deep learning
Controlled terms: Data handling - Gesture recognition - Human computer interaction - Human robot interaction - Infrared imaging - Medical applications - Statistical tests
Uncontrolled terms: Deep learning - Gesture recognition algorithm - Gestures recognition - Non-verbal communications - ShuffleNets - Sign language - The neural network - Thermal images - Thermal-imaging
Classification code: 461.4 Ergonomics and Human Factors Engineering - 723.2 Data Processing and Image Processing - 731.5 Robotics - 746 Imaging Techniques - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 9.863E+01%
DOI: 10.1117/12.2628655
Funding Details: Number: 2021GY-138, Acronym: -, Sponsor: -;
Funding text: This work was finally supported by Shaanxi Provincial Key RESEARCH and development program in 2021 (2021GY-138).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

118. Monitoring method for abrasive jet cutting depth of casing pipes

Accession number: 20223812766781
Authors: Wang, Haiyao (1); Wang, Ce (1); He, TingTing (2); Yun, Mengqi (1); Feng, Cuining (2)
Author affiliation: (1) Xi'an Shiyou University, Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an, China; (2) Cnooc (Tianjin) Pipeline Engineering Technology Co., Ltd, Tianjin, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP

Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 193-196
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the continuous exploitation of offshore oil and gas, the demand for replacement of damaged casing and recovery of abandoned casing is growing. Based on this demand, a monitoring method for abrasive jet cutting depth of casing pipe is proposed. According to the principle of abrasive jet cutting, the vibration signal produced by abrasive impacting casing is picked up by vibration sensor, and the data acquisition and output of vibration signal are carried out by NI-USB 6361. The upper computer operation display interface of the system is established by Labview, and the cutting state visualization interface is added. The experimental results show that the system can accurately judge the current cutting state and display it in real time at the main interface, which can realize the real-time monitoring of the cutting state of the abrasive jet casing and improve the efficiency of casing recovery in offshore abandoned oil wells. © 2022 IEEE.
Number of references: 11
Main heading: Data acquisition
Controlled terms: Drilling platforms - Interface states - Monitoring - Offshore oil well production - Offshore oil wells
Uncontrolled terms: Abrasive jet - Casing pipe - Cutting depth - Cutting pipe monitoring - Data acquisition cards - LabViEW - Monitoring methods - Offshore oil - Pipe monitoring - Vibration signal
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 674.2 Marine Drilling Rigs and Platforms - 723.2 Data Processing and Image Processing - 931 Classical Physics; Quantum Theory; Relativity - 932 High Energy Physics; Nuclear Physics; Plasma Physics
DOI: 10.1109/ICMSP55950.2022.9859089
Funding Details: Number: YCS22113121, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported by Postgraduate Innovation and Practice Ability Training Program of Xi'an Shiyou University, under Grant YCS22113121.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

119. Evaluation of tight waterflooding reservoirs with complex wettability by NMR data: A case study from Chang 6 and 8 members, Ordos Basin, NW China

Accession number: 20221311850870
Authors: Jiang, Zhihao (1, 2); Liu, Zhidi (1, 2); Zhao, Peiqiang (3); Chen, Zhen (4, 5); Mao, Zhiqiang (3)
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Corresponding authors: Liu, Zhidi; Zhao, Peiqiang
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 213
Issue date: June 2022

Publication year: 2022
Article number: 110436
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: After long-term water injection, many developed oilfields in the Ordos Basin, China, have entered a period of the high water-cut stage. In waterflooded layers, formation water is a mixture of injected water and primary formation water. The variation of formation water salinity will significantly affect the evaluation of reservoirs using resistivity logging curves while having little effect on the NMR response. It lays a foundation for identifying fluid type and evaluation of waterflooding grade by NMR logging. However, in waterflooding layers with mixed wettability, the NMR T2 responses are still complicated and unclear. In this paper, the tight sandstone samples with different wettability of Chang 6 and Chang 8 members of Triassic Yanchang Formation in the Ordos Basin are used to investigate the NMR experiments under three saturation states: water-saturated state, oil displacing to bound water state (abbreviated as oil flooding) and water flooding to the residual oil state (abbreviated as water flooding). Results show that the distributions of standard T2 spectra, without an external gradient magnetic field, of the water-saturated state in mix-wetted samples is very close to that of after oil flooding. Thus, the standard T2 spectra will be hard to distinguish the oil layer, water layer, and waterflooded layer of mix-wetted reservoirs. The diffusion coefficients of water and oil in pores differ, resulting in different shift T2 spectra results under gradient magnetic field. Therefore, the shift T2 spectra with the external gradient magnetic field and different echo time TEs were calculated and measured. When the echo time TE = 3.6 ms is adopted, the T2 signal of water-saturated tight rock samples will be nearly distributed less than 100 ms with magnetic field gradient G = 18 G/cm, rather the T2 signal greater than 100 ms is the oil signal. This characteristic makes the shift T2 spectra outstanding in the fluid identification of tight reservoirs with complex wettability. Finally, based on this experiment, a residual oil index based on the shift T2 spectrum is constructed to evaluate the flooded grades of tight waterflooding reservoirs. The evaluation results are consistent with the core description and oil test results in the study infilled wells. © 2022 Elsevier B.V.
Number of references: 42
Main heading: Wetting
Controlled terms: Sandstone - Floods - Petroleum reservoirs - Diffusion in liquids - Magnetic fields - Oil well flooding - Nuclear magnetic resonance - Reservoirs (water) - Nuclear magnetic resonance spectroscopy - Oil well logging
Uncontrolled terms: Complex wettability - Floodings - Formation water - Gradient magnetic field - Oil flooding - Ordos Basin - Shift T2 spectrum - Spectra's - Water-flooding reservoir - Water-saturated state
Classification code: 441.2 Reservoirs - 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 701.2 Magnetism: Basic Concepts and Phenomena
Numerical data indexing: Time 1.00E-01s, Time 3.60E-03s
DOI: 10.1016/j.petrol.2022.110436
Funding Details: Number: 2016ZX05050008, Acronym: -, Sponsor: -; Number: 2021MD703881, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2022JQ-233, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was sponsored by the China Postdoctoral Science Foundation (No. 2021MD703881), the Natural Science Foundation of Shaanxi Province (No. 2022JQ-233), and the Major National Oil & Gas Specific Project of China (No. 2016ZX05050008).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

120. Structural Strength Analysis of Tubing Load Measurement System for High Pressure and High Temperature Wells

Accession number: 20230113343915
Authors: Cheng, Jiarui (1, 2); Yan, Qiqi (1); Liu, Chao (2); Qiao, Fanfan (1); Wei, Wenlan (2)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2383
Part number: 1 of 1
Issue: 1

Issue date: 2022
Publication year: 2022
Article number: 012038
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 8th International Conference on Mechanical Engineering, Materials and Automation Technology, MMEAT 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Qingdao, China
Conference code: 185125
Publisher: Institute of Physics
Abstract: The tubing load measurement system is used to monitor the force and vibration of the tubing string in the process of perforation, fracturing and extraction and judge the safety of the tubing string during use based on the monitoring values, which is a key equipment for obtaining downhole information of the gas oil and gas development process. In this study, a load measurement system is designed for high-temperature and high-pressure tubular strings in wells, and the full-scale mesh modeling and finite element force calculation are performed to obtain stress distributions and safety factors. The results show that under the condition of axial force of 1000kN, internal pressure of 100MPa and composite loading state, the safety factors of the instrument are 2.0, 2.01 and 1.97 respectively, all of which meet the requirements of safe use. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Safety factor
Controlled terms: Loads (forces) - Tubing
Uncontrolled terms: Downholes - High pressure and high temperature - High temperature well - Key equipment - Loads measurements - Measurement system - Oil and gas - Strength analysis - Structural strength - Tubing string
Classification code: 408 Structural Design - 619.1 Pipe, Piping and Pipelines - 914.1 Accidents and Accident Prevention
Numerical data indexing: Force 1.00E+06N, Pressure 1.00E+08Pa
DOI: 10.1088/1742-6596/2383/1/012038
Funding Details: Number: 52105209,PLC 20210401, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation;
Funding text: This research was funded by National Natural Science Foundation of China (grant no. 52105209). It was also supported by Open Fund (PLC 20210401) of State Key Laboratory of Oil and Gas Reservoir Geology and ExploitationChengdu University of Technology.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

121. 3D virtual full-loop CFD simulation of industrial two-stage FCC reaction-regeneration system

Accession number: 20221712011498
Authors: Zhong, Hanbin (1); Chen, Jing (2); Gao, Fei (2); Zhang, Juntao (1); Zhu, Yuqin (1); Niu, Ben (1)
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Source title: International Journal of Chemical Reactor Engineering
Abbreviated source title: Int. J. Chem. Reactor Eng.
Volume: 20
Issue: 11
Issue date: November 1, 2022
Publication year: 2022
Pages: 1179-1191
Language: English
ISSN: 21945748
E-ISSN: 15426580

Document type: Journal article (JA)
Publisher: De Gruyter Open Ltd
Abstract: The 3D virtual full-loop CFD simulation method with two-fluid model (TFM) was developed to model an industrial two-stage FCC reaction-regeneration system. The virtual connections (mass, species, and energy) between riser reactors, disengager, stripper, and regenerator were realized by defining user-defined functions (UDFs) for boundary conditions according to the reality. Five correction factors were used to correct the reaction rates in the 14-lump FCC reaction kinetics, and two correction factors were used to correct the FCC reaction heat in the first and second riser reactors. As a result, the whole FCC reaction-regeneration system was successfully modeled in one single CFD case. A thorough and comprehensive view of the performance of reaction-regeneration system was obtained by the 3D virtual full-loop CFD simulation, which is helpful for the operating and optimization of FCC unit. The major predicted results were in a good agreement with the industrial data. The effects of operating conditions were also investigated by changing regenerated temperature, catalyst to oil (CTO) ratio, and process capacity. © 2022 Walter de Gruyter GmbH, Berlin/Boston.
Number of references: 47
Main heading: Computational fluid dynamics
Controlled terms: 3D modeling - Reaction rates - Two phase flow
Uncontrolled terms: CFD simulations - Correction factors - Energy - FCC - Full-loop - Reaction-regeneration system - Regeneration system - Riser reactor - Two-fluid modeling - Virtual connections
Classification code: 631.1 Fluid Flow, General - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 802.2 Chemical Reactions - 931.1 Mechanics
DOI: 10.1515/ijcre-2021-0249
Funding Details: Number: 2018D-5007-0402, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: 2020JQ-764, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: Financial supports from the Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2020JQ-764) and PetroChina Innovation Foundation (No. 2018D-5007-0402) were greatly appreciated.Research funding: This research is funded by Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2020JQ-764) and the PetroChina Innovation Foundation (No. 2018D-5007-0402).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

122. Working Condition Identification of Rod Pumping System Based on SGTCNN Convolutional Neural Network

Accession number: 20223212545487
Authors: Shao, Jun (1); Hou, Kai (2); Yan, Bin (3); Peng, Yong (1); Wu, Heng (1)
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Source title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Abbreviated source title: Int. Conf. Comput. Vis., Image Deep Learn. Int. Conf. Comput. Eng. Appl., CVIDL ICCEA
Part number: 1 of 1
Issue title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Issue date: 2022
Publication year: 2022
Pages: 213-216
Language: English
ISBN-13: 9781665459112
Document type: Conference article (CA)
Conference name: 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Conference date: May 20, 2022 - May 22, 2022
Conference location: Virtual, Changchun, China
Conference code: 181070
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: In order to improve the performance of the rod pumping system and reduce the inaccuracy of the manual extraction of the indicator diagram, a new identification method of working condition of the rod pumping system based on SGTCNN convolutional neural network is put forword. Through preprocessing of the original data of indicator diagram, the data set of indicator diagram of the rod pumping system is established. SGTCNN model is designed, and the training and recognition of the indicator data set is carried out by using this model. The recognition accuracy is 97.42%. Compared with LeNet5, AlexNet, Vgg16, GoogleNet and ResNetl8 models, SGTCNN model has the best performance in the condition identification of rod pumping system, and satisfy the practical application demand of oil production site, which is of great significance to realize the automatic production of oil fields. © 2022 IEEE.
Number of references: 8
Main heading: Convolutional neural networks
Controlled terms: Convolution - Oil fields - Pumping plants - Pumps - Reservoirs (water)
Uncontrolled terms: Condition identification - Convolutional neural network - Data set - Diagram of work - Identification method - Indicator diagram - Performance - Rod pumping systems - SGTCNN convolutional neural network - Working condition identification
Classification code: 441.2 Reservoirs - 446 Waterworks - 512.1.1 Oil Fields - 618.2 Pumps - 716.1 Information Theory and Signal Processing
Numerical data indexing: Percentage 9.742E+01%
DOI: 10.1109/CVIDLICCEA56201.2022.9824346
Funding Details: Number: 2021GY, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: ACKNOWLEDGMENT This work is supported by the Key R & D Program in Shaanxi Province "Research on Intelligent Diagnosis Technology of Oil Well Working Condition Based on Deep Learning of Indicator Diagram" (No. 2021GY?084).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

123. Aluminum–nitrogen co-doping improves the blue emission of ZnO films: A combined theoretical–experimental study

Accession number: 20221712041168
Authors: Ding, Jijun (1); Yan, Jiahui (1); Jin, Yanxin (1); Cao, Yulong (1); Chen, Haixia (1)
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Source title: International Journal of Quantum Chemistry
Abbreviated source title: Int J Quantum Chem
Volume: 122
Issue: 16
Issue date: August 15, 2022
Publication year: 2022
Article number: e26923
Language: English
ISSN: 00207608
E-ISSN: 1097461X
CODEN: IJQCB2
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: The investigation on visible emission of ZnO is necessary due its potential application in electrochemical communication, biosensor, and white light diodes, and so forth. Previous report indicates that the visible light of ZnO is related to the defect type and concentration. It can be regulated by various methods. However, quenching of light emission occurs if too many defects are introduced. In this work, combined with theoretical calculation about energy band structure, aluminum–nitrogen co-doped ZnO is conducive to form p-type semiconductor, but aluminum doped ZnO films tend to form a deep n-type semiconductors. Therefore, in the experiment, aluminum–nitrogen co-doped ZnO films are prepared using radio frequency magnetron sputtering. The substitution of oxygen using nitrogen impurity is expected to introduce more oxygen vacancies and interstitial zinc defects related to visible light emission. At the same time, annealing in vacuum is also a highly non-equilibrium processes with low oxygen and high zinc contents. Results indicate that combined with aluminum–nitrogen co-doping and an appropriate annealing temperature, the blue and blue-green emission of ZnO films can be greatly improved. © 2022 Wiley Periodicals LLC.

Number of references: 26
Main heading: Aluminum
Controlled terms: Magnetron sputtering - II-VI semiconductors - Oxide semiconductors - Oxygen vacancies - Semiconducting zinc compounds - Zinc oxide - Zinc - Light - Semiconductor doping - Band structure - Magnetic semiconductors - Metallic films - Nitrogen - Wide band gap semiconductors
Uncontrolled terms: Aluminum-nitrogen co-doped ZnO film - Blue emission enhancement - Blue-emission - Co-doped ZnO - Co-doping - Emission enhancement - Experimental study - Theoretical calculations - Visible emissions - ZnO films
Classification code: 541.1 Aluminum - 546.3 Zinc and Alloys - 708.4 Magnetic Materials - 712.1 Semiconducting Materials - 712.1.2 Compound Semiconducting Materials - 741.1 Light/Optics - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 933 Solid State Physics - 933.1 Crystalline Solids
DOI: 10.1002/qua.26923
Funding Details: Number: 11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019GY#170,S202010705027, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: Key Research and Development Projects of Shaanxi Province, Grant/Award Number: 2019GY170; National Innovation Training Program for University Students in 2020, Grant/Award Number: S202010705027; National Natural Science Foundation of China, Grant/Award Number: 11804273 Funding information
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

124. Joint Electronic and Hydraulic Control system for Separate Layer Water Injection

Accession number: 20223812766827
Authors: Xie, Yan (1); Ming, Kangquan (1); Liu, Changzan (1); Sheng, Leixiang (2); Yang, Ling (1); Dang, Bo (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 554-557
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problems of insufficient driving force and low accuracy in the traditional pure electric and pure liquid layered water injection control system, we present a joint electronic and hydraulic control system for separate water injection. Firstly, the circuits of the control, measurement and communication modules of the separate layer water injection system are designed. Then, the time-sharing and constant-pressure water injection for different oil layers is realized by employing the solenoid valves, where the pressure and the temperature of each layer are used to analyze the tightness of downhole instruments. Moreover, through the injection pressure experiment, a time-pressure curve is established, and information such as pressure, temperature, and current are displayed in real time. The experimental results show that the system can realize the control of downhole stratification under the condition of good sealing performance. © 2022 IEEE.
Number of references: 7
Main heading: Control systems

Controlled terms: Separation - Solenoid valves
Uncontrolled terms: Control communications - Control measurements - Downholes - Driving forces - Electromagnetic valves - Electronic control systems - Hydraulic control systems - Layered water injections - Pure liquids - Separate layer water injection
Classification code: 619 Pipes, Tanks and Accessories; Plant Engineering Generally - 731.1 Control Systems - 802.3 Chemical Operations
DOI: 10.1109/ICMSP55950.2022.9859025
Funding Details: Number: 51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation; Number: YCS22113097, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250 and in part by CNOOC Limited Scientific Research Project, under Grant YXKYZX082021.The Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University under Grant YCS22113097.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

125. Performance enhancement of gas sensing by modification of molybdenum selenide nanosheets with metal nanoparticles

Accession number: 20221211814853
Authors: Liu, Shuai (1, 2); Liu, Yinggang (1); Li, Hanxiao (1); Bai, Yu (2, 3); Xue, Jiale (1); Xu, Ruojun (1); Zhang, Min (2, 3); Chen, Guoxiang (1)
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Source title: Nanotechnology
Abbreviated source title: Nanotechnology
Volume: 33
Issue: 21
Issue date: May 21, 2022
Publication year: 2022
Article number: 215501
Language: English
ISSN: 09574484
E-ISSN: 13616528
CODEN: NNOTER
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: In this paper, nanostructured molybdenum selenide (MoSe2) with composited phases are synthesized by hydrothermal method, and the products are modified by metal anoparticles to improve the gas sensing performance. Microstructure characterization shows that few layered 1T/2H-MoSe2 nanosheets have been successfully prepared. Both the morphology and component of nanosheets could be tuned by the reaction parameters. It is shown the MoSe2-based nanomaterials have excellent selectivity to nitrogen dioxide (NO2) according to gas sensing properties measurement. The sensitivity of 1T/2H-MoSe2 nanosheets modified by Cu nanoparticles is 17.73 (50 ppm NO2) at the optimal operating temperature, which is the highest compared with other samples. The sensors also exhibit rapid response/recovery time and high stability. The sensing mechanism of MoSe2 nanosheets toward NO2 is investigated based on the first-principles calculation. The results suggest the modification by metal nanoparticles could significantly improve the adsorption energy and charge transfer between gas molecule and MoSe2. This work demonstrates a promising guidance for the design of new NO2 gas sensing materials and devices. © 2022 IOP Publishing Ltd.
Number of references: 54
Main heading: Nanosheets
Controlled terms: Nitrogen oxides - Gases - Chemical sensors - Gas detectors - Calculations - Chemical detection - Metal nanoparticles - Charge transfer - Morphology - Molybdenum compounds - Selenium compounds

Uncontrolled terms: Composited - First principle calculations - Gas sensing - Gas-sensors - Hydrothermal methods - Microstructure characterization - Nano-structured - Performance enhancements - Sensing performance - Synthesised
Classification code: 761 Nanotechnology - 801 Chemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics - 943.3 Special Purpose Instruments - 951 Materials Science
Numerical data indexing: Inductance 2.00E+00H, Magnetic flux density 1.00E00T
DOI: 10.1088/1361-6528/ac5446
Funding Details: Number: BX2020032, Acronym: -, Sponsor: -; Number: 12004301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: BK20190221, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province; Number: tywl2019-10, Acronym: SER, Sponsor: Shaanxi Key Laboratory of Surface Engineering and Remanufacturing;
Funding text: This work was jointly supported by National Natural Science Foundation of China (Grant No. 12004301), Natural Science Foundation of Jiangsu Province (Grant No. BK20190221), Jiangsu Province Foreign Expert Program (Grant No. BX2020032), the fund of the Shaanxi Key Laboratory of Surface Engineering and Remanufacturing (tywl2019-10).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

126. Design of downhole ultrasonic flow measurement based on CTMU technology

Accession number: 20223812766946
Authors: Li, Yan (1); Yang, Ling (1); Sheng, Leixiang (2); Dang, Bo (1); Yun, Mengqi (1)
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Corresponding author: Dang, Bo(bodang521@126.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 41-44
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The majority of existing downhole ultrasonic flow measurement devices rely on special integrated chips to measure and then calculate flow rate via a microcontroller. However, the complicated circuit design is the Achilles' heel of this scheme. The present study focuses on the complex circuit problem. Here, a dsPIC33EV is proposed as the master chip of the time difference ultrasonic flow measurement system, and then the time is precisely measured by the Charge Time Measurement Unit (CTMU) module inside the master chip. We further reveal the structure and principle of CTMU, system design flow, and ultrasonic receiving circuit. The scheme is believed to be a design that simplifies the hardware circuit of the downhole ultrasonic flow measurement system and reduces the PCB space. In addition, the miniaturized downhole flow measurement circuit also makes downhole flow measurement more convenient. © 2022 IEEE.
Number of references: 9
Main heading: Flow measurement
Controlled terms: Flow rate - Integrated circuit manufacture - Printed circuit boards - Printed circuit design

Uncontrolled terms: Charge time measurement unit - Difference method - Downholes - DsPIC33EV - Measurement system - Measurement-based - Time difference method - Time measurement units - Time-differences - Ultrasonic flow measurements
Classification code: 631 Fluid Flow - 631.1 Fluid Flow, General - 714.2 Semiconductor Devices and Integrated Circuits - 943.2 Mechanical Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859167
Funding Details: Number: YCS22113117, Acronym: -, Sponsor: -; Number: 51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250, in part by CNOOC Limited Scientific Research Project under Grant YXKYZX082021 and in part by Postgraduate Innovation and Practice Ability Training Program of Xi'an Shiyou University, under Grant YCS22113117.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

127. Research on Acoustic Pulse Excitation Method for Behind-Casing Reservoir Detection

Accession number: 20223812766788
Authors: Yun, Mengqi (1); Hao, Xining (2); Wang, Haiyao (1); Li, Yan (1)
Author affiliation: (1) Ministry of Education, Xi'an Shiyou University, Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Xi'an, China; (2) Research Institute of China National Offshore Oil Corporation, Beijing, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 847-850
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: One of the key technologies for behind-casing reservoir detection depends on the performance of the acoustic emission system. The traditional single pulse excitation source is difficult to satisfy the requirements of reservoir detection due to its uncontrollable pulse width and low energy conversion efficiency. To address this problem, we propose a design idea based on the operation of sinusoidal pulse width modulation (SPWM) pulse excitation acoustic transducer. In particular, we study the generation method of the SPWM excitation source and propose an acoustic wave emission circuit to realize this pulse excitation. Finally, the simulation results prove that the excitation pulse generated by our proposed scheme has the characteristics of high stability of waveform and adjustable frequency, which indicates that the scheme is feasible and has a certain value for the research of reservoir detection method behind the oil and gas well casing. © 2022 IEEE.
Number of references: 12
Main heading: Conversion efficiency
Controlled terms: Acoustic emission testing - Voltage control
Uncontrolled terms: Acoustic emission systems - Acoustic pulse - Acoustic signals - Excitation sources - Key technologies - Logging technology - Performance - Pulse excitation methods - Pulses excitation - Sinusoidal pulsewidth modulations (SPWM)

Classification code: 525.5 Energy Conversion Issues - 731.3 Specific Variables Control - 751.2 Acoustic Properties of Materials
DOI: 10.1109/ICMSP55950.2022.9859097
Funding Details: Number: YCS22113124, Acronym: -, Sponsor: -; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by CNOOC Limited Scientific Research Project under Grant YXKYZX082021 and in part by Practice Ability Training Program of Xi'an Shiyou University, under Grant YCS22113124.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

128. Medium and low frequency fiber Bragg grating acceleration sensor based on single-sided single-arc hinge

Accession number: 20220811703050
Authors: Shao, Min (1); Liang, Junjun (1); Gao, Hong (1); Yu, Dakuan (1); Qiao, Xueguang (1, 2)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 69
Issue date: March 2022
Publication year: 2022
Article number: 102814
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A medium and low frequency fiber Bragg grating (FBG) based acceleration sensor based on single-axis single-arc hinge-shaped sensitization structure is designed and experimentally demonstrated. The theoretical formula of the sensor's resonance frequency and sensitivity was given, the stress distribution, characteristic frequency and amplitude frequency characteristics of the sensor were simulated and the structural parameters of the sensor were optimized. The experimental results show that the resonance frequency of the sensor is 630 Hz, the flat frequency range is 30–300 Hz, and the acceleration sensitivity is 57.77 pm/g. The sensor has the advantages of high sensitivity, wide flat frequency range and strong transverse anti-interference ability, which can meet the requirements of acceleration detection in petroleum exploration field. © 2022 Elsevier Inc.
Number of references: 33
Main heading: Fiber Bragg gratings
Controlled terms: Natural frequencies - Petroleum prospecting - Acceleration
Uncontrolled terms: Acceleration sensors - Fiber Sensor - Frequency ranges - Hinge structure - Lower frequencies - Medium frequencies - Resonance frequencies - Sensitisation - Single-axis - Theoretical formula
Classification code: 512.1.2 Petroleum Deposits : Development Operations
Numerical data indexing: Frequency 3.00E+01Hz to 3.00E+02Hz, Frequency 6.30E+02Hz, Size 5.777E-11m
DOI: 10.1016/j.yofte.2021.102814
Funding text: This work is supported by the National Natural Science Foundation of China (Nos. 61735014, 61927812), National Key Research and Development Plan, Key strategic advanced electronic materials (No. 2017YFB0405502), National Science and Technology Project, Large Oil and Gas Field and Coal Bed Gas Development Project (No. 2017ZX05019006).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

129. Design and Application of Torque Measurement and Analysis System for Iron Roughneck

Accession number: 20223812766928
Authors: Li, Fei (1, 2); Wu, Hao (1); Lei, Ge (1); Lyu, Fangxing (1, 2); Fan, Lei (3); Zhang, Xiaoxiang (3)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Zhizuan Xinneng Technology Co., Ltd, China; (3) National Engineering Research Center for Oil & Gas Drilling Equipment, Baoji; 721000, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 85-89
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Torque measurement and analysis system for iron roughnecks are designed to solve the problems of low accuracy by using pressure sensors and no torque data storage. Firstly, this paper analyzed the reasons for the low accuracy of torque calculation by using a pressure sensor. According to the iron roughneck's mechanical structure and motion characteristics, a force sensor was designed to replace the pressure sensor. The accuracy of torque measurement is improved by electrical measurement, and the torque is transmitted and recorded digitally through the user interface. The installation method has been tested on a universal testing machine, and the measurement error of the system less than 1%, which meets the design requirements. Finally, through the field application, this method can accurately identify the operation status of the iron roughneck, and the user interface can completely record the production data of the iron roughneck, and the waveform record is complete. The practical application shows that this method realizes the digital display and data storage of torque and has certain practical value. © 2022 IEEE.
Number of references: 6
Main heading: Torque
Controlled terms: Digital storage - Force measurement - Iron - Pressure sensors - Testing - Torque meters - User interfaces
Uncontrolled terms: Analysis system - Data storage - Design and application - Electrical measurement - Force sensor - Iron roughneck - Measurement and analysis - Measurement system - Torque calculation - Torque data
Classification code: 545.1 Iron - 722.1 Data Storage, Equipment and Techniques - 722.2 Computer Peripheral Equipment - 931.2 Physical Properties of Gases, Liquids and Solids - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements - 944.3 Pressure Measuring Instruments
Numerical data indexing: Percentage 1.00E00%
DOI: 10.1109/ICMSP55950.2022.9859143
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

130. A Fiber Bragg Grating accelerometer with cantilever beam

Accession number: 20224212977910
Authors: Jiang, Lirong (1); Yu, Dakuan (1); Gao, Hong (1); Xu, Dongpo (1); Wang, Bo (1); Qiao, Xueguang (1, 2)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 74
Issue date: December 2022
Publication year: 2022
Article number: 103088
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A Fiber Bragg Grating (FBG) accelerometer with cantilever beam is presented and experimentally demonstrated. The effective length of the optical fiber is reduced by changing the base of the accelerometer, so as to increase the sensitivity. The resonant frequency and the sensitivity of the accelerometer are deduced theoretically. The structural parameters were optimized by numerical simulations and the characteristics of the accelerometer were simulated by finite element simulations. The experimental results show that the resonant frequency of the accelerometer is 119 Hz, the sensitivity (the main direction z) is 134.29 pm/g within 2–60 Hz flat region. It also designed with good immunity to interference, the cross sensitivity in the x and the y directions are 3.86 % and 2.97 %, respectively. In addition, the accelerometer has the characteristics of small volume and easy processing. In general, this accelerometer has a research significance in the field of oil and gas exploration. © 2022 Elsevier Inc.
Number of references: 30
Main heading: Fiber Bragg gratings
Controlled terms: Accelerometers - Cantilever beams - Nanocantilevers - Natural frequencies - Petroleum prospecting
Uncontrolled terms: A.Fibres - Cross sensitivity - Effective length - Fiber bragg grating - Fiber bragg grating accelerometer - Finite elements simulation - Oil and gas exploration - Research significances - Structural parameter - Vibration
Classification code: 408.2 Structural Members and Shapes - 512.1.2 Petroleum Deposits : Development Operations - 761 Nanotechnology - 933 Solid State Physics - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 1.19E+02Hz, Frequency 2.00E+00Hz to 6.00E+01Hz, Percentage 2.97E+00%, Percentage 3.86E+00%, Size 1.3429E-10m
DOI: 10.1016/j.yofte.2022.103088
Funding Details: Number: YCS21211079, Acronym: -, Sponsor: -; Number: 61735014, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JS093, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported in part by the National Major Scientific Research Instrument Development Project (New optical fiber seismic wave survey in oil and gas resources wells) under Project 61927812 , in part by the Key Project of National Natural Science Foundation of China "Basic Research on Fiber Sensing for Formation Energy" under Grant 61735014 , in part by Scientific Research Program Funded by Shaanxi Procincial Education Department of China (No. 18JS093), and in part by the Graduate Student Innovation Fund of Xi'an Shiyou University under Grant YCS21211079 .This work was supported in part by the National Major Scientific Research Instrument Development Project (New optical fiber seismic wave survey in oil and gas resources wells) under Project 61927812, in part by the Key Project of National Natural Science Foundation of China "Basic Research on Fiber Sensing for Formation Energy" under Grant 61735014, in part by Scientific Research Program Funded by Shaanxi Procincial Education Department of China (No. 18JS093), and in part by the Graduate Student Innovation Fund of Xi'an Shiyou University under Grant YCS21211079.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

131. Short-term oil price prediction based on CEEMD decomposition noise reduction and ARMIA-SSA-BP combination model

Accession number: 20230913638938
Authors: Liu, Yunting (1); Huang, Xinyu (2); Wang, Zhichao (3)
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Source title: Proceedings - 2022 International Conference on Computers, Information Processing and Advanced Education, CIPAE 2022
Abbreviated source title: Proc. - Int. Conf. Comput., Inf. Process. Adv. Educ., CIPAE
Part number: 1 of 1
Issue title: Proceedings - 2022 International Conference on Computers, Information Processing and Advanced Education, CIPAE 2022
Issue date: 2022
Publication year: 2022
Pages: 250-255
Language: English
ISBN-13: 9781665468121
Document type: Conference article (CA)
Conference name: 3rd International Conference on Computers, Information Processing and Advanced Education, CIPAE 2022
Conference date: August 26, 2022 - August 28, 2022
Conference location: Ottawa, ON, Canada
Conference code: 186652
Sponsor: Institute of Electronics and Computer (IEC)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Oil as the ' blood of industry' its price volatility has a huge political and economic impact on the world, so how to predict crude oil price more accurately has always been an important issue of concern. This paper proposes a combination model based on CEEMD decomposition noise reduction and ARMIA-SSA-BP. The daily crude oil futures prices of 9735 trading days from April 6, 1983, to March 15, 2007, were studied. The CEEMD method is used to decompose it into four components, ARIMA, BP and SSA - BP are used to forecast. Through the comparison of prediction accuracy, the optimal results are obtained and added, thus combining multiple prediction models and improving the prediction accuracy. The combination model has higher prediction accuracy than the original model. © 2022 IEEE.
Number of references: 13
Main heading: Noise abatement
Controlled terms: Crude oil - Forecasting
Uncontrolled terms: ARMIA - CEEMD - Combination models - Combined modeling - Oil Prices - Prediction accuracy - Prediction-based - Price expectation - Price prediction - SSA-BP
Classification code: 512.1 Petroleum Deposits - 751.4 Acoustic Noise
DOI: 10.1109/CIPAE55637.2022.00060
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

132. Color Constancy via Multi-Scale Region-Weighed Network Guided by Semantics (*Open Access*)

Accession number: 20221712028798
Authors: Wang, Fei (1, 2); Wang, Wei (3); Wu, Dan (1); Gao, Guowang (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, Hunan University, Changsha, China; (3) School of Telecommunications Engineering, Xidian University, Xi'an, China
Corresponding author: Wang, Fei(200102@xsyu.edu.cn)
Source title: Frontiers in Neurorobotics
Abbreviated source title: Front. Neurorobotics
Volume: 16
Issue date: April 8, 2022
Publication year: 2022
Article number: 841426
Language: English
E-ISSN: 16625218
Document type: Journal article (JA)
Publisher: Frontiers Media S.A.
Abstract: In obtaining color constancy, estimating the illumination of a scene is the most important task. However, due to unknown light sources and the influence of the external imaging environment, the estimated illumination is prone

to color ambiguity. In this article, a learning-based multi-scale region-weighed network guided by semantic features is proposed to estimate the illuminated color of the light source in a scene. Cued by the human brain's processing of color constancy, we use image semantics and scale information to guide the process of illumination estimation. First, we put the image and its semantics into the network, and then obtain the region weights of the image at different scales. After that, through a special weight-pooling layer (WPL), the illumination on each scale is estimated. The final illumination is calculated by weighting each scale. The results of extensive experiments on Color Checker and NUS 8-Camera datasets show that the proposed approach is superior to the current state-of-the-art methods in both efficiency and effectiveness. Copyright © 2022 Wang, Wang, Wu and Gao.
Number of references: 61
Main heading: Semantics
Controlled terms: Semantic Web - Light sources - Color - Image processing
Uncontrolled terms: Brain processing - Colour constancy - Human brain - Image scale - Image semantics - Multi-scales - Network - Semantic features - Weighed networks - Weight pooling layer
Classification code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 903 Information Science
DOI: 10.3389/fnbot.2022.841426
Funding Details: Number: 32015013, Acronym: SKLDMVB, Sponsor: State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body;
Funding text: This project was supported by the Science Fund of State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body (No. 32015013).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

133. Collision between the northern Tibet and Tarim Block as revealed by the gravity data

Accession number: 20221011756672
Authors: Shen, Hongyan (1, 2); Li, Qingchun (3); Tan, Chengqian (1, 2); Feng, Xuliang (1, 2); Li, Meng (1, 2); Li, Xinxin (1, 2); Zhao, Jing (1, 2); Che, Han (1, 2)
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Source title: Science Bulletin
Abbreviated source title: Sci. Bull.
Volume: 67
Issue: 10
Issue date: May 30, 2022
Publication year: 2022
Pages: 1007-1009
Language: English
ISSN: 20959273
E-ISSN: 20959281
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Number of references: 17
DOI: 10.1016/j.scib.2022.01.030
Funding Details: Number: 2011JQ5006,2017JZ007,2022GY-148, Acronym: -, Sponsor: -; Number: 41874123,42004110, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2010D-5006-0303,2014D-5006-0303, Acronym: -, Sponsor: PetroChina Innovation Foundation;
Funding text: This work was supported by the National Natural Science Foundation of China (41874123 and 42004110), PetroChina Innovation Foundation (2010D-5006-0303 and 2014D-5006-0303) and Shaanxi Provincial Natural Science Basic Research Project (2011JQ5006, 2017JZ007 and 2022GY-148). The authors thank Dr. G. Randy Keller for his suggestions, and also thank the Bureau Gravimétrique International (BGI)/International Association of Geodesy for providing the real gravity data.This work was supported by the National Natural Science Foundation of China (41874123 and 42004110), PetroChina Innovation Foundation (2010D-5006-0303 and 2014D-5006-0303) and Shaanxi Provincial Natural Science Basic Research Project (2011JQ5006, 2017JZ007 and 2022GY-148). The authors thank Dr. G. Randy Keller for his suggestions, and also thank the Bureau Gravimétrique International (BGI)/ International Association of Geodesy for providing the real gravity data.

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

134. Fiber Bragg grating accelerometer based on symmetrical double flexure hinges

Accession number: 20215211384235
Authors: Luo, Xiaodong (1, 2); Li, Yongfang (1); Feng, Dequan (2); Gao, Hong (2); Zhang, Jianxin (1)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 68
Issue date: January 2022
Publication year: 2022
Article number: 102795
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A compact fiber Bragg grating (FBG) accelerometer based on symmetrical double flexure hinges structure is designed and demonstrated, which integrates the elastic elements and the inertial masses. The resonant frequency and sensitivity of the accelerometer are theoretically analyzed, and then the sensing performance of the accelerometer is researched through experiment. In the experiment, the wavelength shift of FBG shows a good linear response to external acceleration, the linearity is better than 99.6%. The measured resonant frequency of the accelerometer is about 890 Hz, and the sensitivity is about 41 pm/G. The experimental results are in good agreement with the theoretical values. The proposed accelerometer is capable of measuring the vibration acceleration in a wide range of 50–600 Hz, which makes the accelerometer have a good application prospect in the engineering fields. © 2021 Elsevier Inc.
Number of references: 29
Main heading: Accelerometers
Controlled terms: Hinges - Fiber Bragg gratings - Natural frequencies
Uncontrolled terms: Compact fibers - Elastic element - Fiber bragg grating - Fiber bragg grating accelerometer - Flexure hinge - Inertial mass - Sensing performance - Sensitivity - Symmetrical hinge - Wavelength shift
Classification code: 943.1 Mechanical Instruments
Numerical data indexing: Frequency 5.00E+01Hz to 6.00E+02Hz, Frequency 8.90E+02Hz, Percentage 9.96E+01%, Size 4.10E-11m
DOI: 10.1016/j.yofte.2021.102795
Funding Details: Number: 61927812, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JS121, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported in part by the National Natural Science Foundation of China under Grant No. 61927812, in part by Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 20JS121).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

135. Modelling and design of high quality factor fiber Bragg grating-based geophone

Accession number: 20220211455877
Authors: Liu, Wangfei (1); Liu, Qinpeng (1, 2); Wang, Chunfang (1); Zhang, Rong (1); Fan, Wei (1); Gao, Hong (1); Yu, Dakuan (1); Guo, Yingcai (2)
Author affiliation: (1) Xi'an Shiyou University, Faculty Group, Shaanxi Key Laboratory of Measurement and Control Tchnology for Oil and Gas Wells, Shaanxi, Xi'an; 710065, China; (2) CNPC Logging Co., LTD, Shaanxi, Xi'an; 710076, China
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 68
Issue date: January 2022
Publication year: 2022
Article number: 102799
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A double-diaphragm acceleration geophone based on Fiber Bragg Grating (FBG) is proposed and demonstrated experimentally in this paper. The proposed geophone is mainly composed of a FBG, double diaphragms, and an inertial mass. Through theoretical analysis and experimental verification, the FBG acceleration geophone has good comprehensive response characteristics. The experimental results obtained indicate that the flat region sensitivity range is from 651.0 to 850.5 pm/G, the corresponding fluctuation is less than 2.20 dB within 1–70 Hz, the cross sensitivity is less than -16.4 dB, and the quality factor is better than 89.1 nm·Hz/G. Compared with the traditional geophones, the proposed geophone has a higher quality factor. Therefore, this type FBG geophone is very good candidate for low-frequency oil and gas exploration. © 2021 Elsevier Inc.
Number of references: 29
Main heading: Fiber Bragg gratings
Controlled terms: Petroleum prospecting
Uncontrolled terms: A.Fibres - Analysis verification - Experimental verification - Fiber bragg grating - High quality factors - High sensitivity - Inertial mass - Quality factors - Response characteristic - Sensitivity range
Classification code: 512.1.2 Petroleum Deposits : Development Operations
Numerical data indexing: Decibel 1.64E+01dB, Decibel 2.20E+00dB, Frequency 1.00E00Hz to 7.00E+01Hz, Size 6.51E-10m to 8.505E-10m, Size 8.91E-08m
DOI: 10.1016/j.yofte.2021.102799
Funding Details: Number: YCS20111008,YCS20111009, Acronym: -, Sponsor: -; Number: 2021DQ0107-11, Acronym: -, Sponsor: -; Number: 61735014,61927812, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JS093, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported in part by Funding National Natural Science Foundation of China (Nos.61735014, 61927812), in part Shaanxi Provincial Education Department (No.18JS093), in part Operation Fund of Logging Key Laboratory of Group Company (2021DQ0107-11) and in part Graduate Student Innovation Fund of Xi'an Shiyou University (YCS20111008, YCS20111009).This work was supported in part by Funding National Natural Science Foundation of China (Nos. 61735014 , 61927812), in part Shaanxi Provincial Education Department (No. 18JS093), in part Operation Fund of Logging Key Laboratory of Group Company (2021DQ0107-11) and in part Graduate Student Innovation Fund of Xi'an Shiyou University (YCS20111008 , YCS20111009).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

136. Improved wavelet modulus maximum method for distributed optical fiber temperature sensing

Accession number: 20230313396253
Authors: Fu, Haiwei (1); Zhang, Ze (1); Yan, Xinyu (1); Wang, Xiaoling (1); Zhao, Ziliang (1)
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Source title: Optical Engineering
Abbreviated source title: Opt Eng
Volume: 61
Issue: 11
Issue date: November 1, 2022
Publication year: 2022
Report number: 20220903G
Article number: 116109
Language: English

ISSN: 00913286
E-ISSN: 15602303
CODEN: OPEGAR
Document type: Journal article (JA)
Publisher: SPIE
Abstract: The temperature measurement accuracy of the Raman distributed optical fiber temperature sensing system is an important metric. Aimed at the reduction of the temperature measurement error, which is caused by the noises in the sensor system, an improved wavelet modulus maximum method, which combine the 3sigm criterion with the traditional wavelet modulus maximum algorithm is proposed. In this proposed algorithm, the 3sigm value is used as the threshold for the highest decomposition layer of the wavelet modulus maximum method to judge whether it is a signal or noise, instead of using the ratio of the modulus maximum of the highest decomposition level to the number of decomposition levels to determine the threshold. We conduct distributed temperature measurement on a 10-km long multimode fiber, and analyze the experimental data by using the improved algorithm. The results show that the temperature measurement fluctuation obtained by improved method is 0.497°C on average. It is better than the 1.13°C that is obtained by the traditional wavelet modulus maximum algorithm. Compared with the traditional algorithms, the 3sigm criterion algorithm has improved the temperature measurement accuracy significantly. The improved algorithm provides a new idea for the selection of the threshold value, which makes the threshold selection more statistically. © 2022 Society of Photo-Optical Instrumentation Engineers (SPIE).
Number of references: 22
Main heading: Temperature measurement
Controlled terms: Multimode fibers - Temperature sensors - Wavelet analysis - Wavelet decomposition
Uncontrolled terms: 3sigm criteria - Decomposition level - Distributed optical fiber - Distributed optical fiber sensing - Distributed optical fiber temperature sensing systems - Improved * algorithm - Measurement accuracy - Optical fiber temperature sensing - Wavelet modulus maxima - Wavelet-analysis
Classification code: 741.1.2 Fiber Optics - 921 Mathematics - 921.3 Mathematical Transformations - 944.5 Temperature Measuring Instruments - 944.6 Temperature Measurements
Numerical data indexing: Size 1.00E+04m, Temperature 2.73497E+02K, Temperature 2.7413E+02K
DOI: 10.1117/1.OE.61.11.116109
Funding Details: Number: YCS22112077, Acronym: -, Sponsor: -; Number: 2019GY-176, Acronym: -, Sponsor: -;
Funding text: This work was supported by Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-176), the Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS22112077). The authors declare no conflicts of interest.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

137. Low-frequency fiber bragg grating accelerometer based on diaphragm-type cantilever

Accession number: 20221411924402
Authors: Fan, Wei (1, 2); Wen, Jin (2); Gao, Hong (2); Qiao, Xueguang (1)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 70
Issue date: May 2022
Publication year: 2022
Article number: 102888
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: To meet the requirements for low-frequency vibration monitoring, a new type of FBG (fiber Bragg grating) accelerometer based on diaphragm-type cantilever is proposed. The theory analysis of the structure was carried out and the finite element model was constructed to simulate and analyze the acceleration sensing characteristic of the sensor. Simultaneously, the tested results of sensing characteristic from the shaking table indicate that the system has excellent response to low-frequency acceleration excitation signal when the natural frequency of the system is 90 Hz.

The frequency response range of the system is 5.0–60.0 Hz, in which the acceleration sensitivity is 485.75 pm/g. The acceleration sensor is designed with strong lateral immunity since the sensitivity in the transverse sensitivity is only 3.6% of the sensitivity in the working direction. © 2022 Elsevier Inc.
Number of references: 21
Main heading: Accelerometers
Controlled terms: Diaphragms - Fiber Bragg gratings - Frequency response - Nanocantilevers
Uncontrolled terms: Acceleration sensing - Anti-interference - Diaphragm-type cantilever - Fiber bragg grating accelerometer - Finite element modelling (FEM) - Lateral anti-interference - Low-frequency vibration - Lower frequencies - Sensing characteristics - Vibration monitoring
Classification code: 601.2 Machine Components - 761 Nanotechnology - 933 Solid State Physics - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 5.00E+00Hz to 6.00E+01Hz, Frequency 9.00E+01Hz, Percentage 3.60E+00%, Size 4.8575E-10m
DOI: 10.1016/j.yofte.2022.102888
Funding Details: Number: 61735014, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported in part by the National Major Scientific Research Instrument Development Project (New optical fiber seismic wave survey in oil and gas resources wells) under Project 61927812 and in part by the Key Project of National Natural Science Foundation of China "Basic Research on Fiber Sensing for Formation Energy" under Grant 61735014.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

138. MIT/MTT and Visualization Logging Technology and Its Application

Accession number: 20223812766859
Authors: Yan, Zhengguo (1); Li, Yang (1); Liu, Jie (2); Li, Ke (2)
Author affiliation: (1) Xi'an Shiyou University, Key Laboratory of Shaanxi Province for Measurement and Control Technology of Oil and Gas Wells, Shaanxi, Xi'an; 710065, China; (2) China National Logging Corporation, Shaanxi, Xi'an; 710077, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 180-183
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the number of casing damage wells in domestic oil and gas fields increases on a large scale, the problem of low accuracy in casing damage detection of Oil and gas Wells becomes increasingly serious. The Multi Finger Imaging Tool (MIT) and the Magnetic Thickness Tool (MTT) combination logging tool has unique advantages in detecting the change of casing diameter and wall thickness, but it is difficult to reflect the casing damage condition comprehensively and accurately. Considering that the VideoLog downhole TV can combine advantages with the former to make up for shortcomings, and further accurately detect casing loss, this paper proposes a visual combination logging technology scheme of MIT and MTT measurement. MIT/MTT and the VideoLog are mechanically connected by a special conversion head. The communication mode adopts the combination of downhole multi-core bus. By using parallel transmission technology and combining the characteristics of time-sharing operation of the instrument, the problem of signal transmission interference between the two is solved. It provides a set of innovative technical means of low cost, high efficiency and high value for the domestic and overseas field of coat damage detection. © 2022 IEEE.

Number of references: 11
Main heading: Damage detection
Controlled terms: Gas industry - Oil well logging
Uncontrolled terms: Casing damage - Casing damage detection - Downholes - Imaging tools - Magnetic thickness - Multi finger imaging tool/magnetic thickness tool - Multi fingers - Technology application - Videolog - Visual logging
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels
DOI: 10.1109/ICMSP55950.2022.9859058
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

139. Research progress in preparation and application of graphene/polymer functional composite materials

Accession number: 20221411926274
Title of translation: /
Authors: Zhu, Shidong (1); Zhao, Qianzhen (1); Wang, Xinghai (2); Li, Jinling (3); Qi, Dongtao (4); Kong, Lushi (4)
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Source title: Fuhe Cailiao Xuebao/Acta Materiae Compositae Sinica
Abbreviated source title: Fuhe Cailiao Xuebao
Volume: 39
Issue: 2
Issue date: February 2022
Publication year: 2022
Pages: 489-501
Language: Chinese
ISSN: 10003851
CODEN: FCXUEC
Document type: Journal article (JA)
Publisher: Beijing University of Aeronautics and Astronautics (BUAA)
Abstract: The combination of the new-type inorganic nanomaterials with the traditional polymer molecules will greatly promote the fully demonstrate of the versatility and high reinforcing property of the graphene, as well as the good mechanical properties and mature technology of the polymer. The development of the functional materials, nano-graphene and the polymer was briefly described in this paper. The polymer source of adsorption materials (three kinds of natural polymer, synthetic polymer), the application of catalytic materials in (synthetic, electric-) chemical reactions, the pore size characteristics of separation materials (low permeability, nanofiltration, ultrafiltration, microfiltration), and the use (tissue engineering, medical health, and medical materials) of biomedical materials were briefly analyzed. The functions and efficiency of various graphene/polymer functional composites were focused on, and their preparation methods and the reasons for the improvement of efficiency were simply stated. At the same time, the conductive materials, intelligent (or conduction) materials and magnetic materials and liquid crystal materials were summarized. It is expected to provide reference for the development and application of novel graphene/polymer functional composites. Last but not the least, the problems existing in the popularization rate and industrialization of graphene/polymer functional composites were also considered and prospected. Copyright ©2022 Acta Materiae Compositae Sinica. All rights reserved.
Number of references: 104
Main heading: Graphene
Controlled terms: Catalyst activity - Conductive materials - Tissue engineering - Functional materials - Magnetic materials - Chemical analysis - Efficiency - Functional polymers - Liquid crystals - Pore size - Microfiltration
Uncontrolled terms: Adsorption characteristic - Adsorption materials - Catalytic materials - Functional composites - Inorganic nano materials - Low permeability - Polymer molecule - Property - Separation materials - Synthetic polymers

Classification code: 461.1 Biomedical Engineering - 708.2 Conducting Materials - 708.4 Magnetic Materials - 761 Nanotechnology - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 815.1 Polymeric Materials - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.13801/j.cnki.fhclxb.20210713.001
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

140. Research on the laws and influence factors of venting process in natural gas pipeline

Accession number: 20230113345316
Authors: Jin, Wenbo (1); Wang, Panfeng (2); Quan, Qing (1); Yang, Yunbo (3); Wang, Shouxi (1)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2399
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012009
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 International Conference on Power System and Energy Technology, ICPSET 2022
Conference date: August 12, 2022 - August 14, 2022
Conference location: Guangzhou, China
Conference code: 185140
Publisher: Institute of Physics
Abstract: This paper simulates the pipeline venting process using TGNET software and proves the changing laws of venting time with pipeline venting pressure, temperature, and instantaneous flow. Moreover, the venting process with different truck-line pressure, venting-pipe diameter, venting-pipe length, and valve opening are simulated, and it is concluded that an increase in truck-line pressure and venting-pipe length will extend the venting process with venting time becomes longer and pressure drop becomes slower. While an increase in venting-pipe diameter and valve opening will speed up the venting process with venting time becoming shorter and pressure drop becoming greater. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Pressure drop
Controlled terms: Drops - Natural gas pipelines - Piping systems - Trucks
Uncontrolled terms: Instantaneous flow - Pipe diameter - Pressure flow - Speed up - Temperature flow - Truck lines - Valve opening - Venting process
Classification code: 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 663.1 Heavy Duty Motor Vehicles
DOI: 10.1088/1742-6596/2399/1/012009
Funding Details: Number: 0101-134010045,51704236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019QNKYCXTD03, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: The authors wish to thank the Program for Youth to Science Innovation in Xi'an Shiyou University (2019QNKYCXTD03), the National Natural Science Foundation of China (51704236), the Program for Youth to Innovate on Science and Technology in Xi'an Shiyou University (0101-134010045) for providing support for this work.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

141. Large-range and high-sensitivity fiber optic temperature sensor based on Fabry–Pérot interferometer combined with FBG (*Open Access*)

Accession number: 20215111354920
Authors: Liu, Qinpeng (1, 3); Wang, Chunfang (1); Liu, Wangfei (1); Zhang, Rong (1); Gao, Hong (2); Wang, Xiangyu (2); Qiao, Xueguang (2)
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Corresponding author: Wang, Chunfang(w11281212@163.com)
Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 68
Issue date: January 2022
Publication year: 2022
Article number: 102794
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A compact fiber optic temperature sensor based on the Fabry–Pérot interferometer (FPI) combined with FBG is analyzed and demonstrated experimentally in this paper. The FPI is fabricated by splicing a single mode fiber (SMF) with a section of silicon tube filled with ultraviolet (UV) glue to form an air microcavity. Owing to the high thermo-expansion coefficient of UV glue, the sensor can achieve a high sensitivity. Besides, the cascaded FBG can be used to locate different temperature intervals, and therefore the detectable temperature range is largely extended. Experimental results indicate that the sensor has a temperature sensitivity of -4.665 nm/°C in a wide temperature range of -30 to 15 °C. In addition, our fiber temperature sensor also exhibited excellent consistency, good repeatability, and stability during the thermal cycle tests. Therefore, it has a good practical prospect. © 2021 Elsevier Inc.
Number of references: 22
Main heading: Temperature sensors
Controlled terms: Single mode fibers - Glues - Fiber optic sensors - Gluing - Fiber optics - Fiber Bragg gratings
Uncontrolled terms: Compact fibers - Expansion coefficients - Fiber optic temperature sensor - Fibre-optic sensor - High sensitivity - Large range - Silicon tubes - Single-mode fibers - Temperature intervals - Temperature range
Classification code: 741.1.2 Fiber Optics - 944.5 Temperature Measuring Instruments
Numerical data indexing: Size 4.665E-09m, Temperature 3.03E+02K to 2.88E+02K
DOI: 10.1016/j.yofte.2021.102794
Funding Details: Number: YCS20111008,YCS20111009, Acronym: -, Sponsor: -; Number: 61735014,61927812, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JS093, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (Nos. 61735014, 61927812), Shaanxi Provincial Education Department (No.18JS093) and Graduate Student Innovation Fund of Xi'an Shiyou University (YCS20111009, YCS20111008).This work is supported by the National Natural Science Foundation of China (Nos. 61735014 , 61927812), Shaanxi Provincial Education Department (No.18JS093) and Graduate Student Innovation Fund of Xi'an Shiyou University (YCS20111009, YCS20111008).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

142. Characteristics of fractures stimulated by supercritical carbon dioxide fracturing in shale based on acoustic emission monitoring

Accession number: 20220811690208
Authors: Wu, Shan (1, 2); Ge, Hongkui (2); Li, Tiantai (3); Wang, Xiaoqiong (2); Li, Ning (2); Zou, Yushi (2); Gao, Ke (1)
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Source title: International Journal of Rock Mechanics and Mining Sciences
Abbreviated source title: Int. J. Rock Mech. Min. Sci.
Volume: 152
Issue date: April 2022
Publication year: 2022
Article number: 105065
Language: English
ISSN: 13651609
CODEN: IRMGBG
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In recent years, supercritical carbon dioxide (SC–CO2) has been attempted in hydraulic fracturing in shale reservoirs as a new type of fracturing tool to overcome the drawback of traditional water-based fluids. Because of the unique physical and chemical properties of SC-CO2, its fracturing mechanism is more complicated than traditional fluids and still unclear at present. In this paper, we hydraulically fracture a shale reservoir rock using SC-CO2 and monitor the fracturing process using acoustic emission (AE) data. The results show the fractures stimulated by SC-CO2 composite of both shear and tensile fractures. In the initiation stage, SC-CO2 activates the natural fractures around the wellbore and induces shear fractures. In the propagation stage, SC-CO2 permeates the fracture tips quickly, results in a dynamic propagation process, and generates plenty of tensile fractures. The phase change of CO2 could be observed during the fracture propagation process, which is accompanied by a rapid pressure change and local stress shock formations in the fractures. Additionally, the experiments also demonstrate that the existence of bedding structures in shale could constrain the propagation of fractures, thus leading to a smaller volume of fracture network and limiting the complexity of the generated fractures. This research may help understand the fracturing mechanism of SC-CO2 and shed light on the development of hydraulic fracturing technology in shale reservoirs. © 2022 Elsevier Ltd
Number of references: 50
Main heading: Carbon dioxide
Controlled terms: Acoustic emission testing - Fracture - Fracturing fluids - Hydraulic fracturing - Reservoirs (water) - Shale - Supercritical fluid extraction
Uncontrolled terms: Acoustic emission monitoring - Fracturing mechanisms - Physical and chemical properties - Propagation process - Reservoir rock - SC CO 2 - Shear fracture - Supercritical carbondioxides - Tensile fractures - Water-based fluids
Classification code: 441.2 Reservoirs - 512.1.2 Petroleum Deposits : Development Operations - 751.2 Acoustic Properties of Materials - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 951 Materials Science
DOI: 10.1016/j.ijrmms.2022.105065
Funding Details: Number: 51774236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: ZLZX2020-01-07,ZLZX2020-01-08, Acronym: CUPB, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: CNPC, Sponsor: China National Petroleum Corporation;
Funding text: The authors express thanks for financial support from the subprojects of the Strategic Cooperation Technology Projects of CNPC and CUPB (ZLZX2020-01-08 and ZLZX2020-01-07), and the Natural Science Foundation of China (No. 51774236).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

143. Different coupling level induced mode shift of plasmon resonance in Au/ZnO heterojunction

Accession number: 20222512255678
Authors: Xu, Chao (1); Ding, Jijun (1); Chen, Haixia (1); Fu, Haiwei (1)
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Corresponding author: Ding, Jijun(dingjj303@163.com)
Source title: Micro and Nanostructures
Abbreviated source title: Micro. Nanostruct.
Volume: 168
Issue date: August 2022
Publication year: 2022

Article number: 207293
Language: English
E-ISSN: 27730123
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Plasmon resonance properties of Au nanoparticle embedded in ZnO thin film are simulated by COMSOL Multiphysics software in Wave Optics Module. The absorption spectra, surface electric field distribution and the dielectric constant of heterojunction structures with semi and fully embedded Au nanoparticles are investigated. For the fully embedded situation, the local field enhancement caused by resonance is several times more than that of the semi-embedding case. We deduce the parameter A theoretically described size and interface effects in the dielectric constant equation to explain the coupling effect. The results confirm that $E'(\omega)/E''(\omega)$ can be determined by function A, which illustrates that surface plasmon resonance (SPR) mode is transformed into local surface plasmon resonance (LSPR) mode. The resonance hot-spots are gradually formed at the surface of Au nanoparticle, which can be confirmed by calculating the increasingly penetration depth and reach its maximum value at thickness of 150 nm, indicating that the formation of LSPR can be verified. The exploration on the resonance reaction mechanism determined by the function A will promote the development of theoretical system and further application in semiconductor photoluminescence, photocatalysis and surface-enhanced Raman scattering devices. © 2022 Elsevier Ltd
Number of references: 29
Main heading: Gold nanoparticles
Controlled terms: Electric fields - Heterojunctions - II-VI semiconductors - Raman scattering - Surface plasmon resonance - Surface scattering - Wide band gap semiconductors - Zinc oxide
Uncontrolled terms: Au nanoparticle - Au/ZnO heterojunction - Electric field distributions - Hotspots - Local surface plasmon resonances - Mode shifts - Plasmon resonances - Property - Resonance hot spot - Resonance mode
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 761 Nanotechnology - 804.2 Inorganic Compounds - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Size 1.50E-07m
DOI: 10.1016/j.micrna.2022.207293
Funding Details: Number: 16JK1601, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department; Number: YCS19211034, Acronym: -, Sponsor: -; Number: 2019GY-176,2019GY-170, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province; Number: 2016JQ5037, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province; Number: 11804273,11447116, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundations of China (Grant No. 11804273 ; 11447116); Key Research and Development Projects of Shaanxi Province (Grant No. 2019GY-170 ; 2019GY-176); Natural Science Basic Research Program of Shaanxi Province (Grant No. 2016JQ5037); Scientific Research Plan Projects of Shaanxi Education Department (Grant No. 16JK1601); Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS19211034).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

144. SnO2 nanomaterial coating micro-fiber interferometer for ammonia concentration measurement

Accession number: 20220411491965
Authors: Fu, Haiwei (1); You, Yongtao (1); Wang, Shuai (1); Chang, Huimin (1)
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Corresponding author: Fu, Haiwei(hwfu@xsyu.edu.cn)
Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 68
Issue date: January 2022
Publication year: 2022
Article number: 102819

Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: This paper provides a quick and simple method for detecting ammonia gas concentration by coating microfiber interferometer (MFI) with SnO2 sensitive material. The MFI sensor is fabricated by the method of fiber fusion and taper. Then the nanomaterial sensitive to ammonia is prepared by hydrothermal method and coated in the sensing area. When the sensor is in contact with ammonia the SnO2 nanomaterial can adsorb ammonia molecules, which changes the refractive index of the MFI surface and causes the sensor transmission spectrum to shift. The real-time sensing of ammonia concentration can be realized by judging the magnitude of spectral shift. The sensor unit has only optical signal, simple structure, low cost and high sensitivity. The sensor can effectively detect the concentration of ammonia within the range of 0 ppm-10,476 ppm, and the sensor has a sensitivity of 0.58 pm/ppm. The experiment show that SnO2 nanomaterial have high sensitivity to ammonia gas, and the interference sensor coated with SnO2 nanomaterial has good repeatability and selectivity, so it has a broad application prospect in gas sensing in the future.

Number of references: 24
Main heading: Refractive index
Controlled terms: Coatings - Nanostructured materials - Ammonia - Chemical detection - Optical fiber fabrication - Gas detectors - Interferometers - Optical fibers
Uncontrolled terms: Ammonia concentrations - Ammonia gas - Ammonia sensing - Concentration Measurement - Fiber interferometers - Gas sensing - High sensitivity - Micro-fiber - Optical fiber interference - SIMPLE method
Classification code: 741.1 Light/Optics - 741.1.2 Fiber Optics - 761 Nanotechnology - 801 Chemistry - 804.2 Inorganic Compounds - 813.2 Coating Materials - 914.1 Accidents and Accident Prevention - 933.1 Crystalline Solids - 941.3 Optical Instruments - 943.3 Special Purpose Instruments
Numerical data indexing: Size 5.80E-13m
DOI: 10.1016/j.yofte.2022.102819
Funding Details: Number: YCS20211073, Acronym: -, Sponsor: -; Number: 2019GY-176, Acronym: -, Sponsor: -;
Funding text: This work was supported by Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-176), the Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS20211073).This work was supported by Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-176), the Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS20211073).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

145. Pore system and gas adsorption potential of lacustrine Yanchang Mudstone, Ordos Basin, China (*Open Access*)

Accession number: 20215111365794
Authors: Li, Shutong (1, 2); Wang, Yang (3); Wang, Ximeng (4); Guo, Ruiliang (5, 6)
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Corresponding author: Wang, Yang(yang.wang@chd.edu.cn)
Source title: Energy Reports
Abbreviated source title: Energy Rep.
Volume: 8
Issue date: November 2022
Publication year: 2022
Pages: 571-581
Language: English
E-ISSN: 23524847
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: Understanding the pore system and the geological factors controlling the adsorption of gas in mudstones and shales is a key element in predicting the gas accumulation potential of an unconventional reservoir. A series of integrated methods, including basic geochemistry, X-ray diffraction, scanning electron microscopy, low-pressure gas (CO2 and Ar) physisorption, and high-pressure methane adsorption were performed on a set of mudstones from the Triassic Yanchang Formation in Ordos Basin, to characterize the pore system and gas adsorption capacity and their geological controlling factors. The results show that the studied Yanchang Mudstones are mainly siliceous rocks with high total organic carbon concentration (average of 7.63%) and low to moderate thermal maturity (vitrinite reflectance of 0.55–0.92 %). The microscopic visible pores are mainly intergranular pores between organic matter and rigid mineral grains, while organic matter pores are less well-developed. The pore volume is mainly contained in micropores (diameter © 2021 The Authors
Number of references: 57
Main heading: Shale gas
Controlled terms: Methane - Microporosity - Organic minerals - Physisorption - Gases - Organic carbon - Silica - Biogeochemistry - Textures - Gas adsorption - Geology - Metamorphic rocks - Scanning electron microscopy
Uncontrolled terms: Intergranular pores - Lacustrine mudstone - Methane adsorption - Micropores - Ordos Basin - Organics - Pore gas - Pore system - Pore types - Yanchang Formation
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 512.2 Natural Gas Deposits - 522 Gas Fuels - 801.2 Biochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 5.50E+01% to 9.00E+01%, Percentage 5.50E-01% to 9.20E-01%, Percentage 7.63E+00%, Size 2.00E-09m, Size 2.00E-09m to 5.00E-08m
DOI: 10.1016/j.egyr.2021.11.259
Funding Details: Number: 41772142, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 300102271305, Acronym: CHD, Sponsor: Chang'an University; Number: 2021M692735, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported by the National Natural Science Foundation of China [No. 41772142], the Postdoctoral Science Foundation of China [No. 2021M692735], and the Fundamental Research Funds for the Central Universities, CHD, China [No. 300102271305]. We acknowledge editors and three anonymous reviewers for their valuable comments and suggestions.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

146. Numerical Study of Broadband Wavelength Conversion Based on InP/In1-xGaxAsyP1-y Strip-loaded Waveguide

Accession number: 20225213303318
Title of translation: InP/In1-xGaxAsyP1-y
Authors: Wen, Jin (1, 2); He, Chenyao (1); Qin, Weijun (1); Sun, Wei (1); Liang, Bozhi (1); Xiong, Keyu (1); Zhang, Hui (1); Wu, Zhengwei (1); Yu, Huimin (1); Wang, Qian (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Transient Optics and Photonics, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an; 710119, China
Corresponding author: Wen, Jin(wenjin@xsyu.edu.cn)
Source title: Guangzi Xuebao/Acta Photonica Sinica
Abbreviated source title: Guangzi Xuebao
Volume: 51
Issue: 10
Issue date: October 2022
Publication year: 2022
Article number: 1019003
Language: Chinese
ISSN: 10044213
CODEN: GUXUED
Document type: Journal article (JA)
Publisher: Chinese Optical Society

Abstract: In recent years nonlinear integrated optical devices have shown great potential in all-optical signal processing and a lot of research work has been done on them. The nonlinear integrated optical devices usually use silicon - chalcogenide glass and other materials platform. Silicon has very sophisticated low-cost manufacturing platforms but silicon is an indirect band-gap list of semiconductor materials with very low luminous efficiency and silicon needs to be integrated with other materials for example the integration of - lasers and amplifiers on a silicon substrate to achieve integrated optical path which makes the integrated optical path complex and expensive and has compatibility problems. As2Se3 chalcogenide glasses stand out among many materials because of their low linear and nonlinear loss but their refractive index can not be adjusted within a certain range which is not conducive to the flexibility of all-optical signal processing. The As2Se3 chalcogenide glass platform is not compatible with the Complementary Metal-oxide Semiconductor COMS process and the fabrication process is complex. Various ternary and quaternary - compounds with different bandgap wavelengths can form a group of nonlinear photonic materials that can cover the whole spectrum window from ultraviolet to infrared. -materials can improve the flexibility of custom-made integrated optical devices by changing the components of different materials within a certain range. - semiconductor platforms enable active and passive integrated optical devices to be combined on the same material platform which can be achieved by careful design and advanced manufacturing methods for example multilayer epitaxy and vertical coning. - semiconductor waveguides have high nonlinear coefficients and minimal nonlinear absorption can be achieved by selecting the appropriate material composition and operating wavelength. Recent studies have shown that the carrier lifetime of - list of semiconductor materials can be reduced to 0.42 ps which can reduce the nonlinear loss in the communication band and has the potential for efficient wavelength conversion. In this paper an InP/In1-xGaxAsyP1-y strip-loaded waveguide is optimized and designed. The high efficiency broadband wavelength conversion is realized by zero phase mismatch of the waveguide from 1.53 μm to 1.59 μm. The waveguide has good nonlinear optics characteristics with a high Kerr coefficient of 2.2×10-17 m2/W. The wavelength conversion with 35 nm bandwidth and peak conversion efficiency of -26.7 dB is realized in the optimized waveguide structure. The influence of the doping coefficient y of In1-xGaxAsyP1-y on the wavelength conversion is discussed. The numerical results show that when the pump power and the pump wavelength are constant with the doping coefficient y decreasing the effect of the doping coefficient y on the wavelength conversion of In1-xGaxAsyP1-y on the wavelength conversion of In1-xGaxAsyP1-y is obvious the conversion bandwidth is increased. In addition the peak conversion efficiency of the waveguide is increased by increasing the pump power while the pump power is kept constant and the band of the Idle Light is redshifted with the redshift of the pump wavelength. At the same time the optimum length of InP/In1-xGaxAsyP1-y strip-loaded waveguide is 5 mm by analysis and numerical simulation. Wavelength converter based on InP/In1-xGaxAsyP1-y waveguide platform has important application value in optical communication optical sensing and other fields.
Number of references: 25
Main heading: Indium phosphide
Controlled terms: Carrier lifetime - Chalcogenides - CMOS integrated circuits - Efficiency - Energy gap - Four wave mixing - Glass - III-V semiconductors - Integrated optics - MOS devices - Optical signal processing - Optical waveguides - Oxide semiconductors - Photonic integration technology - Refractive index - Selenium compounds - Semiconducting indium phosphide - Semiconductor lasers - Substrates
Uncontrolled terms: All-optical signal processing - Chalcogenide glass - Four-wave-mixing - InP/in1-xgaxasyP1-y - Integrated optical devices - Nonlinear loss - Optical path - Pump power - Pump wavelength - Strip-loaded waveguides
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 712.1.2 Compound Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 714.3 Waveguides - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 744.4.1 Semiconductor Lasers - 804.2 Inorganic Compounds - 812.3 Glass - 913.1 Production Engineering
Numerical data indexing: Decibel -2.67E+01dB, Size 1.53E-06m to 1.59E-06m, Size 2.20E-17m, Size 3.50E-08m, Size 5.00E-03m, Time 4.20E-13s
DOI: 10.3788/gzxb20225110.1019003
Funding Details: Number: 2018KJXX#042, Acronym: -, Sponsor: -; Number: 61505160, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: SKLTOP, Sponsor: State Key Laboratory of Transient Optics and Photonics; Number: 2019JM#084, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: National Natural Science Foundation of China No. 61505160 the Innovation Capability Support Program of Shaanxi No.2018KJXX042 the Natural Science Basic Research Program of Shaanxi No. 2019JM084 State Key Laboratory of Transient Optics and Photonics No.SKLST202108the Graduate Innovation and Practical Ability Training Project of Xi'an Shiyou University No.YCS20211075
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

147. Optimizing the solar-air hybrid source heat pump heating system based on the particle swarm algorithm (*Open Access*)

Accession number: 20222212186239
Authors: Wang, Zhiguo (1); Chen, Haoyu (1); Sun, Xiao (2); Lu, Haibing (3); Wang, Tianyi (3)
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Corresponding author: Wang, Zhiguo(zhgwang@xsyu.edu.cn)
Source title: Energy Reports
Abbreviated source title: Energy Rep.
Volume: 8
Issue date: October 2022
Publication year: 2022
Pages: 379-393
Language: English
E-ISSN: 23524847
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In order to deal with the increasingly severe energy situation and climate change, reducing global carbon emissions and developing new energy have become a universal consensus among countries in the world. The design of clean energy heating systems such as solar collectors (SC) and air source heat pumps (ASHP) has also received widespread attention. However, optimizing multiple parameters that interact with each other in the hybrid heating systems such as solar-air hybrid source heat pumps (HSHP) is still challenging, and the optimization of the parameters remains to be studied. By using the TRNSYS simulation platform, modify the performance parameters to decrease the system's annual cost with particle swarm optimization (PSO) and coordinate search method (CSM), respectively. The results show that two algorithms can significantly enhance the system performance, where it is the easier for PSO to find global optimum, and the average performance index COPsys of the system is about 15% higher than that of the CSM, and the system's annual power consumption could be lowered by 27.75%; In addition, the matching principle of the key parameters of the hybrid heating system is proposed and the sensitivity ranking of the optimized parameters is derived. These results offer theoretical foundations for optimal design of the solar-air HSHP heating system. © 2022 Xi'an Shiyou University
Number of references: 34
Main heading: Solar energy
Controlled terms: Air source heat pumps - Climate change - Geothermal heat pumps - Heating equipment - Particle swarm optimization (PSO) - Pumps - Simulation platform
Uncontrolled terms: Air hybrids - Air-source heat pumps - Energy situation - Heat pumps - Heating system - Hybrid source - Optimisations - Particle swarm algorithm - Search method - Sensitivity
Classification code: 443.1 Atmospheric Properties - 616.1 Heat Exchange Equipment and Components - 618.2 Pumps - 641.2 Heat Transfer - 657.1 Solar Energy and Phenomena - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 921.5 Optimization Techniques
Numerical data indexing: Percentage 1.50E+01%, Percentage 2.775E+01%
DOI: 10.1016/j.egyr.2022.05.098
Funding Details: Number: MSAF-2020-006, Acronym: -, Sponsor: -; Number: 2022JQ-571, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors would wish to acknowledge the support of the Shanxi Province Key Laboratory of CO 2 Sequestration and Enhanced Oil Recovery, China. We also acknowledge Opening project fund of Materials Service Safety Assessment Facilities, China (grant number MSAF-2020-006) . Dr.Wang also acknowledge the Algorithm support of Natural Science Basic Research Program of Shanxi province, China (Program No. 2022JQ-571).The authors would wish to acknowledge the support of the Shanxi Province Key Laboratory of CO2 Sequestration and Enhanced Oil Recovery, China. We also acknowledge Opening project fund of Materials Service Safety Assessment Facilities, China (grant number MSAF-2020-006). Dr.Wang also acknowledge the Algorithm support of Natural Science Basic Research Program of Shanxi province, China (Program No. 2022JQ-571).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

148. Investigations on seven-core fiber based interferometric all-fiber sensor for curvature and temperature measurements

Accession number: 20220511576275
Authors: Liu, Yinggang (1); Dong, Jingfei (1); Huang, Liang (1); Song, Xiaoya (1); Li, Bowen (1)
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Corresponding author: Liu, Yinggang(ygliu@xsyu.edu.cn)
Source title: Optik
Abbreviated source title: Optik
Volume: 254
Issue date: March 2022
Publication year: 2022
Article number: 168638
Language: English
ISSN: 00304026
Document type: Journal article (JA)
Publisher: Elsevier GmbH
Abstract: An all-fiber Mach-Zehnder interferometer (MZI) sensor structure for measurement of temperature and curvature is proposed and demonstrated experimentally, which consists of two parts of no-core fiber (NCF) and seven-core fiber (SCF) sandwiched between two single-mode fibers (SMF). Since the two no-core fibers are respectively cascaded at both ends of SCF to improve light separation and recombination, the intermodal interference effect can be generated in the fiber inside structure. Based on the theoretical optimization analysis, we confirmed the sensing characteristics of the proposed all-fiber MZI-based sensors. The experiment results demonstrate that the spectral interference dips of proposed sensor have different responses for curvature and temperature. The wavelength shift is sensitive to temperature change and has better linearity, but insensitive to curvature variation. The spectral intensity is not only sensitive to curvature variation but also temperature change with a certain nonlinearity. The maximum temperature and curvature sensitivities of 100.1 pm/ in temperature range of 50–100 and 10.22 dB/m-1 in curvature range of 0.82–1.226 m-1 are obtained respectively. These sensing characteristics and the advantages of simple fabrication, high repeatability and common materials can make the proposed sensor be widely used in building structure detection and engineering. © 2022 Elsevier GmbH
Number of references: 25
Main heading: Mach-Zehnder interferometers
Controlled terms: Single mode fibers - Temperature measurement
Uncontrolled terms: All fiber - Core fibre - Curvature - Fiber Mach-Zehnder interferometers - Mach-zehnde interferometer - No-core fiber - Sensing characteristics - Seven-core fiber - Temperature changes
Classification code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 941.3 Optical Instruments - 944.6 Temperature Measurements
Numerical data indexing: Decibel 1.022E+01dB, Size 1.001E-10m, Size 2.54E-02m, Size 8.20E-01m to 1.226E+00m
DOI: 10.1016/j.ijleo.2022.168638
Funding Details: Number: YCS20211072, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2013JM8032, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20JS122, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China (Grant No. 20JS122) and Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS20211072).This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China (Grant No. 20JS122) and Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS20211072).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

149. Thermal Evolution Characteristics and Discrimination of Reservoir Bitumen Based on Raman Spectroscopy

Accession number: 20221211816609

Title of translation:
Authors: Si, Shang-Hua (1, 2); Yang, Zhe-Heng (1, 2); Chen, You-Zhi (3); Song, Li-Jun (1, 2); Shang, Xiao-Qing (1, 2); Er, Chuang (1, 2); Liu, Chao (1, 2)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Hydrocarbon Accumulation Geology, Xi'an; 710065, China; (3) College of Resources and Environmental Engineering, Guizhou Institute of Technology, Guiyang; 550003, China
Source title: Guang Pu Xue Yu Guang Pu Fen Xi/Spectroscopy and Spectral Analysis
Abbreviated source title: Guang Pu Xue Yu Guang Pu Fen Xi
Volume: 42
Issue: 3
Issue date: March 2022
Publication year: 2022
Pages: 783-787
Language: Chinese
ISSN: 10000593
CODEN: GYGFED
Document type: Journal article (JA)
Publisher: Science Press
Abstract: To determine the relationship between the thermal evolution degrees and Raman spectra of reservoir bitumens, bitumen from the reservoir in the Baiceng area of Southwest Guizhou Province was quantitatively analyzed using non-destructive Raman spectroscopy and fluid inclusion. Firstly, the homogenization temperature of fluid inclusions associated with the reservoir bitumen was obtained. The Raman spectrum of the bitumen was then obtained and compared with the maturity distribution standard for bitumen to determine the homogenization temperature, thermal evolution degree, and characteristics of the bitumen in the study. The results indicate that hydrocarbon reservoir charging events occurred in the Baiceng area of Southwest Guizhou in the Late Triassic (230 Ma) and Oligocene (30 Ma) and that the hydrocarbon-forming fluid had the characteristics of multi-stage hydrocarbon accumulation, these two oil and gas charging events are the ultimate source of reservoir bitumen in this area. Bitumen is the natural cracking product formed by the thermal metamorphism of oil. With the increase of burial depth, bitumen is continuously polymerized or carbonized. The formation of reservoir bitumen is accompanied by two stages of aqueous thermal fluid events, and the homogenization temperatures of aqueous inclusions are 93.5~96.7 and 101.2~103.7 . The results show that the Raman shift range of D peak is 1 334~1 346 cm-1, the Raman shift range of G peak is 1 607~1 610 cm-1, the difference G-D is 264~275 cm-1, and the Dh/Gh value is 0.552~0.573. According to the bitumen maturity distribution chart, the bitumen in the reservoir has reached the over-mature stage. The energy intensity ratio of D peak to G peak (R1) is 0.573, the full width at a half ratio of D peak to G peak(R2) is 1.688~1.945, and the ratio of D peak to the (D+G) integral peak area (R3) is 0.68~0.72. The Raman spectrum analysis indicates that the fluid temperature of the regional paleo reservoir is 122.78~164.31 . The reservoir bitumen in the Baiceng area of Southwest Guizhou is derived from allochthonous migration-type organic matter. The similarities in laser Raman spectrum characteristics indicate that the reservoir bitumen samples have the same origin. They are products of the transformation of oil and gas materials that escaped from the preexisting paleo reservoir along the ore-controlling structure in the study area. Finally, the relationship between the Raman spectrum and thermal evolution of bitumen is determined, providing a theoretical basis for studying the evolution of ancient reservoir oil into reservoir bitumen.
Number of references: 15
Main heading: Fluid inclusion
Controlled terms: Raman scattering - Raman spectroscopy - Hydrocarbons - Mineralogy - Spectrum analysis
Uncontrolled terms: Fluid inclusion - Guizhou - Homogenization temperatures - Laser Raman - Oil and gas - Raman shift - Reservoir bitumen - Shift range - Southwest guizhou - Thermal evolution
Classification code: 482 Mineralogy - 631 Fluid Flow - 741.1 Light/Optics - 804.1 Organic Compounds
Numerical data indexing: Age 2.30E+08yr, Age 3.00E+07yr, Size 2.64E+00m to 2.75E+00m, Size 3.46E+00m, Size 6.10E+00m
DOI: 10.3964/j.issn.1000-0593(2022)03-0783-05
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

150. Long-term downhole monitoring and controlling production from wells based on high-temperature DC power line communication (*Open Access*)

Accession number: 20220511560492

Authors: Xu, Liangbin (1); Liu, Changzan (2); Yang, Ling (2); Zhao, Yang (2); Ming, Kangquan (2); Zhang, Chenlu (2); Ren, Bowen (2); Dang, Bo (2)
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Corresponding author: Dang, Bo(bodang521@126.com)
Source title: Energy Reports
Abbreviated source title: Energy Rep.
Volume: 8
Issue date: July 2022
Publication year: 2022
Pages: 175-186
Language: English
E-ISSN: 23524847
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: DC power line communication (PLC) technique has been proven to be efficient for single-core cable communication and DC power supplies. However, the effect of high temperature will have a great influence on the performance of DC-PLC for downhole applications. In this paper, a high-temperature DC-PLC system that enables the operation to 150 °C is presented for long-term downhole production monitoring. Based on the DC-PLC techniques, the downhole system with single-core cable for long-term oil production monitoring and controlling is investigated. In order to improve the transmission efficiency, an adaptive PLC decoding algorithm is proposed to accommodate the single-core cables due to the long-term effect of high temperature, high pressure as well as vibration of the bad downhole conditions. Moreover, a current feedback amplifier LTC1210X of ANALOG DEVICES with extreme high-temperature operation is used as the single-core cable driver for data transmission. Finally, field experiments were conducted, and the results demonstrate the effectiveness of the proposed high-temperature DC-PLC system for the improvement of the efficiency and stability of the downhole system. © 2022 The Author(s)
Number of references: 23
Main heading: High temperature applications
Controlled terms: Efficiency - High temperature operations - High pressure effects
Uncontrolled terms: Communication techniques - DC power line communication - DC power lines - Down-hole monitoring - Downholes - Highest temperature - Long-term - Monitoring and controlling - Power line communication system - Single-core cables
Classification code: 913.1 Production Engineering
Numerical data indexing: Temperature 4.23E+02K
DOI: 10.1016/j.egyr.2022.01.142
Funding Details: Number: 2020KJXX-018, Acronym: -, Sponsor: -; Number: 41874158,51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKY-ZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250 and Grant 41874158 , in part by the Youth Science and Technology Nova Project in Shaanxi Province, China , under Grant 2020KJXX-018 and in part by CNOOC Limited Scientific Research Project, China , under Grant YXKY-ZX082021 .
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

151. A direct Z-scheme heterojunction g-C3N4/α–Fe2O3 nanocomposite for enhanced polymer-containing oilfield sewage degradation under visible light

Accession number: 20223312559704
Authors: Zhang, Xinqing (1); Xia, Li (2); Liu, Chao (3); Cheng, Xiaobo (3); Yang, Zhi (3)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Chemistry and Materials Science, Northwest University, Xi'an; 710127, China; (3) No. 1 Oil Production Plant, PetroChina Changqing Oilfield, Xi'an; 710000, China
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Source title: Environmental Science: Water Research and Technology

Abbreviated source title: Environ. Sci. Water Res. Technol.
Volume: 8
Issue: 9
Issue date: July 22, 2022
Publication year: 2022
Pages: 1965-1975
Language: English
ISSN: 20531400
E-ISSN: 20531419
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The massive discharge of polymer-containing sewage has caused more and more serious consequences to the petroleum production industry and ecological environment. To solve the above problem, constructing a Z-scheme heterojunction with effective charge transfer within the photocatalyst structure is critical in improving the performance of the catalytic reaction. A series of Z-scheme photocatalysts combining g-C3N4 and $_{\alpha}$–Fe2O3 were synthesized, and they exhibited high photocatalytic degradation HPAM efficiencies (up to 90%) without additional photosensitizers and sacrificial agents. The experiments have confirmed an efficient $_{\alpha}$–Fe2O3 to g-C3N4 electron transfer via strong electrostatic interaction, resulting in electron accumulation in g-C3N4 for H2O reduction to generate the active species OH and holes in $_{\alpha}$–Fe2O3 for O2 oxidation to generate the active species O2-; thus, OH and O2- synergistically catalyse HPAM degradation by mimicking natural photosynthesis. This study provides theoretical guidance for the efficient treatment of oilfield sewage using the photocatalytic technology. © 2022 The Royal Society of Chemistry.
Number of references: 72
Main heading: Charge transfer
Controlled terms: Catalysis - Hematite - Heterojunctions - Oil fields - Petroleum industry - Photosensitizers - Sewage
Uncontrolled terms: Active species - Catalytic reactions - Ecological environments - Effective charge - Industry environment - Performance - Petroleum production - Production industries - Synthesised - Visible light
Classification code: 452.1 Sewage - 482.2 Minerals - 512.1.1 Oil Fields - 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 802.2 Chemical Reactions
Numerical data indexing: Force 3.00E+00N, Percentage 9.00E+01%
DOI: 10.1039/d2ew00342b
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

152. An Image Fusion Method of Wavelet Transform and Principal Component Analysis Based on EIT

Accession number: 20223812766561
Authors: Xi, Wei (1); Wang, Xiaoxin (1); Wang, Bo (2)
Author affiliation: (1) Key Laboratory of Education Ministry for Photoelectric Logging and Detecting of Oil and Gas, Xi'an Shiyou University, Xi'an, China; (2) Xi'an Research Institute Co., Ltd., China Coal Technology and Engineering Group Corp., Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 905-909
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China

Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Electrical tomography, one of tomography technologies based on electromagnetic sensitivity mechanism, has attracted wide attention due to its advantages of simple response speed and non-radiation structure. However, the ill-posed and nonlinear problems of imaging technology affected the accuracy of image reconstruction. Given the investigations into electrical impedance tomography and image fusion technology, we proposed here a principal component analysis method based on wavelet transform. The real part, imaginary part and phase part of the impedance information were firstly extracted, followed by using the Landweber iterative algorithm to reconstruct the image respectively. Afterwards, the reconstructed images were subjected to be decomposed by wavelet. Then, the low-frequency component was processed according to the principal component analysis rule, accompanied by the process of high-frequency component according to the regional characteristic measurement rules. Finally, the newly reconstructed images could be obtained through wavelet reassembly. © 2022 IEEE.
Number of references: 10
Main heading: Wavelet transforms
Controlled terms: Electric impedance - Electric impedance measurement - Electric impedance tomography - Image analysis - Image fusion - Image reconstruction - Iterative methods - Principal component analysis
Uncontrolled terms: Electrical impe dance tomography (EIT) - Electrical tomography - Electromagnetic sensitivity - Image fusion methods - PCA - Principal-component analysis - Reconstructed image - Technology-based - Wavelet change - Wavelets transform
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 723.2 Data Processing and Image Processing - 921.3 Mathematical Transformations - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 942.2 Electric Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859195
Funding Details: Number: YCS22113123, Acronym: -, Sponsor: -; Number: 2022JM-314,2022JQ-260, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: ACKNOWLEDGMENT This work was supported by the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2022JQ-260 and No. 2022JM-314) and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (No. YCS22113123)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

153. Effect of Mg–Ga alloy intermetallic compounds on the properties of soluble aluminum alloy

Accession number: 20220811685172
Authors: Hui, Weihua (1); Sun, Liang (1); Zhou, Yong (1); Gao, Yimin (2); Zhai, Wenyan (1); Dong, Hui (1); Liu, Yanming (1); Gao, Qian (1); Peng, Jianhong (3)
Author affiliation: (1) College of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory for Mechanical Behavior of Materials, Xi'an; 710065, China; (3) College of Physics and Energy, Qinghai Nationalities University, Xining; 810007, China
Corresponding authors: Sun, Liang(lsun@xsyu.edu.cn); Gao, Yimin(ymgao@mail.xjtu.edu.cn)
Source title: Intermetallics
Abbreviated source title: Intermet
Volume: 144
Issue date: May 2022
Publication year: 2022
Article number: 107501
Language: English
ISSN: 09669795
CODEN: IERME5
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Numerous soluble aluminum alloys are the overriding applications in hydraulic fracturing technology applied in oil and gas field exploitation or biomaterial utilization. The solubility of aluminum alloy attributes to that of superficial hard and dense alumina film damage or broken, in such cases several representative low melting point metals addition will play a part, such as Ga, In, Sn, etc. Typically, aluminum alloys tends to be brittle due to Ga addition, while Mg element can be supposed to enhance its strength according to four representative Mg–Ga alloy

intermetallic compounds, which is Mg2Ga, MgGa, Mg5Ga2 and MgGa2, respectively. In present article, the first-principles calculation method was introduced to theoretically investigate the mechanical properties of the four Mg–Ga phases. The thermodynamic properties, structural stability, electronic structure, elastic properties and performance under pressure of four Mg–Ga intermetallic compounds were also investigated. Obviously, from the perspective of electronic structure, Mg is the electronic provider and Ga is the electronic acceptor in these compounds. According to the ionization degree calculation, the interaction between Mg and Ga ions in Mg5Ga2 phase is the strongest. In MgGa phase, the s-state electron energy density of Ga atom is the highest, so the s-state electron of Ga atom contributes the most to the contact potential between the grain boundary phase and the Al matrix. Therefore, the driving force of MgGa anodic dissolution has a decisive advantage which is reflected that its corrosion rate and the hydrogen production rate is the maximum. Thus the analysis of four intermetallic compounds mechanical properties, the bulk modulus B of four Mg–Ga intermetallic compounds is basically similar, indicating that they have similar compressive deformation resistance and fracture resistance. At 0 GPa, the young's modulus E and shear modulus G of Mg5Ga2 is the highest. The results show that Mg5Ga2 has the largest stiffness and plastic deformation resistance. © 2022
Number of references: 59
Main heading: Binary alloys
Controlled terms: Aluminum oxide - Gallium alloys - Aluminum alloys - Magnesium compounds - Dissociation - Gas industry - Hydrogen production - Intermetallics - Stability - Elastic moduli - Electronic structure - Gallium compounds - Ionization of gases - Calculations - Alumina - Magnesium alloys
Uncontrolled terms: Deformation resistance - Electronic.structure - First principle calculations - Intermetallics compounds - Mg-ga alloy intermetallic compound - Oil and gas fields - Property - S state - Soluble aluminium - Soluble aluminum alloy
Classification code: 522 Gas Fuels - 531.1 Metallurgy - 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 921 Mathematics - 951 Materials Science
Numerical data indexing: Age 2.00E+09yr, Age 5.00E+09yr, Pressure 0.00E00Pa
DOI: 10.1016/j.intermet.2022.107501
Funding Details: Number: 2019JQ-821, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was financially supported by the Open Fund of the State Key Laboratory for the Mechanical Behavior of Materials (20202212), the Open Fund of the National Joint Engineering Research Center for Abrasion Control and the Molding of Metal Materials (HKDNM201811) and the Natural Science Basic Research Plan in the Shaanxi Province of China (2019JQ-821), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project(YCS20211053).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

154. A MODEL OF CALCULATING THE BOND STRENGTH BETWEEN REBARS AND CONCRETE CONSIDERING THE SOFTENING EFFECT OF CONCRETE

Accession number: 20224813163613
Title of translation:
Authors: Lan, Guan-Qi (1); Wang, Yi-Hong (2); Liu, Le (3); Liu, Xi (2); Song, Mei-Mei (1)
Author affiliation: (1) Xi'an Shiyou University, School of Mechanical Engineering, Shaanxi, Xi’an; 710065, China; (2) Chang'an University, School of Civil Engineering, Shaanxi, Xi’an; 710061, China; (3) China United Northwest Institute Co., Ltd, Shaanxi, Xi’an; 710077, China
Corresponding author: Lan, Guan-Qi(201202@xsyu.edu.cn)
Source title: Gongcheng Lixue/Engineering Mechanics
Abbreviated source title: Gongcheng Lixue
Volume: 39
Issue: 9
Issue date: September 2022
Publication year: 2022
Pages: 234-241 and 256
Language: Chinese
ISSN: 10004750
CODEN: GOLIEB
Document type: Journal article (JA)
Publisher: Tsinghua University

Abstract: The bond strength between high-strength rebars and concrete with different strengths was tested by pull-out tests. The bonding mechanism between rebars and concrete was analyzed. The bilinear softening constitutive model was used to describe the softening behavior of concrete in the cracked zone, and the theoretical calculation model of the bond strength considering the influence of concrete in cracked and non-cracking zones were established. The effects of different radial displacement distributions in the cracked zone on the calculation results are studied. The validity of the calculation model was verified by comparing the calculated results with the experimental results. The results show that the computational model has the best accuracy when the radial displacement distribution in the fracture zone is assumed to be equivalently elastic. However, the bond strength of low-strength concrete specimens was overestimated under this assumption. It is suggested that the elastic assumption be used as the radial displacement distribution of concrete in the cracked zone to ensure adequate safety reserves. © 2022 Tsinghua University. All rights reserved.
Number of references: 21
Main heading: Reinforced concrete
Controlled terms: Bond strength (materials) - Computational methods - Cracks - Failure (mechanical)
Uncontrolled terms: Bond strength - Bonding - Cracked zones - Displacement distribution - Failure mechanism - High-strength - Pull-out test - Radial displacements - Rebar and concretes - Softening effect
Classification code: 412 Concrete - 951 Materials Science
DOI: 10.6052/j.issn.1000-4750.2021.06.0433
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

155. Data-driven closure model for the drag coefficient of the creeping flow past a translating sphere in a shear-thinning viscoelastic fluid

Accession number: 20221211816636
Authors: Su, Xiaohui (1); Xu, Zhifeng (1); Wang, Zhiguo (1); Jin, Hui (2); Wu, Song (1); Lu, Yinbin (1)
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Corresponding author: Su, Xiaohui(xhsu@xsyu.edu.cn)
Source title: Powder Technology
Abbreviated source title: Powder Technol.
Volume: 400
Issue date: March 2022
Publication year: 2022
Article number: 117266
Language: English
ISSN: 00325910
E-ISSN: 1873328X
CODEN: POTEBX
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: A drag force closure model for particle-laden viscoelastic fluid flows is the key to describing the ensemble-averaged behavior of the mixture. The effects of fluid rheological properties on the flow dynamics of a spherical particle in viscoelastic fluids in the creeping flow regime are parameterized using the Giesekus rheological model. Direct numerical simulations are performed within a large range of Deborah number(0-10).The drag force of a sphere in unbounded Giesekus fluids decreases monotonically with the increase of Deborah number. The negative wake may occur when the viscosity ratio is larger than 0.6 in Giesekus fluids but is absent in Oldroyd-B fluids in all conditions. An explicit closure model for the drag coefficient of a sphere in Giesekus fluids is established using the backpropagation artificial neural network. The drag closure model provides a method for explicitly formulating the momentum exchange model for dilute suspensions of solid particles in shear-thinning viscoelastic fluids. © 2022 Elsevier B.V.
Number of references: 44
Main heading: Shear thinning
Controlled terms: Drag - Drag coefficient - Neural networks - Non Newtonian flow - Shear flow - Spheres - Suspensions (fluids) - Viscoelasticity
Uncontrolled terms: Closure models - Creeping flows - Data driven - Deborah numbers - Drag force model - Drag forces - Giesekus fluids - Particle - Vis-coelastic fluids - Visco-elastic fluid

Classification code: 631.1 Fluid Flow, General - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Size 1.524E-02m
DOI: 10.1016/j.powtec.2022.117266
Funding Details: Number: 51906202,52074220, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-814, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (grant number 51906202 , 52074220) and by the Natural Science Basic Research Program of Shaanxi Province (grant number 2019JQ-814).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

156. Optimized schemes of enhanced shale gas recovery by CO2-N2 mixtures associated with CO2 sequestration

Accession number: 20223112468780
Authors: Ma, Haoming (1); Yang, Yun (2); Zhang, Yuming (1); Li, Ziyan (2); Zhang, Kai (1); Xue, Zhenqian (1); Zhan, Jie (3); Chen, Zhangxin (1)
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Corresponding author: Yang, Yun(yun.yang2@ucalgary.ca)
Source title: Energy Conversion and Management
Abbreviated source title: Energy Convers. Manage.
Volume: 268
Issue date: September 15, 2022
Publication year: 2022
Article number: 116062
Language: English
ISSN: 01968904
CODEN: ECMADL
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In response to the growing demand for CO2 mitigation and unconventional natural gas, the oil and gas industry is researching for the viability to enhance shale gas recovery (ESGR) and sequester CO2 in depleted reservoirs. Previous research has shown that a CO2-N2 mixture can be employed as a desired injection fluid to concurrently address both industrial issues. Due to the infancy of ESGR operations, there is no thorough knowledge of field-level optimized strategies using CO2-N2 for the ESGR associated with CO2 sequestration. In this study, the commercial reservoir simulator GEM and CMOST by CMG were adopted to conduct ~ 120 simulation scenarios based on the Barnett shale formation in order to comprehend the impacts of three dominating operational parameters and propose the corresponding solutions. This study reveals four major findings. Firstly, a larger N2 concentration corresponds to a better recovery factor of shale gas but a shorter breakthrough time that causes the worse CO2 storage performance. Secondly, an injection rate is initially proportional to the shale gas recovery and CO2 storage performance but beyond a threshold rate, it can inversely affect both outcomes. Thirdly, the influence of a soaking period is limited in a short term and negligible in a long term for both ESGR and CO2 sequestration. Lastly, by selecting an appropriate combination of an injection rate and a CO2-N2 ratio, the income of a project can significantly be improved by 22 % under the current carbon tax policy. This study provides shale gas operators with a guideline for implementing large-scale ESGR projects employing CO2-N2 mixtures. © 2022 Elsevier Ltd
Number of references: 64
Main heading: Carbon dioxide
Controlled terms: Gas industry - Gases - Industrial research - Mixtures - Recovery
Uncontrolled terms: CO 2 mitigation - CO2 sequestration - CO2-N2 flooding - Enhance shale gas recovery - Floodings - Gas recovery - Growing demand - Injection rates - Optimisations - Storage performance
Classification code: 522 Gas Fuels - 804.2 Inorganic Compounds - 901.3 Engineering Research - 912.1 Industrial Engineering
Numerical data indexing: Percentage 2.20E+01%, Size 5.08E-02m
DOI: 10.1016/j.enconman.2022.116062

Funding Details: Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: -, Acronym: AI, Sponsor: Alberta Innovates;
Funding text: This research has been made possible by contributions from the Natural Sciences and Engineering Research Council (NSERC)/Energi Simulation Industrial Research Chair in Reservoir Simulation and the Alberta Innovates (iCore) Chair in Reservoir Modeling.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

157. Evaluation and dynamic breakup of bubble size distribution of liquified natural gas release underwater

Accession number: 20221912095417
Authors: Zhang, Yixiang (1); Zhu, Jianlu (2); Teng, Lin (3); Li, Yuxing (2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shandong Key Laboratory of Oil & Gas Storage and Transportation Safety, Qingdao; 266580, China; (3) College of Chemical Engineering, Fuzhou University, Fuzhou; 350116, China
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Source title: Journal of Natural Gas Science and Engineering
Abbreviated source title: J. Nat. Gas Sci. Eng.
Volume: 102
Issue date: June 2022
Publication year: 2022
Article number: 104600
Language: English
ISSN: 18755100
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: With the demand for lower carbon emissions and the increasing use of clean energy instead of traditional fossil fuels, offshore production of liquefied natural gas (LNG) has become a major mode of energy transportation and storage. Due to its cryogenic characteristics, LNG produces special physical phenomena once it leaks from cargo ships or offshore pipelines. To investigate the mechanical behavior and thermal interaction between the jet-released LNG and surrounding ambient water, a set of laboratory experiments with various measurements was designed and developed to perform controllable cryogenic liquid horizontal release under water. The hydrodynamic phenomenon of flow behavior, effect of release dynamics, and instability mechanism of the breakup process caused by the formation of vapor bubbles were observed and quantified under different orifice sizes and release pressures. In addition, a four-stage physical model, established by Raj, that described the breakup dynamics transition from jet liquid to diffusion plume was validated and recorded using a visualized high-speed video camera. Two commonly used mathematical methods, the Rosin-Rammler distribution and lognormal distribution, were used to quantify and evaluate the average bubble sizes in 1.95 ± 0.06 mm, 2.18 ± 0.06 mm, and 2.2 ± 0.1 mm from 1, 3–5 mm, using image processing techniques. The bubble breakup mechanisms and empirical equations were developed and discussed with a complete set of literature data based on a non-dimensional analysis of various release conditions, which was validated with droplet size data obtained from laboratory studies in both gas and liquid co-flowing jets. The -0.38 power-law scaling relationship between the dimensionless length scale of d/lm and the mixture Weber number was established to predict the breakup of the vapor bubble size from subsea release fluids. © 2022 Elsevier B.V.
Number of references: 36
Main heading: High speed cameras
Controlled terms: Liquefied natural gas - Natural gas transportation - Pipelines - Petroleum transportation - Fossil fuels - Digital storage - Video cameras - Gas emissions - Offshore oil well production
Uncontrolled terms: Bubble size - Bubble size distributions - Dimensionless relationship - Flow behaviours - Gas release - Leakage under water - Liquified natural gas - Low-carbon emissions - Under water - Vapor bubble
Classification code: 511.1 Oil Field Production Operations - 522 Gas Fuels - 523 Liquid Fuels - 619.1 Pipe, Piping and Pipelines - 716.4 Television Systems and Equipment - 722.1 Data Storage, Equipment and Techniques - 742.2 Photographic Equipment
Numerical data indexing: Size 1.95E-03m, Size 2.18E-03m, Size 2.20E-03m, Size 3.00E-03m to 5.00E-03m
DOI: 10.1016/j.jngse.2022.104600
Funding Details: Number: 2017YFC0805800, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: 19CX02036A, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;

Funding text: This work was supported by the Fundamental Research Funds for the Central Universities (Grant No. 19CX02036A), the National Key R&D Program of China (2017YFC0805800). We also gratefully acknowledged the Shandong Key Laboratory of Oil & Gas Storage and Transportation Safety for experiments.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

158. Study on the handheld monitoring equipment and the supervisory method for transportation loss of oil tank trucks (*Open Access*)

Accession number: 20221011767719
Authors: Zhizhou, He (1); Zuobi, Wang (2); Hua, Ma (2); Shideyi (3); Hejingbin (3); Zhaoxia, Mu (2); Yuanbo, Bai (4)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2195
Part number: 1 of 1
Issue: 1
Issue title: 2021 International Conference on Smart Transportation, Energy and Power, STEP 2021
Issue date: February 23, 2022
Publication year: 2022
Article number: 012005
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2021 International Conference on Smart Transportation, Energy and Power, STEP 2021
Conference date: December 3, 2021 - December 5, 2021
Conference location: Virtual, Online
Conference code: 177423
Publisher: IOP Publishing Ltd
Abstract: At present, the oil of oil fields in remote areas and well sites without petroleum pipeline are mainly transported by oil tankers. Oil will spill and be stolen during the process of transportation, resulting in a large difference between the amount of oil loaded at first and the amount of oil unloaded in the end. The traditional method is to measure and print the bill when loading oil, not to re-measure when unloading oil, and to pay according to the bill, which causes great economic loss. Aiming at tackle this problem, this paper designs and realizes a handheld monitoring device and supervision method for the transportation loss of oil tanker. It integrates EEPROM, RTC real-time clock, PCF8563T memory, LED display lamp, LCD1602 display screen and speakers, and communicates and transmits oil quantity information with primary instruments of oil pumping equipment and oil unloading equipment, the information stored by the device can be read by the communication software of the host computer, and the information can be analyzed, calculated and settled accurately by the management software of the host computer. It can effectively prevent oil leakage and oil stealing during transportation. © Published under licence by IOP Publishing Ltd.
Number of references: 4
Main heading: Oil tanks
Controlled terms: Oil fields - Display devices - Oil tankers - Petroleum transportation - Unloading - Losses - Oil spills - Leakage (fluid)
Uncontrolled terms: Economic loss - Handhelds - Host computers - Lcd1602 - LED display - Monitoring device - Monitoring equipment - Real time clock - Remote areas - When unloading
Classification code: 453.1 Water Pollution Sources - 512.1.1 Oil Fields - 523 Liquid Fuels - 619.2 Tanks - 671 Naval Architecture - 691.2 Materials Handling Methods - 722.2 Computer Peripheral Equipment - 911.2 Industrial Economics
DOI: 10.1088/1742-6596/2195/1/012005
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

159. Quadruple plasmon-induced transparency and tunable multi-frequency switch in monolayer graphene terahertz metamaterial

Accession number: 20220611608887
Authors: Li, Yuhui (1); Xu, Yiping (1); Jiang, Jiabao (1); Ren, Liyong (2); Cheng, Shubo (1); Yang, Wenxing (1); Ma, Chengju (3); Zhou, Xianwen (1); Wang, Ziyi (1); Chen, Zhanyu (1)
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Source title: Journal of Physics D: Applied Physics
Abbreviated source title: J Phys D
Volume: 55
Issue: 15
Issue date: April 14, 2022
Publication year: 2022
Article number: 155101
Language: English
ISSN: 00223727
E-ISSN: 13616463
CODEN: JPAPBE
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: A monolayer graphene metamaterial composed of a graphene block and four graphene strips, which has the metal-like properties in terahertz frequency range, is proposed to generate an outstanding quadruple plasmon-induced transparency (PIT). Additional analyses show that the forming physical mechanism of the PIT with four transparency windows can be explained by strong destructive interference between the bright mode and the dark mode, and the distributions of electric field intensity and electric field vectors under the irradiation of the incident light. Coupled mode theory and finite-difference time-domain method are employed to study the spectral response characteristics of the proposed structure, and the theoretical and simulated results are in good agreement. It is found that a tunable multi-frequency switch and excellent optical storage can be achieved in the wide PIT window. The maximum modulation depth is up to 99.7%, which corresponds to the maximum extinction ratio of 25.04 dB and the minimum insertion loss of 0.19 dB. In addition, the time delay is as high as 0.919 ps, the corresponding group refractive index is up to 2755. Thus, the proposed structure provides a new method for the design of terahertz multi-frequency switches and slow light devices. © 2022 IOP Publishing Ltd.
Number of references: 58
Main heading: Metamaterials
Controlled terms: Slow light - Strip metal - Graphene - Electric fields - Incident light - Monolayers - Transparency - Optical switches - Refractive index - Finite difference time domain method - Plasmons
Uncontrolled terms: Coupled mode theory - Grapheme - Induced transparency - Metal-like properties - Multi frequency - Physical mechanism - Plasmon-induced transparency - Tera Hertz - Terahertz frequency range - Tunables
Classification code: 535.1 Metal Rolling - 701.1 Electricity: Basic Concepts and Phenomena - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 761 Nanotechnology - 804 Chemical Products Generally - 921 Mathematics - 931.3 Atomic and Molecular Physics - 932.3 Plasma Physics - 951 Materials Science
Numerical data indexing: Decibel 1.90E-01dB, Decibel 2.504E+01dB, Percentage 9.97E+01%, Time 9.19E-13s
DOI: 10.1088/1361-6463/ac48b0
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

160. Evolution and controls of high reservoir quality in Oligocene sandstones from moderate to deep burial, Nanpu Sag, Bohai Bay Basin, China

Accession number: 20224413025673
Authors: Wu, Hao (1); Ji, Youliang (2); Du, Zhiwei (1); Zhou, Yong (2); Zou, Juan (3); Zhang, Yunzhao (2, 4, 5); Du, Wei (6); Liu, Haiqing (3)

Author affiliation: (1) Key Laboratory of Mineral Resources in Western China (Gansu Province), School of Earth Sciences, Lanzhou University, Gansu, Lanzhou; 730000, China; (2) State Key Laboratory of Petroleum Resources & Prospecting, College of Geosciences, China University of Petroleum, Beijing; 102249, China; (3) PetroChina Jidong Oilfield Company, Hebei, Tangshan; 063004, China; (4) School of Earth Sciences and Engineering, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (5) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (6) CNOOC International Limited, Beijing; 100028, China
Corresponding author: Wu, Hao(haowu@lzu.edu.cn)
Source title: Sedimentary Geology
Abbreviated source title: Sediment. Geol.
Volume: 441
Issue date: November 2022
Publication year: 2022
Article number: 106275
Language: English
ISSN: 00370738
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The Oligocene sandstones characterized by highly variable reservoir quality are the main hydrocarbon exploration and development targets in the Nanpu Sag, Bohai Bay Basin, China. In this study, the evolution and controls of reservoir quality in Oligocene sandstones from moderate to deep burial were investigated using petrographic and petrological data. The results show that the Oligocene sandstones are mostly fine-to coarse-grained, subangular to subrounded roundness, moderately sorted feldspathic litharenites and lithic arkoses with an average Q/F/R distribution of 48.4: 29.1: 22.5. Three anomalously high porosity/permeability zones (AHPZs, hereinafter named AHPZ-I, AHPZ-II, and AHPZ-III, respectively) are developed at depth ranges of 2300–3100 m, 3200–3550 m, and 3700–4200 m, respectively. Notably, the three zones are featured by distinctly different pore types: mainly primary pores in AHPZ-I; pore combination (average primary pore volume > average secondary pore volume) in AHPZ-II; primary pores with a few microfractures in AHPZ-III. The pore-throat sizes controlling permeability in anomalously high porosity sandstones (AHPS) decrease steadily from AHPZ-I to AHPZ-III-1 and then increase significantly at AHPZ-III-2. The AHPS reservoirs are characterized by low displacement pressure, large pore throat and mercury intrusion saturation, and high free fluid index (FFI) and reservoir quality index (RQI). Compaction greatly degraded the reservoir quality of Oligocene sandstones; carbonate cementation further restricts the formation of high-quality reservoirs. The sandstones with low content (© 2022 Elsevier B.V.
Number of references: 82
Main heading: Sandstone
Controlled terms: Carbonation - Cements - Gasoline - Petroleum prospecting - Petroleum reservoir engineering - Porosity - Quality control
Uncontrolled terms: Anomalously high porosities - Anomalously high porosity/permeability zone - Bohai Bay Basin - Deep burials - Diagenesis - Oligocene - Oligocene sandstone - Petroleum emplacement - Primary pores - Reservoir quality
Classification code: 412.1 Cement - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 802.2 Chemical Reactions - 913.3 Quality Assurance and Control - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.00E+01%, Size 2.30E+03m to 3.10E+03m, Size 3.20E+03m to 3.55E+03m, Size 3.70E+03m to 4.20E+03m, Size 4.00E+03m
DOI: 10.1016/j.sedgeo.2022.106275
Funding Details: Number: 20JR5RA226, Acronym: -, Sponsor: -; Number: 42202135, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: PetroChina, Sponsor: PetroChina Company Limited; Number: lzujbky-2021-17, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2016ZX05006-006, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: We acknowledge support from the National Natural Science Foundation of China (Grant No. 42202135), the Fundamental Research Funds for the Central Universities (Grant No. lzujbky-2021-17), the Gansu Province Youth Science and Technology Fund Project (Grant No. 20JR5RA226) and the National Science and Technology Major Project of China (Grant No. 2016ZX05006-006). We are also grateful to the Jidong Oilfield Company, PetroChina for their support in completing this study and permission to publish.We acknowledge support from the National Natural Science Foundation of China (Grant No. 42202135), the Fundamental Research Funds for the Central Universities (Grant No. lzujbky-2021-17), the Gansu Province Youth Science and Technology Fund Project (Grant No. 20JR5RA226) and the National Science and Technology Major Project of China (Grant No. 2016ZX05006-006). We are also grateful to the Jidong Oilfield Company, PetroChina for their support in completing this study and permission to publish.
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

161. Experimental analysis and deliverability calculation of abnormally pressured carbonate gas reservoir considering stress sensitivity (*Open Access*)

Accession number: 20221611973096
Authors: Cheng, Youyou (1, 2); Guo, Chunqiu (3); Tan, Chengqian (1); Chen, Pengyu (3); Shi, Haidong (3); Xing, Yuzhong (3)
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Corresponding author: Cheng, Youyou(charmingx2u@126.com)
Source title: Journal of Petroleum Exploration and Production Technology
Abbreviated source title: J. Pet. Explor. Prod. Technol.
Volume: 12
Issue: 11
Issue date: November 2022
Publication year: 2022
Pages: 3105-3115
Language: English
ISSN: 21900558
E-ISSN: 21900566
Document type: Journal article (JA)
Publisher: Springer Science and Business Media Deutschland GmbH
Abstract: The stress sensitivity of abnormally pressured carbonate gas reservoirs is of great complexity and exerts much influence on gas well deliverability calculation. Fifty core samples from the AD Gas Reservoirs were selected in the experiment to study the effect of abnormally high pressure and fracture on the stress sensitivity of carbonate gas reservoir. The results show that the permeability decline mainly occurs in the abnormally high-pressure stage and is rather small in normal pressure stage. The existence of the fracture could substantially enhance the stress sensitivity. The higher fracture density could induce the stronger stress sensitivity. Furthermore, a mathematical model with the consideration of the variable permeability modulus was established to calculate gas well deliverability in the abnormally pressured carbonate gas reservoir with developed natural fractures. It is revealed that previous method assuming a fixed permeability modulus would lead to an overestimation of the real stress sensitivity and thus underestimating the absolute open flow of the gas well. © 2022, The Author(s).
Number of references: 29
Main heading: Fracture
Controlled terms: Carbonation - Gases - High pressure effects - Natural gas well production - Natural gas wells - Petroleum reservoir evaluation - Petroleum reservoirs - Sensitivity analysis
Uncontrolled terms: Abnormally high pressure - Carbonate gas reservoir - Gas reservoir - Gas well - Gas well deliverability - High pressure - Permeability modulus - Pressure stages - Stress sensitivity - Well deliverability
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 802.2 Chemical Reactions - 921 Mathematics - 951 Materials Science
DOI: 10.1007/s13202-022-01500-6
Funding Details: Number: 20JK0848, Acronym: -, Sponsor: -; Number: 2021DJ3301, Acronym: КННК, Sponsor: China National Petroleum Corporation;
Funding text: This work is financially supported by the General Special Scientific Research Plan of Shaanxi Provincial Department of Education (20JK0848) and Scientific Research and Technology Development Project of CNPC (2021DJ3301).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

162. Adsorption of toxic H2S, CO and NO molecules on pristine and transition metal doped α–AsP monolayer by first-principles calculations

Accession number: 20215211402065
Authors: Chen, Guo-Xiang (1); Chen, Xiao-Na (1); Wang, Dou-Dou (2); An, Guo (1); Liu, Shuai (1); Zhang, Jian-Min (3)
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Source title: Physica E: Low-Dimensional Systems and Nanostructures
Abbreviated source title: Phys E
Volume: 138
Issue date: April 2022
Publication year: 2022
Article number: 115109
Language: English
ISSN: 13869477
CODEN: PELNFM
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Using first-principles calculations based on density functional theory (DFT-D2 method), the adsorption behavior of pristine and transition metal (TM) atoms (Fe, Ni, Pd and Pt) doped $_{\alpha}$–AsP monolayer for toxic H2S, CO and NO molecules are systematically studied. The results show that TM dopants prefer to substitute As atoms with lower binding energy. TM doping significantly enhances the adsorption ability of the $_{\alpha}$–AsP monolayer for H2S, CO and NO molecules. Furthermore, there is a significant change in work function (WF) after H2S, CO and NO adsorption, meaning that the TM doped $_{\alpha}$–AsP monolayer is sensitive to gas molecules. Double NO can be stably adsorbed on the TM doped substrate plane, indicating that they are suitable for reversible sensor applications under practical circumstances. Our calculations can provide theoretical guidance to develop promising novel two dimensional V–V binary AsP-based gas sensors. © 2021 Elsevier B.V.
Number of references: 65
Main heading: Adsorption
Controlled terms: Arsenic - Chemical sensors - Transition metals - Binding energy - Gas detectors - Calculations - Density functional theory - Monolayers - Platinum compounds - Molecules - Phosphorus
Uncontrolled terms: Adsorption behaviour - CO and NO - CO molecule - Density-functional-theory - DFT-d2 - First principle calculations - Gas sensing - Metal-doped - NO molecule - Transition metal doping
Classification code: 531 Metallurgy and Metallography - 801 Chemistry - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 914.1 Accidents and Accident Prevention - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments
Numerical data indexing: Electrical conductance 2.00E+00S
DOI: 10.1016/j.physe.2021.115109
Funding Details: Number: YCS20212133, Acronym: -, Sponsor: -; Number: 2014KJXX-70, Acronym: -, Sponsor: -; Number: 11304246,12004301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant nos. 11304246 and 12004301), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS20212133).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

163. Streaming Hierarchical Clustering Based on Point-Set Kernel (*Open Access*)

Accession number: 20223612695309
Authors: Han, Xin (1); Zhu, Ye (2); Ting, Kai Ming (3); Zhan, De-Chuan (3); Li, Gang (4)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, China; (2) School of Information Technology, Deakin University, Australia; (3) State Key Laboratory of Novel Software Technology, Nanjing University, China; (4) Centre for Cyber Security Research and Innovation, Deakin University, Australia
Source title: Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining
Abbreviated source title: Proc. ACM SIGKDD Int. Conf. Knowl. Discov. Data Min.
Part number: 1 of 1
Issue title: KDD 2022 - Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining
Issue date: August 14, 2022

Publication year: 2022
Pages: 525-533
Language: English
ISBN-13: 9781450393850
Document type: Conference article (CA)
Conference name: 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, KDD 2022
Conference date: August 14, 2022 - August 18, 2022
Conference location: Washington, DC, United states
Conference code: 181896
Sponsor: ACM SIGKDD; ACM SIGMOD
Publisher: Association for Computing Machinery
Abstract: Hierarchical clustering produces a cluster tree with different granularities. As a result, hierarchical clustering provides richer information and insight into a dataset than partitioning clustering. However, hierarchical clustering algorithms often have two weaknesses: scalability and the capacity to handle clusters of varying densities. This is because they rely on pairwise point-based similarity calculations and the similarity measure is independent of data distribution. In this paper, we aim to overcome these weaknesses and propose a novel efficient hierarchical clustering called StreaKHC that enables massive streaming data to be mined. The enabling factor is the use of a scalable point-set kernel to measure the similarity between an existing cluster in the cluster tree and a new point in the data stream. It also has an efficient mechanism to update the hierarchical structure so that a high-quality cluster tree can be maintained in real-time. Our extensive empirical evaluation shows that StreaKHC is more accurate and more efficient than existing hierarchical clustering algorithms. © 2022 ACM.
Number of references: 41
Main heading: Trees (mathematics)
Controlled terms: Clustering algorithms - Geometry
Uncontrolled terms: Cluster tree - Clusterings - Different granularities - Hier-archical clustering - Hierarchical Clustering - Hierarchical clustering algorithms - Isolation kernel - Point set - Point-based - Streaming data
Classification code: 903.1 Information Sources and Analysis - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1145/3534678.3539323
Funding Details: Number: 62076120, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KFKT2019A32, Acronym: NJU, Sponsor: Nanjing University; Number: -, Acronym: -, Sponsor: State Key Laboratory of Novel Software Technology;
Funding text: This project is supported by State Key Laboratory of Novel Software Technology, Nanjing University (Grant No. KFKT2019A32). Kai Ming Ting is supported by the National Natural Science Foundation of China (Grant No. 62076120).
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

164. An adaptive multiscale noise tuning second order stochastic resonance enhanced method

Accession number: 20222612303192
Title of translation:
Authors: Li, Guoying (1); Wang, Shibin (2); Yang, Zhibo (2); Li, Jimeng (3); Chen, Xuefeng (2)
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Corresponding author: Chen, Xuefeng
Source title: Zhendong yu Chongji/Journal of Vibration and Shock
Abbreviated source title: J Vib Shock
Volume: 41
Issue: 12
Issue date: June 28, 2022
Publication year: 2022
Pages: 8-15
Language: Chinese
ISSN: 10003835

Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society
Abstract: The best matching between noise, periodic signal, and a nonlinear bistable system can be realized through tuning various parameters to achieve stochastic resonance in the classical bistable stochastic resonance system. It makes that a weak periodic component in the system output gets a certain amount of noise energy and achieves enhanced effect. Thus the weak periodic components can be effectively detected. However, the capability of using noise to enhance signal is limited. There is still some useful noise in the system response. Hence, aiming at the repeated utilization of the noise by virtue of double integration, a system model using a second-order stochastic resonance enhanced method was proposed to reuse the noise twice and effectively promote high-frequency noise energy transferring to the low-frequency area in order to improve the signal-to-noise ratio of output response effectively. The second order stochastic resonance enhancement method based on the adaptive multiscale noise tuning of using Paul wavelet, with the collaborative signal to noise ratio (CSNR) as the objective function, was proposed in the work, taking the effect of the multiscale noise on stochastics resonance into account, and based on the mathematical nature of the special low-pass filter of stochastic resonance. This method makes full use of the ability of multi-resolution time-frequency analysis of wavelet, which can divide the input signals and noise into different frequency bands for realizing the control of intensity of signal and noise in different frequency bands. The property of the second order stochastic resonance, which can achieve the enhancement utilization of the noise energy in the signals, has been fully used. The proposed method has been validated by simulation tests and actual application in engineering. © 2022, Editorial Office of Journal of Vibration and Shock. All right reserved.
Number of references: 31
Main heading: Signal to noise ratio
Controlled terms: Circuit resonance - Functions - Low pass filters - Magnetic resonance - Stochastic models - Stochastic systems - Tuning
Uncontrolled terms: Best matching - Different frequency - Faults diagnosis - Multiscale noise tuning - Noise energy - Noise-tuning - Periodic components - Resonance enhanced - Second orders - Stochastic resonances
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 703.1 Electric Networks - 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 731.1 Control Systems - 921 Mathematics - 922.1 Probability Theory - 961 Systems Science
DOI: 10.13465/j.cnki.jvs.2022.12.002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

165. Experimental Study on Erosion of String Inner Wall in Perforation Interval in Liquid-Solid Two-Phase Flow (*Open Access*)

Accession number: 20221611964367
Authors: Zhang, Kui (1); Wang, Junchao (2); Yuan, Liang (1); Mu, Lingyu (1); Cheng, Jiarui (3); Wei, Wenlan (3)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2230
Part number: 1 of 1
Issue: 1
Issue title: 2022 International Conference on Applied Mechanics and Advanced Materials
Issue date: March 31, 2022
Publication year: 2022
Article number: 012029
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 International Conference on Applied Mechanics and Advanced Materials, ICAMAM 2022
Conference date: January 21, 2022 - January 23, 2022
Conference location: Virtual, Online
Conference code: 178311

Publisher: IOP Publishing Ltd
Abstract: In the process of large displacement fracture injection, high flow velocity sand-carrying fluid causes serious erosion corrosion to the borehole. Based on the high-speed liquid-solid two-phase erosion experiments, the erosion experiments of single-hole set with flow velocity, sand concentration and grain size, and the three-dimensional profile scanning of the eroded orifice were carried out to investigate the erosion and corrosion expansion law of the high-speed jet orifice. The study shows that the erosion rate increases with the increase of discharge volume, sand concentration and particle size, and the change of discharge volume and sand concentration has the most significant effect on the erosion of the hole. The prediction of the hole expansion law of single hole with sand liquid injection shows that the hole diameter expands to 13mm-19mm after 90min of construction of 8 clusters of 24 holes, while the hole diameter expands to 11.7mm-12.8mm after 90min of construction of 3 clusters of 48 holes. 3 clusters of 48 holes have smaller hole diameter after the same construction time, which is better than 8 clusters of 24 densely packed holes. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Erosion
Controlled terms: Hole concentration - Orifices - Particle size - Sand - Liquids - Two phase flow - Flow velocity
Uncontrolled terms: Discharge volume - Erosion experiments - Erosion-corrosion - High flow velocity - Hole diameter - Inner walls - Large displacements - Liquid-solid two phase flow - Sand concentrations - Single hole
Classification code: 483.1 Soils and Soil Mechanics - 631 Fluid Flow - 631.1 Fluid Flow, General - 701.1 Electricity: Basic Concepts and Phenomena - 943.2 Mechanical Variables Measurements
Numerical data indexing: Size 1.17E-02m to 1.28E-02m, Size 1.30E-02m to 1.90E-02m, Time 5.40E+03s
DOI: 10.1088/1742-6596/2230/1/012029
Funding Details: Number: 51901180,52105209, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by National Natural Science Foundation of China grant number 52105209 and 51901180, and it was made possible by Research and Application of shale Oil efficient fracturing Technology, No.2019E-260, Scientific Research and technology Development Project of Petrochina Co., LTD.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

166. Service state evaluation for expansion joints of suspension bridge under extreme vehicle braking load

Accession number: 20224613101515
Title of translation:
Authors: Li, Guangling (1); Han, Wanshui (2); Zhang, Lu (3); Zhang, Yumin (1)
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Corresponding author: Han, Wanshui
Source title: Zhendong yu Chongji/Journal of Vibration and Shock
Abbreviated source title: J Vib Shock
Volume: 41
Issue: 15
Issue date: August 1, 2022
Publication year: 2022
Pages: 186-195 and 251
Language: Chinese
ISSN: 10003835
Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society
Abstract: Here, to evaluate service state of expansion joints of suspension bridge under action of extreme vehicle braking loade in operation stage, based on the existing vehicle-bridge coupled vibration analysis system, the vehicle braking force and pitching moment were introduced to establish an analysis system which could consider vehicle braking process, and the load test verification was conducted. Combining the monitored traffic flow data with the variable parameter speed-density relation model, the speed-density model matching the monitored lane data was deduced to determine vehicle flow traffic volume and vehicle speed under different vehicle flow densities. Using the vehicle flow simulation method integrating traffic flow and vehicle characteristics and considering variable correlation,

considering driver response time and the congestion flow model, the high reality simulation of extreme braking vehicle flow was realized. Taking the working limit state of expansion joint as the criterion, the corresponding working domain and failure domain states were defined. Taking a suspension bridge as an example, the service state of expansion joints of the bridge under conditions of vehicle unbraking, single-lane braking and two-lane braking was evaluated. The analysis results showed that the verified analysis system can provide a numerical analysis platform for evaluating service state of expansion joints under extreme vehicle flow braking load; there are differences among normal working domains of expansion joint of the bridge under different environment temperatures; relative to unbraking and single-lane braking working conditions, when two-lane braking occurs and the opposite lane operates normally, the mean value of expansion joint longitudinal displacement response extreme values is the maximum, it is 416. 25 mm not exceeding the design range of 640 -700 mm; under single-lane and two-lane braking conditions, the mean value of extreme values of angle around vertical axis of expansion joint is 0. 075 rad and 0. 082 rad, respectively both exceeding the design range of 0. 055 7 rad, they are very easy to make expansion joint have tensile crack at one end or squeeze at other end; extreme braking working conditions should be considered in design process to ensure working reserve of expansion joint deformation at beam end; if lane braking occurring, vehicles in the opposite lane should immediately be controlled to drive into the bridge range until traffic accident state is relieved.
Number of references: 30
Main heading: Load testing
Controlled terms: Accidents - Deformation - Digital storage - Suspensions (components) - Traffic congestion - Vibration analysis
Uncontrolled terms: Analysis system - Angle around vertical axis - Bridge engineering - Bridge expansion joints - Longitudinal deformation - Service state evalution - Suspension bridge, expansion joint - Vehicle braking - Vehicle flow - Vertical axis
Classification code: 601.2 Machine Components - 722.1 Data Storage, Equipment and Techniques - 914.1 Accidents and Accident Prevention
Numerical data indexing: Absorbed dose 7.00E-02Gy, Absorbed dose 7.50E-01Gy, Absorbed dose 8.20E-01Gy, Size 2.50E-02m, Size 6.40E-01m to 7.00E-01m
DOI: 10.13465/j.cnki.jvs.2022.15.024
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

167. Calculation of lattice vibrational and thermal properties of cadmium sulfide nanocrystal and growth preference of cadmium sulfide powder during microwave-hydrothermal process

Accession number: 20214211025833
Authors: Fu, Jia (1); Chen, Su (1); Liu, Xing (1, 2)
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Source title: International Journal of Quantum Chemistry
Abbreviated source title: Int J Quantum Chem
Volume: 122
Issue: 2
Issue date: January 15, 2022
Publication year: 2022
Article number: e26828
Language: English
ISSN: 00207608
E-ISSN: 1097461X
CODEN: IJQCB2
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: CdS nanocrystal is investigated by first-principles calculations and experiments. Based on phonon spectra, the wurtzite CdS structure is thermodynamically stable. Debye temperature, specific heat capacity and thermal expansion coefficient are calculated to be 221.51 K, 47.68 J·mol-1·K-1 and 1.95×10-4 K-1, respectively. Band gaps of CdS single crystal and monolayer CdS supercell calculated by GGA–mBJ function are 2.74 eV and 2.38 eV. CdS powder is synthesized by microwave-hydrothermal process (140 °C + 15 min), with particle size ranging from 50 to

1000 nm. HRTEM shows the nanocrystal distance of 6.676 Å between the (0001) crystal faces and growth preference along the [002] direction. The band gap of CdS thin film evaluated by UV–Vis absorption spectra is 2.41 eV, close to 2.38 eV of monolayer supercell, which provides theoretical basis for CdS doping to improve photoanode performance of piezoelectric semiconductors. © 2021 Wiley Periodicals LLC.
Number of references: 58
Main heading: Particle size
Controlled terms: Nanocrystals - Phonons - Calculations - Cadmium sulfide - Absorption spectroscopy - Energy gap - Semiconductor doping - Single crystals - Thermal expansion - Electromagnetic wave absorption - II-VI semiconductors - Monolayers - Specific heat - Debye temperature - Zinc sulfide
Uncontrolled terms: Cadmium sulfide nanocrystals - CdS nanocrystals - First principle calculations - Hexagonal CdS crystal - Lattice vibrational - Microwave-hydrothermal process - Phonon spectrum - Specific heat capacity - Super cell - UV-vis absorption spectrum
Classification code: 641.1 Thermodynamics - 711 Electromagnetic Waves - 712.1 Semiconducting Materials - 761 Nanotechnology - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Electron volt 2.38E+00eV, Electron volt 2.41E+00eV, Electron volt 2.74E+00eV, Energy 4.768E+01J, Size 5.00E-08m to 1.00E-06m, Size 6.676E-10m, Temperature 1.00E00K, Temperature 1.95E-04K, Temperature 2.2151E+02K, Temperature 4.13E+02K, Time 9.00E+02s
DOI: 10.1002/qua.26828
Funding Details: Number: 51905427, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JQ#769, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YCS21211070, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This paper is supported by the National Natural Science Foundation of China (No. 51905427) and the Natural Science Foundation of Shaanxi Province (No. 2020JQ769).National Natural Science Foundation of China, Grant/Award Number: 51905427; Natural Science Foundation of Shaanxi Province, Grant/Award Number: 2020JQ769 Funding informationThis paper is supported by the National Natural Science Foundation of China (No. 51905427) and the Natural Science Foundation of Shaanxi Province (No. 2020JQ-769) and the Graduate Innovation Program of Xi'an Shiyou University (YCS21211070).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

168. Reduction Rate as a Quantitative Identification Toward Growth Pathway and Size Control in Low-Polydisperse Colloidal Metal Nanocrystals

Accession number: 20221712011660
Authors: Chen, Xuelian (1); Wang, Jinge (1); Zhong, Yujie (1); Li, Yan (1); Pan, Xiqiang (2); Förster, Stephan (3)
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Corresponding authors: Chen, Xuelian(chenxl@xsyu.edu.cn); Pan, Xiqiang(pxq2336@163.com)
Source title: Journal of Physical Chemistry C
Abbreviated source title: J. Phys. Chem. C
Volume: 126
Issue: 15
Issue date: April 21, 2022
Publication year: 2022
Pages: 6619-6627
Language: English
ISSN: 19327447
E-ISSN: 19327455
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Kinetic control is a powerful means for achieving the desired size and size distribution of metal nanocrystals and thus tailoring their properties in different applications. However, the explicit role of kinetics in the synthesis of metal nanocrystals is still elusive due to the lack of quantitative correlation among the reduction kinetics, monomer concentration, growth pathways, and final products. With Au as an example, here, we quantitatively correlate the initial reduction rate of the Au3+ precursor with monomer concentration, growth pathways, and the final size/size distribution of products by simply manipulating the aging time of the Au3+ precursor and volume ratio of oleylamine to

toluene during the reaction based on quantitative analysis of in situ small-angle X-ray scattering/UV-vis measurements and transmission electron microscopy results. When the initial reduction rate of Au3+ is in the range of 1.45-2.26 × 10-5 M·s-1, corresponding to a slow depletion of monomers, Au nanoparticles with larger size are formed through a sequence of growth events comprising coalescence of the nuclei into bigger particles, intraparticle growth within coalesced particles, atomic deposition, and subsequent focusing of size distribution. It is found that if the initial reduction rate is equal to or faster than 3.47 × 10-5 M·s-1, the growth pathway of Au nanoparticles is gradually changed owing to the disappearance of the atomic deposition event in the later stage caused by a significant reduction in monomer concentration. Interestingly, focusing of the size distribution event is governed in the later growth stage and can take place during the intraparticle growth process as the initial growth rate reaches 5.55 × 10-5 M·s-1, giving rise to much smaller products with low polydispersity. This work will not only offer a mechanistic understanding of the nonclassical growth mechanism but also provide a general guideline for precisely controlling the size and size distribution of noble-metal nanocrystals. © 2022 American Chemical Society.
Number of references: 38
Main heading: Size distribution
Controlled terms: Nanocrystals - High resolution transmission electron microscopy - Deposition - Gold nanoparticles - Growth kinetics - Monomers - X ray scattering - Kinetics
Uncontrolled terms: Atomic deposition - Au nanoparticle - Intraparticle - Metal nanocrystals - Monomer concentration - Quantitative identification - Reduction rate - Size and size distributions - Size-control - Size-distribution
Classification code: 631.1 Fluid Flow, General - 741.3 Optical Devices and Systems - 761 Nanotechnology - 802.3 Chemical Operations - 804 Chemical Products Generally - 922.2 Mathematical Statistics - 931 Classical Physics; Quantum Theory; Relativity - 932.1 High Energy Physics - 933.1 Crystalline Solids
DOI: 10.1021/acs.jpcc.2c00554
Funding Details: Number: 2021GY-133, Acronym: -, Sponsor: -; Number: YCS21112072, Acronym: -, Sponsor: -; Number: 62104191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XJTU, Sponsor: Xi’an Jiaotong University;
Funding text: This work was supported by the National Natural Science Foundation of China (no. 62104191), the Key Research Foundation of Shaanxi Province (no. 2021GY-133), the State Key Laboratory of Metal Material Strength of Xi’an Jiaotong University, and the Postgraduate Innovation and Practical Ability Training Program of Xi’an Shiyou University (no. YCS21112072).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

169. Gas sensing properties of alkali metal decorated pristine and defect α–AsP monolayer toward acid SO2 and alkaline NH3 molecules

Accession number: 20224012822575
Authors: Chen, Xiao-Na (1); Chen, Guo-Xiang (1); Wang, Dou-Dou (2); Liu, Ying-Gang (1); Liu, Shuai (1); Zhang, Jian-Min (3)
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Science, Xi'an University of Science and Technology, Xi'an; 710054, China; (3) College of Physics and Information Technology, Shaanxi Normal University, Xi'an; 710062, China
Corresponding author: Chen, Guo-Xiang(guoxchen@xsyu.edu.cn)
Source title: Solid State Communications
Abbreviated source title: Solid State Commun
Volume: 356
Issue date: November 15, 2022
Publication year: 2022
Article number: 114962
Language: English
ISSN: 00381098
CODEN: SSCOA4
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The sensing properties of Li and Na decorated pristine and defect α–AsP monolayer for acid SO2 and alkaline NH3 toxic gas molecules are systematically studied using first-principles calculations based on density functional theory (DFT-D2 method). The results suggest that the alkali metal atoms decorated defect α–AsP monolayer have moderate adsorption energies for SO2 and NH3 gas molecules, which is conducive to the desorption of gas

molecules. In addition, a prominent increase in work function (WF) after SO2 and NH3 adsorption endow Li and Na decorated pristine and defect α–AsP monolayer with high sensitivity, and there is a clear relationship between the change of WF and the direction of charge transfer. The binding mechanism of SO2 and NH3 on different adsorbent models are explored by the electronic local function (ELF) and density of states (DOS) calculation. The results show that the adsorption of SO2 on substrates is mainly determined by electrostatic interaction and NH3 is bound to the substrates by a covalent bond. The adsorption of NH3 enhances the adsorption spectrum intensity of substrates around 150 and 200 nm. Additionally, thermodynamic analysis demonstrate that the Li and Na decorated pristine α–AsP monolayer may be a suitable material for the detection and storage of SO2 and NH3 toxic gas molecules. Therefore, these results can provide practical guidance for the research of promising novel two-dimensional V–V binary AsP-based gas sensors. © 2022 Elsevier Ltd
Number of references: 73
Main heading: Monolayers
Controlled terms: Ammonia - Calculations - Charge transfer - Chemical detection - Chemical sensors - Defects - Density functional theory - Gas adsorption - Gas detectors - Gases - Lithium - Molecules - Phosphorus - Substrates - Thermoanalysis
Uncontrolled terms: Adsorption energies - Alkali metal atoms - Alkalines - Density-functional-theory - Desorption of gas - First principle calculations - Gas molecules - Gas sensing properties - Toxic gas
Classification code: 542.4 Lithium and Alloys - 549.1 Alkali Metals - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments - 951 Materials Science
Numerical data indexing: Size 1.50E-07m, Size 2.00E-07m
DOI: 10.1016/j.ssc.2022.114962
Funding Details: Number: YCS20212133, Acronym: -, Sponsor: -; Number: 2014KJXX-70, Acronym: -, Sponsor: -; Number: 11304246,12004301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant nos. 11304246 and 12004301), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS20212133).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

170. Experimental study on the effect of different distributed interlayer on SAGD performance

Accession number: 20214811256492
Authors: Wei, Shihao (1); Duan, Yonggang (1); Wei, Mingqiang (1); Ren, Keyi (1); Lu, Chuan (2); Zhan, Jie (3); Tang, Yuxuan (4)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 209
Issue date: February 2022
Publication year: 2022
Article number: 109827
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The Steam-Assisted Gravity Drainage (SAGD) technology is acknowledged in the development of heavy oils worldwide because of its high efficiency. This study is based on the Long Lake reservoir with large-scale interlayers in geovlogy. Firstly, a 3D experiment was built to evaluate the existence of different distributed interlayers on the performance of SAGD technology in consideration of its geology conditions. Our experiment investigated the effect

of the equivalent area of interlayers on the behaviour of the steam chamber. The experiments were grouped into three scenarios, i.e., a) no interlayer, b) quarter-length-covered interlayer, and c) half-length-covered interlayer. The experiment observations demonstrate that the steam chamber expanding would be obstructed by the designed interlayers and then go around both sides of the interlayer to reach the top of the reservoir. The steam chamber would extend out along the top surface of the reservoir and go down until the end of production. It means that the existence of a different distributed interlayer can prolong the steady-production period and reduce the production of this period. Referring to scenario a, the EUR in scenarios b&c is decreased by 4.7% and 7.3%, respectively. Moreover, the longer distributed interlayer obstacle the propagation of the steam chamber significantly. The steady-production period in scenario c should be more extended than scenario b. Also, scenario c exhibited lower production and ultimate recovery. This study is helpful for the understanding of the effect of SAGD development on the different distributed interlayers and guiding the placing of wells on site. © 2021 Elsevier B.V.
Number of references: 39
Main heading: Crude oil
Controlled terms: Steam - Heavy oil production
Uncontrolled terms: Condition - Drainage performance - Heavy oil - Higher efficiency - Interlayer - Large-scales - Physical simulation - Steam chamber - Steam-assisted gravity drainages
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits
Numerical data indexing: Percentage 4.70E+00%, Percentage 7.30E+00%
DOI: 10.1016/j.petrol.2021.109827
Funding Details: Number: PLN2021-12, Acronym: SWPU, Sponsor: Southwest Petroleum University; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation; Number: 2016ZX0503100306, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This article was supported by the National Science and Technology Major Project of China (2016ZX0503100306).This article was supported by the National Science and Technology Major Project of China (2016ZX0503100306). Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, China (PLN2021-12).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

171. Solidification treatment effect of wellsite waste mud based on physical adsorption of a composite curing agent (*Open Access*)

Accession number: 20230113331704
Authors: Liu, Zhikun (1, 2); Zhang, Chaoqun (1, 2); Li, Qi (1, 2)
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Corresponding author: Liu, Zhikun(Lzk12431@xsyu.edu.cn)
Source title: Applied Mathematics and Nonlinear Sciences
Abbreviated source title: Appl. Math. Nonlinear Sci.
Issue date: 2022
Publication year: 2022
Language: English
E-ISSN: 24448656
Document type: Article in Press
Publisher: Sciendo
Abstract: In order to improve the physical adsorption of the composite curing agent and improve the solidification treatment effect of the waste mud, the adsorption materials and adsorption processes were studied. Through the study of orthogonal experiments, the effects of polyvinyl alcohol (PVA) concentration, spinning voltage, spinning distance and other factors on the diameter, fibre uniformity and fibre morphology of PVA nanofibers were explored, with the optimal preparation conditions for the preparation of PVA nanofibers studied. The adsorption properties of PVA nanofibers for Pb2+ and Cu2+ were studied, and the Langmuir and Freundlich theoretical models were used to fit the adsorption isotherms to determine the adsorption model; the adsorption kinetics were fitted using quasi-first-order and quasi-second-order kinetic equations to determine the type of adsorption. The research has a theoretical reference for the exploration of the physical adsorption of composite curing agents and the solidification of waste mud. © 2022 Zhikun Liu et al., published by Sciendo.
Number of references: 15
Main heading: Solidification

Controlled terms: Adsorption - Curing - Integral equations - Nanofibers - Waste treatment
Uncontrolled terms: Adsorption materials - Adsorption process - Composite curing agent - Curing agents - Materials process - Orthogonal experiment - Physical adsorption - Solidification treatment - Treatment effects - Wellsite waste mud
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 921.2 Calculus - 933 Solid State Physics
DOI: 10.2478/amns.2021.2.00205
Funding Details: Number: 2019QNKYCXTD04, Acronym: -, Sponsor: -; Number: 51574194, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The study was supported by the Chinese National Natural Science Foundation, China (Grant No. 51574194) and Young research and innovation team in Xi'an Shiyou University (Grant No. 2019QNKYCXTD04)
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

172. Synergistic halogenation of backbone and end group for high-performance non-fused acceptors based organic solar cells

Accession number: 20220811684704
Authors: Wang, Yi (1, 2); Liu, Shujuan (2); Gao, Huanhuan (1); Wang, Lei (1); Wang, Weiping (2); Zhao, Baofeng (2); Wu, Haimei (2); Gao, Chao (2)
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Source title: Dyes and Pigments
Abbreviated source title: Dyes Pigm.
Volume: 200
Issue date: April 2022
Publication year: 2022
Article number: 110178
Language: English
ISSN: 01437208
E-ISSN: 18733743
CODEN: DYPIDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Non-fused small molecule acceptors based on organic solar cells have the potential to realize low-cost and large-scale industrialized production, benefited by their intrinsic simple synthesized procedures and high yield. However, it is still a challenge to acquire high-performance organic solar cells through the structural adjustment of the non-fused small molecule acceptors. In this work, a synergistic halogenation strategy both in the backbone and in the end group was used to address this issue. Four novel non-fused acceptors, namely BDTC-4F, F-BDTC-4F, and F-BDTC-4Cl were designed and synthesized with much simpler procedures with similar backbone structures but different halogen atoms modification both in the side chains of the backbones and end groups. After device optimization, the resulting OSCs based on F-BDTC-4Cl yield a good efficiency of 10.28%, with an enhanced fill factor (FF) of 63.8%, short-circuit current density (JSC) of 19.28 mA cm-2 and open-circuit voltage (VOC) of 0.836 V, which is higher than that of the BDTC-4F- (9.70%), BDTC-4Cl- (9.42%), and F-BDTC-4F- (8.84%) based devices. The results demonstrate an improved photovoltaic performance from simple structure modification and synthetically inexpensive could be achieved by rational halogenation of non-fused acceptors. © 2022 Elsevier Ltd
Number of references: 52
Main heading: Halogenation
Controlled terms: Costs - Open circuit voltage - Molecules - Efficiency - Morphology - Organic solar cells - Synthesis (chemical)
Uncontrolled terms: End groups - Film morphology - Halogenation strategy - Low-costs - Non-fused acceptor - Performance - Power conversion efficiencies - Simple++ - Small molecules - Synthesised

Classification code: 702.3 Solar Cells - 802.2 Chemical Reactions - 911 Cost and Value Engineering; Industrial Economics - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 951 Materials Science
Numerical data indexing: Capacitance -4.00E+00F, Current density 1.928E+05A/m2, Percentage 1.028E+01%, Percentage 6.38E+01%, Percentage 8.84E+00%, Percentage 9.42E+00%, Percentage 9.70E+00%, Voltage 8.36E-01V
DOI: 10.1016/j.dyepig.2022.110178
Funding Details: Number: 20JK0841, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 51903206, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (51903206), Innovation Capability Support Program of Shaanxi (Program No. 2016KCT-28), Natural Science Basic Research Program of Shaanxi (Programs No. 2020JQ-985, and 2021JQ-595), Scientific Research Program Funded by Shaanxi Provincial Education Department (No.20JK0841), Key Research and Development Program of Shaanxi (Program No. 2020GY-288), and Postgraduate Innovation and Practical Ability Training Program (YCS19211007).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

173. Sensing properties of NO2 gas sensor based on nonmetal doped α–AsP monolayer: A first-principles study

Accession number: 20214711200795
Authors: Chen, Guo-Xiang (1); Chen, Xiao-Na (1); Wang, Dou-Dou (2); An, Guo (1); Zhang, Jian-Min (3)
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Corresponding author: Chen, Guo-Xiang(guoxchen@xsyu.edu.cn)
Source title: Materials Science in Semiconductor Processing
Abbreviated source title: Mater Sci Semicond Process
Volume: 139
Issue date: March 1, 2022
Publication year: 2022
Article number: 106319
Language: English
ISSN: 13698001
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: α–AsP monolayer is a two-dimensional (2D) black phosphorene-like material with potential applications in electronics and gas sensors due to ultra-high carrier mobility. Here, we investigate the gas sensing properties of nonmetal (Si and S) atoms doped α–AsP monolayer using the first-principles calculations based on the density functional theory (DFT-D2 method). The results show that the nonmetal doping can significantly improve selectivity and sensitivity toward NO2 compared with other interfering gas molecules. Especially, the S doped α–AsP monolayer possesses a high selectivity to NO2 with moderate adsorption energy of -0.82 eV, a high sensitivity with significant WF change of 0.39 eV and larger sensitivity value of 53.8 %. By analyzing the electron localization function (ELF) and electronic structure, the enhanced adsorption ability of the S doped α–AsP monolayer to NO2 is mainly determined by electrostatic interaction. In addition, adsorption behavior of NO2 on S doped α–AsP monolayer can be effectively affected by applying external strain and electric field, meaning that strain/electric field can be used as a controllable method for gas storage and release. Therefore, these results not only provide fundamental insights for nonmetal doped α–AsP monolayer as promising gas sensing material for NO2 detection, but also provide a theoretical guideline for designing high performance gas sensors based on 2D AsP. © 2021 Elsevier Ltd
Number of references: 73
Main heading: Adsorption
Controlled terms: Chemical sensors - Nitrogen oxides - Density functional theory - Monolayers - Calculations - Phosphorus - Arsenic - Chemical detection - Gases - Molecules - Electric fields - Electronic structure - Gas detectors
Uncontrolled terms: First principle calculations - First-principle study - Gas sensing properties - Gas-sensors - NO2 molecule - Nonmetal doping - S-doped - Sensing property - Two-dimensional - Ultra-high
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 801 Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 921

Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments
Numerical data indexing: Electron volt 3.90E-01eV, Electron volt 8.20E-01eV, Percentage 5.38E+01%
DOI: 10.1016/j.mssp.2021.106319
Funding Details: Number: YCS20212133, Acronym: -, Sponsor: -; Number: 2014KJXX-70, Acronym: -, Sponsor: -; Number: 12004301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant no. 12004301), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS20212133).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

174. Exploration and development in the Zhaotong national shale gas demonstration area: Progress and propect

Accession number: 20224012817590
Title of translation:
Authors: Liang, Xing (1); Shan, Chang'an (2); Wang, Weixu (1); Li, Zhaofeng (1); Zhu, Douxing (3); Xu, Jinbin (1); Zhang, Zhuo (1); Zhang, Zhao (1); Luo, Yufeng (1); Yuan, Xiaojun (1)
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Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 42
Issue: 8
Issue date: 2022
Publication year: 2022
Pages: 60-77
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: The Zhaotong national shale gas demonstration area in Yunnan (hereinafter referred to as demonstration area) is China's third largest national shale gas production base after Changning–Weiyuan in Sichuan and Fuling in Chongqing. And after more than ten years of deep and careful cultivation, a series of important achievements have been obtained in the exploration and development. From the perspective of exploration and development history, theory and technology, this paper systematically summarizes the exploration discovery process and productivity construction progress of shale gas in the demonstration area, expounds the geological exploration theories and key technologies of mountain shale gas, and predicts their development prospect and direction. And the following research results are obtained. First, the exploration and development in the demonstration area has gone through five development stages, and so far, three major productivity construction zones have been formed, including Huangjinba and Zijinba middle–deep shale gas zones and Taiyang shallow shale gas zone, with cumulative proved geological reserves more than 3 100×108 m3 and cumulative gas production more than 72×108 m3. It has been constructed into the third largest green shale gas demonstration base in China. Second, the "multi-field coordination and multi-element coupling" mountain shale gas enrichment, accumulation and occurrence theory of "sedimentary background controlling source rock and reservoir, reworking intensity controlling preservation, and three-dimensional sealing controlling enrichment" is put forward innovatively, and the "three-dimensional sealing system" accumulation model of extrabasinal shallow shale gas is established. Third, a series of zone selection and evaluation technologies for mountain shale gas in strongly reworked complex structural areas have been developed, and the concept of geology–engineering integration has first been adopted to create transparent shale gas reservoirs and cultivate high-yield wells. A major exploration breakthrough has been achieved from marginal basin medium deep shale gas layers to extrabasin ultra shallow to medium shallow ones, and domestic first large-scale monoblock shallow shale gas field with reserves over 2 570×108 m3 has been discovered. Fourth, a landmark technological achievement and efficient development model with geology–engineering integration and shale geomechanical evaluation as the core has been formed, which leads the clean, green and efficient exploration and development of mountain shale gas. In conclusion, it is necessary to implement the exploration strategic idea of "two outgoing" in the demonstration area, i.e., "walking out of the stable

area of the basin and marching into the complex structure areas in the Dianqianbei Depression" and "walking out of the Wufeng–Longmaxi Formation and exploring other layers for breakthrough". What's more, it is recommended to carry out the double-layer stereoscopic horizontal well pattern deployment of "Leping Formation CBM (coal measure gas) + Longmaxi Formation shale gas" appropriately in a large scale, so as to establish a new integrated development model for the three-dimensional efficient development of mountain shale gas and CBM.
Number of references: 51
Main heading: Gases
Controlled terms: Demonstrations - Gas industry - Geological surveys - Integration - Landforms - Natural gas fields - Petroleum reservoir evaluation - Petroleum reservoirs - Productivity - Proven reserves - Shale gas - Stereo image processing
Uncontrolled terms: Exploration and development - Exploration and development theory and key technology - Geology engineering - Geology-engineering integration - Key technologies - Mountain shale gas - Shallow shale gas - Stereoscopic development - Zhaotong - Zhaotong national shale gas demonstration area
Classification code: 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 723.2 Data Processing and Image Processing - 921.2 Calculus
Numerical data indexing: Size 8.00E+00m
DOI: 10.3787/j.issn.1000-0976.2022.08.006
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

175. Sensor Optimization and Influencing Factor Analysis of Gas Content by Capacitive Method

Accession number: 20223812766552
Authors: Li, Li-Pin (1); Zhang, Bing-Ke (1); Liu, Jia (2); Wang, Xiao (2); Sun, Yu-Qian (2)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 243-246
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper studies and designs a double-ring capacitive sensor gas content detection system, in order to solve the problems of low detection accuracy of traditional gas-liquid two-phase flow gas content and the influence of factors such as inclination angle and flow pattern in actual measurement. The sensor is designed and optimized based on COMSOL simulation software, the influence of electrode width and spacing on the sensitivity uniformity index is analyzed, and the optimized structural parameters of the sensor are obtained. Simulation and experimental results show that the double-loop capacitive sensor measurement system has good linearity and a small average relative error (0.4%). The inclination angle of the pipe and the flow pattern will have a certain influence on the measurement of the sensor. © 2022 IEEE.

Number of references: 9
Main heading: Capacitive sensors
Controlled terms: Computer software - Flow patterns - Gases - Two phase flow
Uncontrolled terms: Content detection - Double ring - Gas content - Gas hold up - Gas hold-ups - Gas/liquid two phase flow - Inclination angles - Influencing factors analysis - Performance testing - Sensor optimization
Classification code: 631.1 Fluid Flow, General - 723 Computer Software, Data Handling and Applications - 732 Control Devices
Numerical data indexing: Percentage 4.00E-01%
DOI: 10.1109/ICMSP55950.2022.9859183
Funding Details: Number: 20JS124, Acronym: -, Sponsor: -; Number: 2020GY-169, Acronym: -, Sponsor: -; Number: 41874158,51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT This work was supported by the National Natural Science Foundation of China (No. 51974250 and No. 41874158), Key Research Projects in Shaanxi Province of China (No. 2020GY-169), and Key Laboratory Project of Shaanxi Provincial Department of Education of China (No. 20JS124).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

176. Enhancement of thin-section image using super-resolution method with application to the mineral segmentation and classification in tight sandstone reservoir

Accession number: 20222612293451
Authors: Liu, Ye (1); Zhang, Qidi (1); Zhang, Nan (2); Lv, Jintao (1); Gong, Meichen (1); Cao, Jie (3)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 216
Issue date: September 2022
Publication year: 2022
Article number: 110774
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The accurate characterization of rock and fluid properties in porous media of oil reservoir using thin sections depends on reliable segmentation and classification of the involved phases. However, in tight sandstone reservoirs, rock image segmentation and classification become a challenging task due to the limitation of resolution on representing the pores, throats, and other minerals at the microscale size. The resolution of an image has thus become a critical factor. Therefore, this study aims to use the super-resolution technique, which can enhance the image resolution by deep learning methods to overcome the limitation of original image resolution, and significantly improve the traditional segmentation and classification results. A Generative Adversarial Network (GAN)-based Super-resolution(SR) model was used as a pre-processing step to enhance the resolution of a given image. Then the effectiveness of super-resolution technique in post-processing procedures like segmentation and classification is evaluated using a tight sandstone data set from Ordos basin. The performance of segmentation with super-resolution enhancement is compared among Level set, Simple Linear Iterative Clustering (SLIC), and Watershed. As numerical test results reflect, segmentation in super-resolution image can achieve the segmentation of tiny minerals, pores, throats, and other blurry edges which can't be correctly segmented in the original image. Furthermore, in classification, we use a Convolutional Neural Network (CNN) model and a logistic regression model to demonstrate the advantage of SR enhancement. After the super-resolution process, the classification accuracy of CNN and logistic models have both improved for over 10%. The comparisons and analyses are presented to show that super-resolution could significantly improve these post-processing procedures. In addition, we discuss the potentials and limitations of applying super-resolution in segmentation and classification. © 2022 Elsevier B.V.
Number of references: 26
Main heading: Image resolution
Controlled terms: Classification (of information) - Convolutional neural networks - Deep learning - Generative adversarial networks - Image classification - Image enhancement - Image segmentation - Iterative methods

- Learning systems - Minerals - Petroleum reservoir engineering - Petroleum reservoirs - Porous materials - Sandstone
Uncontrolled terms: Convolutional neural network - Neural network model - Original images - Pore throat - Post-processing procedure - Resolution enhancement - Resolution techniques - Superresolution - Thin-sections - Tight sandstone reservoirs
Classification code: 461.4 Ergonomics and Human Factors Engineering - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 903.1 Information Sources and Analysis - 921.6 Numerical Methods - 951 Materials Science
Numerical data indexing: Percentage 1.00E+01%
DOI: 10.1016/j.petrol.2022.110774
Funding Details: Number: 52004214, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021M693493, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: PRP/open-2010, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: 2021JM-400,2021JQ-598,2022JM-301, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: Supported by the National Natural Science Foundation of China (No. 52004214), the Foundation of State Key Laboratory of Petroleum Resources and Prospecting , China University of Petroleum, Beijing (PRP/open-2010), China Postdoctoral Science Foundation (2021M693493), the Natural Science Foundation of Shaanxi Province (2021JM-400 , 2021JQ-598 , 2022JM-301).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

177. An optimized XGBoost method for predicting reservoir porosity using petrophysical logs

Accession number: 20213910963465
Authors: Pan, Shaowei (1); Zheng, Zechen (1); Guo, Zhi (2); Luo, Haining (3)
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Corresponding author: Pan, Shaowei(swpan@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109520
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: To overcome the deficiencies of current porosity prediction methods, the XGBoost algorithm is introduced to construct a model for porosity prediction, and the obtained model is optimized by the grid search method and genetic algorithm. First, the optimal values of the three integer hyperparameters and the ranges of optimal values for the five floating-point hyperparameters of the XGBoost algorithm are determined by the grid search method. Then, the optimal values of the five floating-point hyperparameters of the XGBoost algorithm are determined with the genetic algorithm based on the determined value ranges. In this way, the model for porosity prediction based on the XGBoost algorithm and optimized by the grid search method and genetic algorithm (GS-GA-XGBoost) is constructed, and it has eight hyperparameters with determined optimal values. Compared with other porosity prediction methods, our method solves the problems such as the strong subjectivity and poor generalizability of conventional logging interpretation methods and the insufficient generalization performance of machine learning methods in previous porosity prediction studies, and the accuracy of the constructed model for porosity prediction is also greatly improved. Specifically, the RMSE, MAE and MAPE generated by GS-GA-XGBoost on the test set are 0.527946, 0.155880 and 0.020500 respectively, while those generated by linear regression (LR), support vector regression (SVR), random forest (RF), the XGBoost algorithm with default parameters (XGBoost) and the XGBoost algorithm optimized only by the grid search method (GS-XGBoost) on the test set are 3.535521, 2.801047, 0.375713, and 2.695310, 2.002280, 0.283582, and 1.015801, 0.638878, 0.085942, and 2.781069, 1.860557, 0.293334, and 1.380065, 0.979419, 0.128486, respectively. Finally, the multithread technology is introduced to improve the computational speed of GS-GA-XGBoost. GS-GA-XGBoost

provides some technical references for the construction of porosity prediction models for oil fields in Northern Shaanxi, China, and other regions. © 2021 Elsevier B.V.
Number of references: 37
Main heading: Forecasting
Controlled terms: Decision trees - Learning systems - Optimal systems - Digital arithmetic - Porosity - Genetic algorithms
Uncontrolled terms: Floating points - Grid-search method - Hyper-parameter - Optimal values - Petrophysical logs - Porosity predictions - Prediction methods - Reservoir porosity - Test sets - Xgboost
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 961 Systems Science
DOI: 10.1016/j.petrol.2021.109520
Funding Details: Number: 2020JM-534, Acronym: -, Sponsor: -; Number: 18JS086, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The research was supported by the National Natural Science Foundation Projects of Shaanxi Provincial (2020JM-534) and the Scientific Research Program Funded by Shaanxi Provincial Education Department (18JS086).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

178. Influence of arc mode on the microstructure and mechanical properties of 5356 aluminum alloy fabricated by wire arc additive manufacturing (*Open Access*)

Accession number: 20230213354763
Authors: Jiangang, Pan (1, 2); Bo, Yuan (2); Jinguo, Ge (2, 3); Yu, Ren (2); Hongjun, Chen (2); Liang, Zhang (2); Hao, Lu (1)
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Corresponding authors: Liang, Zhang(zhangliang@szpt.edu.cn); Hao, Lu(lhhit@163.com)
Source title: Journal of Materials Research and Technology
Abbreviated source title: J. Mater. Res. Technol.
Volume: 20
Issue date: September 2022
Publication year: 2022
Pages: 1893-1907
Language: English
ISSN: 22387854
Document type: Journal article (JA)
Publisher: Elsevier Editora Ltda
Abstract: In this paper, two arc modes of gas shielded metal arc welding (GMAW), a new pulsed mode (microMIG) and a non-pulsed mode (microMIG-CC), were used to melt ER5356 aluminum alloy wire for thin-wall fabrication. The influence of both arc modes on the melt-drop transition pattern, thin-wall properties, porosity, microstructure and mechanical properties was investigated at the same heat input. The microMIG mode adds SKS-based current time based on conventional pulsed GMAW for short-circuiting the transition, which leads to a faster spread of melt pool temperature. The rapid cooling of the melt pool contributed to the increase of grain nucleation rate and inhibited grain growth, resulting in smaller grain size in the microMIG mode specimens. In addition, the low porosity of microMIG specimens is attributed to the high voltage of the micro-MIG mode resulting in an unfocused heat source, which leads to a shallow penetration depth of the specimens and a reduced hydrogen escape distance. Compared with the microMIG-CC mode, the microMIG mode specimens have smaller grain size and lower porosity, therefore higher tensile strength is obtained. The isotropic property of thin walls is due to the existence of equiaxed grains and the random distribution of grain orientation. However, the aggregation of dislocations and the increase of precipitates make microMIG-CC have higher hardness. Overall, the mechanical properties of the thin wall specimens of WAAM 5356 aluminum alloy are higher than those of the as-cast specimens. © 2022 The Author(s).
Number of references: 50
Main heading: Aluminum alloys
Controlled terms: 3D printers - Additives - Fabrication - Gas metal arc welding - Gas welding - Grain growth - Grain size and shape - Porosity - Tensile strength - Textures - Thin walled structures

Uncontrolled terms: 5356 aluminum alloy - Alloy wire - Arc mode - Gas-shielded metal arc welding - Low porosity - Microstructures and mechanical properties - Pulsed mode - Small grain size - Thin walls - Wire arc
Classification code: 538.2.1 Welding Processes - 541.2 Aluminum Alloys - 745.1.1 Printing Equipment - 803 Chemical Agents and Basic Industrial Chemicals - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.2 Crystal Growth
DOI: 10.1016/j.jmrt.2022.08.005
Funding Details: Number: 6022312032K, Acronym: -, Sponsor: -; Number: 2020KCXTD047, Acronym: -, Sponsor: -; Number: 6021330013K0,6021330015K0, Acronym: -, Sponsor: -; Number: 2020A1515010257, Acronym: -, Sponsor: Natural Science Foundation of Guangdong Province; Number: JCYJ20190809103803675, Acronym: -, Sponsor: Science, Technology and Innovation Commission of Shenzhen Municipality;
Funding text: This work is supported by National Science Foundation of Guangdong Province [2020A1515010257], Shenzhen Science and technology innovation Commission [JCYJ20190809103803675], Guangdong Provincial General University Innovation Team Project [No. 2020KCXTD047], Post-doctoral Foundation Project of Shenzhen Polytechnic [6021330013K0 , 6021330015K0], Foundation Project of Shenzhen Polytechnic [6022312032K].
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

179. MB-BC: Drug Traceability System Based on Multibranched Blockchain Structure (*Open Access*)

Accession number: 20223312565700
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Source title: Wireless Communications and Mobile Computing
Abbreviated source title: Wireless Commun. Mobile Comput.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 5163003
Language: English
ISSN: 15308669
E-ISSN: 15308677
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The establishment of a complete drug traceability system is essentially important for public drug security and the business of pharmaceutical companies which is aimed at tracking where the drug has gone along the drug supply chain. Traditional centralized server-client technical solutions have been far from satisfaction for their bad performances in data authenticity, privacy, system resilience, and flexibility. In this paper, we propose a drug traceability scheme called MB-BC, which realizes the security and traceability of drug data through a novel multibranched blockchain scheme. Different from the characteristics of transparency of traditional blockchains, MB-BC realizes fine-grained access control of data between all levels in the system, which improves the security and privacy of data. MB-BC has further improved the existing consensus mechanism, strengthened the supervision of pharmaceutical companies, and further improved the safety and robustness of the system. Furthermore, the system combines data access strategies with smart contracts; each branch chain can also issue its smart contract to provide personalized services. Finally, security and performance evaluations show that the solution is advantageous in terms of data security, system robustness, supervisibility, and traceability, as well as efficient in terms of blockchain throughput, data query time, and blockchain consensus consumptions, compared with other typical approaches. © 2022 Xudong Tan et al.
Number of references: 40
Main heading: Blockchain
Controlled terms: Access control - Data privacy - Search engines - Smart contract - Supply chains
Uncontrolled terms: Block-chain - Centralized server - Drug supply - Performance - Pharmaceutical company - Privacy systems - System flexibility - System resiliences - Technical solutions - Traceability systems

Classification code: 723 Computer Software, Data Handling and Applications - 723.3 Database Systems - 902.3 Legal Aspects - 911.3 Inventory Control - 912 Industrial Engineering and Management - 913 Production Planning and Control; Manufacturing
DOI: 10.1155/2022/5163003
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

180. Mathematical Modelling and Hierarchical Encourage Particle Swarm Optimization Genetic Algorithm for Jet Pipe Servo Valve (*Open Access*)

Accession number: 20222912363819
Authors: Chen, Jia (1, 2); Li, Fei (1); Yang, Yi (1); Gao, Yi (1)
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Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 9155248
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The jet pipe servo (JPS) valve is one key component, whose dynamic performance directly influences the aircraft's maneuverability. In this paper, a more accurate mathematical model and a novel multiobjective hierarchical encourage particle swarm optimization genetic algorithm (HEPGA) are proposed to improve the dynamic performance of the jet pipe servo valve. By optimizing the main structure parameters of the jet pipe servo valve, the adjustment and overshoot in the dynamic performance are reduced by 24.28% and 51.39%, respectively, compared with the prototype before optimization. To obtain a more accurate mathematical model, the computational fluid dynamics (CFD) is introduced to modify the analytical model considering the turbulent submerged free jet. Different from conventional numerical simulation, the dynamic mesh technique is used to analyze the flow field distribution by considering the force interaction of various parts of the jet pipe servo valve under actual working condition. Then, the HEPGA with better convergence is utilized because of the conflict of adjustment and overshoot. This proposed hybrid algorithm introduces the concept of staff welfare system to divide the population into elite individuals and excellent individuals of particle swarm optimization and general individuals of genetic algorithm. Meanwhile, the convergency performance of the HEPGA is evaluated through the Rosenbrock function by comparing with other particle swarm genetic hybrid methods. Subsequently, the experimental platform is constructed and the dynamic performance tests are conducted on the prototype after optimization. The experimental results verify the accuracy of the established mathematical model and the significant improvement of dynamic performance of the jet pipe servo valve. © 2022 Jia Chen et al.
Number of references: 30
Main heading: Computational fluid dynamics
Controlled terms: Genetic algorithms - Mechanisms - Particle swarm optimization (PSO) - Pneumatic servomechanisms
Uncontrolled terms: Aircraft maneuverability - Dynamic performance - Jet pipe servo valves - Main structure - Multi objective - Optimisations - Optimization genetic algorithms - Particle swarm - Structure parameter - Swarm optimization
Classification code: 601.3 Mechanisms - 632.4 Pneumatic Equipment and Machinery - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 732.1 Control Equipment - 921.5 Optimization Techniques - 931.1 Mechanics
Numerical data indexing: Percentage 2.428E+01%, Percentage 5.139E+01%
DOI: 10.1155/2022/9155248
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green

Database: Compendex
Data Provider: Engineering Village

181. Performance Study of Plant Phenol Modified Tapioca Starch in Drilling Fluid (*Open Access*)

Accession number: 20230713597272
Authors: Song, Bingqian (1); Mo, Cheng (2); Lei, Haoran (3); Zhang, Jie (1)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2437
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012003
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 3rd International Conference on Mechanical Engineering and Materials, ICMEM 2022
Conference date: November 18, 2022 - November 19, 2022
Conference location: Nanchang, Virtual, China
Conference code: 186521
Publisher: Institute of Physics
Abstract: As a natural and environmentally friendly product with wide sources, low cost, easy degradation and good environmental adaptability, starch has a wide range of applications in the petroleum industry, but improving its temperature resistance is an important research direction for the future. In this paper, by modifying cassava starch with plant phenols, different types and concentrations of plant phenols were preferably selected with plastic viscosity PV (mPa-s) and filtration loss FL (mL) as the main evaluation indexes, and the results showed that the plant phenol modified cassava starch has excellent temperature resistance and filtration loss reduction performance. In addition, the results of clay ball experiment and bentonite particle size distribution measurement experiment indicated that the hydration dispersion and hydration swelling inhibition performance of plant phenol-cassava starch clay were good. Plant phenol-cassava starch is expected to be widely used as a safe and environmentally friendly drilling fluid treatment agent with excellent performance. © Published under licence by IOP Publishing Ltd.
Number of references: 13
Main heading: Phenols
Controlled terms: Antioxidants - Bentonite - Costs - Drilling fluids - Hydration - Particle size - Particle size analysis - Petroleum industry - Plants (botany) - Starch - Temperature control
Uncontrolled terms: Cassava starch - Environmental adaptability - Environmentally friendly products - Filtration loss - Low-costs - Performance - Performance study - Plant phenol - Tapioca starch - Temperature resistances
Classification code: 482.2 Minerals - 731.3 Specific Variables Control - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers - 911 Cost and Value Engineering; Industrial Economics - 951 Materials Science
DOI: 10.1088/1742-6596/2437/1/012003
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

182. Coupled geomechanical-thermal simulation for oil sand reservoirs with shale barriers under hot water injection in vertical well-assisted SAGD wells

Accession number: 20214311053235

Authors: Gao, Yanfang (1); Ren, Zhanli (1); Chen, Mian (2); Jiang, Hailong (3); Ding, Shuaiwei (1)
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Corresponding author: Gao, Yanfang(yanfang_gao@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109644
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Mudstone stringers in an oil sand reservoir can significantly affect the propagation of the steam chamber in the process of steam-assisted gravity drainage (SAGD). The micro-fracturing by water injection in strongly heterogeneous oil sands can result in these problems such as hard stringer breakthrough and aggravating heterogeneity. This paper proposed a comprehensive numerical model for conventional SAGD wells and vertical well-assisted SAGD (VWA-SAGD) wells to predict the coupled thermo-hydro-mechanical responses under hot water injection in a typical Karamay oil sand reservoir with two stringers, considering skeleton shear dilation, the "phase change" of bitumen, formation heterogeneity, the permeability evolution induced by elastoplastic deformations, and the theory of heat and mass transfer. Major conclusions were drawn that there are three relatively narrow separate transition zones effectively heated around the SAGD wells and vertical well. The vertical well makes about 0.5 MPa increase to the pore pressure of the reservoir embedded with mudstone stringers in vertical directions and rises by about 0.6 MPa for the reservoir pore pressure above the upper stringer to reduce the pore pressure differential along the wellbore. Water injection-induced ultimate stress states can't reach the shear failure line under field operations, so the shear dilation can't be induced. The thermoporoelastic deformation determines whole reservoir deformation. The reservoir between the two stringers contributes to most of the caprock uplift. The VWA-SAGD technique can improve the porosity by about 1% in the whole vertical direction and reduce the anisotropy of porosity along the wellbore, which is beneficial to the uniform and fast propagation of the steam chamber in subsequent preheating and production stages. These findings can be employed to accurately predict the temperature, pore pressure, stress/displacement, and porosity evolutions for the field engineers to properly evaluate the uplift of reservoir and caprock, oil output changes, and heat utilization efficiency. © 2021 Elsevier B.V.
Number of references: 63
Main heading: Pore pressure
Controlled terms: Boreholes - Geomechanics - Oil field equipment - Oil wells - Oil sands - Petroleum reservoirs - Sand - Water - Deformation - Porosity - Mass transfer - Petroleum reservoir engineering
Uncontrolled terms: Drainage wells - Geomechanical-thermal simulation - Hot water injection - Shale barrier - Shear dilation - Steam chamber - Steam-assisted gravity drainages - Thermal simulations - Vertical direction - Vertical wells
Classification code: 481 Geology and Geophysics - 483.1 Soils and Soil Mechanics - 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 641.3 Mass Transfer - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.00E00%, Pressure 5.00E+05Pa, Pressure 6.00E+05Pa
DOI: 10.1016/j.petrol.2021.109644
Funding Details: Number: 52104005,U1762215, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-407, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20210413, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology; Number: 21JK0937, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work might not be possible without financial supports from the Young Talent Fund of University Association for Science and Technology in Shaanxi , China (No. 20210413), the Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 21JK0937), the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2021JM-407), and the National Natural Science Foundation of China (No. U1762215 , No. 52104005)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

183. Deep learning model for imbalanced multi-label surface defect classification

Accession number: 20220311461484
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Source title: Measurement Science and Technology
Abbreviated source title: Meas. Sci. Technol.
Volume: 33
Issue: 3
Issue date: March 2022
Publication year: 2022
Article number: 035601
Language: English
ISSN: 09570233
E-ISSN: 13616501
CODEN: MSTCEP
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: Automatic defect classification is vital to ensure product quality, especially for steel production. In the real world, the amount of collected samples with labels is limited due to high labor costs, and the gathered dataset is usually imbalanced, making accurate steel defect classification very challenging. In this paper, a novel deep learning model for imbalanced multi-label surface defect classification, named ImDeep, is proposed. It can be deployed easily in steel production lines to identify different defect types on the steel's surface. ImDeep incorporates three key techniques, i.e. Imbalanced Sampler, Fussy-FusionNet, and Transfer Learning. It improves the model's classification performance with multi-label and reduces the model's complexity over small datasets with low latency. The performance of different fusion strategies and three key techniques of ImDeep is verified. Simulation results prove that ImDeep accomplishes better performance than the state-of-the-art over the public dataset with varied sizes. Specifically, ImDeep achieves about 97% accuracy of steel surface defect classification over a small imbalanced dataset with a low latency, which improves about 10% compared with that of the state-of-the-art. © 2021 IOP Publishing Ltd.
Number of references: 46
Main heading: Deep learning
Controlled terms: Learning systems - Classification (of information) - Wages - Surface defects - Steelmaking
Uncontrolled terms: Deep learning - Defect classification - High-accuracy - Imbalanced dataset - Learning models - Low latency - Multi-labels - Performance - Steel production - Steel surface
Classification code: 461.4 Ergonomics and Human Factors Engineering - 545.3 Steel - 716.1 Information Theory and Signal Processing - 903.1 Information Sources and Analysis - 912.4 Personnel - 951 Materials Science
Numerical data indexing: Percentage 1.00E+01%, Percentage 9.70E+01%
DOI: 10.1088/1361-6501/ac41a6
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

184. A new small leakage detection method based on capacitance array sensor for underground oil tank

Accession number: 20220411520823
Authors: Li, Lipin (1); Chen, Huan (1, 2); Huang, Yanqun (3); Xu, Guochao (1); Zhang, Pengli (1)
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Corresponding author: Li, Lipin(lilipin@xsyu.edu.cn)
Source title: Process Safety and Environmental Protection
Abbreviated source title: Process Saf. Environ. Prot.
Volume: 159
Issue date: March 2022
Publication year: 2022

Pages: 616-624
Language: English
ISSN: 09575820
Document type: Journal article (JA)
Publisher: Institution of Chemical Engineers
Abstract: The early detection and discovery of small leakages from underground storage tanks (USTs) is an effective means for preventing the spread of contamination to deep soil and groundwater, which is of great significance to the process safety and risk management of oil tanks. In the previous studies, the soil sample collecting by these boreholes near the oil tank, the detection results have a certain degree of randomness and non-timeliness due to the sampling affected by the distribution of the boreholes, which would result in failure to catch small leakages of UST in time. According to capacitance sensor having a sensible capacity for relative permittivity of the soil, we propose a new small leakage detection method that employs the full-coverage three-dimensional capacitance array sensor with optimized parameters and higher sensitivity and our established measurement function of oil leakage to realize early detection of small leakage. Such a method can effectively solve the problems of incomplete sampling and easy to miss small leaks in borehole sampling detection. In addition, the experimental results show that the absolute error is less than 0.110% when selecting the small oil leakage in the range of 0.068~3.261%. Therefore, our method has higher measurement accuracy and could offer an efficient way for early discovery and quantitative estimation of small oil leakages from UST, which would provide a reliable basis for process safety and risk prediction. © 2022 The Institution of Chemical Engineers
Number of references: 38
Main heading: Capacitance
Controlled terms: Oil tanks - Groundwater pollution - Risk assessment - Risk management - Safety engineering - Groundwater - Leakage (fluid) - Risk perception - Soils - Soil surveys
Uncontrolled terms: Array sensors - Capacitance array sensor - Deep groundwaters - Deep soils - Detection methods - Early detection - Leakage detection - Oil leakage - Small oil leakage - Underground storage tanks
Classification code: 444.2 Groundwater - 453.1 Water Pollution Sources - 483.1 Soils and Soil Mechanics - 523 Liquid Fuels - 619.2 Tanks - 701.1 Electricity: Basic Concepts and Phenomena - 914 Safety Engineering - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 1.10E-01%, Percentage 6.80E-02% to 3.261E+00%
DOI: 10.1016/j.psep.2022.01.020
Funding Details: Number: 20JS124, Acronym: -, Sponsor: -; Number: 2020GY-169, Acronym: -, Sponsor: -; Number: 41774081, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 41774081), Key Research Projects in Shaanxi Province of China (No. 2020GY-169), and Key Laboratory Project of Shaanxi Provincial Department of Education of China (No. 20JS124).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

185. A new theory for flow computations in a large class of anisotropic media with applications to well productivity modeling

Accession number: 20213610875019
Authors: Johansen, Thormod E. (1); Cao, Jie (2, 3)
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Corresponding authors: Cao, Jie(jie.cao@xsyu.edu.cn); Johansen, Thormod E.(thormodj314@gmail.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109366
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.

Abstract: A new theory for calculation of fluid flow in laterally isotropic, spatially anisotropic permeable media is presented. This theory is capable of quantifying fluid flow in such media without the use of cumbersome tensorial calculations involving non-zero off-diagonal elements. Using this theory, we derive analytical models for well productivity of deviated wells in such media, for both steady-state and semi-steady-state flow. The theory developed in this paper relies on a spatial volume preserving transform composed of two rotations and two linear coordinate deformations. This transform is designed such that a prefixed direction aligns with one of the coordinate axes of the transformed space. Furthermore, the transformed medium is isotropic in planes perpendicular to the prefixed direction, and the transformed permeability is diagonal. As a bi-product, the new theory developed in this paper also provides closed formulas for directional permeabilities. These formulas are expressed with a different set of parameters than well known classical formulas for directional permeabilities. Since both approaches are fully analytical without any form of approximation, it is imperative that these formulas are proven identical. © 2021 Elsevier B.V.
Number of references: 18
Main heading: Anisotropy
Controlled terms: Anisotropic media - Mechanical permeability - Flow of fluids - Productivity - Mathematical transformations
Uncontrolled terms: Anisotropic medium - Directional permeability - Flow computation - Fluid-flow - Isotropics - New theory - Permeability tensors - Permeable media - Productivity model - Well productivity
Classification code: 631.1 Fluid Flow, General - 921.3 Mathematical Transformations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2021.109366
Funding Details: Number: 52004214, Acronym: NNSFC, Sponsor: National Natural Science Foundation of China; Number: 2021M693493, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: PRP/open-2010, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: 2021JQ-598, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: The authors thank the National Natural Science Foundation of China (No. 52004214), China Postdoctoral Science Foundation (2021M693493), and the Foundation of State Key Laboratory of Petroleum Resources and Prospecting , China University of Petroleum, Beijing (PRP/open-2010), and Natural Science Basic Research Plan in Shaanxi Province of China (No. 2021JQ-598) for the support without which this work could not have been performed.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

186. On the interface between biomaterials and two-dimensional materials for biomedical applications

Accession number: 20222112147704
Authors: Du, Chunbao (1); Du, Ting (1); Chang, Zixi (1); Yin, Changji (2, 3); Cheng, Yuan (2, 3)
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Corresponding author: Cheng, Yuan(yuan.cheng@monash.edu)
Source title: Advanced Drug Delivery Reviews
Abbreviated source title: Adv. Drug Deliv. Rev.
Volume: 186
Issue date: July 2022
Publication year: 2022
Article number: 114314
Language: English
ISSN: 0169409X
E-ISSN: 18728294
CODEN: ADDREP
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Two-dimensional (2D) materials have garnered significant attention due to their ultrathin 2D structures with a high degree of anisotropy and functionality. Reliable manipulation of interfaces between 2D materials and biomaterials is a new frontier for biomedical nanoscience and combining biomaterials with 2D materials offers a promising way to fabricate innovative 2D biomaterials composites with distinct functionality for biomedical applications. Here, we focus exclusively on a summary of the current work in the interface investigation of 2D biomaterials. Specifically, we highlight

extraordinary features that make 2D materials so desirable, as well as the molecular level interactions between 2D materials and biomaterials that have been studied thus far. Furthermore, the approaches for investigating the interface characteristics of 2D biomaterials are presented and described in depth. To capture the emerging trend in mass manufacturing of 2D materials, we review the research progress on biomaterial-assisted exfoliation. Finally, we present a critical assessment of newly developed 2D biomaterials in biomedical applications. © 2022 Elsevier B.V.
Number of references: 387
Main heading: Biomaterials
Controlled terms: Medical applications - Industrial research - Interfaces (materials)
Uncontrolled terms: 2d biomaterial - 2d material - 2D structures - Biomedical - Biomedical applications - Characterization - Degrees of anisotropy - Two-dimensional - Two-dimensional materials - Ultra-thin
Classification code: 462.5 Biomaterials (including synthetics) - 901.3 Engineering Research - 912.1 Industrial Engineering - 951 Materials Science
DOI: 10.1016/j.addr.2022.114314
Funding Details: Number: 22002117, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-585, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the National Natural Science of China (No.) and the Natural Science of Shaanxi Province, China (No.).This work was supported by the National Natural Science Foundation of China (No. 22002117) and the Natural Science Foundation of Shaanxi Province, China (No. 2021JQ-585).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

187. Leak Detection and Localization in Pipeline System

Accession number: 20230413423258
Authors: Mursyitah, Dian (1, 2); Delouche, David (3); Zhang, Tingting (4); Kratz, Frederic (5)
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Source title: 2022 10th International Conference on Systems and Control, ICSC 2022
Abbreviated source title: Int. Conf. Syst. Control, ICSC
Part number: 1 of 1
Issue title: 2022 10th International Conference on Systems and Control, ICSC 2022
Issue date: 2022
Publication year: 2022
Pages: 385-390
Language: English
ISBN-13: 9781665465076
Document type: Conference article (CA)
Conference name: 10th International Conference on Systems and Control, ICSC 2022
Conference date: November 23, 2022 - November 25, 2022
Conference location: Marseille, France
Conference code: 185805
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper presents leak detection and localization in the pipeline system. We proposed the Finite Memory Observer (FMO) because it has finite-time convergence. We have realized the leak detection in the pipeline system and proven it. To detect and localize the leak, we presented the scheme with two FMOs coupled with Luenberger Observer (LO). The first FMO (called FMO detection or FMO1) is used to detect the leak, and if a leak is detected, then LO is utilized to have fast leak localization and amplitude estimation of the leak. At each time, the leak localization and amplitude become time-varying. The take into account of time-variant is beneficial and utilized to feed the second FMO (called FMO localization or FMO2) to update leak localization adaptatively. In other words, FMO forced the LO to upgrade its capability. The update continuously happened to both of the coupled observers, so leaks were detected and located accurately in finite time. The effectiveness and robustness of the proposed schemes are both analyzed via the simulation. © 2022 IEEE.
Number of references: 36
Main heading: Leak detection
Controlled terms: Piping systems - Water pipelines
Uncontrolled terms: Amplitude estimation - Detection and localization - Finite memory - Finite-time convergence - Leak localization - Leaks detections - Luenberger observers - Memory observers - Pipeline systems - Time varying

Classification code: 446.1 Water Supply Systems - 619.1 Pipe, Piping and Pipelines
DOI: 10.1109/ICSC57768.2022.9993907
Funding Details:
Funding text: The author would like to acknowledge support from the MORA-LPDP (Ministry Affairs & Endowment Fund for Education scholarship Indonesia.*Research supported by MORA-LPDP Scholarship Indonesia. Dian Mursyitah is with the State Islamic University of Sultan Syarif Kasim, Riau, Indonesia, and also a Ph.D. student in INSA CVL, Bourges, France (e-mail: dmursyitah@uin-suska.ac.id; dian.mursyitah@insa-cvl.fr).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

188. Discrimination of Radix Astragali according to geographical regions by data fusion of laser induced breakdown spectroscopy (LIBS) and infrared spectroscopy (IR) combined with random forest (RF)

Accession number: 20220911719973
Authors: WANG, Yang (1); LI, Mao-Gang (1); FENG, Ting (1); ZHANG, Tian-Long (1); FENG, Ya-Qiang (1); LI, Hua (1, 2)
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Corresponding author: ZHANG, Tian-Long(tlzhang@nwu.edu.cn)
Source title: Chinese Journal of Analytical Chemistry
Abbreviated source title: Chin. J. Anal. Chem.
Volume: 50
Issue: 3
Issue date: March 2022
Publication year: 2022
Article number: 100057
Language: English
E-ISSN: 18722040
Document type: Journal article (JA)
Publisher: Chinese Academy of Sciences
Abstract: Data fusion of Laser-induced breakdown spectroscopy (LIBS) and infrared spectroscopy (IR) combined with random forest (RF) was proposed to identify Radix Astragali from different geographical regions. Firstly, the LIBS and IR spectra of 19 Radix Astragali samples were collected and analyzed. Then, an unsupervised discriminant model based on principal components analysis (PCA) with single LIBS and IR spectra was applied to identify Radix Astragali. The results indicated that three types of Radix Astragali samples can not be accurately distinguished using PCA. To distinguish Radix Astragali accurately, a supervised discriminant model based on RF was applied to identify Radix Astragali. The optimal RF discriminant models based on single LIBS or IR were obtained by selecting appropriate pretreatment methods. In low-level data fusion, the optimal LIBS and IR spectra were concatenated into a matrix to construct RF discriminant model. In mid-level data fusion, feature variables were extracted by variable importance (VI) measurement on basis of low-level fused data and the optimal variables were used as input variables to construct RF discriminant model. The results indicated that the predictive performance of RF model based on data fusion was better than the single LIBS or IR method. The predictive performance of RF model based on mid-level data fusion was best and the corresponding sensitivity, specificity and accuracy for the test set were 0.9667, 0.9833 and 0.9778. Additionally, the modeling time was 6.9 s. Summarily, RF model on basis of data fusion of LIBS and IR can provide a rapid and accurate discriminant method for the Radix Astragali from different regions. © 2022
Number of references: 35
Main heading: Atomic emission spectroscopy
Controlled terms: Data fusion - Decision trees - Geographical regions - Infrared spectroscopy - Laser induced breakdown spectroscopy - Principal component analysis
Uncontrolled terms: Discriminant models - Infrared: spectroscopy - Laserinduced breakdown spectroscopy (LIBS) - Model-based OPC - Radix Astragali - Random forest modeling - Random forests - Single lasers - Spectra's - Spectroscopy:spectroscopy
Classification code: 723.2 Data Processing and Image Processing - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 931.1 Mechanics - 961 Systems Science
Numerical data indexing: Time 6.90E+00s
DOI: 10.1016/j.cjac.2022.100057

Funding Details: Number: 21804107,22073074, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JS144, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: SKLACLS1807, Acronym: SKLAC, Sponsor: State Key Laboratory of Analytical Chemistry for Life Science;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 21804107 , 22073074), Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 20JS144) and State Key Laboratory of Analytical Chemistry for Life Science (SKLACLS1807).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

189. Ball-milling assisted fabrication of hierarchical Na4Ti5O12/Na2Ti6O13 for enhanced tetracyclines photodegradation

Accession number: 20222712313610
Authors: Li, Ping (1); Lv, Ying (1); Chen, Xuelian (1); Li, Xiangjuan (2); Xie, Jianfeng (2); Zheng, Jialu (1)
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Corresponding author: Lv, Ying(180305@xsyu.edu.cn)
Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
Volume: 650
Issue date: October 5, 2022
Publication year: 2022
Article number: 129598
Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Successful techniques for the evacuation of antibiotics are of colossal importance and profoundly attractive for satisfying the squeezing need for ecological remediation. Sodium titanates (NTO) as alluring inorganic materials for different applications because of their extraordinary physicochemical properties and low-cost. In this work, we demonstrated the utilization of NTO as photocatalysts, which are acquired by means of a ball-milling assisted heat treatment approach. A regular organic dye, methylene orange (MO), was utilized to examine the photodegradation properties of NTOs. The as-orchestrated Na4Ti5O12/Na2Ti6O13 displayed the greatest mineralization of MO. Particularly, the Na4Ti5O12/Na2Ti6O13 photocatalyst was used to degrade three tetracyclines with the degradation efficiency of tetracycline (TC), chlortetracycline (CTC) and oxytetracycline (OTC) were 80.78 %, 90.39 % and 75.60 %, respectively. In-depth experimental and DFT investigation proved that the relatively narrow bandgap of Na4Ti5O12 induced effective transformation of photo-excited electrons, thus reduced combination of carriers. Moreover, the heterojunction of Na4Ti5O12/Na2Ti6O13 induced the generation of active radicals and transport of carriers are proposed as advantages for the mineralization of three antibiotics. © 2022 Elsevier B.V.
Number of references: 53
Main heading: Sodium compounds
Controlled terms: Antibiotics - Ball milling - Degradation - Heterojunctions - Milling (machining) - Mineralogy - Physicochemical properties - Titanium - Titanium compounds
Uncontrolled terms: Antibiotic degradation - Ecological remediation - Inorganic materials - Low-costs - Mineralisation - Organic dye - Photo degradation - Physicochemical property - Sodium titanates
Classification code: 461.6 Medicine and Pharmacology - 482 Mineralogy - 542.3 Titanium and Alloys - 604.2 Machining Operations - 714.2 Semiconductor Devices and Integrated Circuits - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations
Numerical data indexing: Percentage 7.56E+01%, Percentage 8.078E+01%, Percentage 9.039E+01%
DOI: 10.1016/j.colsurfa.2022.129598
Funding Details: Number: 62104191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YCS20211060, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2021JQ-581, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This study is financially supported by Natural Science Basic Research Program of Shaanxi (Program No. 2021JQ-581). The Young Scientists Fund of the National Natural Science Foundation of China (Grant No.

62104191). Meanwhile, this work is also funded by innovation Team Funding: Design and Application of Metal Functional Materials from Xi'an Shiyou University. Graduate students' innovation ability and practice ability training program (No. YCS20211060).This study is financially supported by Natural Science Basic Research Program of Shaanxi (Program No. 2021JQ-581). The Young Scientists Fund of the National Natural Science Foundation of China (Grant No. 62104191). Meanwhile, this work is also funded by innovation Team Funding: Design and Application of Metal Functional Materials from Xi'an Shiyou University . Graduate students' innovation ability and practice ability training program (No. YCS20211060).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

190. Evaluation of Reservoir Non-Homogeneity Based on Random Forest

Accession number: 20232014082970
Authors: Xing, Kuanhong (1); Xia, Qing (1); Li, Mao (2); Yang, Shasha (3, 4); Jin, Anjie (4)
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Source title: Proceedings - 2022 International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Abbreviated source title: Proc. - Int. Conf. Artif. Intell. Things Crowdsensing, AIoTCs
Part number: 1 of 1
Issue title: Proceedings - 2022 International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Issue date: 2022
Publication year: 2022
Pages: 256-260
Language: English
ISBN-13: 9798350334104
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Artificial Intelligence of Things and Crowdsensing, AIoTCs 2022
Conference date: October 26, 2022 - October 28, 2022
Conference location: Nicosia, Cyprus
Conference code: 188114
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The evaluation of non-homogeneity of geological structure that stores oil and natural gas has the problem of non-uniform parameters and contradictory evaluation results of each parameter. In order to accurately evaluate reservoir non-homogeneity and improve reservoir prediction accuracy, this paper introduces a better effect random forest method based on logging data, which is designed not only to take into account the complexity of the reservoir non-homogeneity evaluation problem, but also presents the advantages of high evaluation accuracy and high tolerance to outliers and noisy data. From the results of reservoir non-homogeneity evaluation of the Chang 6 formation group in the YD oilfield. The accuracy of the random forest classifier is higher than 91%, which indicates that the algorithm has some application potential in reservoir non-homogeneity evaluation. © 2022 IEEE.
Number of references: 13
Uncontrolled terms: Evaluation results - Geological structures - Non-uniform - Nonhomogeneity - Northern shaanxi - Northern shaanxi style - Oil and natural gas - Random forests - Reservoir prediction - Reservoirnon-homogeneity
Numerical data indexing: Percentage 9.10E+01%
DOI: 10.1109/AIoTCs58181.2022.00046
Funding Details: Number: 22 gxfw0148, Acronym: -, Sponsor: -; Number: 22 jk0597, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work was supported by the Shaanxi Provincial Ministry of Education in 2022 under the General Special Scientific Research Project (22 jk0597); Science and Technology personnel Service Enterprise Project Xi 'an Science and Technology Bureau (22 gxfw0148).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

191. Self-assembled asparaginase-based nanoparticles with enhanced anti-cancer efficacy and anticoagulant activity

Accession number: 20221511940280
Authors: Li, Hong (1); Shi, Xiaodan (1); Cui, Wei (2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Beijing National Laboratory for Molecular Sciences, CAS Key Lab of Colloid, Interface and Chemical Thermodynamics, Institute of Chemistry, Chinese Academy of Sciences, Beijing; 100190, China
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Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
Volume: 645
Issue date: July 20, 2022
Publication year: 2022
Article number: 128933
Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Asparaginase, widely distributed in bacteria, plants, and mammals, has attracted much attention for the biomedical applications ranging from acute lymphoblastic leukemia, melanomas, colorectal cancer to hematologic cancers. Herein, a facile and simple strategy is developed to fabricate protein assemblies with nano-spherical morphology through electrostatic interactions of asparaginase (Asp) and heparin (Hep). As-prepared nanoparticles exhibited high loading content (43.7%) of Asp while preserving the bioactivity. Importantly, thanks to the anticoagulant activity of the component of Hep, the assembled nanoparticles could effectively avoid the risk of thromboembolism, a common side effect caused by the usage of Asp. Moreover, the in vitro anti-cancer measurement demonstrated that these nanoparticles showed dose-dependent inhibitory effect towards MCF-7 cells in 1640 medium. These results pave the way to guide protein assembly with enhanced anti-cancer efficacy and reduced side effects. © 2022 Elsevier B.V.
Number of references: 34
Main heading: Nanoparticles
Controlled terms: Polysaccharides - Proteins - Mammals - Electrostatics - Diseases - Self assembly - Medical applications
Uncontrolled terms: Acute lymphoblastic leukaemias - Anti-cancer - Anticoagulant activities - Asparaginase - Biomedical applications - High loadings - Protein assembly - Side effect - Simple++ - Spherical morphologies
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 761 Nanotechnology - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 933 Solid State Physics - 951 Materials Science
Numerical data indexing: Percentage 4.37E+01%
DOI: 10.1016/j.colsurfa.2022.128933
Funding Details: Number: 2021KJXX-39, Acronym: -, Sponsor: -; Number: 20190605, Acronym: -, Sponsor: -; Number: 21703169, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: We acknowledge the financial support from the National Natural Science Foundation of China (No. 21703169), the Scientific Research Plan of Shaanxi Province of China (No. 2021KJXX-39), and the Young Talent Fund of University Association for Science and Technology in Shaanxi Province of China (No. 20190605).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

192. A Conventional Neural Network Lithology Classification Method Based on Vibration Data

Accession number: 20231013671229
Authors: Chen, Gang (1); Tan, Peng (1); Li, Jiran (2); Jiang, Hailong (3); Fu, Li (1); Yang, Henglin (1)
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Source title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Abbreviated source title: U.S. Rock Mech./Geomech. Symp.

Part number: 1 of 1
Issue title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Issue date: 2022
Publication year: 2022
Report number: ARMA-2022-0143
Language: English
ISBN-13: 9780979497575
Document type: Conference article (CA)
Conference name: 56th U.S. Rock Mechanics/Geomechanics Symposium
Conference date: June 26, 2022 - June 29, 2022
Conference location: Santa Fe, NM, United states
Conference code: 186824
Publisher: American Rock Mechanics Association (ARMA)
Abstract: Drilling string vibration data is a high-density ancillary data and it has the advantages of low-latency and low-cost which can be acquired in real time. In this study, vibration dataset is used as signal source, and the original vibration signal is filtered by Butterworth (BHPF). vibration time-frequency characteristics are extracted into time frequency images with the application of short-time Fourier transform (STFT). This paper develops lithology classification models using new data sources based on convolutional neural network (CNN) combining with Mobilenet and ResNet. This model is used for complex formation lithology including fine gravel sandstone, fine sandstone and mudstone. In order to improve the trustworthiness of decision-making results, the gradient-weighted class-activated thermal localization map is applied to interpret the results of the model. The final vertification test shows that the single-sample decision time of the model is 10ms, the test macro precision rate is 90.0%, and the macro recall rate is 89.3%. The lithology classification model is more efficiency and accessible. In conclusion, The CNN model using drill string vibration supplies a superior method of lithology classification. This study provides low-latency and low-cost lithology judgment methods to ensure safe and rapid drilling. © 2022 ARMA, American Rock Mechanics Association.
Number of references: 17
Main heading: Sandstone
Controlled terms: Classification (of information) - Convolutional neural networks - Costs - Decision making - Infill drilling - Lithology - Rock mechanics - Signal processing
Uncontrolled terms: Classification methods - Classification models - Convolutional neural network - Drilling strings - Latency costs - Lithology classification - Low latency - Low-costs - Neural-networks - Vibration data
Classification code: 481.1 Geology - 482.2 Minerals - 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 716.1 Information Theory and Signal Processing - 903.1 Information Sources and Analysis - 911 Cost and Value Engineering; Industrial Economics - 912.2 Management
Numerical data indexing: Percentage 8.93E+01%, Percentage 9.00E+01%, Time 1.00E-02s
Funding Details: Number: 2021DJ4202, Acronym: -, Sponsor: -; Number: 52104005, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-407, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2021DJ4206, Acronym: -, Sponsor: Scientific Research and Technology Development Program of Guangxi;
Funding text: The authors are grateful to the support of CNPC Scientific research and technology development project " Research on Concentric Tube Reverse Circulation Drilling Technology " (Grant No. 2021DJ4206), CNPC "Horizontal well resistance reduction, hole cleaning, intelligent modeling and collaborative control methods" (Grant No. 2021DJ4202), National Natural Science Foundation of China (No.52104005), Natural Science Basic Research Plan in Shaanxi Province of China (No. 2021JM-407).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

193. Investigation of microstructure, texture, and mechanical properties of FeCoNiCrMn high entropy alloy during drive friction welding

Accession number: 20222112157248
Authors: Lu, Yidi (1); Zhang, Xiaoyong (1); Wang, Hongduo (1); Kan, Chengling (2); Zhang, Fan (3); Dai, Pan (1); Wang, Hui (3)
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Source title: Materials Characterization

Abbreviated source title: Mater Charact
Volume: 189
Issue date: July 2022
Publication year: 2022
Article number: 111959
Language: English
ISSN: 10445803
CODEN: MACHEX
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: FeCoNiCrMn high-entropy alloy (HEA) with FCC structure was welded by continuous drive friction welding. The microstructure and mechanical properties of welding joints were investigated using OM, XRD, EBSD, TEM, microhardness, and tensile tests. The microstructure of welding joints samples consist of three zones: the weld zone (WZ), the thermal-mechanically affected zone (TMAZ) and the base metal zone (BM). The microstructure of WZ is consistent with that of BM, which is a single FCC solid solution. Discontinuous dynamic recrystallization (DDRX) and twin-induced dynamic recrystallization (TDRX) mainly occur in WZ and TMAZ. The hardness of TMAZ is significantly increased and higher than that in WZ and BM; the hardness of WZ is slightly higher than that of BM. The increase of the hardness is related to grain refinement. The tensile strength and uniform elongation of the joint samples are increased by 4.2% and 31% respectively compared with the results of the base metal. The results exhibited ductile fracture. © 2022
Number of references: 58
Main heading: Friction
Controlled terms: Cobalt alloys - Dynamic recrystallization - Entropy - Tensile testing - Iron alloys - Textures - Ductile fracture - Manganese alloys - Chromium alloys - Grain refinement - High-entropy alloys - Hardness - Tensile strength
Uncontrolled terms: Base metal zone - Continuous driven friction welding - Dynamic recrystallisation - High entropy alloys - Microstructure-texture - Microstructures and mechanical properties - Thermal - Weld zone - Welding joints - XRD
Classification code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 543.1 Chromium and Alloys - 543.2 Manganese and Alloys - 545.2 Iron Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 641.1 Thermodynamics - 951 Materials Science
Numerical data indexing: Percentage 3.10E+01%, Percentage 4.20E+00%
DOI: 10.1016/j.matchar.2022.111959
Funding Details: Number: YCS19213127, Acronym: -, Sponsor: -; Number: 51174165,51971017, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM5076, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (Nos. 51174165 and 51971017), the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2018JM5076), the Program for Graduate Innovation Fund of Xi'an Shiyou University, China (No. YCS19213127).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

194. Damage assessment of a buried CFRP petroleum pipeline subjected to blast loading

Accession number: 20221411913272
Title of translation: CFRP
Authors: Cui, Ying (1, 2); Zhao, Junhai (3); Qu, Zhan (1, 2); Fang, Jun (1, 2)
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Corresponding author: Zhao, Junhai
Source title: Zhendong yu Chongji/Journal of Vibration and Shock
Abbreviated source title: J Vib Shock
Volume: 41
Issue: 6
Issue date: March 28, 2022
Publication year: 2022
Pages: 60-69
Language: Chinese

ISSN: 10003835
Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society
Abstract: By means of buried explosion experiments, the anti-explosion performance of a buried steel petroleum pipeline with carbon fibre reinforced polymer (CFRP) reinforcement was analysed. Based on the experimental data and numerical simulations, the damage assessment criterion of the buried steel petroleum pipeline with CFRP reinforcement was established. The results show that in the condition of scale distance of 0.19 m/kg1/3 and under shallow buried blast loading, there appear obvious dent deformations on the facing explosive surfaces of both the normal and the CFRP buried pipeline specimens, and the dent deformation of the CFRP pipeline specimen decreases by 38.2% compared with the normal buried pipeline specimen. And, it is found damage occurs more easily on the facing explosive pipeline surfaces and at the joint ends of the two specimens. As to the overpressure on the buried pipeline surfaces facing explosive, the values for the normal buried pipeline is higher than that for the CFRP pipeline, which also proves that the CFRP sheets can decrease the overpressure on the buried pipeline surfaces facing explosive effectively. As to the lasting time of positive pressure, it is similar for the normal and the CFRP buried pipelines, which also proves that the CFRP sheets have little effect on the lasting time of positive pressure. Finally, considering combinedly the dent depth and dent length of the buried steel pipeline with CFRP reinforcement, with the fixed end constraints, the damage assessment formula based on a new critical ratio between the dent depth and dent length was established according to the pressure and impulse (P-I) damage assessment theory.
Number of references: 30
Main heading: Facings
Controlled terms: Steel fibers - Acoustic emission testing - Damage detection - Explosives - Pipelines - Deformation - Carbon fiber reinforced plastics - Gasoline - Numerical models - Carbon fibers
Uncontrolled terms: Arbon fiber reinforced polymer (carbon fiber reinforced polymer) pipeline - Buried pipelines - Carbon fibre reinforced polymer - Damage assessments - Explosion experiment - Fiber-reinforced polymers - Fibre reinforced polymers - Polymer carbon - Polymer reinforcements - Pressure-impulse diagrams
Classification code: 402 Buildings and Towers - 408.2 Structural Members and Shapes - 523 Liquid Fuels - 619.1 Pipe, Piping and Pipelines - 751.2 Acoustic Properties of Materials - 804 Chemical Products Generally - 817.1 Polymer Products - 819.4 Fiber Products - 921 Mathematics
Numerical data indexing: Percentage 3.82E+01%, Size 1.90E-01m
DOI: 10.13465/j.cnki.jvs.2022.06.009
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

195. In-situ phase conversion of composited 1T@2H–MoSe2 nanosheets with enhanced HER performance

Accession number: 20215211384356
Authors: Liu, Yinggang (1); Liu, Shuai (1, 2); Li, Hanxiao (1); Yu, Lijun (2); Sun, Lan (3); Xue, Jiale (1); Xu, Ruojun (1); Chen, Guoxiang (1)
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Laboratory of Surface Engineering and Remanufacturing, Xi'an University, Xi'an; 710065, China; (3) State-Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding authors: Liu, Shuai(liushuai364@163.com); Chen, Guoxiang(guoxchen@xsyu.edu.cn)
Source title: Materials Chemistry and Physics
Abbreviated source title: Mater Chem Phys
Volume: 278
Issue date: February 15, 2022
Publication year: 2022
Article number: 125657
Language: English
ISSN: 02540584
CODEN: MCHPDR
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Transition metal dichalcogenides (TMDCs) are considered as the potential electrocatalysts for hydrogen evolution reaction (HER) owing to the two-dimensional (2D) geometry and tunable band gap. However, both the inefficient electron transferring and high Gibbs free energies for hydrogen adsorption (#GH*) in MoSe2 limit its further

improvement in catalytic performance. Herein, the few-layered 1T@2H–MoSe2 composite nanosheets are synthesized by one-pot hydrothermal reaction. It is found that the morphology and composites of nanosheets could be influenced by hydrothermal reaction parameters. As compared to pure 2H–MoSe2, 1T@2H–MoSe2 electrode exhibits remarkable activity for HER with a low overpotential (118 mV), small Tafel slope (65.8 mV·dec-1) as well as large electrochemical active area (Cdl = 37.5 mF cm-2) in acid electrolytes. Density functional theory (DFT) calculations demonstrate that #GH* of 1T@2H–MoSe2 (0.232 eV) is much lower than these of pure 1T-MoSe2 and 2H–MoSe2. It could be ascribed to both the optimized charge transfer and increased density of active sites in 1T@2H–MoSe2 nanosheets. © 2021 Elsevier B.V.
Number of references: 67
Main heading: Nanosheets
Controlled terms: Transition metals - Molybdenum compounds - Charge transfer - Gas adsorption - Density functional theory - Electrocatalysts - Energy gap - Selenium compounds - Gibbs free energy - Hydrogen
Uncontrolled terms: Composited - Dichalcogenides - Electron transferring - Hydrogen adsorption - Hydrogen evolution reactions - Phase conversion - Phase engineering - Reaction performance - Tunable Band-gap - Two-dimensional
Classification code: 531 Metallurgy and Metallography - 641.1 Thermodynamics - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics
Numerical data indexing: Capacitance 3.75E-02F, Electron volt 2.32E-01eV, Inductance 2.00E+00H, Magnetic flux density 1.00E00T, Voltage 1.18E-01V, Voltage 6.58E-02V
DOI: 10.1016/j.matchemphys.2021.125657
Funding Details: Number: YCS21113154, Acronym: -, Sponsor: -; Number: 12004301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: BK20190221, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province; Number: tywl2019 -10, Acronym: SER, Sponsor: Shaanxi Key Laboratory of Surface Engineering and Remanufacturing;
Funding text: This work was jointly supported by National Natural Science Foundation of China (Grant No. 12004301), Natural Science Foundation of Jiangsu Province (Grant No. BK20190221), the fund of the Shaanxi Key Laboratory of Surface Engineering and Remanufacturing (tywl2019 -10), the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS21113154).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

196. Nano-confinement coating strategy derived Matryoshka-like carbon nanotubes@anatase nanocrystalline@amorphous carbon nanofibers for ultrafast sodium ion storage

Accession number: 20223312584354
Authors: Xia, Yuan (1); Zhu, Xiaohang (2); Qiu, PengPeng (2); Li, Mengjie (3); Wang, Bo (3); Hai, Guojuan (1)
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Corresponding author: Xia, Yuan(xiayuan@fudan.edu.cn)
Source title: Electrochimica Acta
Abbreviated source title: Electrochim Acta
Volume: 428
Issue date: October 1, 2022
Publication year: 2022
Article number: 140941
Language: English
ISSN: 00134686
CODEN: ELCAAV
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Titania is considered to be an attractive candidate as anode for sodium ion batteries due to excellent cycle stability, advanced safety features, and small volume deformation in the charge-discharge process. However, limited by sodium storage mechanism, the fast charge and discharge performance of multi-crystals titania is failed to

satisfy the requirements of commercial application. Here, we develop a Matryoshka-like carbon nanotubes@anatase nanocrystalline@amorphous carbon (CNTs@aTiO2@C) nanofibers for ultrafast sodium ion storage. A nano-confinement coating strategy is demonstrated for constructing an intermediate layer assembled by ultrafine nanocrystalline (2-3 nm) of anatase. The synthesized Matryoshka-like nanofibers with diameters of $_{\sim}95$ nm consists of amorphous carbon outer layer (10-13 nm), anatase nanocrystalline assembled intermediate layer (13-15 nm), and carbon nanotube core. Benefit from the ultra-refinement of anatase nanocrystalline and Matryoshka-like micro-morphology, the proportion of the capacitive-controlled contribution are up to 90.1 %, 90.6%, 91.9 %, 92.3%, and 93.6% with sweep rate increased from 0.2 to 0.4, 0.6, 0.8, and 1.0 mV s-1, thus result in an outstanding reversible specific capacities of $_{\sim}120$ mA h g-1 with Coulombic efficiency of $_{\sim}99.5\%$ after long-life of 10000 cycles at ultrafast rate of 10 A g-1. © 2022 Elsevier Ltd
Number of references: 54
Main heading: Titanium dioxide
Controlled terms: Amorphous carbon - Carbon nanofibers - Carbon nanotubes - Charging (batteries) - Coatings - Metal ions - Nanocrystals - Sodium-ion batteries
Uncontrolled terms: Anatase nanocrystalline - Intermediate layers - Ion storage - Matryoshka-like structure - Nano-confinement coating strategy - Nanocrystallines - Sodium ions - Titania - Ultra-fast - Ultrafast sodium ion storage
Classification code: 531.1 Metallurgy - 702.1.2 Secondary Batteries - 761 Nanotechnology - 804.2 Inorganic Compounds - 813.2 Coating Materials - 933 Solid State Physics - 933.1 Crystalline Solids - 933.2 Amorphous Solids
Numerical data indexing: Electric current 1.00E+01A, Electric current 1.20E-01A, Percentage 9.01E+01%, Percentage 9.06E+01%, Percentage 9.19E+01%, Percentage 9.23E+01%, Size 1.00E-08m to 1.30E-08m, Size 1.30E-08m to 1.50E-08m, Size 2.00E-09m to 3.00E-09m, Size 9.50E-08m, Voltage 1.00E-03V, Percentage 9.36E +01%, Percentage 9.95E+01%
DOI: 10.1016/j.electacta.2022.140941
Funding Details: Number: 21733003,21975050,22088101, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 19JC1410700, Acronym: STCSM, Sponsor: Science and Technology Commission of Shanghai Municipality; Number: 2018YFA0209401,2018YFE0201701, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: 21XD1420800, Acronym: -, Sponsor: Program of Shanghai Academic Research Leader;
Funding text: This work was supported by the National Key R&D Program of China (2018YFA0209401 and 2018YFE0201701), NSFC of China (grant nos. 22088101 , 21733003 , and 21975050), Key Basic Research Program of Science and Technology Commission of Shanghai Municipality (19JC1410700), and Program of Shanghai Academic Research Leader (21XD1420800).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

197. Recent progress in copper nanocatalysis for sustainable transformations

Accession number: 20224112861060
Authors: Wang, Sichang (1); Yuan, Ming (1); Zhang, Qunzheng (1); Huang, Shenlin (2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Jiangsu Co-Innovation Center of Efficient Processing and Utilization of Forest Resources, International Innovation Center for Forest Chemicals and Materials, Nanjing Forestry University, Nanjing; 210037, China
Corresponding author: Huang, Shenlin(shuang@njfu.edu.cn)
Source title: Current Opinion in Green and Sustainable Chemistry
Abbreviated source title: Curr. Opin. Green Sustain. Chem.
Volume: 38
Issue date: December 2022
Publication year: 2022
Article number: 100698
Language: English
ISSN: 24522236
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Copper nanoparticles (CuNPs) have been deeply studied as catalyst for organic synthesis. Various new Cu nanocatalysts are reviewed for different types of organic reactions, such as C–C bond formation (including Mizoroki–Heck, Suzuki–Miyaura, Glaser-Hay coupling), C–N bond formation (including Chan-Lam, Buchwald–Hartwig, Ullmann and Goldberg coupling, alkyne–azide cycloaddition etc.), C–O bond formation and multi-step reactions with C–X (C, N, O) bond formation. Most CuNP-catalyzed protocols possess merits of mild reaction conditions, high catalytic efficiency,

good functional group tolerance, lower cost, clean reaction profiles and reusable copper catalyst. The application of these CuNPs in organic synthesis holds potential for significant impact on advancing organic synthesis and promoting further development of organic copper chemistry. © 2022 Elsevier B.V.
Number of references: 62
Main heading: Copper
Controlled terms: Chemical bonds - Computer software reusability - Metal nanoparticles - Nanocatalysts - Synthesis (chemical)
Uncontrolled terms: Bond formation - C-C bond formation - C-O bond formation - Copper nanoparticles - C–N bond formation - Nano-catalyst - Nanocatalysis - Organic synthesis - Recent progress -]+ catalyst
Classification code: 544.1 Copper - 723 Computer Software, Data Handling and Applications - 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions
DOI: 10.1016/j.cogsc.2022.100698
Funding Details: Number: 2020ZDLSF03 -07, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2021JQ-584, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2021JQ-584), the Key Research and Development Program of Shaanxi Province (2020ZDLSF03 -07).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

198. Simultaneous multi-graph learning and clustering for multiview data

Accession number: 20220811677659
Authors: Ma, Xuanlong (1); Yan, Xueming (2, 3); Liu, Jingfa (2, 3); Zhong, Guo (2, 3)
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Corresponding author: Zhong, Guo(yb77410@um.edu.mo)
Source title: Information Sciences
Abbreviated source title: Inf Sci
Volume: 593
Issue date: May 2022
Publication year: 2022
Pages: 472-487
Language: English
ISSN: 00200255
CODEN: ISIJBC
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: As many data in practical applications occur or can be arranged in multiview forms, multiview clustering utilizing certain complementary and heterogeneous information in various views to promote the clustering performance, has received much attention recently. Among varieties of methods, graph-based unsupervised learning methods are an essential approach for learning intrinsic structure relations of multiview data for clustering. Most of them firstly integrate information from each view into a consensus graph, which is then fed into the classic spectral clustering to achieve clustering. Such a two-step clustering paradigm is difficult to obtain the optimal clustering results even though every step performs individual optimization. This paper integrates multi-graph construction, consensus graph construction, and clustering in a unified learning framework, which can simultaneously consider the consistency and complementarity of multiview data to provide the clustering results directly. Moreover, we treat each view differently by automatic weight learning. Specifically, multi-graph learning, consensus graph learning, and weight learning are seamlessly integrated so that the related variables can be iteratively updated in the unified optimization framework– the clustering results towards an overall optimum. Comprehensive experiments on real multiview datasets verify the superiority of the proposed method over other state-of-the-art baselines in terms of three clustering evaluation metrics. © 2022 Elsevier Inc.
Number of references: 45
Main heading: Graphic methods
Controlled terms: Clustering algorithms - Iterative methods - Unsupervised learning

Uncontrolled terms: Clustering results - Clusterings - Consensus graph learning - Graph construction - Heterogeneous information - Multi-graph fusion - Multi-view clustering - Multi-view datum - Multi-views - Performance
Classification code: 903.1 Information Sources and Analysis - 921.6 Numerical Methods
DOI: 10.1016/j.ins.2022.02.018
Funding Details: Number: 2021A1515011974, Acronym: -, Sponsor: -; Number: 11801441,61976244,62006053, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 202002030238,202102020878, Acronym: -, Sponsor: Guangzhou Municipal Science and Technology Project;
Funding text: The work is partially supported by the National Natural Science Foundation of China (Nos. 62006053, 11801441 and 61976244), the Program of Science and Technology of Guangzhou, China (Nos. 202102020878 and 202002030238), the Guangdong Basic and Applied Basic Research Foundation, China (No. 2021A1515011974).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

199. Molecular coupling behavior of relay catalytic upgrading of heavy oil fast pyrolysis vapor to produce light olefins

Accession number: 20215111362786
Authors: Che, Yuanjun (1); Shi, Kunmou (1); Wang, Qian (1); Tang, Ruiyuan (2); Tian, Yuanyu (3)
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Corresponding author: Wang, Qian(shangjinzhe@163.com)
Source title: Journal of Analytical and Applied Pyrolysis
Abbreviated source title: J Anal Appl Pyrolysis
Volume: 161
Issue date: January 2022
Publication year: 2022
Article number: 105419
Language: English
ISSN: 01652370
CODEN: JAAPDD
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The relay catalytic upgrading of vacuum residue (VR) fast pyrolysis vapor process, which combines the VR fast pyrolysis and pyrolysis vapor catalytic cracking on the molecular level, is proposed to produce the chemicals. In this research, the composition and molecular distribution of Changqing vacuum residue (CQ-VR) pyrolysis vapor at 550–650 °C are investigated firstly. In the pyrolysis vapor, the alkanes and alkenes which have high catalytic cracking reactivity are both distributed from C5–C18, whereas the aromatics with high adsorption capacity is consist of monocyclic and polycyclic aromatics. For further catalytic cracking, the optimal reaction temperature for CQ-VR pyrolysis process is 600 °C due to the fact that the pyrolysis vapor at this temperature contains more alkenes and less aromatics. Then, the pyrolysis vapor is catalyzed over FCC catalyst, ZSM-5 catalyst, ZSM-5/calcium aluminate composite catalyst (Z-C catalyst), and ZSM-5/FCC composite catalyst (Z-F catalyst), which has different pore structure and acidity, respectively. The yield of light olefins after catalytic cracking of pyrolysis vapor over Z-C catalyst is 43.26%, which is higher than that over FCC, ZSM-5, and Z-F catalysts. Coupling the molecular distribution of pyrolysis vapor with the composition structure of catalyst can achieve the maximum conversion of CQ-VR to light olefins, and realize the efficient conversion of inferior heavy oil. © 2021 Elsevier B.V.
Number of references: 44
Main heading: Sodium Aluminate
Controlled terms: Aromatization - Zeolites - Crude oil - Catalytic cracking - Olefins - Catalysts - Heavy oil production - Pore structure
Uncontrolled terms: Calcium aluminate - Catalytic upgrading - Composite catalysts - Fast pyrolysis - Light-olefins - Molecular coupling - Molecular distribution - Molecular relays - Vacuum residue -]+ catalyst
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 4.326E+01%, Temperature 8.23E+02K to 9.23E+02K, Temperature 8.73E+02K

DOI: 10.1016/j.jaap.2021.105419
Funding Details: Number: 107020537, Acronym: -, Sponsor: -; Number: 21878335,22008187, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-583,2021JQ-668, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors acknowledge the financial support provided by the National Natural Science Foundation of China (21878335 and 22008187), the Doctoral Research Startup Fund (107020537), and the Natural Science Basic Research Program of Shaanxi (2021JQ-668 and 2021JQ-583).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

200. Topological Heart Rate Variability Dynamics Analysis toward Sleep Apnea Detection with Persistent Shannon Entropy

Accession number: 20223912809367
Authors: Zhao, Rui-Qi (1, 4); Ren, Xu-Chao (2); Liang, Duan (3); Liu, Guan-Zheng (3); Li, Ying-Tian (4); Jia, Zhen-Hua (1); Yan, Yan (4)
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Source title: 2022 IEEE International Conference on Real-Time Computing and Robotics, RCAR 2022
Abbreviated source title: IEEE Int. Conf. Real-Time Comput. Robot., RCAR
Part number: 1 of 1
Issue title: 2022 IEEE International Conference on Real-Time Computing and Robotics, RCAR 2022
Issue date: 2022
Publication year: 2022
Pages: 640-643
Language: English
ISBN-13: 9781665469838
Document type: Conference article (CA)
Conference name: 2022 IEEE International Conference on Real-Time Computing and Robotics, RCAR 2022
Conference date: July 17, 2022 - July 22, 2022
Conference location: No. 49 Zhong Hua South Road, Nan Ming District, Guiyang, China
Conference code: 182555
Sponsor: IEEE Robotics and Automation Society; Shanghai Jiao Tong University; Shenzhen Institute of Advanced Technology
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Sleep is a necessary process to maintain the normal physiological function of the human body and an important guarantee to improve people's quality of life. Obstructive sleep apnea (OSA) is a common sleep disorder seriously affecting human healthcare, which is also considered to be a potential risk factor for cardiovascular disease. This work investigates sleep state monitoring and OSA recognition from the heart rate variability dynamics. By investigating the topological properties of the state point clouds in the reconstructed phase space, the nonlinear dynamics pattern is well distinguished when the sleeping state changes. We proposed a Shannon entropy analysis and feature learning framework developed with the topological summaries, which shows good classification ability in the OSA detection experiments. The proposed approach is a promising solution for the clinical use of sleep state monitoring in real-Time computing occasions. © 2022 IEEE.
Number of references: 22
Main heading: Dynamics
Controlled terms: Heart - Phase space methods - Sleep research - Topology
Uncontrolled terms: Dynamics analysis - Heart rate variability - Human bodies - Obstructive sleep apnea - Physiological functions - Quality of life - Shannon's entropy - Sleep apnea detection - Sleep state - State monitoring
Classification code: 461.2 Biological Materials and Tissue Engineering - 461.4 Ergonomics and Human Factors Engineering - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1109/RCAR54675.2022.9872275
Funding Details: Number: JCYJ 2021032411569025, Acronym: -, Sponsor: -; Number: JSGG20200807171603039, Acronym: -, Sponsor: Science, Technology and Innovation Commission of Shenzhen Municipality;

Funding text: This work is supported by the Shenzhen Fundamental Research Project with grant No. JCYJ 2021032411569025, and in part by the Science, Technology and Innovation Commission of Shenzhen Municipality under Grant JSGG20200807171603039.This work is supported by the Shenzhen Fundamental Research Project, grant No. JCYJ 2021032411569025, in part by the Science, Technology and Innovation Commission of Shenzhen Municipality under Grant JSGG20200807171603039. Rui-Qi Zhao and Xu-Chao Ren contribute equally. ⁎ indicates the corresponding authors.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

201. The Impact of the Distance Sensors Orientation on the Obstacle Avoidance Ability of the Robot

Accession number: 20224913203579
Authors: Zhang, Guoyu (1); Zhu, Zijian (2)
Author affiliation: (1) Xi'an Shiyou University, College Of Electrical Engineering, Xi'an, China; (2) Qingdao University, College Of Mechanical And Electrical Engineering, Qingdao, China
Corresponding author: Zhang, Guoyu(201905060112@stumail.xsyu.edu.cn)
Source title: Proceedings - 2022 International Conference on Machine Learning and Intelligent Systems Engineering, MLISE 2022
Abbreviated source title: Proc. - Int. Conf. Mach. Learn. Intell. Syst. Eng., MLISE
Part number: 1 of 1
Issue title: Proceedings - 2022 International Conference on Machine Learning and Intelligent Systems Engineering, MLISE 2022
Issue date: 2022
Publication year: 2022
Pages: 52-56
Language: English
ISBN-13: 9781665492461
Document type: Conference article (CA)
Conference name: 2nd International Conference on Machine Learning and Intelligent Systems Engineering, MLISE 2022
Conference date: August 5, 2022 - August 7, 2022
Conference location: Guangzhou, China
Conference code: 184392
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In these few years, intelligent robotics technology becomes more and more popular, they bring big convenience for people. And how to further advance the efficiency of the robot becomes a focus topic. The objective of this paper explores the way to improve robot efficiency in the way to find an optimum orientation for the sensors on the two-wheeled robots. Based on the Matlab Robotics Playground, the research found different mazes, adjusted the original angle of the sensors, and then collected the necessary data for the further survey. From the following experiment, can find that the sensors whose original orientation angle is set at a small value (from 0 degree to 30 degrees) have a higher efficiency than those sensors with a big original orientation angle. Furthermore, when the orientation angle is 0 degree, the robot could have the most optimum efficiency. This paper attempts to seek how the orientation of the sensors could influence the movement process and the efficiency of the robot, provides a feasible way for the installation of sensors on robot. © 2022 IEEE.
Number of references: 16
Main heading: Efficiency
Controlled terms: Robots
Uncontrolled terms: Distance sensors - Intelligent robotics - Laser ranging - Laser ranging sensor - Obstacles avoidance - Orientation angles - Ranging sensors - Robotic technologies - Sensor orientation - Two wheeled robots
Classification code: 731.5 Robotics - 913.1 Production Engineering
DOI: 10.1109/MLISE57402.2022.00018
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

202. Real-time Baseline Drift Correction Method for Transient Electromagnetic Logging Signals Based on Adaptive Segmentation

Accession number: 20223812766862
Authors: Dang, Bo (1); Wang, Ce (1); Liu, Changzan (1); Yang, Ling (1); Zhao, Yang (1)
Author affiliation: (1) Xi'an Shiyou University, Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 259-262
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The empirical mode decomposition can be used to solve the problem of baseline drift caused by downhole temperature changes. However, the endpoint effect problem of this method seriously affects the accuracy of data processing, and the increase of data volume reduces the efficiency of real-time data processing. In view of the above problems, a real-time baseline drift correction method for transient electromagnetic logging signals based on adaptive segmentation is proposed. The method combines the algorithm of adaptive segmentation processing on the basis of the mirror extension method, performing baseline drift correction processing after automatic segmentation of the logging signal, and realizing the automatic splicing of each segment signal by software, so as to obtain a complete reconstructed signal. The test results of field experimental data show that this method can realize the real-time and segmented baseline drift correction of original logging data, and can effectively improve the efficiency and accuracy of data processing. © 2022 IEEE.
Number of references: 7
Main heading: Mirrors
Controlled terms: Data handling - Efficiency - Electromagnetic logging - Electromagnetic wave attenuation - Empirical mode decomposition - Transient analysis
Uncontrolled terms: Adaptive segmentation - Baseline drift - Drift correction - Drift-correction methods - Empirical Mode Decomposition - Endpoint effect - Mirror extension - Real- time - Transient electromagnetic methods - Transient electromagnetics
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism - 711 Electromagnetic Waves - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 741.3 Optical Devices and Systems - 913.1 Production Engineering
DOI: 10.1109/ICMSP55950.2022.9858940
Funding Details: Number: YCS22113120, Acronym: -, Sponsor: -; Number: 51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250, in part by CNOOC Limited Scientific Research Project under Grant YXKYZX082021 and in part by Postgraduate Innovation and Practice Ability Training Program of Xi'an Shiyou University, under Grant YCS22113120.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

203. Bond-Behavior and Bond-Slip Constitutive Model of High-Strength Steel Rebar with Different Crossrib Spacing in Concrete

Accession number: 20230003961
Authors: Lan, Guanqi (1, 2); Cui, Ying (1); Chen, Tao (1); Zhang, Kun (1)
Author affiliation: (1) School of Civil Engineering, Xi'an Shiyou University, China; (2) Key Laboratory of Low-carbon Urban Construction of Xi'an, Chang'an University, China
Corresponding author: Lan, Guanqi(201202@xsyu.edu.cn)
Source title: SSRN
Issue date: November 19, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: In the past century, the mechanical properties of deformed steel bars have improved rapidly, but their surface configurations have been consistent. The height, width, angle, and spacing of the crossribs are key surface parameters that affect the bond behavior between steel rebar and concrete. To reveal the effects of crossrib spacing on the bond behavior of 630 MPa high-strength steel rebar (T63) in concrete, 42 bonding specimens were designed and prepared using T63 rebars and T63 rebars with increased crossrib spacing (TB63). The bond properties of two kinds of steel rebar and concrete were investigated by pull-out testing and the failure modes, bond strengths, relative slippages, and bond-slip curves obtained. Based on analysis of bond-slip curves, the applicability of the existing bond-slip constitutive model to describe T63 and TB63 rebars was discussed. The main conclusions were: (a) A 30–50% increase in crossrib spacing had little effect on the bond failure mode and bond strength of T63 rebar. (b) The bond-slip curves of the two types of bonding specimens were similar and specimen peak slippage with TB63 1.3–1.5-fold that of T63 specimens. (c) The calculation method of critical bond length in Chinese code (GB 50010-2010) is applicable to T63 and TB63 rebars. (d) The bond-slip constitutive model proposed by Harajli was used to describe the bond-slip characteristics of T63 rebar with different crossrib spacings. The results of this study can be used as a basis for applying T63 rebar and as a reference for optimizing rebar rib outline.
Main heading: High strength steel
Controlled terms: Bond length - Bond strength (materials) - C (programming language) - Concretes - Constitutive models - Failure modes
Uncontrolled terms: Bond behaviours - Bond slips - Bond-slip constitutive model - Critical bond length - High-strength steel rebar - High-strength steels - Rebar and concretes - Rib outline - Steel concrete - Steel rebars
Classification code: 412 Concrete - 545.3 Steel - 723.1.1 Computer Programming Languages - 801.4 Physical Chemistry - 921 Mathematics - 931.3 Atomic and Molecular Physics - 951 Materials Science
Numerical data indexing: Percentage 3.00E+01% to 5.00E+01%, Pressure 6.30E+08Pa
Preprint ID: 4281832
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

204. Multistage Multi-population Species Conservation Evolutionary Algorithm for Reversible Logic Circuit Synthesis

Accession number: 20231513864558
Authors: Wang, Xiaoxiao (1); Han, Jiaxin (1); Wang, Ziheng (2); Xu, Manxiang (1); Ji, Yingchao (1); Wang, Jinghao (1)
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Corresponding author: Wang, Xiaoxiao(xxwang@xsyu.edu.cn)
Source title: 2022 IEEE 8th International Conference on Computer and Communications, ICCC 2022
Abbreviated source title: IEEE Int. Conf. Comput. Commun., ICCC
Part number: 1 of 1
Issue title: 2022 IEEE 8th International Conference on Computer and Communications, ICCC 2022
Issue date: 2022
Publication year: 2022
Pages: 1111-1115
Language: English
ISBN-13: 9781665450515

Document type: Conference article (CA)
Conference name: 8th IEEE International Conference on Computer and Communications, ICCC 2022
Conference date: December 9, 2022 - December 12, 2022
Conference location: Virtual, Online, China
Conference code: 187407
Sponsor: Institute of Electrical and Electronics Engineers (IEEE); Sichuan Institute of Electronics
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper aims to propose a multistage multi-population species conservation evolutionary algorithm for reversible logic circuit synthesis (MMSCEA-RLC), which substitutes the species updating schemes in our SCEA-RLC by a new population updating one. After deleting the species falling into evolutionary stagnation, SCEA-RLC reinitializes the species using random chromosome, whereas, MSSCEA-RLC redefines a new fitness function for a reinitialized population according to the seed of the deleting species. The population updating intends to conquer the side effect brought by parsimony pressure originally used to balance the object optimization and constraint violation decreasing in variable length representation, increase the feasible solution rate through a more detailed exploration and save the fitness evaluation. Dynamic tree-structured populations with species are formed through population updating. The solution composition is conducted from the root to a leaf. Experiments carried out over a series of benchmark problems hard for SCEA-RLC show the superior performance of MSSCEA-RLC. © 2022 IEEE.
Number of references: 18
Main heading: Evolutionary algorithms
Controlled terms: Benchmarking - Chromosomes - Computer circuits - Conservation - Logic circuits - Logic gates - Logic Synthesis - Optimization - Timing circuits
Uncontrolled terms: Circuit synthesis - Fitness functions - Multi population - Multi-modal optimization - Multi-stages - Reversible circuit synthesis - Reversible circuits - Reversible logic circuits - Side effect - Species conservations
Classification code: 461.2 Biological Materials and Tissue Engineering - 713.4 Pulse Circuits - 721.2 Logic Elements - 721.3 Computer Circuits - 723.5 Computer Applications - 921.5 Optimization Techniques
DOI: 10.1109/ICCC56324.2022.10065882
Funding Details: Number: 2021GY-138,2022GY035, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: The Key Research and Development Program of Shanxi Province, China (2022GY035, 2021GY-138) financially supported this work.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

205. Research on Seismic Signal Noise Reduction Algorithm based on Deep Learning

Accession number: 20222412229963
Authors: Cheng, Guojian (1); Li, Lulu (1); Yang, Zhuo (2); Qiang, Xinjian (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shaanxi, Xi'an, China; (2) Research Institute of Exploration and Development, Changqing Oilfield Branch, Shaanxi, Xi'an, China
Corresponding author: Cheng, Guojian(gjcheng@xsyu.edu.cn)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 70-73
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The existence of noise interference in field acquired seismic signals is inevitable, which not only reduces the validity of seismic data but also will affect the subsequent interpretation of seismic data. The main objective of this

paper is to use parallel asymmetric convolutional kernels to extract feature information from seismic signals in multiple directions to solve the problem of insufficient feature information extraction. The experiments are combined with the Asymmetric Convolutional Net to improve the De-noising Convolutional Neural Network. The Asymmetric De-noising Convolutional Neural Network is proposed for seismic signal noise reduction. © 2022 IEEE.
Number of references: 8
Main heading: Seismic waves
Controlled terms: Convolution - Convolutional neural networks - Deep learning - Noise abatement - Seismic response - Signal denoising
Uncontrolled terms: Convolutional kernel - Convolutional neural network - De-noising - De-noising convolutional neural network - Feature information - In-field - Noise interference - Noise reduction algorithms - Seismic signals - Signal noise
Classification code: 461.4 Ergonomics and Human Factors Engineering - 484 Seismology - 484.2 Secondary Earthquake Effects - 716.1 Information Theory and Signal Processing - 751.4 Acoustic Noise
DOI: 10.1109/ICSP54964.2022.9778355
Funding Details: Number: 62002286, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT This work was financially supported by the National Youth Science Foundation of China (62002286), Research and Simulation on Spatial and Temporal Characteristics of Air Quality in Fenwei Plain and its Driving Forces Based on Remote Sensing Big Data.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

206. Mechanical Performance Analysis of the Contact between of BOP Hanging Ram Slips and Oil Pipe

Accession number: 20230713574668
Authors: Zheng, Jie (1, 5, 6); Li, Jiahui (1); Zheng, Yong (3, 4); Dou, Yihua (1); Zhang, Yarong (2, 5, 6)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, China; (2) School of Science, Xi'An Shiyou Architecture and Technology, Xi'an, China; (3) Baoji Oilfield Machinery Co., Ltd., Baoji, China; (4) National Engineering Research Center for Oil & Gas Drilling Equipment, Baoji, China; (5) School of Power and Energy, Northwestern Poly Technical University, Xi'an, China; (6) Xi'An Special Equipment Inspection Institute, Xi'an, China
Source title: IMCEC 2022 - IEEE 5th Advanced Information Management, Communicates, Electronic and Automation Control Conference
Abbreviated source title: IMCEC - IEEE Adv. Inf. Manag., Commun., Electron. Autom. Control Conf.
Part number: 1 of 1
Issue title: IMCEC 2022 - IEEE 5th Advanced Information Management, Communicates, Electronic and Automation Control Conference
Issue date: 2022
Publication year: 2022
Pages: 811-817
Language: English
ISBN-13: 9781665479677
Document type: Conference article (CA)
Conference name: 5th IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2022
Conference date: December 16, 2022 - December 18, 2022
Conference location: Chongqing, China
Conference code: 186387
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Global Union Academy of Science and Technology; Chongqing University of Technology; et al.; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In view of large stress concentration caused by the contact between the BOP (Blowout Preventer) slips and oil pipe, resulting in the damage of oil pipe. On the basis of satisfying the working performance of the hanging ram, it is proposed that the tooth opening angles are 80°,90° and 100°, the tooth crest shapes are pointed, flat and vaulted, and the slip teeth were distributed in straight and fork row, the slip and tubing model is established by 3D software, and simulation analysis is carried out by finite element software. Based on the theory of engineering mechanics, the mechanical model of contact between slip and tubing is established. The feasibility of simulation analysis is verified by analyzing the influence of tooth opening angle on tubing deformation. The total deformation and equivalent stress

of slips and tubing are obtained: 1 Compared with 80° slips, the average value of total deformation of slips and tubing models corresponding to 90° and 100° slips decreases by 19.2% and 19.9%, and the average value of equivalent stress decreases by 13.7% and 8.3%. The average value of total deformation corresponding to 100° slips decreases the most, but the value of equivalent stress increases. 2 Compared with pointed slips, the maximum equivalent stress of slips and tubing model corresponding to the vaulted slips decreases by 2.5%, but the total deformation increases by 25.3%; the average values of total deformation and equivalent stress of model corresponding to flat slips are reduced by 29.8% and 12.8%. 3 Compared with straight-row slips, the average value of total deformation and equivalent stress corresponding to fork-row slips are reduced by 43.8% and 51.3%. © 2022 IEEE.
Number of references: 22
Main heading: Wear of materials
Controlled terms: Blowout preventers - Computer software - Tubing
Uncontrolled terms: Average values - Blow out preventers - Deformation stress - Equivalent stress - Hanging ram - Jour-ram blowout preventer - Oil pipes - Opening angle - Slip wear - Tubing damage
Classification code: 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 914.1 Accidents and Accident Prevention - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 1.28E+01%, Percentage 1.37E+01%, Percentage 1.92E+01%, Percentage 1.99E+01%, Percentage 2.50E+00%, Percentage 2.53E+01%, Percentage 2.98E+01%, Percentage 4.38E+01%, Percentage 5.13E+01%, Percentage 8.30E+00%
DOI: 10.1109/IMCEC55388.2022.10019902
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

207. An RFID multi-Tag anti-collision algorithm based on Successive Interference Cancellation with power adaptive regulation (*Open Access*)

Accession number: 20221812048375
Authors: Gao, Xingyue (1); Lou, Huanli (1); Miao, Qingyuan (2)
Author affiliation: (1) School of Computing, Xi'An Shiyou University, Shaanxi, Xi'an; 710068, China; (2) Information Center, Xi'An Aerospace Propulsion Institute, Shaanxi, Xi'an; 710100, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2246
Part number: 1 of 1
Issue: 1
Issue date: April 12, 2022
Publication year: 2022
Article number: 012079
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 8th International Symposium on Sensors, Mechatronics and Automation System, ISSMAS 2022
Conference date: January 14, 2022 - January 16, 2022
Conference location: Virtual, Online
Conference code: 178815
Publisher: IOP Publishing Ltd
Abstract: Radio Frequency Identification (RFID) is a key technology supporting the Internet of Things (IoT). The simultaneous identification of multiple Tag signals by a Reader will generate the Tag collision problem, which will significantly reduce the identification efficiency of the system and prolong the identification time in the scenario of large-scale Tags. In order to solve this problem, this paper researches RFID Tag collision prevention algorithm, and establishes a multi-Tag collision prevention algorithm model by analyzing the Aloha Tag collision prevention algorithm, which can accurately portray the slot efficiency and time efficiency of the system when recognizing multiple Tags; then establishes a power adaptive regulation RFID multi-Tag identification algorithm using Successive Interference Cancellation (SIC) technology. After simulation and verification results show that the constrained Reader can resolve the signal to noise ratio threshold of 6.9db, the slot efficiency and time efficiency of the SIC-based RFID Tag anti-collision algorithm is improved by 179% and 154% compared to the ISOC algorithm; the designed RFID power

adaptive regulation algorithm is improved by 259% and 203% compared to the ISOC algorithm in terms of slot efficiency and time efficiency 203%. © Published under licence by IOP Publishing Ltd.
Number of references: 10
Main heading: Signal to noise ratio
Controlled terms: Collision avoidance - Efficiency - Internet of things - Radio frequency identification (RFID)
Uncontrolled terms: Adaptive regulation - Collisions prevention - Multi-tags - Power - Prevention algorithms - Radio-frequency-identification - Successive interference cancellations - Tag anti-collision algorithms - Tag collision - Time efficiencies
Classification code: 716.1 Information Theory and Signal Processing - 716.3 Radio Systems and Equipment - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 731.1 Control Systems - 913.1 Production Engineering - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 1.54E+02%, Percentage 1.79E+02%, Percentage 2.03E+02%, Percentage 2.59E+02%
DOI: 10.1088/1742-6596/2246/1/012079
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

208. Design of upper computer for wellhead multi-parameter detection based on LabVIEW

Accession number: 20222412229535
Authors: Qin, Hongwei (1); Dang, Ruirong (1); Dang, Bo (1)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Provincial Key Laboratory of Oil and Gas Well Measurement and Control Technology, Shaanxi, Xi'an; 710065, China
Corresponding author: Dang, Ruirong(2990110037@qq.com)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1240-1244
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the field of natural gas well testing, wellhead multi-parameter measurement has become a critical need, so the development of multi-functional intelligent instrument has become the key. In this paper, the upper computer software designed by LabVIEW is a part of the intelligent instrument. The upper computer software first designs the tiled sequential structure, and then performs the main program design at the same time of system initialization, followed by the user interface design and event structure design. Finally, under the condition that the conditional structure is true, the function of each module is designed and the related data and waveform are displayed on the front panel. After the detailed design, the function is tested, and the data and corresponding waveform can be displayed on the upper computer interface, indicating that the upper computer software has been successfully made. As a part of the intelligent instrument, the upper computer software will work together with the supporting hardware structure, and lay a foundation for the optimization of the intelligent instrument in the future. © 2022 IEEE.
Number of references: 10
Main heading: Instrument testing
Controlled terms: Computer hardware - Computer programming languages - Natural gas wells - Phase interfaces - Software testing - User interfaces - Well testing - Wellheads
Uncontrolled terms: Gas well - Gas well testing - Intelligent instrument - Multi-parameter detection - Multi-parameter measurement - The sensor - Upper computer - Upper computer interface - Waveforms - Wellhead parameter

Classification code: 512.2.1 Natural Gas Fields - 722 Computer Systems and Equipment - 722.2 Computer Peripheral Equipment - 723.1.1 Computer Programming Languages - 723.5 Computer Applications - 801.4 Physical Chemistry
DOI: 10.1109/ICSP54964.2022.9778549
Funding Details: Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENTS Thanks for the support of the National Natural Science Foundation of China (41874158), and also thanks for the help of the teachers and students in the laboratory.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

209. Seismic response analysis of buried oil and gas pipeline under bidirectional multi-point excitation

Accession number: 20223312582851
Authors: Dai, Jianbo (1); Wang, Zhaocheng (1); Wang, Zhiqiang (1); Wang, Li (2)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shanxi Zhongli Testing and Identification Co, Ltd, Xi'an; 710077, China
Corresponding author: Dai, Jianbo(184298843@qq.com)
Source title: Soil Dynamics and Earthquake Engineering
Abbreviated source title: Soil Dyn. Earthqu. Eng.
Volume: 162
Issue date: November 2022
Publication year: 2022
Article number: 107469
Language: English
ISSN: 02677261
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Aiming at the seismic response of buried oil and gas pipeline under bidirectional multi-point excitation, the shaking table test of buried oil and gas pipeline under bidirectional multi-point seismic excitation was carried out by using a new layered shear continuum model of soil box and pipeline model. The seismic response law of acceleration and strain of buried oil and gas pipeline under bidirectional multi-point excitation, as well as the response law of soil acceleration and displacement around the pipeline, are clarified through experiments. The results show that: compared with the bidirectional consistent excitation, the curve of soil acceleration amplification coefficient under bidirectional multi-point excitation has a wider fluctuation range, and the soil displacement changes more significantly. The peak acceleration of the pipeline increases with the increase of loading grade and presents a decreasing amplitude and multi-peak phenomenon. The variation law of pipeline strain under bidirectional consistent excitation and bidirectional multi-point excitation is basically the same, showing a trend of large strain in the middle of the pipeline and small strain on both sides, but the strain response of the pipeline under bidirectional multi-point excitation is more prominent. Therefore, the influence of bidirectional multipoint excitation should be considered in seismic response analysis of buried oil and gas pipelines. © 2022 Elsevier Ltd
Number of references: 25
Main heading: Gases
Controlled terms: Continuum mechanics - Pipelines - Seismic response - Soils
Uncontrolled terms: Bi-directional - Bi-directional consistent excitation - Bidirectional - Buried pipelines - Multi-point excitation - Oil-and-Gas pipelines - Seismic response analysis - Shaker testing - Soil acceleration - Soil displacement
Classification code: 483.1 Soils and Soil Mechanics - 484.2 Secondary Earthquake Effects - 619.1 Pipe, Piping and Pipelines - 931.1 Mechanics
DOI: 10.1016/j.soildyn.2022.107469
Funding Details: Number: 51808446, Acronym: -, Sponsor: -; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2019SF-266, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This project is funded by Natural Science Foundation of China Youth Fund Project (51808446) and Key Research and Development Program of Shaanxi (Grand No. 2019SF-266).The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jianbo Dai reports financial support was provided by Xi'an Shiyou University. Jianbo Dai reports a relationship with Xi'an Shiyou University that includes: consulting or advisory, employment, funding grants, speaking and lecture fees, and travel reimbursement. The authors declare that they have no conflicts of interest.

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

210. General three-way decision models on incomplete information tables

Accession number: 20222112132147
Authors: Yang, Hai-Long (1); Xue, Shu-Yue (1); She, Yan-Hong (2)
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Source title: Information Sciences
Abbreviated source title: Inf Sci
Volume: 605
Issue date: August 2022
Publication year: 2022
Pages: 136-158
Language: English
ISSN: 00200255
CODEN: ISIJBC
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: In this paper, we propose general three-way decision models on incomplete information tables. First, for an incomplete information table, we give an axiomatic definition of similarity degree functions on a single attribute. By use of extended aggregation functions, similarity degree functions on an attribute set are also proposed. Then we define a new kind of similarity class of objects and study its properties. On the basis of this similarity class, general three-way decision models based on two evaluation functions and one evaluation function on incomplete information tables are established, respectively. In addition, we study the properties of these general three-way decision models. Finally, we compare the general model based on one evaluation function and a pair of thresholds with four existing models. The results show that the four existing models can be regarded as special cases of this general model, which illustrates the rationality of the new proposed models. © 2022 Elsevier Inc.
Number of references: 48
Main heading: Function evaluation
Controlled terms: Decision tables
Uncontrolled terms: Decision modeling - Evaluation function - Incomplete information - Incomplete information table - Information table - Property - Similarity class - Similarity degree - Similarity degree function - Three-way decision
Classification code: 723.1 Computer Programming - 921.6 Numerical Methods
DOI: 10.1016/j.ins.2022.05.002
Funding Details: Number: 12171293,61473181,61976244, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Authors thank editors and the reviewers for their constructive suggestions and helpful comments. This work is supported by the National Natural Science Foundation of China (Nos. 12171293, 61976244, and 61473181).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

211. Closed-system pyrolysis-based hydrocarbon generation simulation and gas potential evaluation of the Shanxi Formation shales from the Ordos Basin, China (*Open Access*)

Accession number: 20224313012829
Authors: Guo, Xiaobo (1, 2); Shi, Baohong (1, 2); Li, Yu (1, 2); Li, Yanxia (1, 2); Sun, Jianbo (3); Liu, Gang (3); Yin, Jintao (3); Wu, Hongzhu (4); Jin, Xi (4)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (3) Research Institute of Shaanxi Yanchang Petroleum (Group) Co. Ltd, Shaanxi, Xi'an; 710075, China; (4) Zhejiang Institute of Geophysical and Geochemical Exploration, Zhejiang, Hangzhou; 310005, China
Corresponding author: Guo, Xiaobo(gxb9876@163.com)
Source title: Energy Geoscience

Abbreviated source title: Energy Geosci.
Volume: 3
Issue: 1
Issue date: January 2022
Publication year: 2022
Pages: 8-16
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Abstract: The Shanxi Formation (Shan 1 and Shan 2 Members) shales show good prospects in shale gas development in the Yan'an area of Ordos Basin. Based on the simulation experiment of hydrocarbon generation of low maturity shale samples, the hydrocarbon generation characteristics of shale samples was studied systematically. Then, combined with the geochemical analysis of shale and gas generation simulation, shale gas potential was evaluated. The results reveal that Shan 1 and Shan 2 shale samples are favorable for shale gas enrichment by and large, with C1–C5 maximum yields of 146.96–160.83 mg/g TOC and 148.48–148.67 mg/g TOC respectively at a heat rate of 20 °C/h and 2 °C/h. The Shan 1 and Shan 2 shales are basically the same in terms of organic carbon production potential of each unit. The carbon isotopic composition of alkane gas reveals that heteroatomic compounds (NSOs) cracking is an important mechanism for shale gas generation of Shanxi Formation shales, and conducive to gas generation at high-to over-mature stages. Given thermal history and kinetic parameters of hydrocarbon generation, the shales of Shanxi Formation reached the maximum gas production potential in the Late Cretaceous, with a maximum yield of 160.3 mg/g TOC under present geological conditions. During geological history, the Shanxi Formation shales went through high-to over-maturity evolution, mainly producing dry gas, and their gas generation capacity was controlled by the organic matter abundance and cracking capacity. The gas generation potential of Shan 2 shale is higher than that of Shan 1, due to its higher TOC. © 2021 Sinopec Petroleum Exploration and Production Research Institute
Number of references: 35
Main heading: Gases
Controlled terms: Analytical geochemistry - Gas generators - Hydrocarbons - Metamorphic rocks - Organic carbon - Petroleum geology - Petroleum prospecting - Shale gas
Uncontrolled terms: Closed systems - Gas development - Gas generation - Gas potential - Geochemical analysis - Hydrocarbon generation - Ordos Basin - Potential evaluation - Shanxi formation shale - Yan'an area
Classification code: 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 801 Chemistry - 804.1 Organic Compounds
Numerical data indexing: Temperature 2.75E+02K, Temperature 2.93E+02K, null 1.4696E+02null to 1.6083E+02null, null 1.4848E+02null to 1.4867E+02null, null 1.603E+02null
DOI: 10.1016/j.engeos.2021.09.001
Funding Details: Number: 2017JQ4004, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 41372148, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This study was sponsored by the National Natural Science Foundation of China (No. 41702127, 41372148), the National Science and Technology Major Project of China (No. 2017ZX05039001), Natural Science Foundation of Shaanxi Province (No. 2017JQ4004) and Science and Technology Innovation Foundation of Xi'an Shiyou University (No.2016BS19).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

212. Numerical simulation of fracture propagation in different fracturing modes of "well factory"

Accession number: 20224313007296
Title of translation: ""
Authors: Zhang, Haoyu (1, 2); Chen, Junbin (1, 2); Wang, Tao (3); Zhao, Zhengyan (4); Kou, Yuanyuan (1, 2)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shanxi Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; 710065, China; (3) The 3rd Oil Production of Changqing Oilfield Company, Yinchuan; 750005, China; (4) PetroChina Changqing Oilfield Oil & Gas Technology Research Institute, Xi'an; 710065, China
Corresponding author: Chen, Junbin(chenjbxu@126.com)

Source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)/Journal of Central South University (Science and Technology)
Abbreviated source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)
Volume: 53
Issue: 9
Issue date: September 2022
Publication year: 2022
Pages: 3561-3574
Language: Chinese
ISSN: 16727207
CODEN: ZDXZAC
Document type: Journal article (JA)
Publisher: Central South University of Technology
Abstract: The "well factory" fracturing mode can improve the efficiency of shale reservoir volume stimulation and reduce the construction cost, it is of great significance to clarify the influencing factors of induced stress field and the law of hydraulic fracture propagation in various fracturing processes for the prediction of fracture network under volumetric pressure and process optimization. Based on the theory of fluid-solid coupling in porous media and the principle of stress superposition, a mechanical model of multi-fracture propagation in horizontal wells was established. The extended finite element method was used for secondary development on ABAQUS commercial software to analyze the influencing factors of induced stress and the law of artificial fracture propagation in "well factory" fracturing mode. The results show that the stress interference of the two wells in the conventional zipper fracturing and the improved zipper fracturing mode is obviously stronger than that of the sequential fracturing process. The increase of interval spacing can effectively reduce the induced stress of sequential fracturing and improved zipper fracturing, and adjust the inter well stress fluctuation in the conventional zipper fracturing mode. Increasing the well spacing can reduce the stress interference between fractures in the post construction horizontal well in the improved zipper fracturing mode, but the effects on the other two processes are different. The difference of induced stress field on both sides of the wellbore determines the half-length propagation competition relationship of the same fracture, and the fracture on the side with small induced stress expands preferentially. © 2022 Central South University of Technology. All rights reserved.
Number of references: 26
Main heading: Stresses
Controlled terms: ABAQUS - Crack propagation - Fracture - Horizontal wells - Hydraulic fracturing - Morphology - Oil wells - Optimization - Porous materials - Well spacing
Uncontrolled terms: Crack morphology - Cracks propagation - Fracture propagation - Fracturing process - Induced stress - Reservoir volume - Stress field - Stress interference - Well factory - XFEM
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.5 Computer Applications - 921 Mathematics - 921.5 Optimization Techniques - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.11817/j.issn.1672-7207.2022.09.021
Funding Details: Number: YCS21111004, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Project(51874239) supported by the National Natural Science Foundation of China; Project(YCS21111004) supported by the Postgraduate Innovation and Practice Ability Training Program of Xi'an Shiyou University2022-02-09 2022-04-28 (Foundation item) (51874239) (YCS21 1 1 1004) (Project(51874239) supported by the National Natural Science Foundation of China; Project(YCS21 1 1 1004) supported by the Postgraduate Innovation and Practice Ability T raining Program of Xi'an Shiyou University) E-mailchenjbxu@126.com
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

213. One-cycle Controllability for High Step-up Boost Converter with Three-winding Coupled Inductor

Accession number: 20222412229679
Authors: Song, Jiuxu (1); Chang, Zhiwei (1); Ding, Shuai (2); Guo, Yingna (1)
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Corresponding author: Song, Jiuxu(Jxsong@xsyu.edu.cn)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP

Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1311-1314
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Due to the application prospect of the high step-up DC/DC converters in DC microgrid and novel energy power generation, they have attracted a tremendous amount of research interests. Control strategies for high step-up DC/DC converters are the foundation of the design on high performance converters. One-cycle control can suppress the disturbance of the input for the DC/DC converter, transient characteristics of the converter can be improved significantly. One-cycle controllability for the single-switch three-winding coupled inductor Boost (SSCI-Boost) DC/DC converter has been studied. Switched linear system model of SSCI-Boost converter has been established, and criteria for one-cycle controllability of the converter is put forwarded. One-cycle controllability of the converter is verified with simulations on SSCI-Boost converter with an input of 20 V and an output of 200 V implemented with PSIM package. Achieved results in this paper are meaningful for the design of high performance DC/DC converters with high voltage gain. © 2022 IEEE.
Number of references: 9
Main heading: DC-DC converters
Controlled terms: Controllability - HVDC power transmission - Linear systems - Winding
Uncontrolled terms: Application prospect - BOOST converter - High step-ups - Microgrid - One-cycle controllability - Performance - Single switch - Single-switch three-winding coupled inductor boost converter - Switched linear system - Winding coupled inductor
Classification code: 691.2 Materials Handling Methods - 704.1 Electric Components - 706.1.1 Electric Power Transmission - 731.1 Control Systems - 961 Systems Science
Numerical data indexing: Voltage 2.00E+01V, Voltage 2.00E+02V
DOI: 10.1109/ICSP54964.2022.9778470
Funding Details: Number: YCS21213203, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2022GY-135, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This work is supported by key research and development program of Shaanxi province (2022GY-135) and Xi'an Shiyou University graduate innovation and practice ability training project (YCS21213203).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

214. Evaluation and analysis of microscopic imaging characteristics of wear debris for full field-of-view online visual ferrograph

Accession number: 20222012116911
Title of translation:
Authors: Li, Bo (1); Lyu, Haowen (1); Wu, Wei (1); Zheng, Jie (1); Xi, Yinhu (2)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Li, Bo(libo@xsyu.edu.cn)
Source title: Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument
Abbreviated source title: Yi Qi Yi Biao Xue Bao
Volume: 43
Issue: 2
Issue date: February 2022
Publication year: 2022
Pages: 26-35
Language: Chinese

ISSN: 02543087
CODEN: YYXUDY
Document type: Journal article (JA)
Publisher: Science Press
Abstract: To analyze the microscopic imaging characteristics of wear debris for full field-of-view online visual ferrograph (OLVF), a new reflected light microscopic imaging model is proposed. First, by taking the lambert-cosine law and the small-angle scattering theory as references, a reflected light irradiance model based on the wear debris microscopic imaging is formulated. The microscopic imaging sharpness of wear debris is evaluated quantitatively. Then, according to Matlab simulation calculation of contrast transmittance, the optimized value of optical magnification and the numerical ranges of oil attenuation coefficient detected by full field-of-view OLVF are determined. The changing rules of microscopic imaging sharpness of wear debris are investigated and determined successfully by analyzing the effectiveness of the numerical increasing of oil attenuation coefficient on contrast transmittance. Simulation results show that, under 2.0× optical magnification and less than 2.0 oil attenuation coefficient, wear debris deposites near the optical axis of object field of view. And the high-quality microscopic imaging of full field-of-view OLVF for detecting wear debris can be achieved. Finally, the experimental measurement of wear debris microscopic imaging is implemented by using the current full field-of-view OLVF. Results show that the full field-of-view reflected ferrograms of wear debris can be reliably obtained from different in-use lube oils with less than 2.0 oil attenuation coefficient. It has potential for online wear monitoring by extracting the visual feature information of wear debris. © 2022, Science Press. All right reserved.
Number of references: 23
Main heading: Wear debris
Controlled terms: Light scattering - MATLAB - Wear of materials
Uncontrolled terms: Attenuation coefficient - Field of views - Full field-of-view on-line visual ferrograph - Imaging characteristics - Lube oil - Microscopic imaging - Optical- - Reflected ferrogram - Reflected light - Wear debris
Classification code: 452.3 Industrial Wastes - 723.5 Computer Applications - 741.1 Light/Optics - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.19650/j.cnki.cjsi.J2108475
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

215. Deep Reservoir Characteristics and Effective Reservoir Control Factors in Baiyun Sag of Pearl River Mouth Basin (*Open Access*)

Accession number: 20223612698955
Title of translation:
Authors: Liao, Jihua (1); Wu, Keqiang (1); Er, Chuang (2)
Author affiliation: (1) CNOOC Research Institute Company Limited, Beijing; 100028, China; (2) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liao, Jihua(liaojh2@cnooc.com.cn)
Source title: Diqiu Kexue - Zhongguo Dizhi Daxue Xuebao/Earth Science - Journal of China University of Geosciences
Abbreviated source title: Diqiu Kexue Zhongguo Dizhi Daxue Xuebao
Volume: 47
Issue: 7
Issue date: July 2022
Publication year: 2022
Pages: 2454-2467
Language: Chinese
ISSN: 10002383
CODEN: DIKEEL
Document type: Journal article (JA)
Publisher: China University of Geosciences
Abstract: The Zhuhai Formation and Enping Formation in Baiyun Sag of Pearl River Mouth Basin are important strata for deep oil and gas exploration. Understanding the basic characteristics of deep reservoirs and analyzing the development characteristics and controlling factors of effective reservoirs can provide necessary guidance and support for deep oil and gas exploration to find favorable target layers and target areas. Based on the analyses of petrology and mineralogy, diagenesis, pore development characteristics and sedimentary facies types of deep reservoirs, the basic characteristics of deep reservoirs are clarified. Deep reservoirs are mainly low porosity-low

permeability (LL) and tight reservoirs. Compaction is the main reason for the deterioration of deep reservoir, and carbonate cementation and overgrowth of quartz are the main authigenic minerals. Pore types are mainly intergranular dissolved pores and intragranular dissolved pores. Effective reservoirs are mainly LL reservoirs and reservoirs that are better than LL reservoirs. Porosity is generally maintained at about 10%, and permeability varies widely. Sedimentary facies, dissolution and overpressure are the main controlling factors of deep effective reservoir. Medium- and coarse-grained sandstones have better development conditions of primary and secondary pores, higher permeability, weaker porosity reduction by cementation and stronger porosity increase by dissolution. Dissolution is the key constructive diagenesis in deep reservoir, and dissolution pores are the dominate pore type in deep layer. Overpressure conduction is conducive to the activity of acid fluid and the migration of dissolved substances, which is of positive significance to the formation of dissolution pores. Distributary channel and subaqueous distributary channel sandbodies are the main carriers of medium and coarse-grained sandstone and should be the preferred target of deep oil and gas exploration.
Number of references: 37
Main heading: Dissolution
Controlled terms: Cementing (shafts) - Deterioration - Gasoline - Infill drilling - Low permeability reservoirs - Mineral exploration - Minerals - Petroleum prospecting - Petroleum reservoir engineering - Petrophysics - Porosity - Sandstone - Sedimentology - Textures
Uncontrolled terms: Baiyun sag - Basic characteristics - Coarse-grained - Deep reservoirs - Development characteristics - Effective reservoir - Medium- and coarse-grained sandstone - Oil and gas exploration - Overpressure - Pearl River Mouth basin
Classification code: 481.1 Geology - 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 501.1 Exploration and Prospecting Methods - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 1.00E+01%
DOI: 10.3799/dqkx.2022.017
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

216. Parameter analysis affecting the characteristics of sound insulation of gradient U-shaped groove structure

Accession number: 20223812766855
Authors: Zhou, Jing (1); Zhang, Lu (1); He, Wenhao (1); Zheng, Libo (1)
Author affiliation: (1) National Engineering Research Center for Oli & Gas Drilling, Downhole Measurement and Control Research Department of Xi'an ShiYou University, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 130-133
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: There are drill collar mode waves propagating directly along the drill collar during logging while drilling, drill collar waves will seriously interfere with the received strata wave information, At present, the grooveting method

is widely used in drilling instruments, and the effect on drilling collar wave suppression is obvious. In this paper, a new type of sound insulator with gradual U-shaped groove structure is designed to suppress drill collar waves, This paper uses theoretical analysis and simulation methods to study the model mechanics and acoustics two parts of the study. The results show that the uniform groove width basically not affect the mechanical properties of drill collar, The combined groove width parameters of groove depth and gradient groove will affect the mechanical properties. Pulsed sound source depth detection sound insulation device with gradient U-shaped groove structure, on the basis of ensuring the mechanical strength of drill collar, the sound wave attenuation of the drilling collar wave is more than that of the uniform groove structure sound insulation body, that is, the gradual U -shaped groove structure sound insulation body has better acoustic characteristics. © 2022 IEEE.
Number of references: 9
Main heading: Infill drilling
Controlled terms: Acoustic generators - Acoustic logging - Acoustic wave propagation - Acoustic wave transmission - Drill collars - Drills - Sound insulation
Uncontrolled terms: Attenuation coefficient - Collar wave - Groove width - Impulse sound source deep detection while drilling - Sound attenuation - Sound attenuation coefficient - Sound insulator - Sound source - U-shaped - While drillings
Classification code: 413.3 Sound Insulating Materials - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 751.1 Acoustic Waves - 751.2 Acoustic Properties of Materials - 752.4 Acoustic Generators - 941.2 Acoustic Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859054
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

217. Research on small flow detection method based on constant power method (*Open Access*)

Accession number: 20223012410983
Authors: Qin, Hongwei (1); Dang, Ruirong (1); Dang, Bo (1)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Oil and Gas Well Measurement and Control Technology, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China
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Source title: Engineering Research Express
Abbreviated source title: Eng. Res. Exp.
Volume: 4
Issue: 3
Issue date: September 2022
Publication year: 2022
Article number: 035005
Language: English
E-ISSN: 26318695
Document type: Journal article (JA)
Publisher: Institute of Physics
Abstract: In the field of three phase flow testing, real-time and online wellhead production detection has become an indispensable trend for evaluating well production and well condition. At present, the production of most conventional oil fields in China is low, and there are many Wells with less than 10 m3 d-1. It is difficult to detect the flow of low-flow Wells with conventional metering methods. Therefore, this paper proposes to use thermal flowmeter temperature difference method to measure the flow value. First, COMSOL Multiphysics software was used to build the model of the thermal flow meter and set the size of the temperature probe, heating probe and velocity probe. Secondly, relevant parameters are set to simulate two steady state forms with different water content and different flow rate. Finally, the temperature changes of the velocity probe are simulated under the two conditions. The simulation results show that when the water content is the same and the flow velocity is between 0.0059 m s-1 and 0.059 m s-1, the temperature of the probe decreases with the flow velocity increasing, and the temperature of the probe increases with the flow velocity decreasing. At the same flow rate and water content between 0% and 100%, the higher the water content, the lower

the temperature of the speed-measuring probe, and the smaller the water content, the higher the temperature of the speed-measuring probe. The simulation results show that thermal flowmeter can be competent for flow detection of low production fluid and low flow well, which provides the basis for the detection method of low production fluid in the future and lays the foundation for the design of thermal flowmeter. © 2022 IOP Publishing Ltd.
Number of references: 16
Main heading: Probes
Controlled terms: Flow measurement - Flow rate - Flow velocity - Flowmeters - Heat convection - Oil fields - Velocity - Well testing
Uncontrolled terms: Constant power - Convective heat transfer - Detection methods - Flow detection - Flow rate detection - Low yield liquid - Low-yield - Rate detection - Thermal - Thermal flowmeter
Classification code: 512.1.1 Oil Fields - 631 Fluid Flow - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements
Numerical data indexing: Percentage 0.00E00% to 1.00E+02%, Velocity 5.90E-03m/s to 5.90E-02m/s, Volume 1.00E+01m3
DOI: 10.1088/2631-8695/ac7b15
Funding Details: Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Supported by National Natural Science Foundation of China for online Monitoring of Multi-component Reservoir with TIME-domain electromagnetic Method, approval number: 41874158.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

218. An ISVM Algorithm Based on High-Dimensional Distance and Forgetting Characteristics (*Open Access*)

Accession number: 20224813166222
Authors: Xie, Wenhao (1); Li, Jinfeng (2); Li, Juanni (1); Wang, Xiaoyan (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Computer Science and Technology, Xidian University, Xi'an; 710126, China
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Source title: Scientific Programming
Abbreviated source title: Sci. Program
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4872230
Language: English
ISSN: 10589244
CODEN: SCIPEV
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: In the face of the batch, dynamic access data, or the flow of data that continuous changes over time, the traditional support vector machine algorithm cannot dynamically adjust the previous classification model. To overcome this shortcoming, the incremental support vector machine (ISVM) algorithm is proposed. However, many incremental support vector algorithms still have shortcomings such as low efficiency, memory limitation, and poor generalization. This paper puts forward the new ISVM algorithm, HDFC-ISVM# algorithm, based on the high-dimensional distance and forgetting characteristics. This paper firstly proposes the original HDFC-ISVM algorithm that first learns the distribution characteristics of the samples according to the distance between the samples and the normative hyperplane. Then, it introduces the forgetting factor. In the incremental learning process, the classifier gradually accumulates the spatial distribution knowledge of samples, eliminates the samples that have no contributions to the classifier, and selectively forgets some useless samples according to the forgetting factor, which overcomes the shortcomings such as low efficiency and poor accuracy of some algorithms. But, the original HDFC-ISVM algorithm is sensitive to parameters, and different settings of the parameters have a great impact on the final classification accuracy of the algorithm. Therefore, on the basis of the original algorithm, an improved algorithm HDFC-ISVM# based on the adjustments to the initialization strategy and updating rules of the forgetting factor is proposed. The initialization strategy and updating rules of the forgetting factor are adjusted to adapt datasets with different distributions in this improved algorithm. The rationality of the improved strategy about the forgetting factor is discussed theoretically. At the same time, the

proposed algorithm has better classification accuracy, classification efficiency, and better generalization ability than other algorithms, which is verified by experiments. © 2022 Wenhao Xie et al.
Number of references: 28
Main heading: Efficiency
Controlled terms: Learning algorithms - Support vector machines
Uncontrolled terms: Change-over time - Classification accuracy - Dynamic access data - Flow of data - Forgetting factors - High-dimensional - Higher-dimensional - Improved * algorithm - Incremental support vector machine - Support vector machines algorithms
Classification code: 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 913.1 Production Engineering
DOI: 10.1155/2022/4872230
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

219. A Computational Model to Simulate Proppant Transport and Placement in Rough Fractures

Accession number: 20221511955013
Authors: Gong, Facheng (1); Huang, Hai (2); Babadagli, Tayfun (1); Li, Huazhou (1)
Author affiliation: (1) University of Alberta, Canada; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an Shiyou University, China
Source title: Society of Petroleum Engineers - SPE Hydraulic Fracturing Technology Conference and Exhibition, HFTC 2022
Abbreviated source title: Soc. Pet. Eng. - SPE Hydraul. Fract. Technol. Conf. Exhib., HFTC
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - SPE Hydraulic Fracturing Technology Conference and Exhibition, HFTC 2022
Issue date: 2022
Publication year: 2022
Report number: SPE-209150-MS
Language: English
ISBN-13: 9781613998540
Document type: Conference article (CA)
Conference name: 2022 SPE Hydraulic Fracturing Technology Conference and Exhibition, HFTC 2022
Conference date: February 1, 2022 - February 3, 2022
Conference location: The Woodlands, TX, United states
Conference code: 177725
Publisher: Society of Petroleum Engineers
Abstract: Hydraulic fracturing creates rough fracture surfaces, instead of smooth ones, in subsurface formations. It is challenging to simulate the complex proppant transport phenomena in rough fractures due to the roughness effect as well as the complex nature of the coupled particle-fluid two-phase flow. This study first establishes realistic rough fracture models using digital scanning images of real fracture surfaces, and then conducts numerical simulations on the proppant transport and placement dynamics occurring on those rough surfaces. The digital scanning images of the artificially created tensile fractures are used to establish the geometry models of the rough fractures. The Computational Fluid Dynamic (CFD) method is adopted to describe the fluid flow, while the Discrete Element Method (DEM) is adopted to describe the particle motion. A resolved CFD-DEM coupling approach is established to simulate the fluid-granular interactions by properly modeling the momentum exchange between fluid flow and particle motion. We obtain the following preliminary simulation results: the proppant transport and settlement characteristics in rough fractures appear to be drastically different from those in smooth fractures, and the roughness feature tends to increase particle-wall and particle-particle contact. We observe an attenuated particle velocity in rough fractures compared to what occurs in smooth fractures. Additionally, the roughness increases the possibility of proppant settling when particles encounter a location with a large roughness height. Through comparison of the proppant transport phenomena in flat and rough fractures, it is observed that there is a great chance for the rough fractures to create tree-like proppant dunes, which would be beneficial for forming a proppant-filled flow channel with a higher and more sustainable conductivity. Copyright © 2022, Society of Petroleum Engineers
Number of references: 18
Main heading: Proppants

Controlled terms: Velocity control - Channel flow - Transport properties - Finite difference method - Fracture - Surface roughness - Computational fluid dynamics - Two phase flow
Uncontrolled terms: Computational modelling - Digital scanning - Discrete elements method - Fluid-flow - Fracture surfaces - Particle motions - Proppant transports - Rough fractures - Subsurface formations - Transport phenomenon
Classification code: 511.1 Oil Field Production Operations - 631.1 Fluid Flow, General - 723.5 Computer Applications - 731.3 Specific Variables Control - 921.6 Numerical Methods - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.2118/209150-MS
Funding Details: Number: 2020KW-017, Acronym: -, Sponsor: -; Number: -, Acronym: -, Sponsor: BASF; Number: -, Acronym: -, Sponsor: Suncor Energy Incorporated; Number: RES0033730,RGPIN-2018-04571, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: 51874239,51874242,51874338, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 202006450012, Acronym: CSC, Sponsor: China Scholarship Council;
Funding text: This research was conducted under the third author T. Babadagli's NSERC Industrial Research Chair in Unconventional Oil Recovery (industrial partners are Petroleum Development Oman, Husky Energy, Saudi Aramco, Suncor, CNRL, and BASF). The authors greatly acknowledge one NSERC Discovery Grant (Grant No. RGPIN-2018-04571) to H. Li, one NSERC Discovery Grant (Grant No. RES0033730) to T. Babadagli, three grants from the National Natural Science Foundation of China (Grant No. 51874338, No. 51874239, No. 51874242) to H. Huang, and a Shanxi Major Research Project grant (Grant No. 2020KW-017) to H. Huang. The first author F. Gong acknowledges the Chinese Scholarship Council (CSC) for one PhD scholarship (Grant No. 202006450012). The authors also greatly acknowledge Dr. K. Develi for providing the roughness-height data of fracture models Fr4 and Fr5. We gratefully acknowledge these supports.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

220. Design of spatial optical installation used in optical frequency transmission via fiber

Accession number: 20230413424860
Authors: Fu, Longxi (1); Guo, Wenge (1, 2); Zhou, Qian (2); Zang, Qi (2); Liu, Jun (2); Zhang, Xiang (2); Jiao, Dongdong (2); Fan, Le (2); Liu, Tao (2); Zhang, Shougang (2)
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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12501
Part number: 1 of 1
Issue title: Seventeenth National Conference on Laser Technology and Optoelectronics
Issue date: 2022
Publication year: 2022
Article number: 125010T
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510661097
Document type: Conference article (CA)
Conference name: 17th National Conference on Laser Technology and Optoelectronics
Conference date: August 23, 2022 - August 26, 2022
Conference location: Shanghai, China
Conference code: 185720
Publisher: SPIE
Abstract: The noise floor performance of optical frequency transfer system is mainly affected by the change of optical length of the Interferometry and refractive index induced by ambient temperature variations and mechanical vibration effects. At present, the universal installation is connected by fiber components for optical frequency transmission over fiber link. However, for signal detection at the local site, due to the welding technology of fiber, the length between the fiber units is limited to a certain length, which makes it difficult to achieve high-symmetry detection at the local site, and the asymmetric part are susceptible to environmental disturbance. Therefore, in order to minimize the influence of

noise base on transmission system, this paper investigates a compact and integrated optical path module based on free space. The spatial optical module integrates beam prism, half wave plate, quarter wave plate, fiber collimator, 0 degree mirror and Faraday mirror in the size of 5 cm×6 cm, which can reduce the connection distance of local devices from 10 cm to 3 cm. At the same time, the local reference light transmission in air medium is more stable than in the fiber medium, which can reduce the noise level of the reference end and improve the stability of the system. In the experiment, the local end based on the spatial optical path and that based on the fiber path is compared and tested in a non-temperature-controlled environment. The experimental results show that the spatial optical path has obvious advantages in both short-term stability and long-term stability. It can decrease the noise floor level of the optical interferometry used for phase noise cancellation in a optical frequency transmission system via fiber, and provide a potential optimization space for long - distance transmission. © 2022 SPIE.
Number of references: 13
Main heading: Natural frequencies
Controlled terms: Fibers - Floors - Interferometry - Light polarization - Light transmission - Michelson interferometers - Mirrors - Optical materials - Optical systems - Phase noise - Refractive index - Signal to noise ratio - Vibrations (mechanical)
Uncontrolled terms: Fiber links - Frequency transfer - Frequency transmissions - Michelson's interferometer - Optical frequency - Optical frequency transfer - Spatial light - Spatial light path - Transmission instability - Unequal arm michelson interferometer
Classification code: 402 Buildings and Towers - 701.2 Magnetism: Basic Concepts and Phenomena - 716.1 Information Theory and Signal Processing - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 931.1 Mechanics - 941.3 Optical Instruments - 941.4 Optical Variables Measurements
Numerical data indexing: Size 1.00E-01m to 3.00E-02m, Size 5.00E-02m, Size 6.00E-02m
DOI: 10.1117/12.2656269
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

221. A V2P Collision Risk Warning Method based on LSTM in IOV (*Open Access*)

Accession number: 20223412593536
Authors: Pan, Ruoyu (1); Jie, Lihua (1); Zhang, Xinyue (1); Pang, Shengli (1); Wang, Honggang (1); Wei, Zhaoying (2)
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Corresponding author: Wang, Honggang(wanghonggang@xupt.edu.cn)
Source title: Security and Communication Networks
Abbreviated source title: Secur. Commun. Networks
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 7507573
Language: English
ISSN: 19390114
E-ISSN: 19390122
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: With the evolution of communication networks, the Internet of Vehicles (IOV) continues to accelerate the safe and rapid development of autonomous vehicles. Vehicle-to-Pedestrian (V2P) communication is a key technology in autonomous vehicles and a potential solution to realize collaborative intelligence between vehicles and pedestrians. However, the existing V2P communication early warning system does not consider the uncertainty of pedestrian trajectory, and the determination of the collision area is limited to a single point, resulting in an inaccurate system judgment and limited improvement of traffic efficiency. This paper designs a new autonomous-oriented V2P communication network architecture and completes a V2P communication early warning system based on Long Range (LoRa). A V2P anticollision model is established, and a new V2P collision risk early warning method is proposed. In this method, danger index is introduced into the early warning of collision between pedestrian and vehicle. The long short-term memory (LSTM) artificial neural network is used to predict the pedestrian's trajectory, so as to deduce the pedestrian-vehicle collision risk area when the pedestrian trajectory is uncertain. Meanwhile, the confidence probability is used to judge whether the pedestrian and vehicle are warned. The simulation shows that the V2P collision risk warning method proposed in this paper has good performance, which can accurately warn the pedestrian and vehicle under different vehicle speeds and Global Positioning System (GPS) positioning errors. At the same time, it reflects the characteristics of intelligence brought by using LSTM methods. Using the V2P communication early warning system

based on LoRa to verify the experimental results show that when the GPS positioning accuracy is submeter level, the prediction accuracy is greater than 98%. The results of the proposed method show good performance and high detection rate. © 2022 Ruoyu Pan et al.
Number of references: 38
Main heading: Long short-term memory
Controlled terms: Autonomous vehicles - Global positioning system - Network architecture - Pedestrian safety - Trajectories - Vehicle to vehicle communications
Uncontrolled terms: Autonomous Vehicles - Collision area - Collision risks - Communications networks - Early Warning System - Key technologies - Pedestrian trajectories - Performance - Risk warnings - Uncertainty
Classification code: 406.2 Roads and Streets - 432 Highway Transportation - 716.3 Radio Systems and Equipment - 731.6 Robot Applications - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 9.80E+01%
DOI: 10.1155/2022/7507573
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

222. Atomic-scale insight into interaction mechanism between extended dislocation and amorphous phase in high entropy alloys

Accession number: 20222112141526
Authors: Han, L. (1); Song, H.Y. (1); An, M.R. (1); Li, Y.L. (2)
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Corresponding author: Song, H.Y.(hysong@xsyu.edu.cn)
Source title: Journal of Non-Crystalline Solids
Abbreviated source title: J Non Cryst Solids
Volume: 590
Issue date: August 15, 2022
Publication year: 2022
Article number: 121695
Language: English
ISSN: 00223093
CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The crystalline/amorphous dual-phase structure is a new design strategy proposed in recent years to achieve high strength and excellent toughness of high-entropy alloys (HEA). Here, molecular dynamics simulation is used to investigate the effect of amorphous nanopillar size, amorphous nanopillar spacing and temperature on the behavior of extended dislocation overcoming amorphous obstacle in the HEAs. The results indicate that the introduction of amorphous nanopillar can improve the strength the HEA, and the larger the amorphous nanopillar size, the more obvious the strengthening effect. It is worth noting that two stress peaks of the stress-strain curve of the HEA containing amorphous nanopillar correspond to the maximum shear stress required for the leading and trailing dislocations to break away from amorphous nanopillar pinning, while the two peaks of the HEA without amorphous nanopillar represent the shear stress required to drive the leading and trailing dislocations to reach the maximum velocity. © 2022
Number of references: 59
Main heading: Molecular dynamics
Controlled terms: Shear stress - Stress-strain curves - Entropy - High strength alloys - High-entropy alloys - Shear flow
Uncontrolled terms: Amorphous phasis - Atomic scale - Deformation behavior - Dislocation slip - Dual phase structures - Extended dislocations - High entropy alloys - Interaction mechanisms - NanoPillar - Trailing dislocations
Classification code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 543.1 Chromium and Alloys - 545.2 Iron Alloys - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 801.4 Physical Chemistry
DOI: 10.1016/j.jnoncrysol.2022.121695

Funding Details: Number: YCS20211052, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS20211052).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

223. Measurement of the Isobaric Heat Capacity for Methyl Hexanoate and Ethyl Hexanoate at Temperatures from 313 to 433 K and Pressures of up to 10 MPa

Accession number: 20221411906470
Authors: Lv, Shaohua (1, 2); Hao, Yun (1); Yang, Bohao (1); Tang, Linghong (1)
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Source title: Journal of Chemical and Engineering Data
Abbreviated source title: J Chem Eng Data
Volume: 67
Issue: 4
Issue date: April 14, 2022
Publication year: 2022
Pages: 902-907
Language: English
ISSN: 00219568
E-ISSN: 15205134
CODEN: JCEAAX
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: In this article, a calorimeter was established on the basis of steady-flow calorimetry. The present calorimeter was utilized to measure the isobaric heat capacity (cp) of target fluids. First, water was measured to verify the reliability of the experimental system. Then the measurements of cp for methyl hexanoate and ethyl hexanoate were carried out at temperatures from 313 K to 433 K and pressures of up to 10 MPa. To implement easier industrial application, a correlation was proposed on the basis of the experimental data to calculate the cp values of methyl hexanoate and ethyl hexanoate, with maximum absolute relative deviations of 0.77% and 0.65%, respectively. The newly reported data will be helpful for use with methyl hexanoate and ethyl hexanoate. © 2022 American Chemical Society
Number of references: 24
Main heading: Calorimeters
Controlled terms: Specific heat
Uncontrolled terms: Capacity value - Ethyl hexanoate - Experimental system - Flow calorimetry - Hexanoate - Isobaric heat capacity - Measurements of - Relative deviations
Classification code: 641.1 Thermodynamics - 944.5 Temperature Measuring Instruments
Numerical data indexing: Percentage 6.50E-01%, Percentage 7.70E-01%, Pressure 1.00E+07Pa, Temperature 3.13E+02K to 4.33E+02K
DOI: 10.1021/acs.jced.2c00004
Funding Details: Number: 21JK0846, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2020JQ-774, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: S.L., Y.H., B.Y., and L.T. received funding from the Natural Science Basic Research Program of Shaanxi (program no. 2020JQ-774). S.L. and Y.H. received funding from the Scientific Research Program Funded by Shaanxi Provincial Education Department (program no. 21JK0846).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

224. Analysis of tight oil accumulation conditions and prediction of sweet spots in Ordos Basin: A case study (*Open Access*)

Accession number: 20224313011878
Authors: Tang, Ying (1, 2); Tan, Shihao (1); Wang, Ruifei (1); Wang, Hao (1); Xia, Chunming (1); Chen, Kaiyun (2)
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Source title: Energy Geoscience
Abbreviated source title: Energy Geosci.
Volume: 3
Issue: 4
Issue title: SI: Tight Reservoirs
Issue date: October 2022
Publication year: 2022
Pages: 417-426
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Abstract: Tight sandstone reservoirs are widely developed in the Mesozoic Yanchang Formation of the Ordos Basin, China. There is a lack of understanding on the sedimentary setting, source-reservoir relationship and oil accumulation conditions in this area. In this study, through the comprehensive analysis of the distribution of tight oil, we evaluated the properties and petrological features of reservoir, geochemical characteristics of source rocks, the source-reservoir relationship, as well as the trapping, preservation and accumulation conditions of tight oil in the Chang 7 Member, and predicted the sweet spots of tight oil in the study area. The results show that the Chang 7 Member is a typical low-porosity and ultra-low permeability reservoir with great tightness, small pore throat and high capillary pressure, and must have been of near-source accumulation. The source rocks are mainly developed in the Chang 73 submember, and the reservoirs mainly occur in the Chang 71 and Chang 72 submembers, forming a combination mode of "lower source rock and upper reservoir". Sandbodies with good connectivity and fractures being well developed in local areas are the main hydrocarbon transport systems. The abnormal high pressure caused by hydrocarbon generation and pressurization is the main driving force of tight oil accumulation. The mode of hydrocarbon transportation is dominated by the vertical or lateral migration from underlying source rocks or adjacent source rocks to reservoirs within a short distance. Following the integrated evaluation of lithology, physical properties and oil saturation of reservoirs and geochemical characteristics of source rocks, we grouped the sweet spots of Chang 7 Member into three types: Type I, Type II and Type III. Among others, the Type I sweet spots are the best in terms of porosity, permeability and source rock thickness and hydrocarbon enrichment which should be the focus of oilfield development. This study lays an important foundation for the economic and efficient development of tight oil in the Chang 7 Member of Heshui area, and has important implications on tight sandstone reservoirs in other regions of Ordos Basin in China. © 2022 Sinopec Petroleum Exploration and Production Research Institute
Number of references: 18
DOI: 10.1016/j.engeos.2021.09.002
Funding Details: Number: 20LCD09, Acronym: -, Sponsor: -; Number: 2020D-5007-0202, Acronym: -, Sponsor: PetroChina Innovation Foundation;
Funding text: This work was supported by PetroChina Innovation Foundation (No. 2020D-5007-0202) and Opening Foundation of State Key Laboratory of Continental Dynamics, Northwest University(No. 20LCD09).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

225. Detection of the Embankment Slope Formed by the Mixed Fill of Coal and Soil by GPR

Accession number: 20231013662491
Authors: Bao, Liangliang (1); Lv, Gao (2); Liu, Naifei (3); Guo, LongLong (4); Zhang, Yafei (4)
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Corresponding author: Lv, Gao(181103@xsyu.edu.cn)
Source title: 2022 8th International Conference on Hydraulic and Civil Engineering: Deep Space Intelligent Development and Utilization Forum, ICHCE 2022

Abbreviated source title: Int. Conf. Hydraul. Civ. Eng.: Deep Space Intell. Dev. Util. Forum, ICHCE
Part number: 1 of 1
Issue title: 2022 8th International Conference on Hydraulic and Civil Engineering: Deep Space Intelligent Development and Utilization Forum, ICHCE 2022
Issue date: 2022
Publication year: 2022
Pages: 229-233
Language: English
ISBN-13: 9781665465533
Document type: Conference article (CA)
Conference name: 8th International Conference on Hydraulic and Civil Engineering: Deep Space Intelligent Development and Utilization Forum, ICHCE 2022
Conference date: November 25, 2022 - November 27, 2022
Conference location: Xi'an, China
Conference code: 186784
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: [Purpose] The slope formed by the mixed fill of coal and soil is prone to disease problems such as unconsolidated and hollowness because of particle loss. High-frequency GPR can easily detect the relevant diseases near the surface and make targeted treatments. [Methods] Based on the theoretical study of the propagation mechanism of GPR electromagnetic waves in multiple geological layers and the numerical method of the FDTD method, the layered geoelectrical model of the high embankment system is established. Reflection amplitude and electric field intensity of GPR wave in multilayer embankment are deduced. [Results] The change of electrical parameters in the stratum inevitably causes the change of echo characteristics. With the increase of relative permittivity in the stratum, the amplitude of GPR echoes increases significantly. While the amplitude of echoes does not increase significantly with the increase of conductivity in the stratum in a certain range. [Conclusion] The above conclusions make an important guiding significance for the detection of the slope formed by the mixed fill of coal and soil. © 2022 IEEE.
Number of references: 10
Main heading: Coal
Controlled terms: Coal mines - Electric fields - Electromagnetic waves - Embankments - Finite difference time domain method - Geological surveys - Ground penetrating radar systems - Numerical methods - Permittivity - Soils
Uncontrolled terms: Coal mine slope - Component - Embankment slopes - Finite-different time-domain - Ground Penetrating Radar - High frequency HF - Particle loss - Relative permittivity - Time domain
Classification code: 405 Construction Equipment and Methods; Surveying - 481.1 Geology - 483 Soil Mechanics and Foundations - 483.1 Soils and Soil Mechanics - 503.1 Coal Mines - 524 Solid Fuels - 701.1 Electricity: Basic Concepts and Phenomena - 711 Electromagnetic Waves - 716.2 Radar Systems and Equipment - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1109/ICHCE57331.2022.10042531
Funding Details: Number: JT201901, Acronym: -, Sponsor: -; Number: 2020-K41, Acronym: -, Sponsor: -; Number: YGY2020KYPT-03, Acronym: -, Sponsor: -; Number: 51974246, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019M663648,2020JM-538,2021SF-500, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2022CL27, Acronym: -, Sponsor: Material Corrosion and Protection Key Laboratory of Sichuan Province; Number: 22JP065, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: ACKNOWLEDGMENT The authors gratefully acknowledge the support of Shaanxi Key Laboratory of Geotechnical and Underground Space Engineering (Grant No. JT201901). Shaanxi Provincial Urban and Rural Construction Science and Technology Research and Development Program Project (2020-K41). National Natural Science Foundation of China (51974246). Natural Science Foundation of Shaanxi Province of China (Grant No. 2021SF-500, 2019M663648, 2020JM-538) and the Open Fund of State Key Laboratory of Road Engineering Safety and Health in Cold and High-altitude Regions (Grant No. YGY2020KYPT-03). Scientific research program funded by Shaanxi education department (22JP065). The Opening Project of Material Corrosion and Protection Key Laboratory of Sichuan province (2022CL27).The authors gratefully acknowledge the support of Shaanxi Key Laboratory of Geotechnical and Underground Space Engineering (Grant No. JT201901). Shaanxi Provincial Urban and Rural Construction Science and Technology Research and Development Program Project (2020-K41). National Natural Science Foundation of China (51974246). Natural Science Foundation of Shaanxi Province of China (Grant No. 2021SF-500, 2019M663648, 2020JM-538) and the Open Fund of State Key Laboratory of Road Engineering Safety and Health in Cold and High-altitude Regions (Grant No. YGY2020KYPT-03). Scientific research program funded by

Shaanxi education department (22JP065). The Opening Project of Material Corrosion and Protection Key Laboratory of Sichuan province (2022CL27)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

226. Visualization of hydraulic sandblasting perforation in horizontal Wells

Accession number: 20223812766808
Authors: Yan, Zhengguo (1); Liu, Na (1); Yang, Kun (1); Hui, Wenbo (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 184-187
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Hydraulic sand blasting perforation technology has the characteristics of large perforation aperture, deep penetration, short operation cycle, and can realize the combination of perforation and fracturing, so this technology is widely used in horizontal Wells. Due to the lack of monitoring methods for actual hydraulic sandblasting perforation conditions due to the limitations of underground environment, researchers can only conduct indirect analysis by establishing numerical models or surface experiments. At present, there is no literature to evaluate the actual downhole hydraulic sandblasting perforation effects. Based on the real construction case, this paper uses the combination of crawler and downhole TV logging, and uses high-speed remote transmission and parallel transmission technology to obtain downhole video images. For the first time in China, the real hydraulic sandblasting perforation in the underground is seen, and it is analyzed and evaluated from three aspects of shape, position and scalar. It provides technical support for the staff to master the underground working conditions and improve the perforation technology in time, so as to promote the rapid development of the oil and gas industry. © 2022 IEEE.
Number of references: 11
Main heading: Horizontal wells
Controlled terms: Blasting - Gas industry - Numerical methods - Visualization - Well perforation
Uncontrolled terms: Condition - Construction case - Deep penetration - Downholes - High Speed - Hydraulic sand blasting perforation - Monitoring methods - Operation cycles - Sand blasting - Underground environment
Classification code: 512.1.1 Oil Fields - 522 Gas Fuels - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859118
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

227. Exploration innovation practice and effective exploitation key technology of mountain coalbed methane-Taking the Junlian coalbed methane field in southern Sichuan Basin as an example

Accession number: 20231714015103
Title of translation: ——
Authors: Liang, Xing (1); Shan, Chang'an (2); Li, Zhaofeng (1); Luo, Yufeng (1)
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Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 42
Issue: 6
Issue date: 2022
Publication year: 2022
Pages: 107-129
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: Junlian mountain coalbed methane field in southern Sichuan Basin is the first coalbed methane field with commercial development value in south China, and it is also the third coalbed methane industrial base in China besides Qinshui Basin and eastern margin of Ordos Basin. In order to provide guidance and reference for the exploration and development of coalbed methane in other areas of southern China the exploration history and effective development experience of the coalbed methane field in the mountainou area are summarized and the geological, exploration theory and key development technology innovatively formed are summarized.The results show that: At present more than 450 wells have been put into production in the coalbed methane field and the annual gas output has exceeded 1×108 m3 for 5 consecutive years. Coalbed methane is produced in the Upper Permian coal-bearing rock series; which has proved that there is a good prospect of coalbed methane exploration and development in southern Sichuan; There are more than 30 sets of coal seams developed in the Upper Permian in this area. The main coalbed methane producing layers are C7 and C8, with a combined thickness of more than 6 m; The average porosity and permeability of coalbed methane reservoir are 5.33% and 5.057×10 3 mD, and the main reservoir spaces are micro/nano pores; The theory of coalbed methane accumulation in mountain area controlled by four elements of tectonic-thermal evolution, tectonic trace, sedimentary environment and hydrogeological conditions, and the model of coalbed methane accumulation with rich gas in wide and gentle syncline are defined. The large burial depth and compressive stress concentration in the syncline core make the adsorption gas of coal reservoir higher than that in the tectonic wing; According to the geological characteristics of coalbed methane with high rank, thin seam and low permeability in Wumeng mountain, five comprehensive evaluation methods and technology series suitable for the exploration and development of high-rank coalbed methane in mountainou areas have been explored and formed, including: the optimization and evaluation technology for rich gas and high yield of structural reformed mountain coalbed methane, surface and underground integrated deployment and rolling optimization design implementation technology, Factory optimized fast and efficient drilling and completion technology, integrated volume fracturing design and technology, digital intelligent fine drainage and mining technology, and industrial scale application. The conclusion is that the mountain coalbed methane has been successfully developed in scale and effective and green production in the southern of Sichuan Basin.
Number of references: 48
Main heading: Coal bed methane
Controlled terms: Aquifers - Coal - Coal deposits - Firedamp - Hydrogeology - Landforms - Methane - Natural gas wells - Petroleum prospecting - Petroleum reservoir engineering - Tectonics - Trace elements
Uncontrolled terms: Business development - Effective exploitation - Exploration and development - Exploration and development integration practice - Gas reservoir formation - Junlian area - Mountain coalbed methane - Sichuan Basin - Southern sichuan basin - Upper Permian
Classification code: 444.2 Groundwater - 481.1 Geology - 503 Mines and Mining, Coal - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 524 Solid Fuels - 804.1 Organic Compounds
Numerical data indexing: Percentage 5.33E+00%, Size 6.00E+00m, Size 8.00E+00m
DOI: 10.3787/j.issn.1000-0976.2022.06.010
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

228. Formation mechanisms of hydraulic fracture network based on fracture interaction

Accession number: 20220211444030
Authors: Zheng, Peng (1, 2); Xia, Yucheng (1); Yao, Tingwei (2); Jiang, Xu (2); Xiao, Peiyao (2); He, Zexuan (2); Zhou, Desheng (2)
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Source title: Energy
Abbreviated source title: Energy
Volume: 243
Issue date: March 15, 2022
Publication year: 2022
Article number: 123057
Language: English
ISSN: 03605442
CODEN: ENEYDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The interaction between hydraulic fractures and natural fractures have significant influence on the geometry of hydraulic fracture network in fractured reservoirs. In previous mathematical model, the interaction relationship of non-intersecting fractures in propagation process were often been ignored, which resulted the inaccuracy of simulation results. Based on boundary element method and rock failure criterion, we established mathematical model to study the fracture interaction mechanisms and fracture network morphology under induced stress. Simulation results show that hydraulic fracture with incipient propagation superiority are more likely to have a rapid propagation and inhibit the continuous initiation of surrounding micro fractures. Under proper conditions, single natural fracture can deflect the propagation direction of hydraulic fracture by at least 22°. Firstly proposed that shielding and transmission efforts of induced stress by natural fracture are the fundamental reason that affect the complexity of fracture network, which can reduce the normal stress around natural fracture by 50% in this paper. When the inclination Angle of natural fractures is between 45 and 70°, it is more favorable to form complex fracture network. This study is of great significance for the control of fracture network morphology and the further improvement of fracturing effect. © 2021 Elsevier Ltd
Number of references: 66
Main heading: Fracture
Controlled terms: Hydraulic fracturing - Sailing vessels - Boundary element method - Complex networks - Morphology
Uncontrolled terms: Damage evolution - Fracture criterion - Fracture interactions - Fracture intersections - Fracture network - Induced stress - Natural fracture - Network morphology - Stress anisotropy - Structural heterogeneity
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 674.1 Small Marine Craft - 722 Computer Systems and Equipment - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 5.00E+01%
DOI: 10.1016/j.energy.2021.123057
Funding Details: Number: 51934005,51874242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (51934005,51874242).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

229. Research on tubing Defect Detection Method based on laser scanning

Accession number: 20223812766911
Authors: Yan, Zhengguo (1); Yang, Kun (1)
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Corresponding author: Yan, Zhengguo(zhgyan@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1

Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 388-391
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to detect the deformation and corrosion of oil tube, a visual inspection method based on laser scanning was proposed based on the principle of line structured light visual inspection. Firstly, a circular laser is used to scan the inner surface of the tubing, and the camera records the scanning results. Then, the laser fringe center line is extracted through image processing method, and 3d reconstruction of the tubing is carried out according to the frame by frame processing results, finally achieving quantitative analysis of tubing defects. Experimental results show that this method has high measurement accuracy and detection efficiency, and can quantitatively identify the defect types.

Number of references: 8
Main heading: Scanning
Controlled terms: Corrosion - Defects - Image reconstruction - Laser applications - Processing - Tubing
Uncontrolled terms: 3D reconstruction - Defect detection - Defect detection method - Inner surfaces - Laser scanning - Line structured lights - Oil tubes - Tubing defect detection - Visual inspection - Visual inspection method
Classification code: 619.1 Pipe, Piping and Pipelines - 744.9 Laser Applications - 913.4 Manufacturing - 951 Materials Science
DOI: 10.1109/ICMSP55950.2022.9859121
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

230. Improved DSVM finite set model predictive current control of PMSM

Accession number: 20223312571307
Authors: Yan, Hongliang (1); Long, Hulin (1); Zhang, Jianan (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Shaanxi Key Laboratory of Oil and Gas Well Measurement and Control Technology, Xi'an, China
Source title: 2022 IEEE 2nd International Conference on Electronic Technology, Communication and Information, ICETCI 2022
Abbreviated source title: IEEE Int. Conf. Electron. Technol., Commun. Inf., ICETCI
Part number: 1 of 1
Issue title: 2022 IEEE 2nd International Conference on Electronic Technology, Communication and Information, ICETCI 2022
Issue date: 2022
Publication year: 2022
Pages: 200-204
Language: English
ISBN-13: 9781728181158
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Electronic Technology, Communication and Information, ICETCI 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Changchun, China
Conference code: 181343
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: For the problem of large torque ripple of the traditional permanent magnet synchronous motor (PMSM) model to predict the torque ripple of the control system, an improved DSVM finite set model prediction current control (FCS-MPC) strategy of PMSM is proposed. The use of DSVM technology to increase the optional voltage vector effectively reduces the error between the reference voltage vector and the prediction voltage vector, thereby reducing current and torque ripple. To avoid enumeration the voltage vector and calculation online of duty cycle, this strategy optimizes the voltage vector table in two steps, and then directly finds the corresponding duty cycle table, so that the voltage vectors in the prediction process are reduced from 38 to 14. At the same time, the duty cycle table is used to fix the switching frequency by linear combination of fixed voltage vectors. The new control strategy reduces current and torque ripple and reduces the computational burden added by the DSVM method. The Simulink simulation is verified, and the simulation results verify the effectiveness of the proposed control strategy. © 2022 IEEE.
Number of references: 15
Main heading: Model predictive control
Controlled terms: Electric current control - Forecasting - Permanent magnets - Predictive control systems - Set theory - Synchronous motors - Torque - Torque control - Vector spaces - Vectors
Uncontrolled terms: Control strategies - Current ripples - Discrete space vector modulation - Duty-cycle - Finite set - Model-predictive control - Permanent Magnet Synchronous Motor - Set models - Torque ripples - Voltage vectors
Classification code: 704.1 Electric Components - 705.3.1 AC Motors - 731.1 Control Systems - 731.3 Specific Variables Control - 921 Mathematics - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1109/ICETCI55101.2022.9832156
Funding text: This paper is supported by the key laboratory project of Shaanxi Provincial Department of Education (15js084).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

231. Study on correlation modeling between vehicle frontal collision waveform and passenger chest injury

Accession number: 20224212981024
Authors: Xu, A.R. (1); Wang, C. (1); Yang, Z.H. (2); He, P.P. (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Electronic and Control Engineering, Chang'an University, Xi'an; 710061, China
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Source title: Advances in Transportation Studies
Abbreviated source title: Adv. Transp. Stud.
Volume: 2
Issue: Special issue
Issue date: 2022
Publication year: 2022
Pages: 77-86
Language: English
ISSN: 18245463
Document type: Journal article (JA)
Publisher: Aracne Editrice
Abstract: This paper studies the correlation model between vehicle frontal collision waveform and passenger chest injury. By constructing the front-end structure of the car body, the collision acceleration waveform of the car body is analyzed. The relationship between acceleration and force injury, compression and viscosity injury and passenger chest injury index is studied, and the injury law of passenger chest injury in vehicle frontal collision waveform is established. The simulation results show that the acceleration calculation accuracy of the model is relatively stable, the compression damage calculation accuracy is more than 83%, and the average accuracy of viscous damage calculation is 98%. © 2022, Aracne Editrice. All rights reserved.
Number of references: 16
Main heading: Automobile bodies
Controlled terms: Accidents - Railroad cars
Uncontrolled terms: Calculation accuracy - Car crashes - Carbody - Chest injuries - Collision waveform - Correlation modeling - Frontal car crash - Frontal collision - Passenger chest injury - Waveforms

Classification code: 662.4 Automobile and Smaller Vehicle Components - 682.1.1 Railroad Cars - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 8.30E+01%, Percentage 9.80E+01%
DOI: 10.53136/97912599491968
Funding text: This work was supported by the project of "Development of XJ70 workover rig with disc brake and without tension wire rope", Shaanxi DESHI vehicle components (group)Co., LTD.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

232. An Efficient Spatial Covariance Matrix Reconstruction Algorithm in the Hybrid Analog-Digital Structure

Accession number: 20221411920204
Authors: Zhou, Yan (1); Dang, Bo (2); Li, Yanyan (1); Liu, Guanhao (1)
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Corresponding author: Zhou, Yan(yanzhou@nwu.edu.cn)
Source title: IEEE Transactions on Vehicular Technology
Abbreviated source title: IEEE Trans. Veh. Technol.
Volume: 71
Issue: 7
Issue date: July 1, 2022
Publication year: 2022
Pages: 7930-7935
Language: English
ISSN: 00189545
E-ISSN: 19399359
CODEN: ITVTAB
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The use of the emerging hybrid analog-digital structure for future millimeter-wave communications has attracted much attention. Although this structure can reduce the power consumption considerably, the spatial covariance matrix (SCM), as the core of subspace-based direction of arrival (DOA) estimation algorithms, cannot be obtained directly. The beam sweeping algorithm (BSA) was proposed for SCM reconstruction from compressed measurements. However, the BSA is computationally intensive owing to the high-dimensional matrix-to-matrix multiplication and matrix inversion. To address this issue, a BSA algorithm with high accuracy and low computational-cost using the submatrix multiplication (BSASM) is proposed in this paper. By appropriately adjusting the weight, which consists of a switch and a phase shifter, connected to each antenna, the SCM can be accurately reconstructed with low-dimensional matrix-to-vector multiplication and 2-dimensional matrix inversion, thus reducing the computational-cost significantly. After SCM reconstruction, various DOA estimation algorithms can be exploited to obtain the DOA information. Simulation experiments are conducted to verify the performance of the proposed algorithm. The results indicate that using a substantially lower computational-cost, BSASM can reconstruct SCM more accurately than BSA.

Number of references: 20
Main heading: Multiple signal classification
Controlled terms: Digital radio - Millimeter waves - Antennas - Direction of arrival - Phase shifters
Uncontrolled terms: Analog-digital conversion - Digital structures - Direction of arrival estimation - Hybrid analog-digital structure - Multiple signal classification - Phase-shifters - Radiofrequencies - Signal classification - Spatial covariance matrix
Classification code: 711 Electromagnetic Waves - 713.5 Electronic Circuits Other Than Amplifiers, Oscillators, Modulators, Limiters, Discriminators or Mixers - 716.1 Information Theory and Signal Processing - 716.3 Radio Systems and Equipment
DOI: 10.1109/TVT.2022.3164079
Funding Details: Number: 2020KJXX-018, Acronym: -, Sponsor: -; Number: 51974250,61901371,61901372, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 300102322503, Acronym: CHD, Sponsor: Chang'an University; Number: 2020M683541, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2021KW-05,

Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2020JQ-599,2020JQ-600, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported in part by the National Natural Science Foundation of China under Grants 61901371, 61901372 and 51974250, in part by the Natural Science Basic Research Program of Shaanxi under Grants 2020JQ-600 and 2020JQ-599, in part by Youth Science and Technology Nova Project in Shaanxi Province under Grant 2020KJXX-018, in part by China Postdoctoral Science Foundation under Grant 2020M683541, in part by the Key Research and Development Program of Shaanxi Province under Grant 2021KW-05, and in part by the Fundamental Research Funds for the Central Universities, Xi'an Key Laboratory of Intelligent Expressway Information Fusion and Control of CHD under Grant 300102322503.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

233. Uncovering strengthening and softening mechanisms of nano-twinned CoCrFeCuNi high entropy alloys by molecular dynamics simulation

Accession number: 20221211804541
Authors: Shen, T.Z. (1); Song, H.Y. (1); An, M.R. (1); Li, Y.L. (2)
Author affiliation: (1) College of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding authors: Song, H.Y.(hysong@xsyu.edu.cn); Li, Y.L.(liyulong@nwpu.edu.cn)
Source title: Journal of Applied Physics
Abbreviated source title: J Appl Phys
Volume: 131
Issue: 9
Issue date: March 7, 2022
Publication year: 2022
Article number: 094304
Language: English
ISSN: 00218979
E-ISSN: 10897550
CODEN: JAPIAU
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: High-entropy alloys (HEAs) break the design concept of traditional alloys and exhibit excellent mechanical properties. However, as a new member of the alloy family in recent years, the dependence of the deformation behavior of the HEAs on alloy composition and twin boundary (TB) is still unclear, and many phenomena urgently need to be revealed. Here, the effects of TB spacing and Ni concentration on the mechanical properties and deformation behavior of the nano-twinned (CoCrFeCu)1-XNiX HEA (nt-HEA) under tensile loading are investigated by molecular dynamics simulation. The results show that with the decrease in TB spacing, the average flow stress of the nt-HEA changes from Hall-Petch strengthening to inverse Hall-Petch softening. When the TB spacing is greater than a critical value, the plastic deformation mechanism is dominated by the slip of partial dislocations. However, when the TB spacing is less than the critical value, the plastic deformation mechanism is transformed into the formation of voids induced by the amorphous phase, which becomes the key factor for the softening of the nt-HEA. It is also found that the mechanical properties of the nt-HEA can also change from strengthening to softening by adjusting Ni concentration, which is closely related to the change of stacking fault energy of the nt-HEA. In addition, the plastic deformation mechanism and voids formation mechanism of the nt-HEA are also discussed in detail. © 2022 Author(s).
Number of references: 70
Main heading: High-entropy alloys
Controlled terms: Cobalt alloys - Molecular dynamics - Nickel - Copper alloys - Entropy - Iron alloys - Plastic deformation - Chromium alloys
Uncontrolled terms: Alloy compositions - Critical value - Deformation behavior - Design concept - High entropy alloys - New members - Plastic deformation mechanisms - Softening mechanisms - Strengthening mechanisms - Twin boundaries
Classification code: 531 Metallurgy and Metallography - 543.1 Chromium and Alloys - 544.2 Copper Alloys - 545.2 Iron Alloys - 548.1 Nickel - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 641.1 Thermodynamics - 801.4 Physical Chemistry
DOI: 10.1063/5.0082835

Funding Details: Number: YCS21211055, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (NNSFC) (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS21211055).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

234. Portable paper-in-Tip spray ionization for the direct mass spectrometric analysis of target analytes in biofluid samples

Accession number: 20220611586432
Authors: Lu, Fangfang (1); Zheng, Yajun (1); Zhang, Yuan (1); Ma, Qiang (2); Zhang, Zhiping (1)
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Source title: Analytical Methods
Abbreviated source title: Anal. Methods
Volume: 14
Issue: 3
Issue date: January 21, 2022
Publication year: 2022
Pages: 222-227
Language: English
ISSN: 17599660
E-ISSN: 17599679
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Portable sampling of target analytes in complex biofluid samples makes mass spectrometric analysis more efficient. This study reports the development of paper-in-Tip spray ionization for solid-phase microextraction and in situ electrospray of therapeutic drugs and proteins in complex biological matrices using a piece of hydrophobic paper substrate. This technique possesses a long (more than 8 min) and stable spray duration with only 20 μL of spray solvent. The entire analytical process for a complex sample can be completed in less than 1.5 min and enables high sensitivity (picogram-per-milliliter level) and high quantitation precision. © The Royal Society of Chemistry.
Number of references: 36
Main heading: Mass spectrometry
Controlled terms: Electrospray ionization - Mass spectrometers - Drug products - Body fluids
Uncontrolled terms: Biofluid samples - Biological matrixes - Electrosprays - Hydrophobics - Mass spectrometric analysis - Solid-phase microextraction - Spray ionization - Target analytes - Therapeutic drugs - Therapeutic protein
Classification code: 461.2 Biological Materials and Tissue Engineering - 801 Chemistry - 802.2 Chemical Reactions
Numerical data indexing: Time 4.80E+02s, Time 9.00E+01s, Volume 2.00E-02m3
DOI: 10.1039/d1ay01907d
Funding Details: Number: Z19257, Acronym: -, Sponsor: -; Number: 21777128, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JC-33,2021GY-247, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: We are grateful for funding from the National Natural Science Foundation of China (No. 21777128), the Natural Science Basic Research Program of Shaanxi Province of China (Grant No. 2019JC-33, 2021GY-247), and the Youth Innovation Team of Shaanxi Universities (No. Z19257).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

235. Effect of rare earth element on amorphization and deformation behavior of crystalline/amorphous dual-phase Mg alloys (*Open Access*)

Accession number: 20223012421770
Authors: Du, J.J. (1); Song, H.Y. (1); An, M.R. (1); Li, Y.L. (2)
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China
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Source title: Materials and Design
Abbreviated source title: Mater. Des.
Volume: 221
Issue date: September 2022
Publication year: 2022
Article number: 110979
Language: English
ISSN: 02641275
E-ISSN: 18734197
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The crystalline/amorphous (C/A) dual-phase structure is a new design strategy to improve the mechanical properties of Mg alloys. Here, the effect of the content of rare-earth element Y on the deformation mechanism and mechanical behavior of the C/A Mg/(MgCu)100-xYx dual-phase Mg alloys under tensile loading is investigated by molecular dynamics simulation. The results show for the first time that the amorphous phase thickness of the alloys increases obviously after relaxation, which is mainly due to the existence of element Y in amorphous phase. And with the increase of the content of element Y, the thickness of amorphous phase increases. The results indicate that the diffusion of element Y from amorphous phase to amorphous-crystalline interface (ACI) promotes the migration of ACI towards crystalline phase (i.e., the amorphization of crystalline phase). The results further pointed out that the amorphization of Mg alloys depends on two factors: one is that the amorphous phase contains a certain concentration of element Y, and the other is the existence of ACI. The results show that there is a critical amorphous phase thickness of the dual-phase Mg alloys, that is, the critical content of Y element, which can make it achieve nearly perfect plasticity. © 2022
Number of references: 48
Main heading: Molecular dynamics
Controlled terms: Amorphization - Deformation - Magnesium alloys - Rare earth elements - Rare earths
Uncontrolled terms: Amorphizations - Amorphous phasis - Amorphous/crystalline interface - Dual phase - Dual phasis - Dual-phase mg alloy - Dynamics simulation - Mg alloy - Molecular dynamic simulation - Phase thickness
Classification code: 542.2 Magnesium and Alloys - 547.2 Rare Earth Metals - 549.2 Alkaline Earth Metals - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds
DOI: 10.1016/j.matdes.2022.110979
Funding Details: Number: YCS20211057, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS20211057).This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS20211057).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

236. Synthesis, crystal structure and bioactivities of α–asaronol

Accession number: 20221912098480
Authors: Zhang, Qun-Zheng (1); Zhong, Zhen-Hua (1); Hao, Ding (1); Feng, Ming-Nan (1); Wang, Si-Chang (1); Han, Qi-Long (1); Bai, Yajun (2); Xu, Danni (2); Liao, Sha (2); Xiao, Chaoni (2); Zhang, Xun-Li (1); Zheng, Xiaohui (2)
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Source title: Acta Crystallographica Section C: Structural Chemistry
Abbreviated source title: Acta crystallogr., C Struct. Chem.
Volume: 78

Issue date: May 1, 2022
Publication year: 2022
Pages: 265-270
Language: English
E-ISSN: 20532296
CODEN: ACSCGG
Document type: Journal article (JA)
Publisher: International Union of Crystallography
Abstract: α–Asaronol [or (E)-3'-hydroxyasarone; systematic name: (E)-3-(2,4,5-trimethoxyphenyl)prop-2-en-1-ol; C12H16O4] was synthesized towards the development of a potential antiepileptic drug. Following purification by recrystallization, single crystals of α–asaronol were obtained by a liquid interface diffusion method at room temperature. The product was characterized by 1H and 13C NMR, and FT-IR spectroscopic analysis. X-ray crystallography revealed the title crystal to belong to the orthorhombic space group P212121. Preliminary bioassays with mouse neuroblastoma N2a cells demonstrated the neuroprotective activities of the synthesized α–asaronol. © 2022.
Number of references: 39
Main heading: Crystal structure
Controlled terms: Single crystals - Crystal growth - Self assembly - Spectroscopic analysis - X ray crystallography
Uncontrolled terms: Antiepileptics drugs - Crystals structures - Diffusion method - Interface diffusion - Liquid interface - Neuroprotective activity - Orthorhombic space groups - Recrystallisation - Synthesised - A–asaronol
Classification code: 801 Chemistry - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice - 933.1.2 Crystal Growth - 951 Materials Science
Numerical data indexing: Inductance 1.00E00H
DOI: 10.1107/S2053229622003631
Funding Details: Number: YCS21211044, Acronym: -, Sponsor: -; Number: 2021KWZ-24, Acronym: -, Sponsor: -; Number: 20JK0830, Acronym: -, Sponsor: -; Number: 22005242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021470, Acronym: NWU, Sponsor: Northwest University; Number: 202110705006, Acronym: -, Sponsor: National College Students Innovation and Entrepreneurship Training Program; Number: 2018KWZ-05,2020ZDLSF03-07, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2021JQ-584, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: Funding for this research was provided by: National Natural Science Foundation of China (grant No. 22005242); Key Research and Development Program of Shaanxi Province (grant No. 2020ZDLSF03-07; grant No. 2018KWZ-05); Scientific Research Program of Shaanxi Provincial Education Department (grant No. 20JK0830); Natural Science Basic Research Plan of Shaanxi Province (grant No. 2021JQ-584); National College Students Innovation and Entrepreneurship Training Program (grant No. 202110705006); Graduate Innovation and Practice Skills Foundation of Xi'an Shiyou University (grant No. YCS21211044); the Primary R&D Plan of Shaanxi Province (grant No. 2021KWZ-24); the Innovation and Entrepreneurship Training Program of Northwest University (grant No. 2021470).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

237. Quantification of preferential and mutual mass transfer of gases-light oil systems at high pressures and elevated temperatures by dynamic volume analysis

Accession number: 20222612293817
Authors: Dong, Xiaomeng (1); Shi, Yu (2); Huang, Desheng (1); Yang, Daoyong (1)
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Source title: International Journal of Heat and Mass Transfer
Abbreviated source title: Int. J. Heat Mass Transf.
Volume: 195
Issue date: October 2022
Publication year: 2022
Article number: 123188
Language: English
ISSN: 00179310
CODEN: IJHMAK

Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this study, a robust and pragmatic technique has been developed for the first time to quantify preferential and mutual mass transfer of gases-light oil systems at high pressures and elevated temperatures by performing dynamic volume analysis. Experimentally, diffusion tests have been conducted for gases-light oil systems at high pressures and a constant reservoir temperature with a PVT setup. During experiments, the dynamic liquid volume due to gas dissolution and light-component extraction has been measured and recorded continuously, while gas fractions at the beginning and end of each test have been measured with gas chromatography (GC) analysis, respectively. Theoretically, the preferential and mutual diffusion between gas and oil phases can be quantified by minimizing the discrepancies between the measured and calculated swelling factor and gas composition. According to the measured swelling factors, oil swelling effect slows down during the late stage of a diffusion experiment, indicating that CO2 dissolution is transited from the natural convection-dominated period to the diffusion-dominated period. Compared to the swelling effect at a higher pressure, the effect of light-component extraction on the determined diffusion coefficients of gas components becomes weaker. In addition, both individual diffusion coefficients for each gas component of a gas mixture in an oil phase and oil component extracted from the oil phase to the gas phase are increased with pressure. The diffusion-convection model allows us to isolate the natural convection from the molecular diffusion, leading to larger diffusivities compared with the ones determined from the conventional method. © 2022 Elsevier Ltd
Number of references: 95
Main heading: Diffusion
Controlled terms: Dissolution - Extraction - Gas chromatography - Gases - Liquid chromatography - Natural convection - Swelling
Uncontrolled terms: Dynamic volume analyse - Elevated temperature - Euqation of state - Gas-light oil system - High pressure - Light oil - Oil phase - Oil system - Preferential and mutual mass transfer - Volume analysis
Classification code: 641.2 Heat Transfer - 802.3 Chemical Operations - 951 Materials Science
DOI: 10.1016/j.ijheatmasstransfer.2022.123188
Funding Details: Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada;
Funding text: The authors acknowledge a Discovery Development Grant, a Discovery Grant, and a Collaborative Research and Development (CRD) Grant from the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Mitacs Industry-Faculty Collaboration for Innovation (MIFCI) Grant to D. Yang as well as EHR Enhanced Hydrocarbon Recovery Inc. and Thermal Recovery Technologies Inc. for financial support.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

238. Semidefinite Programming for Wireless Cooperative Localization Using Biased RSS Measurements

Accession number: 20221712037137
Authors: Wang, Qi (1); Duan, Zhansheng (2); Li, Fei (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an; 710065, China; (2) Xi'an Jiaotong University, Center for Information Engineering Science Research, Xi'an; 710049, China
Corresponding author: Duan, Zhansheng(zsduan@mail.xjtu.edu.cn)
Source title: IEEE Communications Letters
Abbreviated source title: IEEE Commun Lett
Volume: 26
Issue: 6
Issue date: June 1, 2022
Publication year: 2022
Pages: 1278-1282
Language: English
ISSN: 10897798
E-ISSN: 15582558
CODEN: ICLEF6
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Cooperative localization in wireless sensor network (WSN) using biased received signal strength (RSS) measurements is investigated in this letter. In the existing work on cooperative RSS localization, measurements of sensor nodes (including both target-anchor and target-target measurements) are generally assumed bias-free.

However, in practice, they may be subject to biases, which directly affect localization accuracy. As a result, the existing localization methods are not applicable any more. In this letter, RSS observation biases are considered as the extra parameters to be estimated as well as locations of target nodes. To overcome the nonconvexity of the maximum likelihood (ML) estimator, semidefinite programming (SDP) is applied with l_{1} and l_{2} norms, respectively. Then, the locations of multiple target nodes and observation biases are simultaneously estimated through convex optimization. Numerical examples demonstrate the performance superiority of the proposed methods compared to the existing bias-free SDP methods for wireless cooperative localization. © 1997-2012 IEEE.
Number of references: 27
Main heading: Time measurement
Controlled terms: Cooperative communication - Numerical methods - Uncertainty analysis - Maximum likelihood estimation - Sensor nodes - Convex optimization - Location
Uncontrolled terms: Cooperative localization - Location awareness - Maximum-likelihood estimation - Measurement uncertainty - Noise measurements - Observation bias - Received signal strength - Received signal strength measurements - Semi-definite programming - Wireless communications
Classification code: 716.3 Radio Systems and Equipment - 722 Computer Systems and Equipment - 722.3 Data Communication, Equipment and Techniques - 921.6 Numerical Methods - 922 Statistical Methods - 922.1 Probability Theory - 943.3 Special Purpose Instruments
DOI: 10.1109/LCOMM.2022.3166780
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

239. A high-applicability heterogeneous cloud data centers resource management algorithm based on trusted virtual machine migration

Accession number: 20221011756751
Authors: Liang, Bin (1, 2); Dong, Xiaoshe (2); Wang, Yufei (2); Zhang, Xingjun (2)
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Source title: Expert Systems with Applications
Abbreviated source title: Expert Sys Appl
Volume: 197
Issue date: July 1, 2022
Publication year: 2022
Article number: 116762
Language: English
ISSN: 09574174
CODEN: ESAPEH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: With the continuous development and maturity of cloud computing technology, the scale and number of cloud data center (CDC) are also expanding. This increasingly draws attention to the problem of high energy consumption in CDCs. Dynamic virtual machine (VM) consolidation is a promising approach for reducing energy consumption. VM migration, as a VM consolidation technology, can effectively improve the utilization of physical machine (PM) and optimize the scheduling process of CDCs. However, most VM integration algorithms, in existing research, are aimed at improving the utilization of PMs. Excessive utilization of PMs may increase the competition for shared resources among the VMs running on them. As a result, the performance of these VMs deteriorates, and the execution time of cloud tasks is increased or even interrupted. This study systematically analyzes the overall architecture of CDCs. Subsequently, migration rules are established for the one-dimensional and multidimensional trusted VMs. A high- applicability heterogeneous CDC resource management algorithm based on trusted VM migration (HTVM2) is then proposed. The proposed algorithm not only solves the one-dimensional VM migration problem of homogeneous and heterogeneous CDCs but also those of multi-dimensional VMs. This improves the success rate of VM migration, reduces the energy consumption of the CDC, and improves load balancing while ensuring VM performance. Finally, the algorithm was compared with the other three algorithms outperforming them all, as demonstrated by experimental results. © 2022 Elsevier Ltd
Number of references: 28
Main heading: Virtual machine

Controlled terms: Energy utilization - Natural resources management - Balancing - Resource allocation - Scheduling algorithms - Information management - Trusted computing - Network security - Cloud computing
Uncontrolled terms: Cloud computing technologies - Cloud data centers - Continuous development - Multi dimensional - Multi-dimensional virtual machine - One-dimensional - Resource management algorithms - Virtual machine consolidations - Virtual machine integration - Virtual machine migrations
Classification code: 525.3 Energy Utilization - 601 Mechanical Design - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 912.2 Management
DOI: 10.1016/j.eswa.2022.116762
Funding Details: Number: 2022GY-031, Acronym: -, Sponsor: -; Number: 2020KJRC0101, Acronym: -, Sponsor: -;
Funding text: This work was supported by the Key R & D Plan of Shaanxi Province (General Project)[No. 2022GY-031] and the Science and Technology Program of Xi'an [No. 2020KJRC0101].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

240. Video Log Visual Detection Technology of Horizontal Well and Its Application

Accession number: 20223812766830
Authors: Su, Juan (1); Guo, Liang (1); Li, Bing (2); Huo, Dongkai (2); Huang, Jintao (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China; (2) Cnpc Logging Company Limited, Changqing Division, Xi'an, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 948-951
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Horizontal wells increase the contact surface area between wells and reservoirs, so they can enhance oil recovery efficiency effectively. In order to obtain more logging information of horizontal wells, this paper studies the visualization detection technology of horizontal well. By using two-way coding and local large capacity high-speed storage equipment to realize three operation mode-three operation modes of surface readout mode, memory mode and compatibility mode. Special connectors are used to make VideoLog tool to work in three methods by parallel transmission. Video acquisition and analysis software realizes 3D modeling and quantitative analysis of casing pipe. Field tests of 8 horizontal wells show that VideoLog can provide a new horizontal well detection scheme. © 2022 IEEE.
Number of references: 13
Main heading: Horizontal wells
Controlled terms: 3D modeling - Oil well logging
Uncontrolled terms: Contact surface area - Detection technology - Enhance oil recoveries - ITS applications - Oil recovery efficiency - Operation mode - Two ways - Videolog - Visual detection - Visual logging
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICMSP55950.2022.9859028
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

241. Data Analysis and Knowledge Mining of Machine Learning in Soil Corrosion Factors of the Pipeline Safety (*Open Access*)

Accession number: 20222112137958
Authors: Zhao, Zhifeng (1); Chen, Mingyuan (2); Fan, Heng (1); Zhang, Nailu (1)
Author affiliation: (1) School Of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department Of Mechanical, Industrial And Aerospace Engineering, Concordia University, Montreal; H3G2W1, Canada
Corresponding author: Zhao, Zhifeng(zfzhao@xsyu.edu.cn)
Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 9523878
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The purpose of this research is to enhance the ability of data analysis and knowledge mining in soil corrosion factors of the pipeline. According to its multifactor characteristics, the rough set algorithm is directly used to analyze and process the observation data without considering any prior information. We apply rough set algorithm to delete the duplicate same information and redundant items and simplify the condition attributes and decision indicators from the decision table. Combined with the simplified index, the decision tree method is used to analyze the root node and branch node of it, and the knowledge decision model is constructed. With the Python machine learning language and PyCharm Community Edition software, the algorithm functions of rough set and decision tree are realized, so as to carry out artificial intelligence analysis and judgment of the soil corrosion factor data in pipeline. Taking the area of loam soil corrosion as an example, the data analysis and knowledge mining of its multifactors original data are carried out through the model. The example verifies that the evaluation and classification rules of the model meet the requirements, and there are no problems such as inconsistency and heterogeneity. It provides decision-making service and theoretical basis for the soil corrosion management of pipeline. © 2022 Zhifeng Zhao et al.
Number of references: 23
Main heading: Pipelines
Controlled terms: Machine learning - Python - Soils - Underground corrosion - Data reduction - Decision tables - Computer software - Factor analysis - Data mining - Decision trees - Pipeline corrosion
Uncontrolled terms: Condition attributes - Corrosion factor - Knowledge mining - Machine-learning - Multi-factor - Observation data - Pipeline safety - Prior information - Set algorithm - Soil corrosion
Classification code: 483.1 Soils and Soil Mechanics - 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.1.1 Computer Programming Languages - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
DOI: 10.1155/2022/9523878
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

242. Restoration of the pre-Jurassic paleogeomorphology and its control on hydrocarbon distribution in western Ordos Basin (*Open Access*)

Accession number: 20224313010926
Authors: Yuan, Hui (1); Yin, Shuai (1); Dong, Li (2); Tan, Chengqian (1)
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Corresponding author: Yin, Shuai(speedysys@163.com)
Source title: Energy Geoscience
Abbreviated source title: Energy Geosci.

Volume: 3
Issue: 4
Issue title: SI: Tight Reservoirs
Issue date: October 2022
Publication year: 2022
Pages: 485-494
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Abstract: In recent years, the discovery of the Jurassic oil reservoirs in the Western Thrust Belt of the Ordos Basin reveals that the Jurassic formation in this area has huge oil and gas potential. The pre-Jurassic paleogeomorphology plays a vital role in the formation of the Jurassic oil reservoirs. In this paper, the impression method is applied to restore the pre-Jurassic paleogeomorphology of the Hongde area in the western Ordos Basin, using a large number of drilling, logging, well testing and the latest 3D seismic data. The pre-Jurassic paleogeomorphological units in the study area can be categorized into five groups, including ancient channel valley, ancient terrace, slope, interchannel mound, and low residual mound facies. The oil reservoirs are mainly distributed in highland areas such as slope belts and low residual mounds, the main areas where hydrocarbons accumulate. In addition, the branch ditches in the study area are developed to the southeast and merged into the Ganshan ancient channel. The sandstone in the confluence area of the branch gully is well sorted and connected under frequent scouring by the river. The sand bodies of good connectivity therefore form a drainage system for long-term hydrocarbon migration. The formation of the Jurassic reservoirs in the study area is mainly affected by sedimentary facies, deposition location, and hydrocarbon migration pathway (or fault) of pre-Jurassic paleomorphology. The results from this study can be useful for the prediction of the Jurassic sweet spots in the western margin of the Ordos Basin. © 2022 Sinopec Petroleum Exploration and Production Research Institute
Number of references: 31
DOI: 10.1016/j.engeos.2021.06.007
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

243. Negative area-dependent nanoscale friction of annular graphene sheets (*Open Access*)

Accession number: 20225213288916
Authors: Zhang, Hongwei (1); Qu, Jinfeng (2); Guo, Zhongjun (1); Huang, Longlong (1); Xie, Qingxia (1)
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Corresponding author: Zhang, Hongwei(zhanghongwei@xpu.edu.cn)
Source title: AIP Advances
Abbreviated source title: AIP Adv.
Volume: 12
Issue: 11
Issue date: November 1, 2022
Publication year: 2022
Article number: 115312
Language: English
E-ISSN: 21583226
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: The influence mechanisms of the contact area on the sliding friction behavior are still not entirely clear, and determining the intrinsic correlation between friction and the contact area at the nanoscale remains a challenge. In this study, the area-dependent friction behavior is investigated based on the model of an annular graphene flake sliding on a supported graphene substrate via molecular dynamics simulations. The results demonstrate that the friction force decreases with the increasing flake area, i.e., the nanoscale friction is inversely correlated with the contact area. This contradicts the everyday experience, wherein an increase in the contact area leads to an increase in friction. The more pronounced edge effects and elastic deformation are considered the main reasons for the larger friction force of a smaller flake on the substrate. The study results are useful for comprehensively understanding the friction behavior of two-dimensional materials and extending their application fields. © 2022 Author(s).
Number of references: 58

Main heading: Friction
Controlled terms: Graphene - Molecular dynamics - Nanotechnology
Uncontrolled terms: Contact areas - Dynamics simulation - Friction behaviour - Friction force - Graphene sheets - Graphene substrates - Influence mechanism - Nano scale - Nanoscale friction - Sliding friction
Classification code: 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally
DOI: 10.1063/5.0117212
Funding Details: Number: 202110709057, Acronym: -, Sponsor: -; Number: BS201821, Acronym: XPU, Sponsor: Xi'an Polytechnic University; Number: 2022JQ-057, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the Natural Science Basic Research Program in Shaanxi Province of China (Grant No. 2022JQ-057), the Ph.D. Research Start-up Fund of Xi'an Polytechnic University (Grant No. BS201821), and the National Undergraduate Innovation and Entrepreneurship Training Program (Grant No. 202110709057).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

244. Application of Machine Learning in the Reliability Evaluation of Pipelines for the External Anticorrosion Coating (*Open Access*)

Accession number: 20221611981506
Authors: Zhao, Zhifeng (1); Chen, Mingyuan (2); Fan, Heng (1); Zhang, Nailu (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Dept of Mechanical, Industrial and Aerospace Engineering, Concordia University, Montreal; H3G2W1, Canada
Corresponding author: Zhao, Zhifeng(zfzhao@xsyu.edu.cn)
Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4759514
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The purpose of this research is to enhance the analysis of the reliability status for external anticorrosive coatings. With the limitation and insufficiency of the static evaluation method, we study and construct an evaluation method of dynamic reliability for the anticorrosive layer, integrating the trend analysis of the Markov chain and the set pair theory. This method is implemented by the machine learning software of PyCharm community edition, based on Python language. The algorithm utilizes the connection degree in the set pair theory to determine the risk levels of the anticorrosive coating systems. According to the characteristics of the dynamic change of the anticorrosive layer with time, we built the mathematical evaluation model by combining it with the nonaftereffect property of the Markov chain. Therefore, we can make a dynamic and useful analysis for the reliability grade of the anticorrosive coating and assess the effectiveness grade of the changed reliability for the anticorrosive coating after some time. This method can effectively evaluate the reliability level of the anticorrosion coating through the example of big data of detection points. Under national standards, we provide the theoretical basis for pipeline maintenance within detection cycle requirements. © 2022 Zhifeng Zhao et al.
Number of references: 24
Main heading: Corrosion resistant coatings
Controlled terms: Pipelines - Reliability theory - Reliability analysis - Computer software - Machine learning - Pipeline corrosion
Uncontrolled terms: Anti-corrosion coating - Anti-corrosive - Anti-corrosive coatings - Dynamic reliability - Evaluation methods - Machine learning software - Machine-learning - Reliability Evaluation - Static evaluation - Trend analysis
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 922.2 Mathematical Statistics
DOI: 10.1155/2022/4759514
Compendex references: YES

245. Coupling control of tectonic evolution and fractures on the Upper Paleozoic gas reservoirs in the northeastern margin of the Ordos Basin

Accession number: 20224313007719
Title of translation:
Authors: Yin, Shuai (1, 2); Sun, Xiaoguang (3); Wu, Zhonghu (4); Wang, Yingbin (5); Zhao, Jingzhou (1); Sun, Weihao (1); Yan, Haolin (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an; 710065, China; (3) Petrochina Coalbed Methane Company Limited Xinzhou Company, Taiyuan; 030000, China; (4) College of Civil Engineering, Guizhou University, Guiyang; 550025, China; (5) Unconventional Oil & Gas Branch, CNOOC Co. Ltd., Beijing; 100016, China
Corresponding author: Wu, Zhonghu(wuzhonghugzu@163.com)
Source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)/Journal of Central South University (Science and Technology)
Abbreviated source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)
Volume: 53
Issue: 9
Issue date: September 2022
Publication year: 2022
Pages: 3724-3737
Language: Chinese
ISSN: 16727207
CODEN: ZDXZAC
Document type: Journal article (JA)
Publisher: Central South University of Technology
Abstract: In order to elucidate the controlling effect of tectonic evolution and fractures on natural gas in the Upper Paleozoic in the northeastern margin of the Ordos Basin, taking the Linxing Block in this area as an example, the control effects of ancient and modern structures, magmatic rocks and fractures on hydrocarbon accumulation were studied using abundant cores, tests, logging, seismic and productivity data. The results show that the Upper Paleozoic sediment in the study area is rapidly deposited during the Triassic, and stratigraphic uplift begins to occur in the early Cretaceous. The uplift time of the Zijinshan Pluton is in the middle of the Early Cretaceous, and its uplift time is consistent with the sharp thinning of the North China plate and the asthenosphere intrusion into the surface. Affected by the uplift of the Zijinshan Pluton, the Upper Paleozoic strata have been bent and shortened longitudinally. After that, the study area is in a weakly tensile environment, and the structural appearance is basically finalized. Ancient structures and current low-amplitude structures are beneficial to the formation of gas reservoirs, while magmatic intrusion and fracture factors have both positive and negative effects. At the end of the Late Jurassic, the high part of the ancient structure is a favorable place for gas accumulation, and the current structure has a certain regulating effect on the distribution of gas. Large-scale upwelling of magma in the Zijinshan Pluton area and extremely developed fractures are not conducive to reservoir formation, while the small-scale magma in the gentle structure area plays a role in hydrocarbon drainage, and moderately developed fractures are beneficial to hydrocarbon accumulation and preservation. On the whole, the controlling effects of structures and fractures on the Upper Paleozoic gas reservoirs are mainly manifested as "paleo-structure-controlled belts, present-day structures-controlled traps, small-scale magmatic rock bodies and faults controlling migration, and fractures controlling hydrocarbon accumulation". © 2022 Central South University of Technology. All rights reserved.
Number of references: 27
Main heading: Gases
Controlled terms: Hydrocarbons - Metamorphic rocks - Natural fractures - Petroleum reservoir engineering - Petroleum reservoirs - Stratigraphy - Tectonics
Uncontrolled terms: Amplitude structure - Brittle mineral - Intrusive rock mass - Intrusive rocks - Low-amplitude - Low-amplitude structure - Ordos Basin - Rock-mass - Tectonic evolution - Upper Paleozoic
Classification code: 421 Strength of Building Materials; Mechanical Properties - 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
DOI: 10.11817/j.issn.1672-7207.2022.09.033

Funding Details: Number: S2020107051 12, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation; Number: -, Acronym: -, Sponsor: National College Students Innovation and Entrepreneurship Training Program;
Funding text: 2022-01-14 2022-03-14 (Foundation item) (FYJFWQTQT -17-086) (S2020107051 12) (Project(FYJFWQTQT -17-086) supported by the CNOOC Unconventional Oil and Gas Branch; Project (S2020107051 12)supported by the Innovation and Entrepreneurship T raining Program for Colle ge Students) E-mailwuzhonghugzu@163.com(Project(FYJFWQTQT-17-086) supported by the CNOOC Unconventional Oil and Gas Branch; Project (S202010705112) supported by the Innovation and Entrepreneurship Training Program for College Students)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

246. Circumferential Heat Transfer Analysis of Sinusoidal Microchannel Heat Sink on Power Module

Accession number: 20222212179533
Title of translation:
Authors: Gao, Zhigang (1); Zheng, Dawen (1); Shang, Xiaolong (1); Wang, Tianhu (1); Bai, Junhua (2); Li, Peng (1)
Author affiliation: (1) Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Kung Cheng Je Wu Li Hsueh Pao/Journal of Engineering Thermophysics
Abbreviated source title: Kung Cheng Je Wu Li Hsueh Pao
Volume: 43
Issue: 5
Issue date: May 2022
Publication year: 2022
Pages: 1267-1275
Language: Chinese
ISSN: 0253231X
CODEN: KCJPDF
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Aiming at the heat dissipation requirement of high-power electrical servo system on flight vehicles, the heat sink with sinusoidal microchannel of power module is designed in this paper, and the deionized water is implemented as the coolant. After establishing the numerical model of heat sink, the investigation of circumferential non-uniform heat transfer characteristic and thermal performance in sinusoidal microchannel heat sink is carried out. The influence factors such as heating power, inlet Reynolds number and geometric parameters on thermal performance of the sinusoidal microchannel heat sink are explored. The simulation results indicate that the non-uniform circumferential distribution of inner wall temperature and local heat flux is exhibited, the maximum temperature and local heat flux appear at the bottom observation line of the center region close to the heating substrate. The inner wall temperature and heat flux fluctuate periodically following with the geometric structure of sinusoidal microchannel, and remarkable oscillation of the local heat transfer coefficient occurs simultaneously, meanwhile the maximum value locates at the center point of wavy channel. The lower heating power corresponds with the better temperature uniformity, and the Nu and the required pumping power are constant at various heat flux. With the enlargement of inlet velocity, the evaluation parameters, namely temperature uniformity of heat sink, thermal resistance and Nusselt number are all improved. In addition, both the amplitude and wavelength of sinusoidal channel play an important role on the overall thermal performance of heat sink. © 2022, Science Press. All right reserved.
Number of references: 34
Main heading: Heat sinks
Controlled terms: Deionized water - Electric power systems - Heat flux - Heat resistance - Heat transfer - Microchannels - Reynolds number - Servomechanisms
Uncontrolled terms: Circumferential heat transfer - Heating power - High power - High-power electrical servo system - Micro channel heat sinks - Non-uniform - Power module - Servo-systems - Sinusoidal channels - Thermal Performance
Classification code: 445.1 Water Treatment Techniques - 616.1 Heat Exchange Equipment and Components - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 705 Electric Generators and Motors - 706.1 Electric Power Systems - 732.1 Control Equipment
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

247. User Dynamic Preference Construction Method Based on Behavior Sequence (*Open Access*)

Accession number: 20223212532253
Authors: Luo, Mingshi (1); Zhang, Xiaoli (2); Li, Jiao (1); Duan, Peipei (1); Lu, Shengnan (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shaanxi, Xi'an, China; (2) College of Communication and Information Engineering, Xi'an University of Science and Technology, Shaanxi, Xi'an, China
Corresponding author: Luo, Mingshi(luomsh@xsyu.edu.cn)
Source title: Scientific Programming
Abbreviated source title: Sci. Program
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 6101045
Language: English
ISSN: 10589244
CODEN: SCIPEV
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: People's needs are constantly changing, and the performance of traditional recommendation algorithms is no longer enough to meet the demand. Considering that users' preferences change with time, the users' behavior sequence hides the evolution and change law of users' preferences, so mining the dependence of the users' behavior sequence is extremely important to predict users' dynamic preferences. From the perspective of constructing users' dynamic preferences, this paper proposes a users' dynamic preference model based on users' behavior sequences. Firstly, the user's interest model is divided into short-term and long-term interest models. The short-term interest reflects the user's current preference, and the long-term interest refers to the user's interest from all his historical behaviors, representing the user's consistent and stable preference. Users' dynamic preference is obtained by integrating short-term interest and long-term interest, which solves the problem that the user's preference cannot reflect the change in the user's interest in real-time. We use the public Amazon review dataset to test the model we propose in the paper. Our model achieves the best performance, with a maximum performance improvement of 15.21% compared with the basic model (BPR, NCF) and 2.04% compared with the sequence model (GRU4REC, Caser, etc.), which proves that the user's dynamic preference model can effectively predict the user's dynamic preference. Users' dynamic preferences are helpful in predicting users' real-time preferences, especially in the field of recommendation. © 2022 Mingshi Luo et al.
Number of references: 28
Main heading: Statistical tests
Controlled terms: Behavioral research - Forecasting
Uncontrolled terms: Behavior sequences - Long-term interests - Performance - Preference models - Real- time - Short-term interests - User behaviors - User dynamics - User's preferences - Users' interests
Classification code: 461.4 Ergonomics and Human Factors Engineering - 922.2 Mathematical Statistics - 971 Social Sciences
Numerical data indexing: Percentage 1.521E+01%, Percentage 2.04E+00%
DOI: 10.1155/2022/6101045
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

248. Game analysis on the choice of emission trading among industrial enterprises driven by data

Accession number: 20214611155431
Authors: Hong, Zitao (1); Peng, Zhen (2); Zhang, Liumei (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shaanxi; 710065, China; (2) Department of Information Management, Beijing Institute of Petrochemical Technology, Beijing; 102617, China
Corresponding author: Peng, Zhen(zhen_peng1981@163.com)

Source title: Energy
Abbreviated source title: Energy
Volume: 239
Issue date: January 15, 2022
Publication year: 2022
Article number: 122447
Language: English
ISSN: 03605442
CODEN: ENEYDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The construction and promotion of emission trading information platform makes it possible for enterprises to collect and use emission rights and other data. How to conduct game analysis for industrial enterprises' emission trading under data driven has become an effective basis and inevitable trend to assist enterprises to achieve emission reduction and optimal decision-making. However, existing game methods are not used for comprehensive optimal decision for enterprises based on these data. Therefore, this paper integrates dynamic game and data to effectively solve optimal choice in the process of emission trading among industrial enterprises. The bargaining dynamic game model and forward reasoning method are proposed to realize the game analysis of emission trading among enterprises in the secondary market based on the data mining or evaluation of pollutant emissions, market price and marginal revenue of emission rights and initial emission rights by Support Vector Regression (SVR), Linear Regression (LR) and Analytical Hierarchy Process (AHP). Taking six industrial enterprises in Tianjin as an example, this paper analyzes the optimal trading price, trading volume and object of emission trading among different enterprises under different loss factors. © 2021 Elsevier Ltd
Number of references: 29
Main heading: Data mining
Controlled terms: Emission control - Game theory - Regression analysis - Commerce - Decision making
Uncontrolled terms: Bargaining game - Dynamic bargaining game - Dynamic game - Emission rights - Emissions Trading - Forward reasoning - Game analysis - Industrial enterprise - Support vector regression - Support vector regressions
Classification code: 451.2 Air Pollution Control - 723.2 Data Processing and Image Processing - 912.2 Management - 922.1 Probability Theory - 922.2 Mathematical Statistics
DOI: 10.1016/j.energy.2021.122447
Funding Details: Number: 71601022, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KZ202110017025, Acronym: -, Sponsor: Beijing Municipal Commission of Education;
Funding text: This work was supported by the Beijing Municipal Education Commission (No. KZ202110017025) and the National Natural Science Foundation (No. 71601022).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

249. Stator Flux Sliding Mode Observer of Permanent Magnet Synchronous Motor Based on Effective Flux

Accession number: 20223812766833
Authors: Huang, Shengjie (1); Zhang, Qizhi (1, 2)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) Shaanxi Provincial Key Lab of Oil and Gas Well Measurement and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 343-347
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)

Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to improve the stator flux observation performance of permanent magnet synchronous motor (PMSM) with DIRECT Torque Control (DTC), a stator flux sliding mode observer is proposed based on the concept of effective flux. The stator current and effective flux in the stator stationary coordinate system are taken as state variables to construct the corresponding sliding mode observer. The stator flux is calculated according to the observed effective flux. Experimental results show that the proposed observer can obtain more accurate stator flux observations than the open-loop observer. The proposed observer has strong robust suppression ability to the variation of motor inductance. © 2022 IEEE.
Number of references: 13
Main heading: Torque control
Controlled terms: Permanent magnets - Sliding mode control - Stators - Synchronous motors
Uncontrolled terms: Direct torque control - Flux observation - Flux observers - Performance - Permanent Magnet Synchronous Motor - Sliding mode variable structure control - Sliding-mode observer - Stator currents - Stator flux - Stator flux observer
Classification code: 704.1 Electric Components - 705.1 Electric Machinery, General - 705.3.1 AC Motors - 731.1 Control Systems - 731.3 Specific Variables Control
DOI: 10.1109/ICMSP55950.2022.9859031
Funding Details: Number: YCS22113138, Acronym: -, Sponsor: -;
Funding text: This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113138)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

250. CERTAIN PROPERTIES OF THE ENHANCED POWER GRAPH ASSOCIATED WITH A FINITE GROUP

Accession number: 20220294113
Authors: Parveen (1); Kumar, Jitender (1); Singh, Siddharth (1); Ma, Xuanlong (2)
Author affiliation: (1) Department of Mathematics, Birla Institute of Technology and Science Pilani, Pilani; 333031, India; (2) School of Science, Xi'an Shiyou University, Xi'An; 710065, China
Corresponding author: Kumar, Jitender(jitenderarora09@gmail.com)
Source title: arXiv
Abbreviated source title: arXiv
Issue date: July 11, 2022
Publication year: 2022
Language: English
E-ISSN: 23318422
Document type: Preprint (PP)
Publisher: arXiv
Abstract: The enhanced power graph of a finite group G, denoted by PE(G), is the simple undirected graph whose vertex set is G and two distinct vertices x, y are adjacent if x, y $\in$ hzi for some z $\in$ G. In this article, we determine all finite groups such that the minimum degree and the vertex connectivity of PE(G) are equal. Also, we classify all groups whose (proper) enhanced power graphs are strongly regular. Further, the vertex connectivity of the enhanced power graphs associated to some nilpotent groups is obtained. Finally, we obtain a lower bound and an upper bound for the Wiener index of PE(G), where G is a nilpotent group. The finite nilpotent groups attaining these bounds are also characterized.MSC Codes 05C25 Copyright © 2022, The Authors. All rights reserved.
Number of references: 27
Main heading: Undirected graphs
Controlled terms: Graph algorithms - Machine learning - Molecular structure
Uncontrolled terms: Enhanced power graph - Finite groups - Minimum degree - Nilpotent groups - Power graphs - Property - Simple++ - Undirected graph - Vertex connectivity - Wiener index

Classification code: 723.4 Artificial Intelligence - 801.4 Physical Chemistry - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931.3 Atomic and Molecular Physics
DOI: 10.48550/arXiv.2207.05075
Compendex references: YES
Preprint ID: 2207.05075v1
Preprint source website: https://arxiv.org
Preprint ID type: ARXIV
Database: Compendex
Data Provider: Engineering Village

251. Mechanical Modeling of Fracturing Proppant in Horizontal Well and Study on Mechanism of Reflowing Sand

Accession number: 20223612681375
Authors: Xie, Yapeng (1); Li, Dan (1); Lai, Yan (1); Song, Yuanjuan (1); Zhang, Jianbing (2); Ju, Luyan (2); Wang, Haiying (2)
Author affiliation: (1) Gas Production Plant 2 of Petro China Changqing Oilfield Company, Yulin; 719054, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding authors: Xie, Yapeng(715171641@qq.com); Li, Dan(lidan9_cq@petrochina.com); Lai, Yan(lyan3_cq@petrochina.com); Song, Yuanjuan(syjuan1_cq@petrochina.com); Zhang, Jianbing(zhjb@xsyu.edu.cn); Ju, Luyan(yan885858@163.com); Wang, Haiying(3210208992@qq.com)
Source title: MEMAT 2022 - 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology
Abbreviated source title: MEMAT - Int. Conf. Mech. Eng., Intell. Manuf. Autom. Technol.
Part number: 1 of 1
Issue title: MEMAT 2022 - 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology
Issue date: 2022
Publication year: 2022
Pages: 928-932
Language: English
ISBN-13: 9783800757619
Document type: Conference article (CA)
Conference name: 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology, MEMAT 2022
Conference date: January 7, 2022 - January 9, 2022
Conference location: Guilin, Virtual, China
Conference code: 181662
Publisher: VDE VERLAG GMBH
Abstract: Horizontal well staged fracturing technology has become the main technologies of exploiting low permeability oil and gas reservoirs since its emergence. However, the fracturing effect cannot be correctly evaluated due to the fracturing backflow of sand, which seriously restricts the development of technical advantages. In this paper, the particle dynamics theory and fluid mechanics theory are applied to the establishment of sand production prediction model for horizontal wells according to the different stress state of horizontal wells and diameter proppant particles before and after fracture closure. Considering the factors such as fracturing fluid loss and fluid physical properties, the mechanical model of horizontal well fracturing proppant and the mechanism of sand body flowback are emphatically analyzed. The critical flow rate prediction formula of proppant backflow in horizontal well fracturing fluid is derived, and the sand production analysis and prediction software is compiled. The accuracy of the model is verified by the actual sand production monitoring data of gas wells in the second gas production plant of Changqing Oilfield. The results confirm that the calculation results of the mechanical modeling and the flowback critical flow model in this paper are close to the actual sand production field data. The calculation model in this paper can provide a reference for formulating a reasonable staged fracturing fluid backflow system in horizontal wells to effectively control proppant backflow. © VDE VERLAG GMBH Berlin Offenbach.
Number of references: 15
Main heading: Forecasting
Controlled terms: Fluid mechanics - Fracturing fluids - Horizontal wells - Low permeability reservoirs - Petroleum reservoir engineering - Plant shutdowns - Proppants - Sand

Uncontrolled terms: Back flow - Flowback - Horizontal well fracturing - Low permeability oil - Mechanical modeling - Oil and gas reservoir - Particle dynamics - Production prediction - Proppant backflow - Sand production
Classification code: 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931.1 Mechanics
Funding Details: Number: 51905426,51974251, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019D-5007-0305, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: 2020KW-015, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: The authors are grateful for the financial support from the National Natural Science Foundation of China (Nos. 51974251 and 51905426), Key Research and Development Program of Shaanxi (No. 2020KW-015) and Petro China Innovation Foundation(2019D-5007-0305).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

252. Distribution of plastic zone around horizontal wells in hydrate reservoir in non-uniform in-situ stress field

Accession number: 20221511957742
Title of translation:
Authors: Zhao, Kai (1); Li, Runsen (1); Feng, Yongcun (2); Gao, Wei (1); Zhang, Zhenwei (1); Dou, Liangbin (1); Bi, Gang (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Petroleum Engineering, China University of Petroleum(Beijing), Beijing; 102249, China
Corresponding author: Zhao, Kai(zkaiup@126.com)
Source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)/Journal of Central South University (Science and Technology)
Abbreviated source title: Zhongnan Daxue Xuebao (Ziran Kexue Ban)
Volume: 53
Issue: 3
Issue date: March 26, 2022
Publication year: 2022
Pages: 952-962
Language: Chinese
ISSN: 16727207
CODEN: ZDXZAC
Document type: Journal article (JA)
Publisher: Central South University of Technology
Abstract: To study the distribution of plastic zone around horizontal wells in hydrate reservoir under non-uniform in-situ stress field, firstly, considering the influence of temperature change, seepage and hydrate decomposition, the plastic zone distribution analysis model was established combined with the rock plastic yield criterion. Secondly, the distribution of plastic zone around the well was solved. Finally, the influence of geological factors and engineering factors on the shape and area of the plastic zone around the well was analyzed. The results show that the plastic zone around the well is more complex in non-uniform in-situ stress field, and oval, butterfly and X-shaped shapes may appear. The shape of the plastic zone around the well is mainly controlled by the inhomogeneity of in-situ stress and the orientation of horizontal hole. When the stress difference on the well section is large, the plastic zone is mainly butterfly and X-shaped. When the stress difference is small, the plastic zone is mainly oval. The plastic zone area is mainly affected by ground stress inhomogeneity, bottom hole temperature and pressure, borehole azimuth, hydrate decomposition zone area and rock strength after decomposition. When the hydrate decomposition zone is small, the main factor affecting the plastic zone area is the weakening degree of rock strength in the decomposition zone and the plastic zone area increases with the increase of hydrate decomposition zone area. When the hydrate decomposition zone is large, the main factor affecting the plastic zone area is the borehole stress and the plastic zone area will not change with the change of the hydrate decomposition zone area.
Number of references: 29
Main heading: Horizontal wells
Controlled terms: Hydration - Stresses - Boreholes
Uncontrolled terms: Hydrate - Hydrate decomposition - In-situ stress field - Inhomogeneities - Non-uniform in-situ stress - Plastic zone distribution - Plastic zones - Rock strength - Stress difference - Temperature changes

Classification code: 512.1.1 Oil Fields
DOI: 10.11817/j.issn.1672-7207.2022.03.017
Funding Details: Number: 52074221, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 52074224, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 52104005, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Projects(52074224, 52074221, 52104005)supported by the National Natural Science Foundation of China; Project(2021JM-407) supported by the Natural Science Basic Research Plan in Shaanxi Province of China; Project(YCS20213139) supported by the Graduate Student Innovation and Practical Training Program of Xi'an Shiyou University
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

253. Synergistic Corrosion Inhibition Effect of Oleic Acid Imidazoline and Oleic Acid in Saturated CO2 Salt Solution

Accession number: 20230713579301
Authors: Liu, Chang (1); Chen, Xu (1); Yang, Jiang (1, 2); Wang, Xin-Tong (3)
Author affiliation: (1) Liaoning Petrochemical University, Liaoning, Fushun; 113001, China; (2) Xi'an Shiyou University, Xi'an; 710065, China; (3) China Petroleum University (East China), Shandong, Qingdao; 266000, China
Corresponding author: Chen, Xu
Source title: Surface Technology
Abbreviated source title: Surf. Technol.
Volume: 51
Issue: 6
Issue date: 2022
Publication year: 2022
Pages: 291-299
Language: Chinese
E-ISSN: 10013660
Document type: Journal article (JA)
Publisher: Chongqing Wujiu Periodicals Press
Abstract: The synergistic effect of imidazoline and oleic acid corrosion inhibitor on corrosion inhibition of N80 steel in formation water containing CO2 saturated oilfield was studied by weight loss method and electrochemical technology. The corrosion morphology was observed by SEM. By measuring the contact Angle of the metal surface film, the hydrophobic performance of the metal surface film was evaluated, and the adsorption model was established and the adsorption curve was fitted. The corrosion inhibition mechanism of the two corrosion inhibitors was analyzed when the two inhibitors acted alone and after mixing. The results showed that when imidazoline and oleic acid were used alone, the corrosion potential could be positively moved, and the inhibition efficiency was 82.89% and 78.51%, respectively, when the addition amount was 100 mg/L. When the imidazoline: oleic acid was 2575, the inhibition efficiency was the highest. Compared with the imidazoline with the same concentration alone, the inhibition efficiency was increased by about 15% (98.07%). When a single corrosion inhibitor was added, the corrosion degree of the metal surface decreased with the increase of the concentration. After the addition of the compound corrosion inhibitor, the number and the size of pitting decreased compared with the corrosion morphology after the addition of a single inhibitor at the same concentration. The contact angle of the metal surface increased after the combination of the two inhibitors, which indicated that the hydrophobic ability of the corrosion inhibitor film formed on the metal surface was stronger than that when the two inhibitors were used alone. The Gibbs free energy #G0 imidazoline and oleic acid were calculated as 48.578 kJ/mol and 48.319 kJ/mol, respectively. There is a good synergistic effect between imidazoline and oleic acid. A single imidazoline or oleic acid corrosion inhibitor acted on the metal surface through chemical adsorption. The corrosion inhibition mechanism after the combination of imidazoline and oleic acid could be attributed to the change of the structure of the mixed film which made the corrosion inhibitor film denser, thus achieving a better corrosion inhibition effect. © 2022, Chongqing Wujiu Periodicals Press. All rights reserved.
Number of references: 36
Main heading: Corrosion inhibitors
Controlled terms: Adsorption - Carbon dioxide - Contact angle - Electrochemical corrosion - Free energy - Gibbs free energy - Hydrophobicity - Morphology - Oleic acid - Steel corrosion
Uncontrolled terms: Acid corrosion - CO 2 corrosion - Corrosion inhibition - Corrosion morphology - Imidazolines - Inhibition effect - Inhibition efficiency - Metal surfaces - Synergistic effect - Synergy

Classification code: 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 641.1 Thermodynamics - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Energy 4.8319E+04J, Energy 4.8578E+04J, Mass density 1.00E-01kg/m3, Percentage 1.50E+01%, Percentage 7.851E+01%, Percentage 8.289E+01%, Percentage 9.807E+01%
DOI: 10.16490/j.cnki.issn.1001-3660.2022.06.027
Funding Details: Number: -, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China; Number: LJKZ0416, Acronym: -, Sponsor: Department of Education of Liaoning Province;
Funding text: 2021–05–172021–10–08 Received2021-05-17Revised2021-10-08 ""LJKZ0416? Fund"Chunhui" International Cooperation Project of the Ministry of Education; Surface Project of Education Department of Liaoning Province of China (LJKZ0416) 1997— BiographyLIU Chang (1997-), Female, Postgraduate, Research focus: development and application of corrosion inhibitor. 1974— Corresponding authorCHEN Xu (1974-), Female, Doctor, Professor, Research focus: corrosion and protection of metal materials. 1964— Corresponding authorYANG Jiang (1964-), Male, Doctor, Professor, Research focus: oilfield chemicals. , , , . CO2 [J]. , 2022, 51(6): 291-299. LIU Chang, CHEN Xu, YANG Jiang, et al. Synergistic Corrosion Inhibition Effect of Oleic Acid Imidazoline and Oleic Acid in Saturated CO2 Salt Solution[J]. Surface Technology, 2022, 51(6): 291-299.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

254. Comparative Analysis of Mineral Insulated Cable Heating Schemes in Ultra-deep Heavy Oil Wells

Accession number: 20231714022956
Authors: Zhang, Hong Wei (1); Hu, Jin Tong (1); Shu, Chang (1); Yang, Tian Cheng (1); Cao, Yin Ping (2); Yu, Yang (2)
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Corresponding author: Zhang, Hong Wei
Source title: 2022 2nd International Conference on Electrical Engineering and Control Science, IC2ECS 2022
Abbreviated source title: Int. Conf. Electr. Eng. Control Sci., IC2ECS
Part number: 1 of 1
Issue title: 2022 2nd International Conference on Electrical Engineering and Control Science, IC2ECS 2022
Issue date: 2022
Publication year: 2022
Pages: 1106-1109
Language: English
ISBN-13: 9798350399165
Document type: Conference article (CA)
Conference name: 2nd International Conference on Electrical Engineering and Control Science, IC2ECS 2022
Conference date: December 16, 2022 - December 18, 2022
Conference location: Virtual, Online, China
Conference code: 187831
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Heavy oil is very sensitive to the temperature. When the temperature in the well decreases, the viscosity of the heavy oil will increase exponentially, and even solidify, reducing the exploitation efficiency. In order to improve the exploitation efficiency of ultra-deep heavy oil well, the mathematical model of wellbore temperature distribution is established based on the heat transfer theory of heating wellbore and energy conservation principle. And the influence of "bottom hole heating" and "tubing combined heating" on wellbore temperature distribution is compared and analyzed. The results show that when the bottom hole of the mineral insulated cable is heated, the large amount of heat is lost from the formation. And it is difficult to transfer to the wellhead, resulting in the large viscosity of the heavy oil at the wellhead, and the heating viscosity reduction effect is not obvious. When the combination of the mineral insulated cable tubing is heated, the temperature of the heavy oil is above the inflection point temperature, and the viscosity of the heating section is significantly reduced, which can achieve a good effect of heavy oil exploitation. © 2022 IEEE.
Number of references: 11
Main heading: Crude oil

Controlled terms: Boreholes - Heavy oil production - Minerals - Oil field equipment - Temperature distribution - Tubing - Viscosity - Wellheads
Uncontrolled terms: Bottomhole - Comparative analyzes - Electrical heating - Energy conservation principle - Heat transfer theory - Heating schemes - Mineral insulated cables - Ultra deeps - Wellbore - Wellbore temperature
Classification code: 482.2 Minerals - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1109/IC2ECS57645.2022.10088151
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

255. Design and Implementation of a Frequency Converter Power Supply

Accession number: 20223812766873
Authors: Liu, Hao (1); Zhang, Qizhi (1, 2)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) Shaanxi Provincial Key Lab of Oil and Gas Well Measurement and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 668-672
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to realize the miniaturization, high efficiency and low cost of inverter power supply, this paper introduces the demand characteristics and working principle of inverter power supply, deduces its small signal model in detail, and analyzes the key parameters and design process of power conversion circuit, PWM control circuit and feedback detection circuit. PSIM software was used to build a circuit simulation model, and the hardware closed-loop automatic control of inverter power supply was studied. The high-precision and stable output of DC 24V/1A, 12V/1A and 5V/3A was realized. The simulation results prove the feasibility and correctness of the design. © 2022 IEEE.
Number of references: 11
Main heading: Electric inverters
Controlled terms: Automation - Circuit simulation - Computer software - Costs - Design
Uncontrolled terms: Closed-loop - Design and implementations - Flyback - Flyback topology - Hardware closed loop - Higher efficiency - Inverter power supply - Miniaturisation - PID - Power supply
Classification code: 703.1.1 Electric Network Analysis - 723 Computer Software, Data Handling and Applications - 731 Automatic Control Principles and Applications - 911 Cost and Value Engineering; Industrial Economics
Numerical data indexing: Electric current 1.00E00A, Electric current 3.00E+00A, Voltage 1.20E+01V, Voltage 2.40E+01V, Voltage 5.00E+00V
DOI: 10.1109/ICMSP55950.2022.9858953
Funding Details: Number: YCS22113112, Acronym: -, Sponsor: -;
Funding text: This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113112)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

256. Heat Transfer Investigation of Supercritical Methane in Regenerative Cooling Channel of High-Power Servo Motor under Scale Effect

Accession number: 20222012106586
Title of translation:
Authors: Gao, Zhi-Gang (1); Bai, Jun-Hua (2); Wang, Tian-Hu (1); Wang, Chao-Ran (1); Li, Peng (1)
Author affiliation: (1) Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Gao, Zhi-Gang
Source title: Tuijin Jishu/Journal of Propulsion Technology
Abbreviated source title: Tuijin Jishu
Volume: 43
Issue: 5
Issue date: Mary 2022
Publication year: 2022
Pages: 178-184
Language: Chinese
ISSN: 10014055
CODEN: TUJIEG
Document type: Journal article (JA)
Publisher: Journal of Propulsion Technology
Abstract: The numerical model of supercritical methane in regenerative cooling channel of high-power servo motor in flight vehicle actuator is built for the problem of heat dissipation, the thermal performance and heat transfer mechanism of supercritical methane in helically coiled tube are investigated, and the scale effect on heat transfer is explored by evaluating the domination of gravitational buoyancy force and centrifugal buoyancy force. The simulation results reveal that both the two buoyancy forces are affected by the thermophysical properties of supercritical methane significantly. Under the constant thermal mass ratio, the gap of bulk temperature is not obvious, while the dramatic difference exists between the inner wall temperature, and the superiority of small-scale tube on heat transfer is revealed. The important role of thermophysical properties contributed to the gravitational buoyancy force on heat transfer is illustrated, while the effect of centrifugal buoyancy force is not dramatical. Meanwhile, both the two buoyancy forces affect the heat transfer of supercritical methane remarkably under large scale tube. Moreover, the flow acceleration is obvious after the large specific heat region under small scale tube. © 2022, Editorial Department of Journal of Propulsion Technology. All right reserved.
Number of references: 17
Main heading: Methane
Controlled terms: Buoyancy - Cooling - Specific heat - Tubes (components)
Uncontrolled terms: Buoyancy forces - Heat-transfer characteristics - High power - High-power servo motor - Regenerative cooling - Regenerative cooling channel - Scale effects - Servo-motor - Supercritical - Supercritical methane
Classification code: 619.1 Pipe, Piping and Pipelines - 641.1 Thermodynamics - 641.2 Heat Transfer - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.13675/j.cnki.tjjs.200700
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

257. Study on Characteristics of Needle-Ring Electrode for Deep Detection of Impulse Sound Source

Accession number: 20223812766560
Authors: Zhou, Jing (1); Hui, Zhe (1); Li, Danhong (1); Zheng, Libo (1)
Author affiliation: (1) Xi'an ShiYou University, National Engineering Research Center for Oli & Gas Drilling and Completion Technology, Downhole Measurement and Control Research Department, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1

Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 599-602
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The plasma impulse sound source is developing rapidly and has been applied to many fields such as wastewater treatment and oilfield exploration, and the electrode structure is an important factor affecting the performance of the sound source. In this paper, the effect of electrode gap length on the peak intensity and spectrum of the impulse wave of a needle-ring electrode is investigated by numerical simulation to provide some reference for the design of downhole impulse sound sources. The results show that the peak impulse intensity of the impulse source can reach the order of MPa at a charging voltage of 20 kV and has a strong sound pressure amplitude of 304.96 dB from 0 to 10 KHZ. Increasing the electrode gap length will lead to an increase in the pre-breakdown time and consume more energy to heat the fluid during the pre-breakdown stage, which will reduce the peak impulse intensity. The effect of the change in the gap length on the width of the impulse wave band is small. The results of the study provide a theoretical basis for the needle-ring electrode to obtain higher impulse intensity under the condition of high frequency band. © 2022 IEEE.
Number of references: 8
Main heading: Needles
Controlled terms: Acoustic generators - Electric discharges - Electrodes - Wastewater treatment
Uncontrolled terms: Discharge in water - Electrode gap - Electrode gap length - Gap length - Impact shock intensity - Plasma impulse - Plasma impulse sound source - Pulse discharge - Pulse discharge in water - Sound source
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 701.1 Electricity: Basic Concepts and Phenomena - 752.4 Acoustic Generators
Numerical data indexing: Decibel 3.0496E+02dB, Voltage 2.00E+04V
DOI: 10.1109/ICMSP55950.2022.9859194
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

258. An Improved Slap Swarm Algorithm Incorporating Tent Chaotic Mapping and Decay Factor

Accession number: 20223812766938
Authors: Zhang, Jiawei (1, 2); Zhang, Qizhi (1, 2); Li, Lin (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) Shaanxi Provincial Key Lab of Oil and Gas Well Measurement and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022

Publication year: 2022
Pages: 1010-1014
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the defects of local stagnation and slow convergence speed of Salp Swarm Algorithm in the optimization process, an improved Salp Swarm Algorithm (ISSA) incorporating Tent chaotic mapping and decay factor is proposed. To begin, the Tent chaotic mapping strategy is used to initialize the population, which allows the population to traverse the search space and improve the first stage of the algorithm's iteration speed; second, the decay factor is added to the leader position update, which expands the search range and improves the algorithm's search accuracy. The experimental results reveal that the improved algorithm's exploration ability and optimization accuracy have been greatly enhanced by a series of benchmark function simulations. © 2022 IEEE.
Number of references: 6
Main heading: Iterative methods
Controlled terms: Mapping
Uncontrolled terms: Benchmark functions - Chaotic mapping - Convergence speed - Decay factor - Mapping strategy - Salp swarms - Slap swarm algoritnm - Slow convergences - Swarm algorithms - Tent chaotic mapping
Classification code: 405.3 Surveying - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859159
Funding Details: Number: YCS22113140, Acronym: -, Sponsor: -;
Funding text: This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113140)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

259. Research on Torque Current Error Control of PMSM Based on Model Predictive Control (*Open Access*)

Accession number: 20230113331583
Authors: Yan, Hongliang (1); Zhang, Kui (1); Xu, Yuhao (2)
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Corresponding author: Zhang, Kui(2903686327@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2404
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012008
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Electrical Engineering and Computer Technology, ICEECT 2022
Conference date: September 23, 2022 - September 25, 2022
Conference location: Suzhou, China
Conference code: 185170
Publisher: Institute of Physics

Abstract: To solve the problem that the torque pulsation is serious due to the large current error in the period when the duty cycle is calculated by the deadbeat method in the duty cycle dual-vector model predictive current control method, a vector switching method is proposed. The control objective of the proposed method is not to equate the predicted torque current with the reference value under the dead-beat idea, but to reduce the torque current control error by changing the switching time of the voltage vector and ensuring the symmetry of the positive and negative current errors. By deducing the duty cycle, the maximum current errors in a single control cycle before and after vector switching is compared and analyzed. The vector switching method is verified on the Simulink simulation platform and compared with the duty cycle double vector method. The results show that the vector switching method can effectively reduce the intra-cycle torque current tracking error and realize the optimal process control in each cycle. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Vectors
Controlled terms: Electric current control - Errors - Simulation platform - Torque
Uncontrolled terms: Current error - Dual vector - Duty-cycle - Error control - Large current - Model-predictive control - Switching methods - Torque current - Torque pulsation - Vector-modeling
Classification code: 723.5 Computer Applications - 731.3 Specific Variables Control - 921.1 Algebra - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1088/1742-6596/2404/1/012008
Funding Details: Number: 15JS084, Acronym: -, Sponsor: -;
Funding text: This paper is funded by the Shaanxi Provincial Department of Education key Laboratory Project (15JS084). Graduate Innovation and practical Ability Training Program of Xi'an Shiyou University.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

260. Broadband interconnected receiver-transmitter surface for generating dual circularly polarized dual beams (*Open Access*)

Accession number: 20220711627653
Authors: Wang, Huili (1); Yang, Pei (2); Qin, Hongwei (2); Dang, Ruirong (2)
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Corresponding author: Yang, Pei(210101@xsyu.edu.cn)
Source title: AIP Advances
Abbreviated source title: AIP Adv.
Volume: 12
Issue: 2
Issue date: February 1, 2022
Publication year: 2022
Article number: 025003
Language: English
E-ISSN: 21583226
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: We propose an interconnected receiver-transmitter surface (IRTS) for simultaneously generating left-hand circularly polarized (CP) beams and right-hand CP beams based on the Pancharatnam-Berry phase, thus realizing dual CP dual beam radiations. The IRTS is composed of upper-layer gradient patches and lower-layer periodic patches that are connected by the metal probes that cross the center tears of the middle metal ground. The lower-layer patches of the IRTS can receive linearly polarized waves and couple the energy into the upper-layer by the metal probe for obtaining dual CP dual beam radiations. In particular, the working bandwidth of the present design can also be further extended when both IRTSs with adjacent working frequency bands are superimposed on each other to form a broadband IRTS (BIRTS). Finally, we fabricate the proposed IRTS and BIRTS with a standard gain horn antenna as the feed and experimentally demonstrate the functionalities of generating dual CP dual beams. © 2022 Author(s).
Number of references: 38
Main heading: Probes
Controlled terms: Horn antennas - Circular polarization - Transmitters
Uncontrolled terms: Circularly polarized beam - Dual circularly polarized - Dual-beam - Energy - Linearly polarized - Metal probes - Pancharatnam-Berry phase - Polarized wave - Upper layer - Working frequency

Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 711 Electromagnetic Waves
DOI: 10.1063/5.0075559
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

261. A power system restoration target network frame optimization algorithm

Accession number: 20222412229893
Authors: Feng, Shuai (1); Guo, Yingna (1, 2); Sun, Rui (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an, China; (2) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'an, China
Corresponding author: Feng, Shuai(fyfs0406@qq.com)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1600-1603
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The construction of the network frame for power outage system restoration target is a key link in accelerating the restoration process and reducing losses. Aiming at the fact that the commonly used random search intelligent algorithm needs to continuously iteratively correct, adjust the adaptability function, the process is complex, and the solution efficiency is low in solving such problems, a mathematical model considering the minimum reactive power, the shortest closing time and the node weight is established. On this basis, the energy function characterizing the optimization target and various constraints is constructed, and the energy function of the Hopfield neural network is used to directly obtain the optimal restoration target frame, and the algorithm steps are given. The proposed method is verified by using the IEEE-10 generators 39 node system, and the results show that the proposed method is feasible and effective. © 2022 IEEE.
Number of references: 9
Main heading: Combinatorial optimization
Controlled terms: Functions - Hopfield neural networks - Iterative methods - Outages - Restoration
Uncontrolled terms: Energy functions - Key links - Neural-networks - Optimization algorithms - Power outage - Power system restoration - Random searches - Restoration process - System restoration - Target frame
Classification code: 706.1 Electric Power Systems - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1109/ICSP54964.2022.9778401
Funding Details: Number: YCS21213213, Acronym: -, Sponsor: -; Number: 15JS083, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by Shaanxi Provincial Department of Education Key Project (15JS083) and Postgraduate Innovation and Practical Ability Training Project of Xi'an Shiyou University (YCS21213213)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

262. Random Weighting Adaptive Estimation of Model Errors on Attitude Measurement for Rotary Steerable System (*Open Access*)

Accession number: 20223312569450

Authors: Gao, Yi (1); Li, Fei (1); Chen, Jia (1)
Author affiliation: (1) Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Gao, Yi(gy@xsyu.edu.cn)
Source title: IEEE Access
Abbreviated source title: IEEE Access
Volume: 10
Issue date: 2022
Publication year: 2022
Pages: 80794-80803
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: During drilling, a rotary steerable system (RSS) is affected by vibration, rotation, and other random noises. This paper presents a random weighting adaptive estimation of model errors on attitude measurement for RSS drilling tools. The algorithm is used to estimate the covariance matrix of the dynamic model errors and the state prediction vectors for RSS drilling tools, to reduce the effect of abnormal noises of the dynamic model on the estimation of state parameters. The random weighting estimation of observation's systematic error and covariance matrices of observation error vectors to control the effect of observation model noises anomaly on state parameter estimation, enhance the use efficiency of the latest observation information, indirectly weaken the impact of model error on state parameter vector, and improve the accuracy of attitude calculation of RSS drilling tools. Experimental results and comparison analysis demonstrate that the proposed algorithm achieves better outcomes than the Kalman filtering and Extended Kalman filtering. The maximum solution error is controlled at 0.15°, and the tool face angle error is less than 3°. It cannot only control the covariance matrix of the observation error vector and predicted residual vector, but it can also effectively resist the disturbances of kinematic model error. It also can improve the dynamic measurement accuracy of attitude parameters, and solve the problem of uncertainty in dynamic attitude measurement of RSS drilling tools. © 2013 IEEE.
Number of references: 33
Main heading: Covariance matrix
Controlled terms: Dynamic models - Heuristic algorithms - Kalman filters - Kinematics - Parameter estimation - Random errors - Systematic errors - Uncertainty analysis - Vectors
Uncontrolled terms: Covariance matrices - Dynamic measurement - Heuristics algorithm - Measurement uncertainty - Model errors - Oil - Random weighting estimation - Rotary-steerable drilling - Vibration
Classification code: 723.1 Computer Programming - 921 Mathematics - 921.1 Algebra - 922.1 Probability Theory - 931.1 Mechanics
DOI: 10.1109/ACCESS.2022.3195519
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

263. A UAV Pursuit-Evasion Strategy Based on DDPG and Imitation Learning (*Open Access*)

Accession number: 20222212164351
Authors: Fu, Xiaowei (1); Zhu, Jindong (1, 2); Wei, Zhaoying (3); Wang, Hui (1); Li, Sili (1)
Author affiliation: (1) Northwestern Polytechnical University, Xi'an; 710129, China; (2) AVIC Shenyang Aircraft Design and Research Institute, Shenyang; 110035, China; (3) Xi'An Shiyou University, Xi'an; 710065, China
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Source title: International Journal of Aerospace Engineering
Abbreviated source title: Int. J. Aerosp. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3139610
Language: English
ISSN: 16875966
E-ISSN: 16875974
Document type: Journal article (JA)
Publisher: Hindawi Limited

Abstract: The UAV pursuit-evasion strategy based on Deep Deterministic Policy Gradient (DDPG) algorithm is a current research hotspot. However, this algorithm has the defect of low efficiency in sample exploration. To solve this problem, this paper uses the imitation learning (IL) to improve the DDPG exploration strategy. A kind of quasiproportional guidance control law is designed to generate effective learning samples, which are used as the data of the initial experience pool of DDPG algorithm. The UAV pursuit-evasion strategy based on DDPG and imitation learning (IL-DDPG) is proposed, and the algorithm obtains the data from the experience pool for experience playback learning, which improves the exploration efficiency of the algorithm in the initial stage of training and avoids the problem of too many useless exploration in the training process. The simulation results show that the trained pursuit-UAV can flexibly adjust the flight speed and flight attitude to pursuit the evasion-UAV quickly. It also verifies that the improved DDPG algorithm is more effective than the basic DDPG algorithm to improve the training efficiency. © 2022 Xiaowei Fu et al.
Number of references: 28
Main heading: Unmanned aerial vehicles (UAV)
Controlled terms: Learning algorithms - Efficiency - Flight simulators
Uncontrolled terms: 'current - Deterministics - Evasion strategy - Exploration strategies - Gradient algorithm - Gradient learning - Hotspots - Imitation learning - Policy gradient - Pursuit evasion
Classification code: 652.1 Aircraft, General - 723.4.2 Machine Learning - 913.1 Production Engineering
DOI: 10.1155/2022/3139610
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

264. High-Efficiency Pso Based on Gpu Initialization and Thread Adaption

Accession number: 20220448763
Authors: Liu, Ye (1); Wu, Jia (1); Ren, Hui (1); Yang, Shuopeng (1); Zhang, Fuqiang (1); Cao, Jie (2)
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Corresponding author: Liu, Ye
Source title: SSRN
Issue date: November 30, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: Particle Swarm Optimization (PSO) is one of the most commonly used heuristic optimization methods. However, when comes to practical applications, it has been limited by the efficiency requirement for many optimization problems. In recent years, with the development of parallel computing and Graphics Processing Unit (GPU) calculating, many researchers have tried combining PSO with these computational techniques to break down the obstacle of computational efficiency. Nevertheless, it is still a challenging problem to solve and will be a long-term demand for PSO. In this research, we propose a HEPSO algorithm that focuses on the procedure optimization of PSO in GPU. It optimizes the GPU computation schedule from the following aspects: 1) Migrate the data initialization procedure from CPUs to GPUs to reduce the huge IO loss caused by repeating migration while the computing process. 2) Employ a self-adaptive thread management strategy to improve the algorithm execution efficiency. Moreover, we use four benchmark optimization functions to test our HEPSO algorithm with some detailed comparative analysis and provide a full discussion of it from experimental perspectives. The experiment results show that HEPSO takes extremely efficient improvement, especially when a large number of particles is required. The time speedup ratio between HEPSO and GPU-PSO can exceed 6 times. Meanwhile, when we evaluate the performance of HEPSO with the time cost for functions converge, HEPSO only needs 1/3 time cost of GPU-PSO in most cases. © 2022, The Authors. All rights reserved.
Number of references: 18
Main heading: Graphics processing unit
Controlled terms: Computational efficiency - Computer graphics - Computer graphics equipment - Heuristic methods - Particle swarm optimization (PSO) - Program processors
Uncontrolled terms: Graphic processing unit initialization - Optimzation - Particle swarm - Particle swarm optimization - Swarm optimization - Thread adaption - Time cost

Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 721.3 Computer Circuits - 722.2 Computer Peripheral Equipment - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 921.5 Optimization Techniques
Compendex references: YES
Preprint ID: 4289968
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

265. Effect of Degassing on Water Droplets Stability in Crude Oil Emulsion with Dissolved CO2

Accession number: 20224713142524
Title of translation: CO2
Authors: Yang, Shuang (1); Li, Chuanxian (2); Liu, Daiwei (2); Deng, Zhian (1); Yang, Fei (2); Sun, Guangyu (2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Pipeline and Civil Engineering, China University of Petroleum, Qingdao; 266580, China
Corresponding author: Yang, Shuang(375006647@qq.com)
Source title: Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)
Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
Volume: 38
Issue: 4
Issue date: July 10, 2022
Publication year: 2022
Pages: 834-845
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Editorial Office of Acta Petrolei Sinica
Abstract: Effect of degassing on water droplets stability of crude oil emulsion with dissolved CO2was investigated with using a high pressure emulsifying apparatus and emulsion stability test instrument. Various properties, including solubility of CO2in oil/water/emulsion phase, flowability and stability of crude oil with dissolved CO2, interfacial characteristics between oil and water, and interfacial pressure of water droplets, were both tested and calculated. Changes of flocculation sedimentation stability (i.e., oil separation rate) and coalescence demulsification stability (i.e., water separation rate) of crude oil emulsion with dissolved CO2at both constant and decreasing pressure conditions were analyzed based on interfacial characteristics (interfacial tension and interfacial modulus) and interfacial pressure. It was found that asphaltenes and other interfacial active substances in crude oil emulsion with dissolved CO2could migrate and adsorb at oil-water interface quickly. They could reduce interfacial tension and improve structural strength of the interfacial film. This could increase interfacial elastic modulus, and reduce interfacial expansion loss angle. Viscosity of oil phase can be reduced after CO2dissolving, and thus can help increase oil separation ratio of crude oil emulsion. CO2bubbles can be formed and further developed in water phase during degassing process. This can expand water droplet and reduce the concentration of active substances at oil-water interface. Consequently, interfacial pressure of water droplet can be reduced, and droplet coalescence stability becomes poor, and thus increase crude oil emulsion water separation ratio. © 2022 Science Press. All rights reserved.
Number of references: 25
Main heading: Carbon dioxide
Controlled terms: Coalescence - Crude oil - Degassing - Demulsification - Dissolution - Drops - Emulsification - Emulsions - High pressure effects - Stability
Uncontrolled terms: Crude oil emulsion - Droplet stability - Emulsion stability - Interface pressure - Interfacial characteristics - Interfacial pressure - Oil separation - Pressure of water - Separation rate - Water droplets
Classification code: 512.1 Petroleum Deposits - 801.3 Colloid Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds
Numerical data indexing: Size 5.08E-02m
DOI: 10.3969/j.issn.1001-8719.2022.04.010
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

266. PH Responsiveness of Microwave-Magnetic Nano-Ni Powder to the Demulsification Effect of Heavy Oil

Accession number: 20231714021704
Title of translation: -NipH
Authors: Sun, Nana (1, 2); Shen, Lisha (1); Sun, Huina (1); Su, Ruiyu (1); Qi, Hongyuan (1, 2)
Author affiliation: (1) College of Petroleum Engineering, XianShiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'An Shiyou Uniuersity, Xi'an; 710065, China
Corresponding author: Sun, Nana(bingyuxuan6666@126.com)
Source title: Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)
Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
Volume: 38
Issue: 5
Issue date: September 10, 2022
Publication year: 2022
Pages: 1230-1328
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Editorial Office of Acta Petrolei Sinica
Abstract: Using bottle test method, this paper studies the influence law of magnetic nano-Ni powder on the demulsification effect of heavy oil O/W (Oil-in-water) emulsion at different pH values with and without microwave radiation. On this basis, combined oil droplet morphology and distribution with apparent viscosity of emulsion, the pH value response behavior mechanism for the demulsification effect of microwave-magnetic nano-Ni powder is revealed. The results show that when the pH value is the same, the water separation rates of the emulsion under the action of pure magnetic nano-Ni powder and microwave-magnetic nano-Ni powder both increase first and then decrease with the increasing concentration of the magnetic nano-particles; meanwhile, magnetic nano-Ni powder and microwave have a synergistic demulsification effect, and as the pH value increases, the coupling effect of microwave and magnetic nano-Ni powder is first weakened and then enhanced, which hits the peak when the pH value is 3, and the water separation rate of the emulsion under this condition reaches up to 102. 63% in 30 min. © 2022 Science Press. All rights reserved.
Number of references: 20
Main heading: Nanoparticles
Controlled terms: Bottles - Crude oil - Demulsification - Drops - Emulsification - Emulsions - Magnetite - Morphology - Viscosity
Uncontrolled terms: Apparent viscosity - Droplet morphologies - Magnetic nano-ni powder - Microwave magnetics - Nano ni - Ni powder - Oil droplet morphology - Oil droplets - pH value - Synergistic demulsification
Classification code: 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 694.2 Packaging Materials - 761 Nanotechnology - 802.3 Chemical Operations - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics - 951 Materials Science
Numerical data indexing: Percentage 6.30E+01%, Time 1.80E+03s
DOI: 10.3969/j.issn.1001-8719.2022.05.024
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

267. Cap-Like Ellipsoid Deposition on the ZnO Nanowires for Large Increase of Fluorescence Induced by Localized Field Enhancement Effect

Accession number: 20221411876403
Authors: Chen, Haixia (1); Xu, Chao (1); Ding, Jijun (1); Fu, Haiwei (1); Jin, Yanxin (1)
Author affiliation: (1) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, College of Science, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Chen, Haixia(chenhx@xsyu.edu.cn)
Source title: Crystal Research and Technology

Abbreviated source title: Cryst Res Technol
Volume: 57
Issue: 7
Issue date: July 2022
Publication year: 2022
Article number: 2100271
Language: English
ISSN: 02321300
E-ISSN: 15214079
CODEN: CRTEDF
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: The cap-like ZnO ellipsoids are deposited on the top of the ZnO nanowire (NW) arrays to synthesize ZnO-based ellipsoid/NW nanostructures. By controlling the deposition time, the aspect ratio of ZnO ellipsoids from 100/70 to 270/120 is improved. The effect of the ellipsoid deposition time on the fluorescence properties is systematically investigated and successfully enhanced. Photoluminescence (PL) emission for 5 min ZnO ellipsoid/NW nanostructures is enhanced by an enhancement factor of around 3.2 compared with the as-grown ZnO NW arrays. Moreover, using the finite element method simulation, the most vigorous electric field intensity appears on the top of nanostructures owing to the localized field enhancement effect of ZnO ellipsoids, which can effectively prolong the photons remaining in the ZnO ellipsoid/NW nanostructures, enable electrons to exchange energy with photons and then generate more electron–hole pairs, resulting in PL emission enhancement. In addition, the maximum area integration for electric field values higher than 3 × 108 V m-1 can also be obtained corresponding to the most vigorous PL emission. This shows great potential applications as fluorescence materials in photoelectric devices. © 2022 Wiley-VCH GmbH.
Number of references: 41
Main heading: Zinc oxide
Controlled terms: Nanowires - Photons - Aspect ratio - Fluorescence - II-VI semiconductors - Deposition - Electric fields
Uncontrolled terms: Aspect-ratio - Cap-like ZnO ellipsoid - Deposition time - Field enhancement effect - Fluorescence properties - Localized field - Localized field enhancement effect - Photoluminescence emission - ZnO nanowire arrays - ZnO nanowires
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 741.1 Light/Optics - 761 Nanotechnology - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 933 Solid State Physics
Numerical data indexing: Electric field strength 8.00E+00V/m, Time 3.00E+02s
DOI: 10.1002/crat.202100271
Funding Details: Number: YCS19211034, Acronym: -, Sponsor: -; Number: 2016JQ5037,2019GY#170,2019GY#176, Acronym: -, Sponsor: -; Number: 16JK1601, Acronym: -, Sponsor: -; Number: 11447116,11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by National Natural Science Foundation of China (Grant/Award Number: 11804273 and 11447116); Science and Technology Planning Project of Shaanxi Province, China (Grant/Award Number: 2019GY170; 2019GY176; and 2016JQ5037); Special Project for Scientific Research of Shaanxi Educational Committee (Grant/Award Number: 16JK1601); Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant/Award Number: YCS19211034).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

268. An Enhanced Photonic-Assisted Sampling Approach for Spectrum-Sparse Signal by Compressed Sensing (*Open Access*)

Accession number: 20222112149175
Authors: Lyu, Fangxing (1, 2); Li, Fei (1, 2); Fang, Xin (1); Zhang, Nan (1, 2); Ma, Xueying (1, 2)
Author affiliation: (1) Xi'an Shiyou University, School Of Electronic Engineering, Xi'an; 710065, China; (2) Shaanxi Key Laboratory Of Measurement And Control Technology For Oil And Gas Wells, Xi'an; 710065, China
Corresponding authors: Li, Fei(lif@xsyu.edu.cn); Fang, Xin(fangxin_200610_@126.com)
Source title: IEEE Access
Abbreviated source title: IEEE Access
Volume: 10
Issue date: 2022

Publication year: 2022
Pages: 55350-55359
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Spectrum-sparse signals are vital for wideband radar and wireless communication applications. A high-speed analog-to-digital converter (ADC) with the capacities of tens of gigahertz sampling rates is often required to acquire these signals. In this work, an enhanced photonic-assisted sampling approach with the combination of the photonic-assisted time-interleaved ADC and compressed sensing techniques is presented, which enables the measured signal to be reconstructed through very few samples by utilizing the sparsity of the spectrum-sparse signal. An ultrahigh spectral resolution Fourier dictionary was introduced to suppress the spectrum leakage and obtain the actual sparse expression of the spectrum-sparse signals. Moreover, a layered tracking orthogonal matching pursuit signal recovery algorithm was employed to reduce computational complexity and enhance processing speed. The performance of the proposed approach has been investigated via simulations and laboratory experiments by varying the applied spectrum-sparse signals over 100 times. The experimental results demonstrate that the proposed method can capture the blind-frequency spectrum-sparse signal at an equivalent sampling rate of 1 GS/s by utilizing four parallel ADCs with a sampling rate of 50 MS/s. It is proven that the proposed approach achieves ⁓ 5 times higher equivalent sampling rate than that of the conventional PTIADC at the same sampling rate. This work provides a valuable method for acquiring spectrum sparse signals in practical applications. © 2013 IEEE.
Number of references: 37
Main heading: Compressed sensing
Controlled terms: Photonics - Signal reconstruction - Analog to digital conversion - Signal sampling
Uncontrolled terms: Analog to digital converters - Compressed-Sensing - Optical variable measurement - Photonic-assisted analog-to-digital converter - Recovery algorithms - Signal recovery - Signal recovery algorithm - Signal resolution - Sparse matrices - Time-interleaved
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 922 Statistical Methods
DOI: 10.1109/ACCESS.2022.3175458
Funding Details: Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-590, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20JS125,21JK0836, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This work was supported in part by the National Natural Science Foundation of China under Grant U20B2029, in part by the Key Research and Development Program of Shaanxi under Grant 2021KW-33 and Grant 2022KW-25, in part by the Natural Science Basic Research Plan in Shaanxi Province of China under Grant 2021JQ-590, and in part by the Scientific Research Program Funded by the Shaanxi Provincial Education Department under Grant 20JS125 and Grant 21JK0836.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

269. Research on weak Magnetoacoustic detection method based on phase locked amplifier

Accession number: 20223812766927
Authors: Guo-Wang, Gao (1); Zhe, Gao (1); Wei, Liu (2); Peng, Zhao (3); Dan, Wu (1); Fei, Wang (1); Pei-Jiang, Zhao (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xian, China; (2) Qinghai Oilfield Testing Company, Qing Hai, China; (3) Cnpc Chuanqing Drilling Engineering Company, Xi'an, China
Corresponding author: Guo-Wang, Gao(wwgao@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 434-437

Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the conductivity measurement of oil-water two-phase flow, it is detected that the frequency of Magnetoacoustic signal is high and reaches 1MHz, and there are many noise interference signals. Based on this problem, this paper studies the detection method of weak signal generated by oil-water two-phase flow based on Magnetoacoustic coupling, designs each module of phase-locked amplifier for this weak signal, and simulates each module with Multisim circuit simulation software. The simulation results are consistent with the design index, which verifies the rationality of parameter selection. Finally, the simulation results of the circuit in detection are given. The results show that the parameter selection is reasonable and the performance is stable. © 2022 IEEE.
Number of references: 5
Main heading: Circuit simulation
Controlled terms: Computer software - Signal detection - Two phase flow
Uncontrolled terms: Acoustic signals - Detection methods - Magnetoacoustics - Oil-water two phase flows - Parameter selection - Phase locked - Phase locked amplifier - Signal channels - Weak acoustic signal - Weak signals
Classification code: 631.1 Fluid Flow, General - 703.1.1 Electric Network Analysis - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications
Numerical data indexing: Frequency 1.00E+06Hz
DOI: 10.1109/ICMSP55950.2022.9859142
Funding Details: Number: YCS21113135, Acronym: -, Sponsor: -; Number: 2021GY-168, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: In this paper, the phase-locked amplifier circuit is studied for the detection of inductive Magnetoacoustic coupling weak Magnetoacoustic signal with frequency up to 1MHz. After theoretical analysis and calculation, the main devices and parameters in the corresponding circuits in each module are determined, and the simulation research is carried out by using Multisim software. The rationality of the circuit design is verified by the final simulation results. The phase-locked amplifier circuit is beneficial in processing weak signals, which can provide good information for the subsequent measurement of oil-water phase sensitive signal ACKNOWLEDGMENT This project is supported by the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi 'an Shiyou University (YCS21113135), Shaanxi Provincial Key Research and Development Program(2021GY-168). Shaanxi Provincial Key Research and Development Program(2019GY-100).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

270. Analysis of Impulse Wave Characteristics of Underwater Plasma

Accession number: 20223812766777
Authors: Zhou, Jing (1); Li, Danhong (1); Hui, Zhe (1); Zheng, Libo (1)
Author affiliation: (1) Xi'an ShiYou University, National Engineering Research Center for Oli & Gas Drilling and Completion Technology, Downhole Measurement and Control Research Department, Shaanxi, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 171-174
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)

Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The plasma impulse sound source based on the 'hydroelectric effect' has great application value in petroleum geological exploration and oilfield plugging removal. Using the finite element simulation model of the underwater plasma impulse sound source, the impulse wave characteristic graphs under different charging voltages are given. The results show that when the charging voltage is 10kV, the impulse energy is 30.12J, and the electroacoustic efficiency is 4.02%. When the charging voltage is increased, the impulse wave energy increases, but the electroacoustic conversion efficiency decreases. The effect of circuit parameters on the impulse wave characteristics can be studied by modeling and analysis, which can provide a theoretical basis for practical engineering applications of impulse waves. © 2022 IEEE.
Number of references: 8
Main heading: Acoustic generators
Controlled terms: Petroleum prospecting - Underwater acoustics - Wave energy conversion
Uncontrolled terms: Charging voltage - Electroacoustic efficiency - Energy - Impulse wave characteristic - Impulse wave energy energy - Impulse waves - Underwater plasmas - Wave characteristics - Wave energy
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 615.6 Wave Energy - 751.1 Acoustic Waves - 752.4 Acoustic Generators
Numerical data indexing: Energy 3.012E+01J, Percentage 4.02E+00%, Voltage 1.00E+04V
DOI: 10.1109/ICMSP55950.2022.9859085
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

271. Study on characteristics of 1-3 piezoelectric composite transducer for underground impulse sound source

Accession number: 20223812766944
Authors: Zhou, Jing (1); Chen, Xiang (1); Zheng, Libo (1); He, Wenhao (1)
Author affiliation: (1) Xi'an ShiYou University, National Engineering Research Center for Oli & Gas Drilling and Completion Technology, Downhole Measurement and Control Research Department, Shaanxi, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 691-694
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: Oil exploration has now developed in the direction of low permeability, low porosity and low reserve abundance, and the target of exploration has to turn to unconventional oil and gas reservoirs. For conventional acoustic logging, its exploration is more refined, but the exploration range is small, for seismic exploration, the exploration range is large, but for small oil and gas reservoirs, it is difficult to find. The rise of underground impulse sound source depth detection technology has made up for the shortcomings of conventional acoustic logging and seismic exploration. In the underground impulse sound source logging, the piezoelectric composite structure of the receiving transducer is of great benefit to improving the sensitivity, bandwidth width and other parameters of the receiving transducer. Based on the underground impulse sound source, this paper studies the piezoelectric composite transducer, and verifies the resonant frequency of the composite structure through COOMSOL Multiphysics modeling. Finally, a 1-3 piezoelectric composite structure with a resonant frequency of about 240khz is obtained. The transducer in this frequency band can be applied to the high frequency of underground pulsed sound source. 1-3 piezoelectric composite structure can be used for short-range formation detection. © 2022 IEEE.
Number of references: 9
Main heading: Piezoelectricity
Controlled terms: Gasoline - Natural frequencies - Petroleum industry - Petroleum reservoir engineering - Piezoelectric transducers - Proven reserves - Seismology - Structure (composition)
Uncontrolled terms: 1-3 piezoelectric composite - Composites structures - COMSOL - Low permeability - Oil and gas reservoir - Oil exploration - Piezoelectric composite transducers - Seismic exploration - Sound source - Underground impulse sound source
Classification code: 484.1 Earthquake Measurements and Analysis - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 701.1 Electricity: Basic Concepts and Phenomena - 951 Materials Science
DOI: 10.1109/ICMSP55950.2022.9859165
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

272. Mechanical strength analysis of sound insulator of grooves for deep detection of downhole impulse sound source

Accession number: 20223812766834
Authors: Shang, Haiyan (1); He, Wenhao (1); Zhang, Lu (1); Chen, Xiang (1)
Author affiliation: (1) Xi'an Shiyou University, National Engineering Research Center for Oil and Gas Drilling and Completion Technology, Downhole Measurement and Control Laboratory, Shaanxi, Xi'an, China
Corresponding author: He, Wenhao(1320191568@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 107-110
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: In downhole impulse sound source deep detection logging, the sound insulator is interposed between the impulse sound source transmitter and receiver to suppress drill collar waves. At present, the most common method is to notch the surface of the drill collar to suppress the drill collar wave. In this paper, the variation law of the strength of the grooved sound insulator with the groove parameters is studied by numerical simulation, and the appropriate groove parameters are selected for the sound insulation of the single-carved external groove and the periodic internal and external staggered grooved sound insulators. The effect comparison proves the sound insulation superiority of the latter. The research results provide a basis for the sound insulation body to have good mechanical strength under the condition that the sound insulation performance is satisfied. © 2022 IEEE.
Number of references: 8
Main heading: Drills
Controlled terms: Acoustic logging - Drill collars - Infill drilling - Sound insulation
Uncontrolled terms: Downholes - Drill collar wave - Equivalent stress - Groove parameters - Mechanical - Mechanical strength - Sound insulator - Sound source - Strength analysis - Total deformation
Classification code: 413.3 Sound Insulating Materials - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 751.2 Acoustic Properties of Materials - 941.2 Acoustic Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859032
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

273. Fracture Analysis of Butt Joint Girth Weld of Pipe and Flange (*Open Access*)

Accession number: 20230113340988
Authors: Xu, Yan (1); Bi, Liuhan (2); Liu, Yinglai (1); Xu, Tianhan (2); Feng, Zhenjun (1); Bai, Qiang (1); Yang, Fengping (1)
Author affiliation: (1) Tubular Goods Research Institute of CNPC, Shaanxi, Xi'an; 710077, China; (2) School of Materials Science and Engineering, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Xu, Yan(xuyan008@cnpc.com.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2390
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012044
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 3rd International Conference on Advanced Materials and Intelligent Manufacturing, ICAMIM 2022
Conference date: August 5, 2022 - August 7, 2022
Conference location: Guangzhou, China
Conference code: 185131
Publisher: Institute of Physics
Abstract: Duplex stainless steel has been widely applied to industry. In this paper, nondestructive testing, chemical composition analysis, metallographic analysis, hardness test, and scanning electron microscope were used to study the causes of the crack in the butt joint girth weld of pipe and flange. Both steel pipe and flange are duplex stainless steel S31803. Through analysis, it was judged that the crack was a crystalline crack, generated in the welding process, which was related to the welding process and the control of the welding installation gap between the steel pipe and the flange with unequal wall thickness. © Published under licence by IOP Publishing Ltd.
Number of references: 9
Main heading: Flanges

Controlled terms: Butt welding - Cracks - Metallography - Nondestructive examination - Scanning electron microscopy - Stainless steel - Steel pipe - Welds
Uncontrolled terms: Butt joints - Chemical compositions analysis - Fracture analysis - Girth weld - Metallographic analysis - Scanning electrons - Unequal wall thickness - Welding process
Classification code: 531.2 Metallography - 538.2 Welding - 538.2.1 Welding Processes - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 619.1.1 Pipe Accessories
DOI: 10.1088/1742-6596/2390/1/012044
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

274. Study on the structure parameters of transmitting transducer for drilling acoustic logging technology

Accession number: 20223812766858
Authors: Zhou, Jing (1); Zheng, Libo (1); Chen, Xiang (1); Zhang, Lu (1)
Author affiliation: (1) Xi'an Shiyou University, National Engineering Research Center for Oil and Gas Drilling and Completion Technology, Downhole Measurement and Control Laboratory, Shaanxi, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 126-129
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Acoustic logging is an effective measurement tool for detecting formation information and obtaining geological parameters, which is widely used in the petroleum field, and the transmitting transducer is an important part of acoustic logging technology, acting as an important duty to excite the sound source signal, and for different use scenarios, the transmitting transducer needs different structures. Therefore, this paper starts from the structural parameters of the emission transducer and analyzes the influence of the structural parameters of the rectangular emission transducer on its resonant frequency by using the finite element analysis method. The study shows that the structural parameters of the transducer affect the resonant frequency of the emission transducer, and the resonant frequency decreases with the increase of the length, width and thickness of the piezoelectric ceramic piece, which provides a certain scientific basis for the emission transducer in practical applications. © 2022 IEEE.
Number of references: 8
Main heading: Natural frequencies
Controlled terms: Acoustic logging - Acoustic transducers - Piezoelectric ceramics - Piezoelectric transducers - Piezoelectricity
Uncontrolled terms: Different structure - Finite-element analysis methods - Geological parameters - Measurement tools - Petroleum fields - Sound source - Source signals - Structural parameter - Structure parameter - Transmitting transducer
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 708.1 Dielectric Materials - 751.2 Acoustic Properties of Materials - 752.1 Acoustic Devices - 812.1 Ceramics - 941.2 Acoustic Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859057
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;

Funding text: ACKNOWLEDGMENT This work is supported by the National Science Foundation of China (No.51874238). It is also supported by the Strategic Priority Research Program of Chinese Academy of Sciences (No. XDA14030103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

275. Dual-Linear-to-Circular Polarization Converter Based Polarization-Twisting Metasurface Antenna for Generating Dual Band Dual Circularly Polarized Radiation in Ku-Band

Accession number: 20222412226747
Authors: Yang, Pei (1); Dang, Ruirong (1); Li, Lipin (1)
Author affiliation: (1) Xi'An Shiyou University, Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, School of Electronic Engineering, Xi'an; 710065, China
Corresponding author: Yang, Pei(210101@xsyu.edu.cn)
Source title: IEEE Transactions on Antennas and Propagation
Abbreviated source title: IEEE Trans Antennas Propag
Volume: 70
Issue: 10
Issue date: October 1, 2022
Publication year: 2022
Pages: 9877-9881
Language: English
ISSN: 0018926X
E-ISSN: 15582221
CODEN: IETPAK
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: We propose a polarization-twisting metasurface antenna (PTMA) to generate the dual-band dual-circularly polarized (CP) radiation by integrating a dual-linear-to-circular polarization converter (DLCPC) with a linear polarization conversion metasurface (LPCM) in the Ku-band. The DLCPC possesses the functionality of polarization selection and is capable of transforming the linearly polarized (LP) waves into right hand CP (RHCP) waves in low-frequency (LF) and left hand CP (LHCP) waves in high frequency (HF). Based on the DLCPC, the dual-band dual-CP PTMA is designed and fabricated, and then, the measured results indicate that the PTMA is capable of realizing the RHCP radiation in LF and the LHCP radiation in HF. In the meanwhile, the common bandwidths of-1.5 dB gains and 3 dB axial ratios are 12.25-12.95 and 14.00-14.55 GHz, respectively. Our design, by integrating the DLCPC and LPCM to construct the dual-band dual-CP PTMA, should, thus, pave the way for building up more efficient wireless communication systems with the requirement of different CPs as the receiver and the transmitter at downlink and uplink in the Ku-band. © 1963-2012 IEEE.
Number of references: 29
Main heading: Circular polarization
Controlled terms: Antenna feeders - Microwave antennas
Uncontrolled terms: Antenna feeds - Antennas measurement - Aperture - Circularly polarization - Dual Band - Dual circularly polarization - Electromagnetic bandgap structures - Metasurface - Polarization-twisting metasurface antenna
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 711 Electromagnetic Waves
Numerical data indexing: Decibel -1.50E+00dB, Decibel 3.00E+00dB, Frequency 1.225E+10Hz to 1.295E+10Hz, Frequency 1.40E+10Hz to 1.455E+10Hz
DOI: 10.1109/TAP.2022.3178803
Funding Details: Number: 20JS124, Acronym: -, Sponsor: -; Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021M693890, Acronym: -, Sponsor: China Postdoctoral Science Foundation;
Funding text: This work was supported in part by the China Postdoctoral Science Foundation under Grant 2021M693890, in part by the National Natural Science Foundation of China under Grant 41874158, and in part by the Key Laboratory Project of Shaanxi Provincial Department of Education under Grant 20JS124
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

276. Relationship Between Creep Deformation and Materials Structure of Metal Thin Films

Accession number: 20222412233344
Title of translation:
Authors: Wu, Jinping (1); Li, Chunchen (1, 2); Zhao, Bin (1); Qiu, Longshi (1); Xin, Chao (1); Pan, Xiaolong (1); Zhao, Heng (1, 3); Li, Huan (1); Zhao, Jing (1)
Author affiliation: (1) Xi'an Rare Metal Materials Institute Co., Ltd, Xi'an; 710016, China; (2) Lanzhou University of Technology, Lanzhou; 730050, China; (3) Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhao, Jing(zjdidi349@126.com)
Source title: Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering
Abbreviated source title: Xiyou Jinshu Cailiao Yu Gongcheng
Volume: 51
Issue: 5
Issue date: May 2022
Publication year: 2022
Pages: 1674-1680
Language: Chinese
ISSN: 1002185X
CODEN: XJCGEA
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The relationship between the creep behavior and the microstructure of metal films at room temperature was evaluated by nanoindentation experiment. Nanocrystalline body center-cubic (bcc) metal Mo, nanocrystalline face center-cubic (fcc) metal Ni and amorphous CuZr were selected as the study materials, and the loading strain rates were 0.005, 0.05, 0.1 and 0.2 s-1. According to research, the creep deformation of bcc-Mo, fcc-Ni and amorphous CuZr exhibits strong loading strain rate dependence, and the main reason is related to the dominant deformation mechanism. The creep behavior of bcc-Mo is dominated by the mixed dislocation movement dominated by screw dislocation, the creep behavior of fcc-Ni is dominated by the grain boundary emission incomplete dislocation, and the creep behavior of amorphous CuZr is dominated by the shear deformation transition zone (STZ). © 2022, Science Press. All right reserved.
Number of references: 24
Main heading: Creep
Controlled terms: Binary alloys - Grain boundaries - Loading - Nanocrystalline materials - Nanocrystals - Strain rate
Uncontrolled terms: Creep behaviors - Creep deformations - Cubic metals - Deformation mechanism - Deformation structure - Loading strain rates - Materials structure - Metal thin film - Microstructure of metals - Nanocrystallines
Classification code: 691.2 Materials Handling Methods - 761 Nanotechnology - 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Time 1.00E-01s, Time 2.00E-01s
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

277. Effect of Heat Treatment Temperature on Microstructure and Friction and Wear Properties of High-speed Laser Cladded Ni/316L Coating

Accession number: 20230713585912
Authors: Dong, Hui (1); Guo, Peng-Fei (1); Xu, Long (1); Kang, Kai-Xiang (1)
Author affiliation: (1) Xi'an Key Laboratory of High Performance Oil and Gas Field Materials, School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Surface Technology
Abbreviated source title: Surf. Technol.
Volume: 51
Issue: 5
Issue date: 2022
Publication year: 2022
Pages: 111-120
Language: Chinese

E-ISSN: 10013660
Document type: Journal article (JA)
Publisher: Chongqing Wujiu Periodicals Press
Abstract: The effect of heat treatment temperature on the wear resistance of high-speed laser cladded Ni/316L coatings in seawater corrosive environment was illustrated in this case. Ni/316L coatings were prepared on the surface of Q235 steel by high-speed laser cladding equipment, and heat-treated at 650, 700, 750 , and 800 for 1.5 h, respectively. X-ray diffraction (XRD), scanning electron microscope (SEM) The microstructure and phase composition of the Ni/316L cladding layer were characterized by energy dispersive spectrometer (EDS). In addition, the effect of heat treatment temperature on the hardness and the wear resistance of the Ni/316L cladding layer was analyzed via hardness test and wear test in a simulated marine environment. The thickness of as-cladded layer is about 2 mm, and the transition layer is about 50 μm. The cladding layer has the characteristics of compactness, low porosity and crack free. The cladding coating grains contain dendrites and equiaxed grains. With the increase of heat treatment temperature, the number of equiaxed crystal in the coating first increased and then decreased, similar to that of the new phase content, the second phase content first increased and then decreased. Correspondingly, as the heat treatment temperature increased, the grain size of the cladding layer decreased first and then increased, resulting in the hardness of the cladding layer increased first and then decreased. The hardness of the cladding layer reached the highest value at 750 , which was about 2.4 times that of the as-cladded coating. It was found that the friction coefficient of the four cladding layers after heat treatment is about 0.31, which is slightly lower than that of the cladding coating (0.33). The wear rate of the as-cladded coating was about 5 times higher than that of the coating heat-treated at 750 . Under the high load of 200 N, the coating surface was plastically deformed, and the wear debris and particles after cutting enter into the sliding friction, resulting in cutting effect intensified, forming a valgus morphology caused by furrows and plastic deformation. The seawater is corrosive, and the stainless steel coating first forms a passivation film in seawater, which will be destroyed and will intensify corrosion and lead to crack expansion. On the other hand, the resistance of GCr15 steel in seawater the corrosion resistance is poor. The products after rapid corrosion formed abrasive particles during sliding friction, which enter the coating and the friction pair to produce three-body wear. As a result, the particles has a continuous cutting effect on the cladding layer. 5 kinds of coatings wear mechanisms are mainly the abrasive wear. The four different heat treatment processes all could improve the wear resistance of the cladding layer, while C shows a better wear resistance. The°the coating heat-treated at 750 microstructure and the number of second phases of the high-speed laser cladding Ni/316L coating changes with the heat treatment temperature. However, the high temperature leads to some problems, such as grain growth. Therefore, the heat treatment temperature of the high-speed laser cladding Ni/316L coating should be controlled below 750 . © 2022, Chongqing Wujiu Periodicals Press. All rights reserved.
Number of references: 38
Main heading: Laser cladding
Controlled terms: Ductile fracture - Friction - Hardness - Heat resistance - Heat treatment - Morphology - Phase composition - Scanning electron microscopy - Seawater corrosion - Spectrometers - Steel corrosion - Textures - Wear of materials - Wear resistance
Uncontrolled terms: 316L - Cladding layer - Effect of heat treatments - Friction and wear - Heat treatment temperature - High speed laser - High-speed laser cladding - Marine environment - Ni/316l coating - Phase's contents
Classification code: 471.4 Seawater, Tides and Waves - 537.1 Heat Treatment Processes - 539.1 Metals Corrosion - 545.3 Steel - 641.1 Thermodynamics - 741.3 Optical Devices and Systems - 744.9 Laser Applications - 813.1 Coating Techniques - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Force 2.00E+02N, Size 2.00E-03m, Size 5.00E-05m, Time 5.40E+03s, Volume 3.16E-01m3
DOI: 10.16490/j.cnki.issn.1001-3660.2022.05.012
Funding Details: Number: 111-120,YCS20212124, Acronym: -, Sponsor: -; Number: YS37020203, Acronym: -, Sponsor: -; Number: 20202210, Acronym: XJTU, Sponsor: Xi’an Jiaotong University; Number: 2020JM540, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: Received2022-02-18Revised2022-04-19 2020JM540 20202210 YS37020203YCS20212124 FundThe Natural Science Foundation of Shaanxi Province (2020JM540); State Key Laboratory of Metal Material Strength, Xi'an Jiaotong University (20202210); Provincial Advantage Discipline Project of Materials Science and Engineering, Xi'an Shiyou University (YS37020203); Foundation of Postgraduate Innovation and Practice Ability of Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS20212124) 1981— BiographyDONG Hui (1981-), Male, Doctor, Associate professor, Research focus: coating (thermal barrier, anti-corrosion and anti-wear) technology on material. , , , . Ni/316L [J]. , 2022, 51(5): 111-120. DONG Hui, GUO Peng-fei, XU Long, et al. Effect of Heat Treatment Temperature on Microstructure and Friction and Wear Properties of High-speed Laser Cladded Ni/316L Coating[J]. Surface Technology, 2022, 51(5): 111-120.
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

278. Research on Reactive Power Optimization of Distribution Network with Distributed Generation

Accession number: 20221511946651
Authors: Wu, Xiaomeng (1, 2); Sun, Fengyu (1); Tian, Weidong (1)
Author affiliation: (1) School of Electric Engineering, Xi'An Shiyou University, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province Xi'an, China
Source title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Abbreviated source title: IEEE Inf. Technol. Mechatronics Eng. Conf., ITOEC
Part number: 1 of 1
Issue title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Issue date: 2022
Publication year: 2022
Pages: 242-246
Language: English
ISBN-13: 9781665431859
Document type: Conference article (CA)
Conference name: 6th IEEE Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Conference date: March 4, 2022 - March 6, 2022
Conference location: Chongqing, China
Conference code: 177924
Sponsor: Chengdu Union Institute of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Due to its good environmental, social and economic benefits, the combination of distributed generation and centralized power generation has been the trend of power system development, but the randomness and intermittency of distributed generation have brought new problems to the system. For the reactive power optimization problem of distribution network with distributed generation, this study establishes a reactive power optimization model with the minimum active loss, the minimum voltage offset and the minimum average voltage offset as the multi-objectives. Different from most studies using weight to convert multi-objective into single-objective, this paper uses the multi-objective model of Pareto optimal solution, uses the improved non-dominated sorting differential evolution algorithm to determine the capacity of distributed generation, obtains a set of Pareto optimal solutions, and selects the compromise solution. Finally, taking IEEE33 - bus system as an example, the proposed model and algorithm are verified. The results show that the model and algorithm have certain reference value for reactive power optimization of distribution network. © 2022 IEEE.
Number of references: 11
Main heading: Distributed power generation
Controlled terms: Economic and social effects - Pareto principle - Evolutionary algorithms - Multiobjective optimization - Optimal systems - Reactive power
Uncontrolled terms: DE algorithms - Distributed generators - Economic benefits - Environmental benefits - Model and algorithms - Multi objective - Pareto optimal solutions - Reactive power optimization - Social benefits - Voltage offsets
Classification code: 706.1.2 Electric Power Distribution - 921.5 Optimization Techniques - 961 Systems Science - 971 Social Sciences
DOI: 10.1109/ITOEC53115.2022.9734541
Funding Details: Number: 2021JM-404, Acronym: -, Sponsor: -; Number: YCS20241003, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by Shaanxi Province Science and Technology Plan Basic Research Project (2021JM-404), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS20241003). National College Student Innovation and Entrepreneurship Training Program (202110705026).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

279. Automatic Scene Segmentation Algorithm for Image Color Restoration

Accession number: 20231213792592
Authors: Yu, Runde (1); Han, Lu (2); Zhang, Wenying (3)
Author affiliation: (1) School of Computer, Beijing Institute of Technology, Beijing, China; (2) Computer Science and Technology, Xidian University, Shaanxi, Xi'an, China; (3) School of Computer, Xi'an Shiyou University, Shaanxi, Xi'an, China
Source title: ACM International Conference Proceeding Series
Abbreviated source title: ACM Int. Conf. Proc. Ser.
Part number: 1 of 1
Issue title: Proceedings of 2022 6th International Conference on Electronic Information Technology and Computer Engineering, EITCE 2022
Issue date: October 21, 2022
Publication year: 2022
Pages: 746-751
Language: English
ISBN-13: 9781450397148
Document type: Conference article (CA)
Conference name: 6th International Conference on Electronic Information Technology and Computer Engineering, EITCE 2022
Conference date: October 21, 2022 - October 23, 2022
Conference location: Virtual, Online, China
Conference code: 187251
Publisher: Association for Computing Machinery
Abstract: In the process of the automatic coloring of black and white movies, due to the issue of inaccurate scene segmentation, the selected reference image coloring is not suitable for two scenes, which further leads to poor coloring effects. Towards the issue, this paper designs an automatic scene segmentation algorithm based on deep learning, which can combine depth features and semantic similarities and not use the color distribution in the video. More specifically, the method first employs the pre-trained model VGG19 to learn the multi-layer feature representation of adjacent two frames. Secondly, the residual network is adopted to combine the multi-layer feature representations produced by the pre-trained model VGG19 to form feature vectors. Finally, the paper calculates the semantic similarity between the two feature vectors and designs an adaptive threshold scheme for determining the boundary frames, which can perform well in the scene segmentation task for various categories of videos. Experimental results show that this paper can effectively address the scene segmentation issue in various movies and thus improve the coloring effect of the ones. © 2022 Association for Computing Machinery.
Number of references: 12
Main heading: Semantics
Controlled terms: Color - Color image processing - Deep learning - Image reconstruction - Learning algorithms - Restoration - Semantic Segmentation
Uncontrolled terms: Color restoration - Deep learning - Feature representation - Features vector - Image color restoration - Image colours - Multi-layers - Scene segmentation - Segmentation algorithms - Semantic similarity
Classification code: 461.4 Ergonomics and Human Factors Engineering - 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 741.1 Light/Optics
DOI: 10.1145/3573428.3573777
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

280. Comparative Research on Reactive Power Optimization of Distribution Network Based on Ant Colony and Bee Colony Algorithm

Accession number: 20221511946780
Authors: Wu, Xiaomeng (1, 2); Yan, Jun (1); Zhao, Jiayang (1)
Author affiliation: (1) School of Electric Engineering, Xi'An Shiyou University, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province Xi'an, China
Source title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Abbreviated source title: IEEE Inf. Technol. Mechatronics Eng. Conf., ITOEC
Part number: 1 of 1
Issue title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Issue date: 2022
Publication year: 2022

Pages: 247-251
Language: English
ISBN-13: 9781665431859
Document type: Conference article (CA)
Conference name: 6th IEEE Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Conference date: March 4, 2022 - March 6, 2022
Conference location: Chongqing, China
Conference code: 177924
Sponsor: Chengdu Union Institute of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Reactive power optimization of distribution network is an effective means to ensure the safe and economic operation of distribution network, and it is an important measure to improve the voltage quality of distribution network. The reactive power optimization of distribution network can improve the voltage distribution of distribution network system, improve the voltage quality of users, reduce the power loss of power transmission, reduce the power cost, and improve the power transmission and distribution capacity and stable operation level of distribution network. This paper studies the optimality of ant colony algorithm and artificial bee colony algorithm for distribution network reactive power optimization. Taking the minimum system active power loss as the objective function, the mathematical model of distribution network reactive power optimization is established. Based on IEEE33 node system, the simulation experiments of distribution network reactive power optimization based on ant colony algorithm and artificial bee colony algorithm are carried out respectively, and the experimental results are compared and analyzed. The experimental results show that both algorithms can improve the system node voltage, the artificial bee colony algorithm has better performance in reducing the efficiency of system active power loss, and the ant colony algorithm runs faster. © 2022 IEEE.
Number of references: 11
Main heading: Ant colony optimization
Controlled terms: Functions - Reactive power - Power transmission
Uncontrolled terms: Active power loss - Ant colonies - Ant colonies algorithm - Artificial bee colony algorithm - Bee colony algorithms - Comparative research - Network-based - Reactive power optimization - Safe operation - Voltage quality
Classification code: 602.2 Mechanical Transmissions - 921 Mathematics - 921.5 Optimization Techniques
DOI: 10.1109/ITOEC53115.2022.9734469
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

281. Impacts of pore-throat spaces on movable fluid: Implications for understanding the tight oil exploitation process

Accession number: 20220111415679
Authors: Qu, Yiqian (1, 2); Sun, Wei (1); Wu, Hanning (1); Huang, Shengjun (3); Li, Teng (1); Ren, Dazhong (4); Chen, Bin (2)
Author affiliation: (1) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Northern Taibai Str. 229, Xi'an; 710069, China; (2) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an; 710065, China; (3) No.8 Oil Production Plant, PetroChina Changqing Oilfield Company, Xi'an; 710018, China; (4) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Yiqian(quyiqian623@126.com)
Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 137
Issue date: March 2022
Publication year: 2022
Article number: 105509
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: In this study, a series of experiments were carried out on tight sandstone samples from the Yangchang Formation in the Ordos Basin, China to investigate their pore-throat spaces and fluid flow capacity, including nuclear magnetic resonance (NMR) test, constant-rate mercury injection (CRMI), pore-casted thin section analysis, scanning electron microscopy (SEM), and X-ray diffraction (XRD). The pore-throat space was divided into two main types based on CRMI and NMR results: the throat-dominant space and the intergranular pore-dominant space, and the volume proportions was calculated. Proportions of different pore-throat spaces do not affect the total reservoir space, and the proportion of the throat-dominant space plays an important role in controlling the complexity of the pore-throat structure. The intergranular pore-dominant space contributes the main permeability, which affects the fluid flow capacity of tight sandstone through the large throats connecting intergranular pores. Fluid flow capacity in the intergranular pore-dominant space is related to the configuration of pores and throats, a higher proportion of the short conduit throats exist means a more homogeneous pore-throat structure, bound water is redistributed on the pore-throat surface to form a thin water film after centrifugation, leading to a higher proportion of movable fluid. The change of throat volume proportion to the total pore-throat volume with pore-throat radius was studied based on CRMI. With the increase of the pore-throat radius, the proportion of the throat volume first decreases in a fluctuating manner and then starts to increase rapidly at a certain radius (rt-p). The rt-p value is believed to determine the fluid flow capacity of the tight sandstone. This study has certain reference significance for understanding the fluid flow during the exploitation process of tight sandstone. © 2021 Elsevier Ltd
Number of references: 51
Main heading: Flow of fluids
Controlled terms: Sandstone - Metamorphic rocks - Scanning electron microscopy - Nuclear magnetic resonance - Tight gas - Textures
Uncontrolled terms: Constant rate - Flow capacity - Fluid-flow - Intergranular pores - Mercury injection - Ordos Basin - Pore throat - Pore-throat space - Tight sandstones - Yanchang Formation
Classification code: 482.2 Minerals - 512.2 Natural Gas Deposits - 522 Gas Fuels - 631.1 Fluid Flow, General
DOI: 10.1016/j.marpetgeo.2021.105509
Funding Details: Number: PAG-2021- 01, Acronym: -, Sponsor: -; Number: 2019KJXX-054, Acronym: -, Sponsor: -; Number: 51934005, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-151, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2021GY-140, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This study was supported by the Open Fund of Shaanxi Key Laboratory of Petroleum Accumulation Geology (grant No: PAG-2021-01), the Natural Science Foundation Research Project of Shaanxi Province (grant No: 2019JQ-151), the Young Science and Technology Talents Foundation of Shaanxi Province (grant No: 2019KJXX-054), the Key Program of Research and Development of Shaanxi Provincial (grant No: 2021GY-140), and the National Natural Science Foundation of China (grant No: 51934005). The authors sincerely thank Department of Geology of Northwest University and the No.7 Oil Production Plant of PetroChina Changqing Oilfield Company for providing the drill cores used in this study.This study was supported by the Open Fund of Shaanxi Key Laboratory of Petroleum Accumulation Geology (grant No: PAG-2021- 01), the Natural Science Foundation Research Project of Shaanxi Province (grant No: 2019JQ-151), the Young Science and Technology Talents Foundation of Shaanxi Province (grant No: 2019KJXX-054), the Key Program of Research and Development of Shaanxi Provincial (grant No: 2021GY-140), and the National Natural Science Foundation of China (grant No: 51934005). The authors sincerely thank Department of Geology of Northwest University and the No.7 Oil Production Plant of PetroChina Changqing Oilfield Company for providing the drill cores used in this study.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

282. Research on Dynamic Reactive Power Optimization of Distribution Network with Distributed Generation

Accession number: 20230713574569
Authors: Wu, Xiaomeng (1, 2); Jing, Mengyi (1); Li, Xiaoxiao (1); Wang, Zhongwen (1); Jiang, Jiahe (1)
Author affiliation: (1) Xi'An Shiyou University, School of Electric Engineering, Xi'an, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province, Xi'an, China
Source title: IMCEC 2022 - IEEE 5th Advanced Information Management, Communicates, Electronic and Automation Control Conference
Abbreviated source title: IMCEC - IEEE Adv. Inf. Manag., Commun., Electron. Autom. Control Conf.
Part number: 1 of 1
Issue title: IMCEC 2022 - IEEE 5th Advanced Information Management, Communicates, Electronic and Automation Control Conference

Issue date: 2022
Publication year: 2022
Pages: 1895-1899
Language: English
ISBN-13: 9781665479677
Document type: Conference article (CA)
Conference name: 5th IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2022
Conference date: December 16, 2022 - December 18, 2022
Conference location: Chongqing, China
Conference code: 186387
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Global Union Academy of Science and Technology; Chongqing University of Technology; et al.; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The traditional reactive power optimization is based on the load of the power grid at a certain instantaneous moment, while the dynamic reactive power optimization is different. It optimizes the reactive power according to the load change curve throughout the day, thereby reducing the network loss of the entire power grid. From the perspective of economy, the adjustment cost is taken as the objective function, which avoids the strong coupling between network loss and constraint conditions. From the perspective of safety, the voltage stability index is proposed. Finally, the reactive power compensation equipment is added to the IEEE33 node distribution network, and the improved particle swarm optimization algorithm is used to solve the problem. The results show that the system network loss and node voltage stability have been significantly improved after adding the compensation equipment. © 2022 IEEE.
Number of references: 6
Main heading: Reactive power
Controlled terms: Curve fitting - Distributed power generation - Electric loads - Particle swarm optimization (PSO)
Uncontrolled terms: Change curves - Distributed power supplies - Dynamic reactive power optimization - Improved particle swarm algorithm - Load change - Network loss - ON dynamics - Particle swarm algorithm - Power grids
Classification code: 706.1 Electric Power Systems - 706.1.2 Electric Power Distribution - 723 Computer Software, Data Handling and Applications - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1109/IMCEC55388.2022.10020055
Funding Details: Number: 2021JM-404, Acronym: -, Sponsor: -; Number: YCS22215313, Acronym: -, Sponsor: -; Number: S202210705111, Acronym: -, Sponsor: National College Students Innovation and Entrepreneurship Training Program;
Funding text: This paper is supported by Shaanxi Province Science and Technology Plan Basic Research Project (2021JM-404), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS22215313). National College Student Innovation and Entrepreneurship Training Program(S202210705111).ACKNOWLEDGMENT This paper is supported by Shaanxi Province Science and Technology Plan Basic Research Project (2021JM-404),Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS22215313). National College Student Innovation and Entrepreneurship Training Program(S202210705111).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

283. Dynamic behavior and failure analysis of perforating string under explosive load

Accession number: 20221111794161
Authors: Mao, Liangjie (1); He, Xin (1); Zhang, Juan (1, 2)
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Source title: Engineering Failure Analysis
Abbreviated source title: Eng. Fail. Anal.
Volume: 136
Issue date: June 2022
Publication year: 2022
Article number: 106222
Language: English

ISSN: 13506307
CODEN: EFANEM
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Perforation in oil and gas wells can cause severe impact vibration of perforating string systems, which can even lead to the buckling of tubing, breaking of joints, and damage of packers. This study focuses on the dynamic behavior and failure analysis of perforated strings. A dynamic analysis model of perforating strings that couples transverse, longitudinal, and torsional vibrations was first established. The finite element method was used to discretize the perforating string into beam elements, and the Newmark-β method was used to solve the model. A field well was used as an example to prove the correctness of the model. The dynamic behavior of the perforating string at actual scale under the action of the explosive load was discussed. The effects of perforating parameters and string structure on the safety performance of the perforating string were analyzed. The results obtained can provide scientific guidance for the field perforating operation. © 2022 Elsevier Ltd
Number of references: 53
Main heading: Failure analysis
Controlled terms: Perforating - Failure (mechanical) - Explosives - Well perforation - Vibration analysis
Uncontrolled terms: Breakings - Dynamic analysis models - Dynamic behaviors - Dynamic failures - Explosive loads - Impact vibration - Oil and gas well - Perforating string - String systems - Transverse vibrations
DOI: 10.1016/j.engfailanal.2022.106222
Funding Details: Number: 2020D-5007-0210, Acronym: -, Sponsor: -; Number: 52174006, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PLN2020-15, Acronym: SWPU, Sponsor: Southwest Petroleum University; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation; Number: 21SYSX0054,21ZDYF3109, Acronym: -, Sponsor: Key Research and Development Program of Sichuan Province;
Funding text: The authors would like to thank the financial support of the National Natural Science Foundation of China (52174006), CNPC Innovation Foundation (2020D-5007-0210), Key Research and Development Projects of Sichuan Province (21ZDYF3109) (21SYSX0054), and Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Southwest Petroleum University) (PLN2020-15).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

284. High-order conservative scheme for the coupled space fractional nonlinear Schrödinger equations

Accession number: 20212110412697
Authors: Zhai, Liangliang (1, 3); Wang, Junjie (2)
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Corresponding author: Zhai, Liangliang(sxzhailiangliang@126.com)
Source title: International Journal of Computer Mathematics
Abbreviated source title: Int J Comput Math
Volume: 99
Issue: 3
Issue date: 2022
Publication year: 2022
Pages: 607-628
Language: English
ISSN: 00207160
E-ISSN: 10290265
CODEN: IJCMAT
Document type: Journal article (JA)
Publisher: Taylor and Francis Ltd.
Abstract: In this paper, an efficient finite difference scheme is proposed for one dimension and two dimension coupled space fractional nonlinear Schrödinger equations. First, the high-order difference scheme and Crank–Nicolson scheme are used to one dimension coupled space fractional nonlinear Schrödinger equations. second, we show that the high-order conservative difference scheme satisfies the mass and energy conservation laws respectively, and convergence and unconditional stability of the scheme are also proved. Next, we give the high-order conservative scheme for two

dimension coupled space fractional nonlinear Schrödinger equations. Finally, some numerical results are reported to verify our theoretical analysis. © 2021 Informa UK Limited, trading as Taylor & Francis Group.
Number of references: 27
Main heading: Nonlinear equations
Controlled terms: Physical properties - Finite difference method
Uncontrolled terms: Conservative difference schemes - Conservative schemes - Difference schemes - Dinger equation - Finite difference scheme - Mass and energy conservation - Numerical results - Unconditional stability
Classification code: 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1080/00207160.2021.1925889
Funding Details: Number: 11801441, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JM-425, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This research is supported by National Natural Science Foundation of China (Grant No. 11801441) and Natural Science Foundation of Shaanxi Province No. 2020JM-425.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

285. Effect of local heat treatment on residual stresses in an in-service repair welded pipeline

Accession number: 20223912792790
Authors: Zhang, Hongbo (1, 3); Lu, Yongxin (2); Yang, Fengping (1, 3); Bai, Qiang (1); Liu, Yinglai (1, 3); Zhang, Xiaoyong (2); Feng, Hongfeng (2)
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Source title: Materialpruefung/Materials Testing
Abbreviated source title: Materialpruefung
Volume: 64
Issue: 9
Issue date: September 2022
Publication year: 2022
Pages: 1255-1262
Language: English
ISSN: 00255300
CODEN: MTPRAJ
Document type: Journal article (JA)
Publisher: Walter de Gruyter GmbH
Abstract: The multi-pass fillet welds of casing pipe were welded onto the in-service pipeline, which is widely used in pipeline repairs. However, the residual stress of repairing welded joints is larger, and it is easy to cause cracks in the heat-affected zone. In this paper, the local heat treatment was used to adjust the residual stress of the repaired welded joint of the in-service pipeline. The results show that the local heat treatment is very useful for reducing the residual stress of the repair welding joint of the in-service pipeline. © 2022 Walter de Gruyter GmbH, Berlin/Boston.
Number of references: 19
Main heading: Residual stresses
Controlled terms: Heat affected zone - Heat treatment - Pipelines - Repair - Welding
Uncontrolled terms: Blind-hole methods - Casing pipe - Fillet welds - In-service pipelines - Local heat treatment - Multi-pass - Pipe repair welding - Pipe repairs - Repair welding - Welded pipelines
Classification code: 537.1 Heat Treatment Processes - 538.2 Welding - 619.1 Pipe, Piping and Pipelines - 913.5 Maintenance
DOI: 10.1515/mt-2022-0034
Funding Details: Number: WZXGL202105, Acronym: -, Sponsor: -; Number: 2021JQ-594, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: Research funding: The authors wish to acknowledge the financial supported by National Pipe Network Scientific Research and Technology Development Project (Research on failure mechanism for girth weld of high steel pipeline, NO. WZXGL202105), and Natural Science Basic Research Program of Shaanxi (Program No.: 2021JQ-594).
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

286. A new method for predicting injection multiples of extreme displacement in waterflood reservoirs

Accession number: 20224313012447
Authors: Lv, Jing (1); Yin, Shuai (2); Sun, Yeheng (1); Liu, Lijie (1); Li, Weizhong (1); Tao, Deshuo (1); Li, Xiaoning (1)
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Source title: Energy Geoscience
Abbreviated source title: Energy Geosci.
Volume: 3
Issue: 4
Issue title: SI: Tight Reservoirs
Issue date: October 2022
Publication year: 2022
Pages: 465-472
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Abstract: The theoretical relationship between water injection multiple (i.e. injected pore volume) and water saturation is inferred from theoretical concepts of reservoir engineering. A mathematical model based on core displacement tests is established for the entire injection process that satisfies both initial displacement and extreme displacement, simultaneously. The results show that prior to the flooding, the water injection multiple has a linear relationship with the water saturation, and the utilization rate of the injected water is the highest. As water breakthrough at the production end, the water-cut increases, and the injection multiple increases exponentially while the utilization efficiency of the injected water gradually decreases. When the injection multiple approaches infinity, the utilization efficiency of the injected water gradually decreases to 0, by which time the water-cut at the production end is always 1. At this time, the water saturation no longer changes, and the water flooding recovery rate reaches its limit. Based on the experimental test data, a mathematical model of the entire process of injection multiple and water saturation is established, which has high fitting accuracy that can predict the injection multiple in the different stages of development of a mature oil reservoir. The dynamically changing index of the injection water utilization efficiency in reservoir development by reactive water flooding can be obtained through reasonable transformation of the mathematical model. This is of great significance in guiding evaluations of the effects of reservoir development and formulating countermeasures. © 2022 Sinopec Petroleum Exploration and Production Research Institute
Number of references: 33
DOI: 10.1016/j.engeos.2022.01.002
Funding text: The authors gratefully acknowledge support from scientific research projects of the Shengli Oilfield, which include "Research of the Evolution Law of High Water Consumption Zone in Positive Rhythmic Reservoir" and "Research of the Recognition and Distribution of High Water Consumption Zone in Positive Rhythmic Reservoir".
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

287. Investigation of Dioscorea oppositifolia L. as green lubricant in water-based drilling fluids

Accession number: 20222212182474
Authors: Tian, Wen (1); Wang, Qingchen (2); Liu, Xiongxiong (1); Du, Weichao (1, 3); Zhang, Jie (1); Gang, Chen (1, 3, 4)
Author affiliation: (1) Shanxi Prov. Key Lab. of Environ. Pollution Control and Reservoir Protection Technology of Oilfields, Xi'an Shiyou University, Xi'an, China; (2) Changqing Drilling Company of Ccdc, China National Petroleum Corporation, Xi'an, China; (3) State Key Laboratory of Petroleum Pollution Control, Cnpc Research Institute of Safety and Environmental Technology, Beijing, China; (4) Xi'an Key Laboratory of Tight Oil (Shale Oil) Development, Xi'an Shiyou University, Xi'an, China

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Source title: Green Materials
Abbreviated source title: Green Mater.
Volume: 10
Issue: 4
Issue date: May 19, 2022
Publication year: 2022
Pages: 169-175
Language: English
ISSN: 20491220
E-ISSN: 20491239
Document type: Journal article (JA)
Publisher: ICE Publishing
Abstract: With the increasing exploration of unconventional wells, such as horizontal wells and complex wells, and the increasingly strict national environmental protection regulations, drilling fluid lubricants are in increasing demand. High-performance and environment-friendly lubricants for water-based drilling fluids are urgently needed. In this work, Chinese yam (Dioscorea oppositifolia L.) was investigated as a drilling fluid lubricant; the effects of Chinese yam slurry on drilling fluid lubricating properties at different temperatures were investigated and the compatibility and inhibitory properties of Chinese yam slurry were studied. The results show that the viscosity coefficient of the mud cake is reduced by 44.5% as 1.5% Chinese yam slurry was added to water-based drilling fluids. Chinese yam also has certain temperature resistance in drilling fluids, and it can inhibit the swelling of clay. Chinese yam slurry is competitively compatible with other drilling fluid additives, and the lubricity of modified drilling fluids can also be improved effectively. The lubrication mechanism of Chinese yam slurry was investigated through thermogravimetric analysis, scanning electron microscopy, Fourier transform infrared spectroscopy and contact angle tests. © 2022 ICE Publishing: All rights reserved.
Number of references: 30
Main heading: Horizontal wells
Controlled terms: Additives - Contact angle - Drilling fluids - Environmental regulations - Infill drilling - Lubrication
Uncontrolled terms: Complex well - Environment friendly - Environmental protection regulations - Lubricating properties - Mud cakes - Performance - Property - Temperature resistances - Viscosity coefficient - Water based drilling fluids
Classification code: 454.2 Environmental Impact and Protection - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 607.2 Lubrication - 803 Chemical Agents and Basic Industrial Chemicals - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.50E+00%, Percentage 4.45E+01%
DOI: 10.1680/jgrma.21.00017
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

288. Data processing workflow for reflections from cement-formation interface in ultrasonic pitch-catch measurement in cased hole

Accession number: 20230413446123
Authors: Shi, Shaopeng (1); Wang, Hua (1); Li, Meng (2); Tao, Aihua (3)
Author affiliation: (1) School Resources and Environment, University of Electronic Science and Technology of China, China; (2) School of Geosciences and Engineering, Xi'an Shiyou University, China; (3) China Oilfield Services Limited, China
Source title: SEG Technical Program Expanded Abstracts
Abbreviated source title: SEG Techn. Program Expand. Abstr.
Volume: 2022-August
Part number: 1 of 1
Issue title: 2nd International Meeting for Applied Geoscience and Energy, IMAGE 2022
Issue date: August 15, 2022
Publication year: 2022
Pages: 277-281
Language: English
ISSN: 10523812

E-ISSN: 19494645
Document type: Conference article (CA)
Conference name: 2nd International Meeting for Applied Geoscience and Energy, IMAGE 2022
Conference date: August 28, 2022 - September 1, 2022
Conference location: Houston, TX, United states
Conference code: 185877
Publisher: Society of Exploration Geophysicists
Abstract: Well cementation ensures the wellbore integrity for production safety and environmental protection. Advanced ultrasonic pitch-catch measurement is recent widely used in cement bond evaluation because it can obtain the attenuation of the casing flexural wave (primary A0) and reflection waves from the cement-formation interface (TIE). Although the TIE is critical for the determination of casing-eccentering and cement velocity, the weak amplitude in field data hinders its picking. We propose a processing workflow to enhance the detection of TIE waves in pitch-catch measurement. The workflow consists of three modules: filtering, interface auto-picking, and coordinate transformation. The casing reflections are firstly suppressed in the filtering module to improve the SNR where the primary A0 and TIE waves are manifested. Then the arrival times of primary A0 and TIE can be automatically picked in the interface auto-picking module. Finally, the coordinate transformation module maps arrival times on the array waveforms in the time-depth profile at each measurement azimuth. The proposed processing flow works well for the dataset from numerical simulations and a calibration well and the feature of cement-formation interface can be obtained well. © 2022 Society of Exploration Geophysicists and the American Association of Petroleum Geologists.
Number of references: 11
Main heading: Cements
Controlled terms: Data handling - Ultrasonic applications
Uncontrolled terms: Advanced ultrasonics - Auto pickings - Cased hole - Cement-formation interfaces - Coordinate transformations - Pitch-catch - Production safety - Well cementation - Wellbore - Work-flows
Classification code: 412.1 Cement - 723.2 Data Processing and Image Processing - 753.3 Ultrasonic Applications
DOI: 10.1190/image2022-3745590.1
Funding Details: Number: 41974150,42174158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research is supported by two National Natural Science Foundation of China (No. 41974150 and No. 42174158).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

289. Looseness Fault Diagnosis on Coupling of Wind Turbines Based on Adaptive EEMD

Accession number: 20221912072966
Title of translation: EEMD
Authors: Li, Guoying (1); Wang, Shibin (2); Chen, Xuefeng (2)
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Source title: Zhendong Ceshi Yu Zhenduan/Journal of Vibration, Measurement and Diagnosis
Abbreviated source title: Zhendong Ceshi Yu Zhenduan
Volume: 42
Issue: 2
Issue date: April 2022
Publication year: 2022
Pages: 292-298
Language: Chinese
ISSN: 10046801
CODEN: ZCZHFY
Document type: Journal article (JA)
Publisher: Nanjing University of Aeronautics an Astronautics
Abstract: The coupling is the unique mechanical connection between the high-speed rotating machinery gear-box and the generator in the wind turbine. Looseness and skid faults of coupling directly threaten the stable 407 and reliable operation of wind turbines, and even cause major accidents or damage to other equipments. After coupling loosening, the observed signals are also contaminated by strong background noises and harmonic in-terferences. The fault characteristics are difficult to identify. To address those problems, adaptive ensemble empirical mode decomposition(EEMD) with the collaborative signal-to-nosisratio (CSNR) index is pro-posed. The method in this paper is used to analyze the numerical simulation, and components of the simula-tion signal are separated accurately. This

new method is applied to the looseness fault diagnosis on coupling of wind turbines, and the fault characteristics of weak signals under the background of strong noise of looseness are extracted effectively, verifying the effectiveness and practicability of the method in practical engineering applications. © 2022, Editorial Department of JVMD. All right reserved.
Number of references: 22
Main heading: Empirical mode decomposition
Controlled terms: Wind turbines - Fault detection - Numerical methods - Failure analysis
Uncontrolled terms: Empirical Mode Decomposition - Ensemble empirical mode decomposition - Fault characteristics - Faults diagnosis - Gear-box - High-speed rotating - Major accidents - Mechanical connections - Reliable operation - Vibration signal
Classification code: 615.8 Wind Power (Before 1993, use code 611) - 716.1 Information Theory and Signal Processing - 921.6 Numerical Methods
DOI: 10.16450/j.cnki.issn.1004-6801.2022.02.013
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

290. Research on Reactive Power Compensation of Distribution Network Considering Wind Turbine Access

Accession number: 20221511946777
Authors: Wu, Xiaomeng (1, 2); He, Changgeng (1); Wei, Chenjia (1)
Author affiliation: (1) Xi'An Shiyou University, School of Electric Engineering, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province, Xi'an, China
Source title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Abbreviated source title: IEEE Inf. Technol. Mechatronics Eng. Conf., ITOEC
Part number: 1 of 1
Issue title: IEEE 6th Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Issue date: 2022
Publication year: 2022
Pages: 1032-1036
Language: English
ISBN-13: 9781665431859
Document type: Conference article (CA)
Conference name: 6th IEEE Information Technology and Mechatronics Engineering Conference, ITOEC 2022
Conference date: March 4, 2022 - March 6, 2022
Conference location: Chongqing, China
Conference code: 177924
Sponsor: Chengdu Union Institute of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In response to the concept of green low-carbon environmental protection, more and more distributed generations are connected to the distribution network. However, with the integration of various distributed energy into the distribution network, the safe and stable operation of the power system will be affected[1]. This paper studies the reactive power compensation of distribution network with distributed wind power. Based on the traditional reactive power optimization model, the reactive power optimization mathematical model of distribution network is established. The objective function is network loss and voltage offset, and the constraint conditions are node voltage, reactive power compensation capacity and transformer ratio[2]. Firstly, the network loss and voltage change of distribution network after wind power integration are analyzed, and then the reactive power compensation device is used to optimize. A hybrid particle swarm optimization algorithm is used to verify the IEEE30 node system. The results show that the algorithm can significantly reduce the distribution network loss, improve voltage quality, reduce investment costs, and has good economy. © 2022 IEEE.
Number of references: 10
Main heading: Wind turbines
Controlled terms: Reactive power - Wind power - Investments - Electric equipment protection - Particle swarm optimization (PSO) - Economics - Electric power utilization

Uncontrolled terms: Distributed energies - Improved particle swarm algorithm - Low carbon - Network loss - Particle swarm algorithm - Power - Reactive power compensation of distribution network - Reactive power optimization - Safe operation - Stable operation
Classification code: 615.8 Wind Power (Before 1993, use code 611) - 704.2 Electric Equipment - 706.1 Electric Power Systems - 723 Computer Software, Data Handling and Applications - 921.5 Optimization Techniques - 971 Social Sciences
DOI: 10.1109/ITOEC53115.2022.9734466
Funding Details: Number: S202110705117, Acronym: -, Sponsor: -; Number: 2021JM-404, Acronym: -, Sponsor: -; Number: YCS20241002, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by Shaanxi Province Science and Technology Plan Basic Research Project (2021JM-404) ,Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS20241002), College Student Innovation and Entrepreneurship Training Program of Shaanxi Province (S202110705117).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

291. Study on particle settling behavior in viscoelastic surfactant solutions

Accession number: 20222212165515
Title of translation:
Authors: Su, Xiaohui (1); Zhang, Chi (1); Xu, Zhifeng (1); Jin, Hui (2); Wang, Zhiguo (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Wang, Zhiguo(zhgwang@xsyu.edu.cn)
Source title: Huagong Xuebao/CIESC Journal
Abbreviated source title: Huagong Xuebao
Volume: 73
Issue: 5
Issue date: May 2022
Publication year: 2022
Pages: 1974-1985
Language: Chinese
ISSN: 04381157
CODEN: HUKHAI
Document type: Journal article (JA)
Publisher: Materials China
Abstract: The suspended particle flow of viscoelastic surfactant solution widely exists in nature and industrial production. The nonlinear rheological properties and stress relaxation effect of viscoelastic surfactant solution have a significant impact on the particle settlement. The FENE-P and Giesekus constitutive models were used to study the sedimentation characteristics of particles in surfactant solutions. The hydrodynamics of the viscoelastic fluid is solved regarding the settling spherical particle as the reference system. Firstly, the rheological properties of the FENE-P and Giesekus fluids are obtained from the numerical solution of constitutive equations under the planar shear flow and the uniaxial tension conditions. It shows that both constitutive models exhibit not only the shear thinning but also the tension hardening, and the shear band appears when the mobility factor is larger than 0.8 for Giesekus fluids. The numerical results show that the elasticity of the fluid causes the instability of the settling velocity of the particle at the beginning. The stronger the elasticity of the fluid is, the stronger the instability of the settling velocity of the particle is. While the shear thinning weakens the instability of the settling velocity of the particle. The shear thinning and tension hardening affect the flow simultaneously and a negative wake is formed behind the particle. The negative wake region enlarges when the shear thinning and tension hardening are enhanced, and the negative wake is also enhanced with the increase in the fluid elasticity. However, the simulated settling velocity of the sphere using the FENE-P and Giesekus models becomes steady after a while, and the sphere reaches a constant terminal velocity eventually. It shows some difference from the unusual experimental phenomenon, e.g. the continuous velocity fluctuation of the settling sphere in actual surfactant wormlike micellar fluids. Thus, the FENE-P and Giesekus models are incapable when they are used to describe the particle behaviors in these surfactant wormlike micellar fluids. The breakage and reformation of the micro-scale wormlike micelles in surfactant solutions caused by the reversed velocity in the negative wake region may be the reason for the fluctuation of the settling velocity of a particle in this kind of viscoelastic fluids. Therefore, an advanced constitutive model is needed to clarify the phenomenon in the future study. © 2022, Editorial Board of CIESC Journal. All right reserved.
Number of references: 34

Main heading: Shear thinning
Controlled terms: Constitutive equations - Constitutive models - Elasticity - Hardening - Hydrodynamics - Micelles - Non Newtonian flow - Non Newtonian liquids - Rheology - Shear flow - Spheres - Surface active agents - Suspensions (fluids) - Velocity - Viscoelasticity - Wakes
Uncontrolled terms: Giesekus fluids - Negative wakes - Particle settling - Rheological property - Settling velocity - Simulation - Surfactant solution - Vis-coelastic fluids - Visco-elastic fluid - Viscoelastic surfactants
Classification code: 537.1 Heat Treatment Processes - 631.1 Fluid Flow, General - 801.3 Colloid Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.11949/0438-1157.20211783
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

292. Large measurement-range and low temperature cross-sensitivity optical fiber curvature sensor based on Michelson interferometer

Accession number: 20223012421570
Authors: Shao, Min (1); Cao, Zhongwei (1); Gao, Hong (1); Hao, Minru (1); Qiao, Xueguang (2)
Author affiliation: (1) Key Laboratory of Photo Electricity Gas & Oil Logging and Detecting of Ministry of Education, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Physics, Northwest University, Xi'an; 710065, China
Corresponding author: Shao, Min(shaomin@xsyu.edu.cn)
Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 72
Issue date: September 2022
Publication year: 2022
Article number: 102990
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A large-measurement-range fiber curvature sensor based on Michelson interferometer is proposed and investigated. The sensor is fabricated by sandwiching a bitaper between a single-mode fiber (SMF) and a piece of multimode fiber (MMF), and the MMF end face is multiply discharged to form a fiber sphere. The mode interference is accumulated in the MMF for the bitaper could excite high-order modes and couple them with core mode. The sensor can be defined as a cantilever beam structure, in which the fiber sphere serves as a mass block, while the bitaper and MMF act as cantilever beam. The reflection interference spectrum is sensitive to ambient curvature, so a large-range curvature detection is realized. Experimental results show that the sensor has a sensitivity of -0.6888 nm/m-1 and -1.812 dB/m-1 in the curvature range of 0–12.2894 m-1. The maximum temperature sensitivity is 0.0078 nm/°C and 0.007 dB /°C in the temperature range of 30–150 °C, and the maximum temperature cross-sensitivity is -0.0113 m-1/°C, which could be neglected in the application. The sensor has advantages of low cost, easy fabrication, large curvature detection range, and low temperature cross-sensitivity, making it has broad application prospects in the curvature sensing field. © 2022 Elsevier Inc.
Number of references: 31
Main heading: Multimode fibers
Controlled terms: Cantilever beams - Michelson interferometers - Nanocantilevers - Single mode fibers - Spheres - Temperature
Uncontrolled terms: Curvature detection - Curvature sensitivities - Curvature sensor - Fiber sphere - Lows-temperatures - Maximum temperature - Measurement range - Michelson's interferometer - Single-mode fibers - Temperature cross-sensitivity
Classification code: 408.2 Structural Members and Shapes - 641.1 Thermodynamics - 741.1.2 Fiber Optics - 761 Nanotechnology - 933 Solid State Physics - 941.3 Optical Instruments
Numerical data indexing: Decibel 1.812E+00dB, Decibel 7.00E-03dB, Size 0.00E00m to 1.22894E+01m, Size 1.13E-02m, Size 2.54E-02m, Size 6.888E-10m, Size 7.80E-12m, Temperature 3.03E+02K to 4.23E+02K
DOI: 10.1016/j.yofte.2022.102990

Funding Details: Number: YCS21111025, Acronym: -, Sponsor: -; Number: 12105220,61927812, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 21JK0849, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 61927812 and No. 12105220), Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 21JK0849) and Graduate Student Innovation Fund of Xi'an Shiyou University (YCS21111025).This work is supported by the National Natural Science Foundation of China (No. 61927812 and No. 12105220), Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 21JK0849) and Graduate Student Innovation Fund of Xi'an Shiyou University (YCS21111025).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

293. Joint Power Allocation and Relay Selection Scheme in Multiple Untrusted Relay Networks

Accession number: 20230413416294
Authors: Su, Wanying (1); Yao, Rugui (1); Fan, Ye (1); Xie, Yi (2); Qi, Nan (3); Zuo, Xiaoya (1)
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Source title: 2022 IEEE International Conference on Signal Processing, Communications and Computing, ICSPCC 2022
Abbreviated source title: IEEE Int. Conf. Signal Process., Commun. Comput., ICSPCC
Part number: 1 of 1
Issue title: 2022 IEEE International Conference on Signal Processing, Communications and Computing, ICSPCC 2022
Issue date: 2022
Publication year: 2022
Language: English
ISBN-13: 9781665469722
Document type: Conference article (CA)
Conference name: 2022 IEEE International Conference on Signal Processing, Communications and Computing, ICSPCC 2022
Conference date: October 25, 2022 - October 27, 2022
Conference location: Xi'an, China
Conference code: 185431
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Untrusted relays might decode the information while forwarding it and lead to threaten the security of the system in some realistic scenarios. The aim of the paper is to maximize the secrecy performance, and therefore on the ground of the cooperative jamming, we propose a novel power allocation-relay selection program in a multi-untrusted relay network where numerous antennas are equipped in the source and the destination simultaneously. Besides, we allow an optimal application of the power allocation factor and the proper selection of the relays, which makes the Ergodic Secrecy Rate (ESR) increased directly. Moreover, the closed-form expressions of the ESR in different scenarios to measure the secrecy performance are acquired. It can be known that the simulation results of the ESR are compliant with the theoretical, especially when Signal-to-Noise Ratio (SNR) is low. Apart from this, the ESR in theoretical values are tested to be approximately equal to the simulation. Compared to other relay selection strategies like partial selection strategy and the Max-Min (MM) selection strategy, the scheme proposed here can get the secrecy performance strengthen better. © 2022 IEEE.
Number of references: 25
Main heading: Signal to noise ratio
Controlled terms: Network layers - Network security - Relay control systems
Uncontrolled terms: Ergodics - Joint power - Performance - Physical layer security - Power allocations - Relay network - Relay selection - Secrecy performance - Untrusted relay network - Untrusted relays
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 731.1 Control Systems
DOI: 10.1109/ICSPCC55723.2022.9984259
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

294. 1D intelligent inversion of electromagnetic wave logging data based on convolutional neural network

Accession number: 20223812766586
Authors: Kang, Zhengming (1); Qin, Haojie (1); Zhang, Yi (2); Bo, Hongwei (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 370-375
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the increase of the application of highly deviated wells and horizontal wells, the accurate prediction of formation boundary and resistivity becomes particularly important, but the logging environment of horizontal wells is relatively complex, it is difficult to predict the formation information accurate. In this paper, a new method based on convolutional neural network (CNN) is proposed to solve the problem of resistivity inversion. This method establishes the neural network model, uses Adam optimization algorithm to optimize the network parameters, enhances the nonlinear approximation ability of the network by adding activation function, and uses batch normalization to speed up the rate of training. The data set is calculated by the forward model and processed for the training, verification and test of neural network. Finally, relative noise is added to the test data set, and the network is applied to the test set with noise. The results show that the model has strong robustness. In addition, compared with the commonly used nonlinear iterative method, it not only overcomes the disadvantage of its dependence on the initial value, but also greatly reduces the time of inversion calculation. © 2022 IEEE.
Number of references: 10
Main heading: Horizontal wells
Controlled terms: Approximation algorithms - Convolution - Convolutional neural networks - Iterative methods - Neural network models - Statistical tests
Uncontrolled terms: Accurate prediction - Batch normalization - Boundary - Convolutional neural network - Data set - Highly deviated wells - Logging data - Neural-networks - Normalisation - Resistivity inversion
Classification code: 512.1.1 Oil Fields - 716.1 Information Theory and Signal Processing - 723.4 Artificial Intelligence - 921 Mathematics - 921.6 Numerical Methods - 922.2 Mathematical Statistics
DOI: 10.1109/ICMSP55950.2022.9859226
Funding Details: Number: YCS21213230, Acronym: -, Sponsor: -; Number: 2021JQ-590, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 21JK0836, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: ACKNOWLEDGEMENT The authors would like to thank Sinopec Research Institute of Petroleum Engineering for allowing using the data in this study. This research is supported by the Postgraduate Innovation and Practice Ability Development Fund of Xi'an Shiyou University (Program No. YCS21213230), Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2021JQ-590) and the Scientific Research Program Funded by Shaanxi Province Education Department (Program No. 21JK0836). The anonymous reviewers are also acknowledged.

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

295. Low-frequency Fiber Bragg Grating Accelerometer Based on Diaphragm-type Cantilever beam Invited

Accession number: 20225213302334
Title of translation:
Authors: Fan, Wei (1, 2); Feng, Dequan (1, 2); Qiao, Xueguang (1)
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Source title: Guangzi Xuebao/Acta Photonica Sinica
Abbreviated source title: Guangzi Xuebao
Volume: 51
Issue: 10
Issue date: October 2022
Publication year: 2022
Article number: 1006004
Language: Chinese
ISSN: 10044213
CODEN: GUXUED
Document type: Journal article (JA)
Publisher: Chinese Optical Society
Abstract: In the process of deep oil and gas explorationlow-frequency signal plays a key role. Therefore accelerometers that can receive low-frequency signals are particularly important in low-frequency exploration. Compared with electric accelerometers the Fiber Bragg Grating FBG accelerometer has the characteristics of anti-electromagnetic interference small size high-temperature resistance and high resolution. Researchers have proposed various FBG vibration sensor structures in which cantilever beam and circular diaphragm are two typical structures and have been widely studied. The early single cantilever fiber grating sensor has the characteristics of high sensitivity and weak lateral interference resistance. In contrast the ordinary circular diaphragm structure has strong lateral interference resistance and low sensitivity. In this paper we propose a low-frequency FBG accelerometer based on a diaphragm-type cantilever structure. It combines a plane circular diaphragm and an equal strength cantilever beam into one which reduces the lateral interference and enhances the sensitivity coefficient. The diaphragm-type cantilever is made of a beryllium bronze sheet into a circular diaphragm. Then four symmetrically distributed equal strength cantilever beams are cut into the diaphragm. The four suspension beams jointly support a copper inertial mass block located in the diaphragm center. The edge of the diaphragm is fixed between the base and the gasket through screws. An FBG with a central wavelength of 1 539.15 nm a reflectivity of 90% and a grating area length of 10 mm is selected. The FBG is pasted at two points and fixed on the centerline of one cantilever of the diaphragm-type cantilever with 302 glue. The tail fiber at one end passes through the gap between the diaphragm-type cantilever and the gasket and is connected with the external optical demodulation equipment. According to the theoretical analysis the optimal size of structural parameters of the diaphragm cantilever beam is obtained by MATLAB numerical simulation. According to the optimal size a finite element model is established by COMSOL simulation software to further analyze the vibration form of the structure. The simulation results show that when the edge of the diaphragm cantilever is set as a fixed constraint the resonance frequency of the first mode is 49.5 Hz. The vibration form is that the central mass of four cantilever supports vibrates up and down along the z-axis and the vibration mode conforms to the original design intention. Simultaneously the tested results of sensing characteristics from the shaking table indicate that the system has an excellent response to low-frequency acceleration excitation signals when the natural frequency of the system is 48 Hz. The frequency response range of the system is 1~35 Hz in which the acceleration sensitivity is 452.6 pm/g. The acceleration sensor is designed with strong lateral immunity since the sensitivity in the transverse sensitivity is only 2.16% of the sensitivity in the working direction. Therefore the designed FBG accelerometer provides a new method for the single component FBG accelerometer in the practical application of seismic exploration. © 2022 Chinese Optical Society. All rights reserved.
Number of references: 18
Main heading: Fiber Bragg gratings
Controlled terms: Cantilever beams - Diaphragms - Electromagnetic pulse - Explosives - Gaskets - MATLAB - Nanocantilevers - Vibration analysis

Uncontrolled terms: Anti-interference - Circular diaphragms - Diaphragm-type cantilever - Equal strengths - Interference resistance - Lateral anti-interference - Low-frequency signals - Lower frequencies - Optimal size - Vibration
Classification code: 408.2 Structural Members and Shapes - 601.2 Machine Components - 619.1.1 Pipe Accessories - 701 Electricity and Magnetism - 723.5 Computer Applications - 761 Nanotechnology - 921 Mathematics - 933 Solid State Physics
Numerical data indexing: Frequency 1.00E00Hz to 3.50E+01Hz, Frequency 4.80E+01Hz, Frequency 4.95E+01Hz, Percentage 2.16E+00%, Percentage 9.00E+01%, Size 1.00E-02m, Size 4.526E-10m, Size 5.3915E-07m
DOI: 10.3788/gzxb20225110.1006004
Funding Details: Number: 61735014,61927812,62005214, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: National Natural Science Foundation of ChinaNos. 61927812 61735014 62005214
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

296. First-principles of Tunable Band Gaps of van der Waals Heterostructures Under Electric Field: Monolayer SiC on Hydrogenated BN Nanosheets

Accession number: 20222012109351
Title of translation: :SiCBN
Authors: Xiao, Meixia (1); Leng, Hao (1); Yao, Tingzhen (1); Wang, Lei (1); He, Cheng (2)
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Source title: Cailiao Daobao/Materials Reports
Abbreviated source title: Cailiao Daobao/Mater. Rep.
Volume: 36
Issue: 8
Issue date: April 25, 2022
Publication year: 2022
Article number: 20080062
Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review
Abstract: As a typical representative of the third generation semiconductor materials, silicon carbide (SiC) is one of the most ideally wide band gap semiconductor materials, which has a wide application prospect in semiconductor lighting device and electronic equipment. In this work, we have systematically investigated structural and electronic properties of monolayer SiC on fully-hydrogenated BN nanosheets (SiC/HBNH) and studied the effects of electric field on the band gaps of SiC/HBNH heterobilayers using first-principles calculations based on the density functional theory with van der Waals corrections. The results show that the position of Si and C atoms relative to HBNH nanosheet can determine the structural stability and the interaction strength between SiC and HBNH nanosheets. Therefore, the stacking types can effectively regulate the energy gaps of SiC/HBNH heterobilayers. Moreover, the conduction band minimum and valence band maximum of the heterobilayers are determined by SiC and HBNH nanosheets, respectively, leading to the separation of electrons and holes. Applying an electric field, a linear distribution of band gaps is a function of the strength of electric field, accompanied with a transition from direct semiconductors to indirect semiconductors even to conductors, which are primarily induced the stronger interaction between SiC and HBNH nanosheets. The results demonstrate that the stacking arrangements and electric field can effectively tune the electronic properties of SiC/HBNH heterobilayers, and reduce the recombination probability of electrons and holes, which open a way for the diverse and tunable electronic properties of semiconductor heterostructures in novel electronic nanodevices.
Number of references: 47
Main heading: Electronic properties
Controlled terms: Oscillators (electronic) - Calculations - Nanosheets - Wide band gap semiconductors - Silicon carbide - Density functional theory - Electric fields - Stability - Energy gap - Heterojunctions - Van der Waals forces

Uncontrolled terms: Application prospect - Electrons and holes - First principles - Silicon carbide heterostructure - Stackings - Third generation - Tunable Band-gap - Van der Waal - Van Der Waals interactions - Wide band gap semiconductor materials
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 713.2 Oscillators - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics
DOI: 10.11896/cldb.20080062
Funding Details: Number: ys37020203, Acronym: -, Sponsor: -; Number: 51801155, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Young Scientists Fund;
Funding text: This work was financially supported by the Young Scientists Fund of the National Natural Science Foundation of China (51801155) and Materials Science and Engineering of Provincial Advantage Disciplines in Xi'an Shiyou University (ys37020203).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

297. Genetic mechanism of overpressure and its significance on petroleum exploration in Baiyun sag in the deep water zone of Pearl River Mouth Basin

Accession number: 20221011757120
Title of translation:
Authors: Zhang, Xiangtao (1); Li, Jun (2); Xiang, Xuhong (1); Zhao, Jingzhou (2)
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Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 43
Issue: 1
Issue date: January 2022
Publication year: 2022
Pages: 41-57
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Recently, an important breakthrough has been made in the oil-gas exploration of Zhuhai Formation and Wenchang Formation of Baiyun sag in the deep water zone of Pearl River Mouth Basin, and the sandbody, i.e., oil and gas, was found in overpressure section, revealing that overpressure might be one of the key controlling factors for the formation and distribution of this type of oil-gas reservoirs. However, there are still few stuies on the overpressure genesis and the relationship between it and oil-gas reservoir formation. Therefore, three typical overpressure wells in the sag were selected for systematic shale sampling throughout the well section, and the experiments such as field emission scanning electron microscopy, N2/CO2 absorption and X-ray diffraction were carried out, clarifying the shale diagenesis in the main depression, north slope and the east of Baiyun sag, as well as the causes for the difference in overpressure logging response. Meanwhile, based on the determination of overpressure distribution characteristics according to the pressure prediction results obtained by drilling and Bowers method, multiple methods were adopted to this paper thoroughly analyzes the overpressure genesis mechanism using multiple methods and explores the hydrocarbon accumulation effect under overpressure and the oil-gas exploration fields in the near future. The research results show that there is a regional difference in the logging response model of overpressure section in Baiyun sag; the sonic transit time and density remain constant and the electrical resistivity is increased in the main depression and north slope of Baiyun sag; in the east of Baiyun sag, the sonic transit time and resistivity show an obvious reversal with the increasing of depth, while the density first increases and then is slightly reversed. The reason for such a difference is that there are differences in mineral composition of the shale in the two regions, thus resulting in various pore structures and compaction modes. The overpressure in Zhuhai Formation-Wenchang Formation of Baiyun sag is not caused by undercompaction, and the source of overpressure primarily lies in fluid expansion caused by hydrocarbon generation; the overpressure in the east of Baiyun sag may also be related to clay mineral

transformation, and reservoir overpressure is resulted from pressure transfer. As overpressure is the driving force for hydrocarbon accumulation, and the formation and distribution of oil-gas reservoirs are closely related to the distribution of overpressure in ancient and modern times. On this basis, the oil-gas exploration fields can be divided into the atmospheric pressure oil-gas reservoir at the edge of overpressure sealing compartment or outside the compartment and the overpressure oil-gas reservoir inside the compartment. Specifically, the former is mainly controlled by the effective coupling of reservoir-forming elements, such as pressure releasing pathway and high-quality trap, while the latter is closely related to such factors as good hydrocarbon generation and hysteresis conditions, overpressure strength and high-quality reservoirs and sweet spots.
Number of references: 62
Main heading: Pore structure
Controlled terms: Geological surveys - Gases - Petroleum reservoirs - Petroleum prospecting - Scanning electron microscopy - Field emission microscopes - Hydrocarbons - Oil well logging - Petroleum reservoir engineering - Clay minerals - Shale
Uncontrolled terms: Baiyun sag - Exploration field - Hydrocarbon generation - Hydrocarbon generation overpressure - Overpressure - Overpressure genesis - Pearl River Mouth basin - Pressure transfer - Zhuhai formation to wenchang formation - Zhuhai formations
Classification code: 481.1 Geology - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 741.3 Optical Devices and Systems - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.7623/syxb202201004
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

298. Influence of reservoir minerals and ethanol on catalytic aquathermolysis of heavy oil

Accession number: 20213610874954
Authors: Zhou, Zhichao (1); Slaný, Michal (2, 3); Kuzielová, Eva (3); Zhang, Wangyuan (1); Ma, Liwa (1); Dong, Sanbao (1); Zhang, Jie (1); Chen, Gang (1, 4)
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Source title: Fuel
Abbreviated source title: Fuel
Volume: 307
Issue date: January 1, 2022
Publication year: 2022
Article number: 121871
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this paper, the effect of different types of minerals and alcohols as hydrogen donors on the catalytic aquathermolysis of heavy oil was investigated. The best catalytic effect showed sodium clay. Methanol was demonstrated as the most suitable to enhance viscosity reduction efficiency. Under the optimal conditions of the catalytic aquathermolysis, the viscosity reduction rate can reach 87.32 % in comparison with the original oil. Differential scanning calorimetry (DSC), Fourier Transform Infrared Spectrometry (FTIR), Thermogravimetric Analysis (TGA), Elemental analysis, and Gas chromatography-mass spectrometry (GC–MS) were used to study the changes occurring during the catalytic aquathermolysis of crude oil. In addition, several different model compounds (1-octene, thiophene, phenol, pyridine, quinoline, benzothiophene, and nonylphenol) were selected to simulate the chemical changes of crude oil components and to propose the reaction mechanisms.
Number of references: 40
Main heading: Crude oil

Controlled terms: Petroleum reservoir engineering - Petroleum reservoirs - Ethanol - Gas chromatography - Heavy oil production - Clay minerals - Thermogravimetric analysis - Viscosity - Differential scanning calorimetry - Fourier transform infrared spectroscopy - Mass spectrometry - Phenols - Thiophene
Uncontrolled terms: Aquathermolysis - Catalytic aquathermolyse - Catalytic effects - Heavy oil - Hydrogen donor - Optimal conditions - Reduction efficiency - Reduction rate - Reservoir mineral - Viscosity reduction
Classification code: 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 801 Chemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 944.6 Temperature Measurements
Numerical data indexing: Percentage 8.732E+01%
DOI: 10.1016/j.fuel.2021.121871
Funding Details: Number: 2/0166/21, Acronym: -, Sponsor: -; Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: APVV-18-0075,APVV-19-0490, Acronym: APVV, Sponsor: Agentúra na Podporu Výskumu a Vývoja; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was supported by courtesy of the National Natural Science Foundation of China (51974252), the Youth Innovation Team of Shaanxi University, the Slovak Research and Development Agency APVV-18-0075, APVV-19-0490, and the Slovak Grant Agency VEGA No. 2/0166/21. The authors also thank the work of the Modern Analysis and Testing Center of Xi'an Shiyou University.This work was supported by courtesy of the National Natural Science Foundation of China (51974252), the Youth Innovation Team of Shaanxi University, the Slovak Research and Development Agency APVV-18-0075, APVV-19-0490, and the Slovak Grant Agency VEGA No. 2/0166/21. The authors also thank the work of the Modern Analysis and Testing Center of Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

299. Layer-dependent electronic and optical properties of tin monoxide: a potential candidate in photovoltaic applications

Accession number: 20221611964657
Authors: Wanzhong, Li (1); Jian, Sun (2); Chong, Deng (1)
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Source title: Physical Chemistry Chemical Physics
Abbreviated source title: Phys. Chem. Chem. Phys.
Volume: 24
Issue: 13
Issue date: March 10, 2022
Publication year: 2022
Pages: 7611-7616
Language: English
ISSN: 14639076
CODEN: PPCPFQ
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Tunable band gaps make two-dimensional (2D) SnO a promising candidate for a wide variety of applications in optoelectronic devices. In this work, we calculated the structural, electronic, and optical properties of monolayer and mutilayer SnO up to seven layers based on density functional theory. We found that the band gaps of SnO can vary from 0.61 eV to 4.05 eV as the layer number of SnO decreases from seven to one, which is mainly because of the interlayer coupling effect. The interlayer coupling ensures improved carrier transport properties between neighbouring layers, which can benefit the performance of 2D SnO in photovoltaic applications. In particular, a suitable band gap of 1.20 eV for solar cell applications is obtained in trilayer SnO, and the predicted theoretical efficiency of solar cells with trilayer SnO as the active material achieves a high value exceeding 16%, which is relatively high for 2D materials. © 2022 The Royal Society of Chemistry
Number of references: 44
Main heading: Density functional theory
Controlled terms: Energy gap - Optical properties - Optoelectronic devices - Solar cells

Uncontrolled terms: Density-functional-theory - Electronic and optical properties - Interlayer coupling - Layer number - Optoelectronics devices - Photovoltaic applications - Tin monoxides - Trilayers - Tunable Band-gap - Two-dimensional
Classification code: 702.3 Solar Cells - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: Electron volt 1.20E+00eV, Electron volt 6.10E-01eV to 4.05E+00eV, Percentage 1.60E+01%
DOI: 10.1039/d1cp05305a
Funding Details: Number: 19JK0659, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2021JQ-606, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors are truly grateful for the support by the Scientific Research Program Funded by Shannxi Provincial Education Department (Program No. 19JK0659) and the Natural Science Basic Research Program of Shaanxi (Program No. 2021JQ-606)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

300. Solid particle erosion prediction in elbows based on machine learning and swarm intelligence algorithm

Accession number: 20223812772695
Authors: Wang, Zhiguo (1); Chen, Haoyu (1); Wang, Meng (2); Zhang, Xu (1); Dou, Yihua (1)
Author affiliation: (1) Xi'an Key Laboratory of Wellbore Integrity Evaluation, New Energy College, Xi'an Shiyou University, Xi'an; 710065, China; (2) Research Institute of Petroleum Exploration & Development, PetroChina, Beijing; 100083, China
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 218
Issue date: November 2022
Publication year: 2022
Article number: 111042
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Continuous impact of solid particles causes severe pipeline wear, and may result in leakage in directional change areas such as elbows. Accurate prediction of erosion is essential in the petroleum industry. In this study, a new machine learning (ML)-based model for predicting elbow erosion was established. Seven parameters were selected as feature inputs from the fluid characteristics, particle characteristics, and pipe characteristics. The maximum erosion rate was used as the predicted output. Based on the gas–solid flow data, the prediction accuracy of different ML models was compared. The kernel extreme learning machine (KELM) model was considered as the optimal model. For gas–liquid–solid flow, incorporating swarm intelligence (SI) algorithms, the whale optimization algorithm–hybrid kernel extreme learning machine (WOA–HKELM) erosion prediction model was proposed; the predictions were compared with the experimental values. The root mean square error (RMSE) of the prediction was 0.82 × 10-3, which is consistent with the experimental results. It was also demonstrated that the model can capture the trend of the influence of mixed dimensionless inputs on the prediction results in churn and annular flow. © 2022 Elsevier B.V.
Number of references: 47
Main heading: Erosion
Controlled terms: Forecasting - Knowledge acquisition - Learning algorithms - Machine learning - Mean square error - Petroleum industry - Swarm intelligence
Uncontrolled terms: Continuous impacts - Elbow - Erosion predictions - Hybrid kernel extreme learning machine - Learning machines - Machine-learning - On-machines - Solid particle erosion - Solid particles - Swarm intelligence algorithms
Classification code: 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 922.2 Mathematical Statistics
DOI: 10.1016/j.petrol.2022.111042
Funding Details: Number: 2022GY-129, Acronym: -, Sponsor: -; Number: 52074220,5227042548, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: The authors would like to acknowledge the supports of the National Natural Science Foundation of China (No. 52074220 and No. 5227042548) and the Key R&D Plan of Shaanxi Province (No. 2022GY-129).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

301. Research on Space-Time Adaptive Noise Reduction Based on Information Entropy

Accession number: 20223512639669
Authors: Huang, Xiaoyan (1); Liu, Keman (1); Li, Jing (1)
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Shaanxi, Xi'an, China
Source title: IEEE Joint International Information Technology and Artificial Intelligence Conference (ITAIC)
Abbreviated source title: ITAIC - IEEE Jt. Int. Inf. Technol. Artif. Intell. Conf.
Volume: 2022-June
Part number: 1 of 1
Issue title: IEEE 10th Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2022
Issue date: 2022
Publication year: 2022
Pages: 2146-2150
Language: English
ISSN: 26932865
ISBN-13: 9781665422079
Document type: Conference article (CA)
Conference name: 10th IEEE Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2022
Conference date: June 17, 2022 - June 19, 2022
Conference location: Chongqing, China
Conference code: 181640
Sponsor: Chengdu Global Union Institute of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; IEEE Harbin Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Usually, the logging signal strength is small and the noise interference is serious, effective noise reduction methods must be adopted to acquire real formation information. It is difficult to separate useful information by traditional filtering and noise reduction methods. To solve this problem, a reduced dimension space-time adaptive method based on the theory of information entropy is proposed to suppress the noise. The algorithm divides the received data into subarrays, performs short-time smoothing processing, estimates the covariance matrix, and dimensionality reduction of original space-time data. Simulation and experimental results show that the method can effectively suppress the noise in the logging echo on the premise of ensuring the complete formation information. © 2022 IEEE.
Number of references: 5
Main heading: Covariance matrix
Controlled terms: Data reduction - Information filtering
Uncontrolled terms: Adaptive noise - Dimensionality reduction - Dimensionality reduction processing - Information entropy - Logging echo - Noise reduction methods - Reduction processing - Signal strengths - Space-time adaptive - Spacetime
Classification code: 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 921 Mathematics
DOI: 10.1109/ITAIC54216.2022.9836566
Funding Details: Number: 16JK1614, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This article supported by the special scientific research program of Shaanxi Provincial Department of education, "a new method for acoustic logging echo noise suppression" (No.: 16JK1614).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

302. Application of DIAdem in while-drilling vibration data analysis

Accession number: 20223612687541

Authors: Li, Fei (1); Wang, Yifan (1); Liu, Yuan (1); Wang, Xi (1)
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Source title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Abbreviated source title: Int. Conf. Commun., Inf. Syst. Comput. Eng., CISCE
Part number: 1 of 1
Issue title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Issue date: 2022
Publication year: 2022
Pages: 637-640
Language: English
ISBN-13: 9781665498487
Document type: Conference article (CA)
Conference name: 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Shenzhen, China
Conference code: 181987
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: While-drilling vibration data acquisition module has the characteristics of collecting more data and high acquisition frequency, which leads to the problems of long processing time, low efficiency, and poor visualization in traditional vibration data analysis methods. In order to solve these problems, this paper proposes the application of DIAdem in the analysis of while-drilling vibration data. It introduces some powerful functions of DIAdem software in detail. Based on DIAdem software to process while-drilling vibration data, data correction, time-frequency domain analysis, automatic operation can be completed. The processing time is short, high efficiency, and has excellent visualization. © 2022 IEEE.
Number of references: 5
Main heading: Visualization
Controlled terms: Data acquisition - Data handling - Data visualization - Efficiency - Frequency domain analysis - Infill drilling - Information analysis - Vibration analysis
Uncontrolled terms: Data acquisition modules - Data analysis-methods - Data corrections - Diadem - Longest processing time - Powerful functions - Time/ frequency Domain Analysis - Vibration data - While drillings - While-drilling vibration data
Classification code: 511.1 Oil Field Production Operations - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 903.1 Information Sources and Analysis - 913.1 Production Engineering - 921.3 Mathematical Transformations
DOI: 10.1109/CISCE55963.2022.9851184
Funding Details: Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021K?-33 and 2022K?-25) and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

303. Software Design of Protocol Conversion between Instruments Based on Test-Driven Development

Accession number: 20223812766848
Authors: Li, Fei (1); Zhang, Guanghui (1); Lei, Ge (1); Wang, Xi (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1

Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 175-179
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the differences in the data frame format, transmission rate and medium access mechanism of the bus protocol used in the interaction between the Rotary Steering System (RSS) tool and the Measurement While Drilling (MWD) tool in the downhole petroleum instrument, as well as many challenges faced by traditional embedded software development question. In this paper, the test-driven development method is used to develop the inter-instrument communication protocol conversion software, which improves the robustness and stability of the code, and effectively solves the problems faced by the traditional embedded development mode. The software is based on TI's cross compiler CCS as a development tool. Firstly, through analyzing the overall scheme of the system design, the software functions during software development are analyzed in detail. The software is divided into three modules: command receiving, conversion, and transmission module. Secondly, according to the test-driven development mode, write a list of test cases and design test cases for each functional module in sequence. Then write the product code to make the test case pass. After the test is passed, refactor the code to eliminate duplication. After confirming the correctness of the product code and optimizing the code, write the following test case and the corresponding function code in the list until the code design of the entire module is completed. © 2022 IEEE.
Number of references: 6
Main heading: Software design
Controlled terms: Product design - Software testing
Uncontrolled terms: Data frame format - Development modes - Downhole instrument - Downholes - Embedded software development - Product code - Protocol conversion - Test case - Test driven development - Transmission rates
Classification code: 723.1 Computer Programming - 723.5 Computer Applications - 913.1 Production Engineering
DOI: 10.1109/ICMSP55950.2022.9859046
Funding Details: Number: YCS22113126, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability(Grant No. YCS22113126).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

304. The Auxiliary Role of College Music in Teaching in View of Artificial Intelligence (*Open Access*)

Accession number: 20222812344547
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Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022

Article number: 2693199
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Music is a common art and it is a jewel of human civilisation. In the course of music's development, the evaluation of music teaching is an inevitable step in the development of quality music. Universities are important places that abound with musical souls and their contribution to the development of music has been outstanding. But with the development of the times, university music has been hampered in the field of teaching and learning. As an important branch in the field of computer science and information technology, artificial intelligence technology contains many intersecting and comprehensive subject connotations, bringing brand-new elements to music education. It has also had an important impact on the development of music teaching. The article focuses in depth on the traditional process of music development in terms of the characteristics and ways of teaching music. Based on this, the article further explores the integration of artificial intelligence and music and analyses the role of emerging technologies as an aid to music from the perspective of the times. And this article uses emotion recognition as an evaluation index to explore the evaluation role of artificial intelligence technology in college music teaching, and improve the quality and efficiency of music teaching. The experimental results show that the teacher's positive emotion rate based on image data is 57.8%, and the student's positive emotion rate is 44.5%; the teacher's positive emotion rate based on voice data is 53.3%, and the student's positive emotion rate is 51.1%. The classroom emotion is negative at 7-13 minutes, the classroom emotion continues to be low at 28-40 minutes, and the teacher and student emotions are more positive at 13-28 minutes. © 2022 Jie Liu.
Number of references: 26
Main heading: Quality control
Controlled terms: Artificial intelligence - Education computing - Emotion Recognition - Engineering education - Music - Students - Teaching
Uncontrolled terms: Artificial intelligence and music - Artificial intelligence technologies - Emerging technologies - Emotion recognition - Evaluation index - Human civilization - Music education - Positive emotions - Teachers' - Teaching and learning
Classification code: 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 901.2 Education - 913.3 Quality Assurance and Control - 971 Social Sciences
Numerical data indexing: Percentage 4.45E+01%, Percentage 5.11E+01%, Percentage 5.33E+01%, Percentage 5.78E+01%, Time 1.68E+03s to 2.40E+03s, Time 4.20E+02s to 7.80E+02s, Time 7.80E+02s to 1.68E+03s
DOI: 10.1155/2022/2693199
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

305. Hardware-in-Loop Test of Rotary Steerable System Main Controller

Accession number: 20223812766913
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 687-690
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022

Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: To solve many problems faced by the main controller of the rotary steerable tool in the actual test, such as time-consuming, poor economy, difficulty in building a test environment, and it is not easy to arbitrarily change the measurement variables according to the test requirements. By making the simulation attitude sensor model and the mud downlink command model, downloading it into the rapid prototyping controller SP6000, and adding the corresponding I/O interface between simulation and semi-physical simulation, the virtual attitude sensor and mud downlink command simulator are designed. And then combined with the permanent magnet synchronous motor to perform the hardware-in-loop test of the main controller of the rotary steerable tool. This test can meet the requirements for different attitude angle parameters and mud down commands during the main controller test. After the experimental trial, the test system solves the problem of difficulty in setting up the test on the one hand. On the other hand, the measurement variable can be arbitrarily changed according to the test requirements, which significantly saves the tester's time and improves the test efficiency. © 2022 IEEE.
Number of references: 10
Main heading: Controllers
Controlled terms: Permanent magnets - Testing - Virtual reality
Uncontrolled terms: Attitude sensors - Hardware in loop - In-buildings - Main controller of the rotary steerable tool - Rapid-prototyping - Rotary steerable systems - Sensors models - Test Environment - Test requirements - Virtual instrument
Classification code: 704.1 Electric Components - 723 Computer Software, Data Handling and Applications - 732.1 Control Equipment
DOI: 10.1109/ICMSP55950.2022.9859124
Funding Details: Number: YCS22113139, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENTS This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability (YCS22113139).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

306. Downlink Command Simulator based on Simulink for Rotary Steerable System

Accession number: 20223812766559
Authors: Li, Fei (1); Liu, Yuan (1); Mei, Yu (1); Wang, Xi (1); Wang, Yifan (1); Tan, Yuqi (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 167-170
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: To solve the rotary steerable system in the production of downlink command testing difficulties. A simulator of mud downlink command generation and transmission based on Simulink is designed. The downlink command's generation and transmission model is built using the Simulink module. In the transmission model, mud flow is positively correlated with turbine speed, and turbine speed is converted into square wave voltage frequency. Then, the Simulink model is downloaded to YXSPACE-SP6000, the downlink commands of different parameters in the Simulink model are changed, and the correlation between the input and output of the simulator is analyzed. Through the correlation experiment of the simulator, it can be concluded that the correlation between the input and output of the simulator is about 98%, which verifies the effectiveness of the Simulink model and the reliability of the downlink command simulator. © 2022 IEEE.
Number of references: 8
Main heading: Simulink
Controlled terms: Rotating machinery - Simulators - Transmissions
Uncontrolled terms: Coding - Command generation - Input and outputs - Mud downlink command - Rotary steerable systems - Simulink - Simulink models - Simulink simulator - Transmission model - Turbine speed
Classification code: 601.1 Mechanical Devices - 602.2 Mechanical Transmissions - 723.2 Data Processing and Image Processing
Numerical data indexing: Percentage 9.80E+01%
DOI: 10.1109/ICMSP55950.2022.9859193
Funding Details: Number: YCS22113143, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability (Grant No. YCS22113143).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

307. Target Tracking Based on Spatiotemporal Saliency and Multiscale Appearance Cue Fusion

Accession number: 20231013689823
Authors: Li, Xiangjuan (1); Zhao, Chuanyuan (1); Yang, Wenyang (1)
Author affiliation: (1) College of Computer Science, Xi'an ShiYou University, Xi'an; 710065, China
Source title: Proceedings - 2022 8th Annual International Conference on Network and Information Systems for Computers, ICNISC 2022
Abbreviated source title: Proc. - Annu. Int. Conf. Netw. Inf. Syst. Comput., ICNISC
Part number: 1 of 1
Issue title: Proceedings - 2022 8th Annual International Conference on Network and Information Systems for Computers, ICNISC 2022
Issue date: 2022
Publication year: 2022
Pages: 328-334
Language: English
ISBN-13: 9781665453516
Document type: Conference article (CA)
Conference name: 8th Annual International Conference on Network and Information Systems for Computers, ICNISC 2022
Conference date: September 16, 2022 - September 19, 2022
Conference location: Virtual, Online, China
Conference code: 186867
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this paper, an unsupervised approach for tracking moving targets in videos is proposed. The proposed approach combines multi-scale appearance cues and spatiotemporal saliency. Firstly, the gradient distribution of the optical flow field at lower spatiotemporal scales is analyzed to get a global saliency map, estimating the initial range of the moving target. Then, the structured forest algorithm is used to extract more refined edge information. Appearance clues including HOG, color histogram, color contrast and spatial color variance are fused to describe local spatial information. The spatial saliency map is calculated by the geodesic distance-based method according to the spatial

feature difference of superpixels. The temporal saliency map is generated based on the position and color deviation of the superpixels from two adjacent frames. Finally, the global saliency map, the spatial map and the temporal saliency map are fused to obtain the spatiotemporal saliency map, indicating the region of moving targets. Experimental results on two benchmark video datasets show that our approach does not need prior information and can achieve superior experimental results compared with four previous classical algorithms. © 2022 IEEE.
Number of references: 21
Main heading: Target tracking
Controlled terms: Clutter (information theory) - Color - Image segmentation - Superpixels
Uncontrolled terms: Appearance - Colour spaces - Moving targets - Multi-scales - Saliency map - Spatiotemporal saliency - Super pixels - Targets tracking - Tracking moving targets - Unsupervised approaches
Classification code: 716.1 Information Theory and Signal Processing - 741.1 Light/Optics
DOI: 10.1109/ICNISC57059.2022.00072
Funding Details: Number: SGH21Y0087, Acronym: -, Sponsor: -; Number: 41301480, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JK0832, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2021JQ-607, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: ACKNOWLEDGMENT This work is supported by the National Natural Science Fund of China (No. 41301480), the Basic Research Program of Natural Science of Shaanxi Province (No 2021JQ-607), the Special Scientific Research Plan of Shaanxi Provincial Department of Education (No. 20JK0832) and the 14th Five-Year Plan of Shaanxi Educational Science (No. SGH21Y0087).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

308. Automatic Attitude Test System for Rotary Steerable Tool

Accession number: 20223612687641
Authors: Li, Fei (1); Lei, Ge (1); Li, Lingzhi (1); Zhang, Guanghui (1); Wu, Hao (1); Wang, Xi (1)
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Source title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Abbreviated source title: Int. Conf. Commun., Inf. Syst. Comput. Eng., CISCE
Part number: 1 of 1
Issue title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Issue date: 2022
Publication year: 2022
Pages: 152-155
Language: English
ISBN-13: 9781665498487
Document type: Conference article (CA)
Conference name: 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Shenzhen, China
Conference code: 181987
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: There are problems such as a long data acquisition cycle, high test cost, and uncontrollable factors in manual testing for the traditional attitude algorithm verification process. Also, the test can not go through all attitude positions. The design of an automatic attitude test system is proposed, and it can realize the automatic control of the virtual while drilling sensor and the signal acquisition of the main controller. The test consists of static and dynamic measurement methods, the communication with the main controller is realized through RS485, and the data is acquired and then uploaded to the GUI interface of the automated test system. After verification, the system can modify the step length by setting the attitude, completing the attitude's 100% full coverage test, and verifying the attitude acquisition end of the main controller. The interface is simple to operate, and the automation program is high, which can effectively solve the attitude data. The test cycle is long, and the problem of manual error is easy. © 2022 IEEE.
Number of references: 9
Main heading: Controllers
Controlled terms: Automation - Data acquisition - Infill drilling - Signal processing

Uncontrolled terms: Attitude correction - Attitude sensors - Automated test systems - Component - IS problems - Test cost - Test systems - Virtual attitude sensor while drilling - While drillings
Classification code: 511.1 Oil Field Production Operations - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 731 Automatic Control Principles and Applications - 732.1 Control Equipment
Numerical data indexing: Percentage 1.00E+02%
DOI: 10.1109/CISCE55963.2022.9851125
Funding Details: Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: and 2022KW-25), and the Graduate Innovation Project of Xi An Shryou University.This research was funded by the National Science Foundation of China (Grant No. U20B2029), the NaturalScience Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

309. OAuth 2.0 protocol optimization based on CPK technology

Accession number: 20224713138786
Authors: Li, Qian (1); Jie, Kong (1)
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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12451
Part number: 1 of 1
Issue title: 5th International Conference on Computer Information Science and Application Technology, CISAT 2022
Issue date: 2022
Publication year: 2022
Article number: 1245140
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510660076
Document type: Conference article (CA)
Conference name: 5th International Conference on Computer Information Science and Application Technology, CISAT 2022
Conference date: July 29, 2022 - July 31, 2022
Conference location: Chongqing, China
Conference code: 183755
Sponsor: Guangzhou Computer Society
Publisher: SPIE
Abstract: As a security standard, OAuth's access certificate is an anonymous token without any protective measures. It is easy to be malicious monitored or stolen in channel transmission. In order to enhance the security transmission of access token and ensure the confidentiality of protected resources. This paper discusses the authorization and delegation function of oauth2.0. Based on the operation mechanism of standard oauth2.0 protocol, it is proposed that the access credentials issued by the subject authorization server are transmitted in JWT structured token format, a handshake is added between the authorization server and the resource server, and the combined encryption CPK system is used in the transmission of access tokens to strengthen mutual authentication among servers, The formal security analysis of partially optimized oauth2.0 protocol is carried out with AVISPA tool as the carrier. The verification results show that this method improves the security of the protocol to a certain extent. © 2022 SPIE.
Number of references: 6
Main heading: Cryptography
Controlled terms: Authentication - Authorization
Uncontrolled terms: Authorization Servers - Channel transmission - Combined encryption CPK - Formal analysis - In-channels - Oauth2.0 protocol - Protective measures - Protocol optimization - Security - Security standards
Classification code: 723 Computer Software, Data Handling and Applications
DOI: 10.1117/12.2656672
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

310. The design of material winding system based on tension control

Accession number: 20223812766864
Authors: Kang, Chen (1); Liu, Feng (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 616-619
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The quality of tension control directly affects the quality of winding products. The quality of tension control directly affects the quality of winding products. At present, most winding systems adopt indirect tension control with dancing roller to meet the requirements in structure, cost and accuracy. Aiming at this goal, this article designs a direct control system based on Siemens 314 PLC and S120 frequency converter by analyzing the winding process and mathematical modeling of tension control. This system adopts a direct closed-loop tension control scheme and converts the tension problem into the control of motor speed. This tension control system has a very friendly man-machine dialogue interface, convenient operation and high reliability, which significantly improves the control accuracy of material winding tension and can be widely used in the actual production of material winding industry. © 2022 IEEE.
Number of references: 5
Main heading: Control systems
Controlled terms: Quality control - Winding
Uncontrolled terms: Closed loop tension controls - Control schemes - Direct control - Material winding - Motor speed - Siemens - Tension control systems - Tension controls - Winding process - Winding system
Classification code: 691.2 Materials Handling Methods - 731.1 Control Systems - 913.3 Quality Assurance and Control
DOI: 10.1109/ICMSP55950.2022.9858942
Funding Details: Number: YCS21213221, Acronym: -, Sponsor: -;
Funding text: Fund project: Shaanxi Province Technology Innovation Guidance Special Fund (Project NO. YCS21213221).ACKNOWLEDGMENT This article was supported by Xi'an Shiyou University Postgraduate Innovation and Practical Ability Training Program.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

311. ARM-based attitude measurement system design of guided drilling tool

Accession number: 20223812766813
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022

Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 233-237
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Accurate measurement of attitude parameters (inclination angle I, tool face angle T, azimuth angle A) of downhole tools is one of the key technologies in the whole guided drilling process. Improving the measurement accuracy of attitude parameters can shorten the drilling cycle and reduce the drilling risk. Based on the existing drilling tool attitude measurement theory, this paper proposes a design scheme of drilling tool attitude data acquisition and processing system based on ARM. The system takes Samsung Exynos4412 processor as the core controller, co-ordinates the control between various functional modules, completes the acquisition, processing and calculation of attitude angles such as I, A and T, and replaces the traditional scheme of ' PC + data acquisition card'. © 2022 IEEE.
Number of references: 10
Main heading: Data acquisition
Controlled terms: Data handling - Infill drilling - Parameter estimation - Risk assessment
Uncontrolled terms: Accurate measurement - Attitude algorithms - Attitude measurement - Attitude parameter - Azimuth angles - Drilling tool - Exynos4412 - Inclination angles - Measurement system design - Measurements of
Classification code: 511.1 Oil Field Production Operations - 723.2 Data Processing and Image Processing - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICMSP55950.2022.9859008
Funding Details:
Funding text: ACKNOWLEDGMENT This paper is supported by Xi'an Shiyou University Postgraduate Innovation and Practical Ability Training Program.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

312. Effect of Axial Heat Conduction on Thermal Performance in a Printed Circuit Heat Exchanger

Accession number: 20221912081233
Title of translation:
Authors: Tang, Ling-Hong (1); Yang, Bo-Hao (1); Li, Wen-Jun (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Kung Cheng Je Wu Li Hsueh Pao/Journal of Engineering Thermophysics
Abbreviated source title: Kung Cheng Je Wu Li Hsueh Pao
Volume: 43
Issue: 4
Issue date: April 2022
Publication year: 2022
Pages: 1055-1062
Language: Chinese
ISSN: 0253231X
CODEN: KCJPDF
Document type: Journal article (JA)
Publisher: Science Press

Abstract: In this study, the effect of axial heat conduction on thermal performance in a zigzag channel printed circuit heat exchanger (PCHE) with supercritical liquefied natural gas as the working fluid was studied by a numerical method under different conditions. The influence factors included Reynolds number, operating pressure, and inlet temperatures of the cold side. The results indicated that the axial heat conduction could greatly affect the thermal performance of the PCHE at low Reynolds numbers but decrease it at high Reynolds numbers for different working conditions, and the effect of axial heat conduction could be ignored at high Reynolds numbers. At the same average Reynolds number, the thermal performance of the PCHE decreased as the pressure increased, and the inlet temperature of 195 K provided the best thermal performance while the inlet temperature of 220 K was the worst among the three different inlet temperatures of the cold side. However, the influence of different inlet temperatures on the axial heat conduction in the PCHE was very small. © 2022, Science Press. All right reserved.
Number of references: 15
Main heading: Reynolds number
Controlled terms: Liquefied natural gas - Printed circuits - Heat conduction - Numerical methods - Heat exchangers - Timing circuits
Uncontrolled terms: Axial heat conduction - Cold side - Condition - High Reynolds number - Inlet temperature - Printed circuit heat exchangers - Reynold number - Supercritical - Thermal Performance - Working fluid
Classification code: 523 Liquid Fuels - 616.1 Heat Exchange Equipment and Components - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 713.4 Pulse Circuits - 921.6 Numerical Methods
Numerical data indexing: Temperature 1.95E+02K, Temperature 2.20E+02K
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

313. Intelligent reservoir dynamic analysis management system

Accession number: 20224312992578
Authors: Wang, Xiao-Yan (1); Ma, Yan-Juan (1); Shi, Pei-Qi (1); Wang, Chuang (1); Dang, Hui-Feng (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Wang, Xiao-Yan(shiyouwxy@126.com)
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12345
Part number: 1 of 1
Issue title: International Conference on Applied Statistics, Computational Mathematics, and Software Engineering, ASCMSE 2022
Issue date: 2022
Publication year: 2022
Article number: 123451L
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510657625
Document type: Conference article (CA)
Conference name: 2022 International Conference on Applied Statistics, Computational Mathematics, and Software Engineering, ASCMSE 2022
Conference date: May 20, 2022 - May 22, 2022
Conference location: Qingdao, China
Conference code: 183053
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: Taking the oil reservoir managed by an oil production plant as the main object, and mainly aiming at the problems existing in the current oil reservoir dynamic analysis, such as the heavy workload of data statistics, the incomplete function of drawing pictures, and the cumbersome filling of reports, we have fully investigated the current technical cadres of the whole plant. On the basis of understanding the current data requirements, functional requirements and operating habits, through the basic database, an intelligent management data platform for reservoir dynamic analysis is established. The system can meet the current reservoir dynamic analysis data statistical query, curve drawing, automatic report generation and other functions, provide convenience for development and analysis, and improve work efficiency and quality. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.

Number of references: 8
Main heading: Search engines
Controlled terms: Petroleum reservoir engineering - Quality control - Query processing - Reservoir management
Uncontrolled terms: 'current - Data statistics - Dynamics analysis - Heavy workloads - Main objects - Management systems - Oil reservoirs - Oil-production - Production plant - Reservoir dynamics
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 723 Computer Software, Data Handling and Applications - 913.3 Quality Assurance and Control
DOI: 10.1117/12.2648735
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

314. Research on modification method of voltage control area considering wind power connection

Accession number: 20224112857974
Title of translation:
Authors: Li, Yingliang (1); Wang, Kang (1); Gao, Zhaodi (1); Wang, Deming (1); Song, Nan (1); Zhu, Qi (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Yingliang(Yingliang.li@hotmail.com)
Source title: Taiyangneng Xuebao/Acta Energiae Solaris Sinica
Abbreviated source title: Taiyangneng Xuebao
Volume: 43
Issue: 9
Issue date: September 28, 2022
Publication year: 2022
Pages: 258-266
Language: Chinese
ISSN: 02540096
CODEN: TYNPDG
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The traditional Voltage Control Area(VCA)division will change with the fluctuation of wind power output. To obtain a stable partition to adapt the various wind power output, this article proposed a method of voltage control area correction considering the impact of wind power. Firstly, in order to study the impact of the fluctuation of wind power output on the partition, the probability distribution of wind power output is discretized into multiple scenarios, and the power flow and partition of each scenario are studied. Secondly, the Jacobian submatrix is used to establish the sensitivity matrix and electrical distance matrix with power factor, and the condensed hierarchical clustering method is used to partition PQ nodes under different cross-section conditions of wind power output. According to the minimum value of Q-V curve, the generators which are consistent with the reactive power limit of PQ node are also classified into a group, and then the remaining PV nodes are divided into the whole network by sensitivity method. Finally, by identifying the boundary of VCA, the broken line analysis method is used to re divide the boundary nodes with inconsistent voltage fluctuations, so as to improve the voltage decoupling degree identifying the boundary of VCA. In this paper, the IEEE 39 bus system is used for wind power processing in multiple scenarios, and the simulation analysis of each output scenario is carried out. The results show that the proposed method can reasonably reflect the partition changes caused by the fluctuation of wind power output, and correct the partition changes under different output scenarios, which provides conditions for the voltage stability control of each region of the system.
Number of references: 20
Main heading: Sensitivity analysis
Controlled terms: Cluster analysis - Clustering algorithms - Electric load flow - Electric power transmission - Jacobian matrices - Probability distributions - Thermoelectric power - Timing circuits - Voltage control - Wind power
Uncontrolled terms: A-stable - Condition - Hier-archical clustering - Hierarchical Clustering - Modification methods - Power connections - Power output - Probability: distributions - Stabilizing circuit - Voltage control area
Classification code: 615.8 Wind Power (Before 1993, use code 611) - 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 713.4 Pulse Circuits - 723 Computer Software, Data Handling and Applications - 731.3 Specific Variables Control - 903.1 Information Sources and Analysis - 921 Mathematics - 921.1 Algebra - 922.1 Probability Theory

DOI: 10.19912/j.0254-0096.tynxb.2021-0131
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

315. Evaluation of fractures using conventional and FMI logs, and 3D seismic interpretation in continental tight sandstone reservoir (*Open Access*)

Accession number: 20222312203323
Authors: Qiu, Xiangliang (1); Tan, Chengqian (2); Lu, Yuanyuan (3); Yin, Shuai (2)
Author affiliation: (1) Xi'An Shiyou University, School of Petroleum Engineering, Xi'an; 710065, China; (2) Xi'An Shiyou University, School of Earth Science and Engineering, Xi'an; 710065, China; (3) CNOOC Research Institute Corporation Ltd., Beijing; 100028, China
Corresponding authors: Tan, Chengqian(1098364810@qq.com); Yin, Shuai(speedysys@163.com)
Source title: Open Geosciences
Abbreviated source title: Open Geosci.
Volume: 14
Issue: 1
Issue date: January 1, 2022
Publication year: 2022
Pages: 530-543
Language: English
E-ISSN: 23915447
Document type: Journal article (JA)
Publisher: De Gruyter Open Ltd
Abstract: Due to the complex pore structures and strong heterogeneity of fractured reservoirs, it is a hot and difficult point in petroleum geology to identify fractures using logging principles. In this paper, taking the tight sandstone reservoir of the Chang 8 Member in the Huanjiang Oilfield as an example, field outcrops, cores, thin sections, and logging identification methods were used for quantitative description and fine logging evaluation of fractures. The research shows that high-angle, medium-low-angle, near-vertical, and horizontal fractures are developed in the Chang 8 Member of the Huanjiang Oilfield. The main ones are high-angle fractures, followed by horizontal fractures with a low degree of fillings. Under the constraints of core and imaging logging data, three fracture sensitivity logging parameters of acoustic wave time difference, natural gamma, and dual induction-octalateral resistivity were optimized, and a comprehensive fracture probability index was proposed. Seventy-nine fracture development intervals were identified based on log curve characteristics and fracture probability indexes. The coincidence rate of fracture logging identification results with the core observation and imaging logging interpretation is 80.6%. The research results can provide a theoretical basis for the efficient development of fractured continental tight sandstone reservoirs in similar areas. © 2022 Xiangliang Qiu et al., published by De Gruyter.
Number of references: 80
Main heading: Fracture
Controlled terms: Oil well logging - Petroleum prospecting - Pore structure - Sandstone - Seismology
Uncontrolled terms: 3-D seismics - Chang 8 reservoir - Fracture characteristics - Fracture interpretation using logging - Fracture probability - Horizontal fractures - Huanjiang oilfield - Imaging logging - Probability index - Tight sandstone reservoirs
Classification code: 482.2 Minerals - 484.1 Earthquake Measurements and Analysis - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 8.06E+01%
DOI: 10.1515/geo-2022-0372
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

316. Numerical simulation study of thermoelastic stress field around the wellbore

Accession number: 20231013671496
Authors: Wang, Haiyang (1); Zhou, Desheng (2); Jie, YeNan (1); Gao, Qian (1); Ma, XianLin (1)

Author affiliation: (1) Xi'an Shiyou University, Shaanxi, Xi'an, China; (2) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Xi'an Shiyou University, Shaanxi, Xi'an, China
Source title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Abbreviated source title: U.S. Rock Mech./Geomech. Symp.
Part number: 1 of 1
Issue title: 56th U.S. Rock Mechanics/Geomechanics Symposium
Issue date: 2022
Publication year: 2022
Report number: ARMA-2022-0496
Language: English
ISBN-13: 9780979497575
Document type: Conference article (CA)
Conference name: 56th U.S. Rock Mechanics/Geomechanics Symposium
Conference date: June 26, 2022 - June 29, 2022
Conference location: Santa Fe, NM, United states
Conference code: 186824
Publisher: American Rock Mechanics Association (ARMA)
Abstract: Analysis of the stress field around the wellbore is a prerequisite for predicting the formation breakdown pressure. With the development of hot dry rock and deep oil and gas reservoirs, thermoelastic stress has become one of the significant factors in the analysis of the stress field around the wellbore. Based on linear elastic theory and heat transfer theory, this paper analyzed the effect mechanism of thermoelastic stress around the wellbore by establishing a two-dimensional wellbore physical model. Through the finite difference method, this paper simulated the thermoelastic stress field around the wellbore under quasi-static and transient conditions. Numerical simulation results show that the calculation results of the finite difference scheme established in this paper are consistent with the analytical solutions under quasi-static conditions. The finite difference scheme established in this paper can accurately calculate the thermoelastic stress field around the wellbore. When the cold liquid injected from the wellbore acts on the hot rock, the circumferential tensile stress is generated around the wellbore. With the increase of Young's modulus, Poisson's ratio, and the linear expansion coefficient of the rock, the thermoelastic circumferential stress value around the wellbore increases significantly. The faster the cooling rate of the wellbore, the greater the thermoelastic circumferential stress generated around the wellbore. The finite difference solution of the thermoelastic stress field established in this paper can provide theoretical guidance for the design of hot dry rock hydraulic fracturing and drilling fluids. © 2022 ARMA, American Rock Mechanics Association.
Number of references: 15
Main heading: Rocks
Controlled terms: Boreholes - Drilling fluids - Elastic moduli - Finite difference method - Heat transfer - Infill drilling - Numerical models - Oil field equipment - Oil wells - Petroleum reservoir engineering - Petroleum reservoirs - Rock mechanics - Stresses - Thermoelasticity
Uncontrolled terms: Circumferential stress - Finite difference scheme - Formation breakdown pressure - Hot dry rock - Numerical simulation studies - Quasi-static conditions - Stress field - Thermoelastic stress - Thermoelastics - Wellbore
Classification code: 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 641.2 Heat Transfer - 921 Mathematics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Funding Details: Number: 51874242,51934005,51974253, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 51874242, 51934005 51974253).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

317. What does students' experience of e-portfolios suggest (*Open Access*)

Accession number: 20222012104246
Authors: Mei, Dong (1)
Author affiliation: (1) School of Foreign Languages, Xi'An Shiyou University, Shannxi, Xi'an; 710065, China
Corresponding author: Mei, Dong(2548121615@qq.com)
Source title: Applied Mathematics and Nonlinear Sciences

Abbreviated source title: Appl. Math. Nonlinear Sci.
Volume: 7
Issue: 2
Issue date: July 1, 2022
Publication year: 2022
Pages: 15-20
Language: English
E-ISSN: 24448656
Document type: Journal article (JA)
Publisher: Sciendo
Abstract: This research presents a critical examination of 102 undergraduate students' experience with e-portfolios in a university based in Northwest China. Qualitative data are collected via interviews to explore the advantages and disadvantages of e-portfolios in order to examine the possibility for popularization of the application and further improvement as well. Findings reveal that e-portfolios are beneficial in the aspects of new knowledge creation, learning management, reflective learning, test anxiety elimination, as well as student performance assessment. Meanwhile, some problems have also been revealed, which have pedagogical implications. © 2021 Dong Mei, published by Sciendo.
Number of references: 25
Uncontrolled terms: E-portfolios - English - Knowledge creations - Learning managements - NorthWest China - Qualitative data - Reflective learning - Student experiences - Student performance - Undergraduate students
DOI: 10.2478/amns.2021.2.00166
Funding Details: Number: 2019M002, Acronym: -, Sponsor: -; Number: 18BYY096, Acronym: NPOPSS, Sponsor: National Office for Philosophy and Social Sciences;
Funding text: This work was collectively supported by the National Social Science Fund (No. 18BYY096) and Shannxi Social Science Fund (No. 2019M002).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

318. Fuzzy Comprehensive Evaluation and Obstacle Factors of Water Resources on TOPSIS for Environment Carrying Capacity in Xi'an

Accession number: 20231013680687
Authors: Zhao, Peiyu (1); Si, Xunlian (1); Dong, Zhonghui (1)
Author affiliation: (1) Xi'an Shiyou University, School of Economics and Management, Shannxi, Xi'an, China
Corresponding author: Zhao, Peiyu(1369460352@qq.com)
Source title: Proceedings of the 4th IEEE Eurasia Conference on IoT, Communication and Engineering 2022, ECICE 2022
Abbreviated source title: Proc. IEEE Eurasia Conf. IoT, Commun. Eng., ECICE
Part number: 1 of 1
Issue title: Proceedings of the 4th IEEE Eurasia Conference on IoT, Communication and Engineering 2022, ECICE 2022
Issue date: 2022
Publication year: 2022
Pages: 300-305
Language: English
ISBN-13: 9781665482080
Document type: Conference article (CA)
Conference name: 4th IEEE Eurasia Conference on IoT, Communication and Engineering, ECICE 2022
Conference date: October 28, 2022 - October 30, 2022
Conference location: Yunlin, Taiwan
Conference code: 186844
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The carrying capacity of water resources and the environment has become a restrictive factor in economic development. It is also of great significance to Xi'an City, which is rapidly developing and lacking water. Based on the carrying capacity of water resources and environment, we construct an evaluation index system in four aspects: water resources, water environment, society, and economy. The entropy weight method is used to objectively give weights along with the TOPSIS method and the fuzzy comprehensive evaluation method to evaluate the method for the

period from 2006 to 2020. The carrying capacity of water resources and the environment in Xi'an City, and its restrictive factors are explored with the obstacle degree model. In general, from 2006 to 2020, the carrying capacity of water resources and the environment in Xi'an showed a fluctuating upward trend. From the perspective of each subsystem, the comprehensive score of each subsystem showed an upward trend. From the perspective of obstacles, the water resources in Xi'an were restricted. The obstacles to environmental carrying capacity mainly came from water resources and water environment subsystems. © 2022 IEEE.
Number of references: 13
Main heading: Water resources
Controlled terms: Economics - Entropy - Fuzzy set theory
Uncontrolled terms: Carrying capacity of water resource and environment - Entropy weight method - Fuzzy-comprehensive evaluations - Obstacle model - Resource and environment - TOPSIS method - Upward trend - Water environments - Waters resources - Xi'an cities
Classification code: 444 Water Resources - 641.1 Thermodynamics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 971 Social Sciences
DOI: 10.1109/ECICE55674.2022.10042879
Funding Details: Number: 2019S019, Acronym: -, Sponsor: -; Number: 2021KRM057, Acronym: -, Sponsor: -; Number: 19JK0646, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The research was supported by the General Project of Shaanxi Provincial Social Science Fund (Project No. 2019S019), the Special Research Project of Shaanxi Provincial Department of Education (Project No. 19JK0646), and the General Project of Soft Science Research Program of Shaanxi Provincial Innovation Capability Support Program (Project No. 2021KRM057) co-funding. Special thanks to the editors and reviewers for their comments and suggestions.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

319. Improvement in the performance of focusing plasma desorption ionization by altering its counter electrode

Accession number: 20231613927061
Authors: Zheng, Yajun (1); Zuo, Qianqian (1); Xiang, Zhicheng (1); Huang, Yajie (1); Zhang, Zhiping (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Zhang, Zhiping(zhipingzhang@xsyu.edu.cn)
Source title: Rapid Communications in Mass Spectrometry
Abbreviated source title: Rapid Commun. Mass Spectrom.
Issue date: 2022
Publication year: 2022
Language: English
ISSN: 09514198
E-ISSN: 10970231
CODEN: RCMSEF
Document type: Article in Press
Publisher: John Wiley and Sons Ltd
Abstract: Rationale: Plasma-based ionization sources play a vital role in rapidly analyzing diverse compounds without extensive sample pretreatment. In contrast to other sources, DC voltage-based ionizations are more advantageous due to their high analytical sensitivity and good tandem with commercially available mass spectrometers without extra power supplies. However, their performance is at the risk of high current DC voltage and helium flow rate, which poses significant challenges to practical operation and increased expense. Methods: In this work, we propose a novel focusing plasma desorption ionization (FPDI) in which a visible plasma beam is favorably generated between a conducting wire in a polymeric tube and a counter electrode composed of metal mesh and filter paper drilled with holes. A systematic investigation has been conducted on the influences of the geometry of drilled holes in filter paper, applied DC voltage, helium flow rate, and filter paper size. The optimized system is used to analyze various pesticides in fluid foodstuffs. Results: Compared to metal mesh and conducting paper as the counter electrode for FPDI-MS, combining metal mesh and filter paper drilled holes improved the analysis sensitivity by a factor of more than five. By applying the developed protocol for determining pesticides in complex matrixes such as orange juice and milk, a limit of detection as low as 1.3–3.0 ng mL-1 could be achieved. Conclusions: A novel FPDI-MS technique has been developed by combining metal mesh and filter paper drilled with holes as the counter electrode and sample carrier. The corresponding improvement in analysis sensitivity facilitates the future expansion of FPDI-MS applications into different pesticides and other compounds in complex matrixes. © 2022 John Wiley & Sons Ltd.

Number of references: 37
Main heading: Sensitivity analysis
Controlled terms: Desorption - Electrodes - Fruit juices - Helium - Infill drilling - Ionization - Mesh generation - Pesticides
Uncontrolled terms: And filters - Counter electrodes - DC voltage - Desorption ionization - Drilled holes - Filter papers - Helium flow rate - Metal-mesh - Performance - Plasma desorption
Classification code: 511.1 Oil Field Production Operations - 723.5 Computer Applications - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 822.3 Food Products - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
Numerical data indexing: Mass density 1.30E-06kg/m3 to 3.00E-06kg/m3
DOI: 10.1002/rcm.9458
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

320. Development of an environmentally friendly electricity monitoring platform

Accession number: 20223812766773
Authors: Li, Changxin (1); Zhang, Fen (1); Min, Xin (1)
Author affiliation: (1) Xi'an Shiyou University, Department of Electronic and Information Engineering, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 495-498
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Ens the intensity of environmental protection supervision. In recent years, with the development of science and technology, industrial development is facing the elimination of backward equipment. But some backward factories choose to move to underdeveloped or remote areas, which has brought serious ecological pollution to the regional environment. Automatic monitoring often has problems such as incomplete monitoring indicators, low data quality and insufficient monitoring coverage. The system will describe the composition of the electricity monitoring system, the logic business processing module and the mechanism of electricity consumption which will plays a certain role in pollution control and pollution supervision, and strength. © 2022 IEEE.
Number of references: 10
Main heading: Pollution control
Controlled terms: Monitoring
Uncontrolled terms: Development of science and technologies - Electricity monitoring - Environmental Monitoring - Industrial development - Monitoring platform - MVC - MYSQL - Remote areas - SSH - System functionality
DOI: 10.1109/ICMSP55950.2022.9859078
Funding Details: Number: YCS22113125, Acronym: -, Sponsor: -;
Funding text: Xi'an Shiyou University Graduate Innovation and Practice Ability Training Program; The item number: YCS22113125
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

321. Reconstruction of multimodal aesthetic critical discourse analysis framework (*Open Access*)

Accession number: 20222012104245
Authors: Mei, Dong (1)
Author affiliation: (1) School of Foreign Languages, Xi'An Shiyou University, Shannxi, Xi'an; 710065, China
Corresponding author: Mei, Dong(2548121615@qq.com)
Source title: Applied Mathematics and Nonlinear Sciences
Abbreviated source title: Appl. Math. Nonlinear Sci.
Volume: 7
Issue: 1
Issue date: January 1, 2022
Publication year: 2022
Pages: 1001-1008
Language: English
E-ISSN: 24448656
Document type: Journal article (JA)
Publisher: Sciendo
Abstract: The paper starts with a theoretical discussion of the possible introduction of aesthetic linguistics into the research field of multimodal critical discourse analysis for analysing tourist news of two modalities: visual and text. Thanks to the successful stories of analysis concerning aesthetic linguistics, systemic functional grammar and visual grammar; first, a framework of multimodal aesthetic critical discourse analysis is carefully redesigned based on multimodal aesthetic critical discourse analysis framework of version 1, originally designed for the same purpose. Then, the validity of the reconstructed framework is verified via analysing a piece of Shannxi tourist news with it. The result indicated that the multimodal aesthetic critical discourse analysis framework re-designed in this paper is of practical significance and can be applied to the analysis of news of multiple modalities. © 2021 Dong Mei, published by Sciendo.
Number of references: 25
Main heading: Modal analysis
Controlled terms: Semantics
Uncontrolled terms: Analysis frameworks - Critical discourse analysis - Esthetic linguistic - Multi-modal - Multiple modalities - Research fields - Visual grammar
Classification code: 921 Mathematics
DOI: 10.2478/amns.2021.2.00165
Funding Details: Number: 2019M002, Acronym: -, Sponsor: -; Number: 18BYY096, Acronym: NPOPSS, Sponsor: National Office for Philosophy and Social Sciences;
Funding text: This work was support by the National Social Science Fund (No. 18BYY096) and Shannxi Social Science Fund (No. 2019M002).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

322. Reliable screening of beta2-adrenoceptor ligands from Rheum palmatum L extract using a paper-based chromatographic column containing the immobilized receptor

Accession number: 20214911257255
Authors: Xiong, Xunyu (1); Nan, Yefei (1); Yu, Hongjiang (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Xiong, Xunyu(xiongxy@xsyu.edu.cn)
Source title: Separation Science Plus
Abbreviated source title: Sep. Sci. Plus
Volume: 5
Issue: 1
Issue date: January 2022
Publication year: 2022
Pages: 4-16
Language: English

E-ISSN: 25731815
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Isolation and identification of bioactive compounds from complex matrices like traditional Chinese medicines still challengeable because of the low specificity, efficiency and high false positive rate in the current screening methods. Herein, we reported a method for screening ligands of beta2-adrenoceptor from Rheum palmatum L extract. The method involved in immobilization of beta2-adrenoceptor on a paper material of polytetrafluoroethylene membrane by a site-specific covalent method, characterization of the immobilized receptor by X ray photoelectron spectroscopy and fourier transform infrared spectroscopy, parallel screening of Rheum palmatum L extract by immobilized beta2-adrenoceptor column and the control column, identification of the screened compounds by mass spectrometry and the binding mechanism analysis of the screened compounds with beta2-adrenoceptor by molecular docking. Morphological analysis showed beta2-adrenoceptor was successfully immobilized. Aloe-emodin, rhein, emodin, chrysophanol, and physcion were screened as the potential bioactive compounds binding to the receptor from Rheum palmatum L extract. Van der Waals force and π–π stacking interactions were the main driving forces for these compounds to bind with the receptor. These results indicated that paper-based receptor chromatography with a peak-missing strategy is reliable in screening and identifying bioactive compounds within medicinal plants that bind to G protein coupled receptors. © 2021 Wiley-VCH GmbH
Number of references: 31
Main heading: Ligands
Controlled terms: Chromatography - Fourier transform infrared spectroscopy - Mass spectrometry - Medicine - Van der Waals forces - X ray photoelectron spectroscopy
Uncontrolled terms: Bioactive compounds - Chromatographic column - Complex matrixes - Current screening - False positive rates - Immobilisation - Immobilized receptors - Isolation and identification - Screening methods - Traditional Chinese Medicine
Classification code: 461.6 Medicine and Pharmacology - 801 Chemistry - 801.4 Physical Chemistry - 931.3 Atomic and Molecular Physics
DOI: 10.1002/sscp.202100043
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

323. Intelligent Recognition English Translation Model Based on Embedded Machine Learning and Improved GLR Algorithm (*Open Access*)

Accession number: 20224012825989
Authors: Lei, Lei (1)
Author affiliation: (1) School of Foreign Languages, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Lei, Lei(leilei010702@xsyu.edu.cn)
Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 5632131
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Most of the popular translation models are based on encoder-decoder architecture and belong to the autoregressive translation model. When autoregressive translation models decode, they generate the current sequence according to the sequence generated before. This process is not parallel. The generalized maximum likelihood ratio detection (GLR) algorithm model cannot effectively guarantee the overlapping and accurate results of English translation detection. To improve the recognition rate of English phrases and meanings, this paper proposes an intelligent model for English translation recognition based on embedded machine learning and an improved GLR algorithm. A corpus of 520000 English phrases is used for training. And we compare and analyze different corpora and compare GLR algorithm with other traditional algorithms. Words and phrases are based on analytic linear structure. The syntactic function of the table corrects the ambiguity between English and Chinese structures in some speech recognition results and finally retains the recognition content. The research shows that the recognition accuracy

based on the improved GLR algorithm is more than 96.58%, which is 23% higher than the classical GLR in semantic recognition. Statistical algorithm and dynamic storage algorithm make it more suitable for intelligent translation and provide a new model method for intelligent machine translation. © 2022 Lei Lei.
Number of references: 28
Main heading: Decoding
Controlled terms: Computational linguistics - Learning algorithms - Machine learning - Maximum likelihood - Semantics - Speech recognition
Uncontrolled terms: 'current - Algorithm model - Auto-regressive - Embedded machines - Encoder-decoder architecture - Generalized maximum likelihood ratios - Intelligent recognition - Machine-learning - Model-based OPC - Translation models
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 751.5 Speech - 922.1 Probability Theory
Numerical data indexing: Percentage 2.30E+01%, Percentage 9.658E+01%
DOI: 10.1155/2022/5632131
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

324. Research on Salt Dome Recognition Algorithm based on reverse attention mechanism

Accession number: 20224613132903
Authors: Lou, Li (1); Zhang, Fengxia (1); Han, Boxun (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shanxi, Xi'an; 710065, China
Corresponding author: Zhang, Fengxia(2628162931@qq.com)
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12344
Part number: 1 of 1
Issue title: International Conference on Intelligent and Human-Computer Interaction Technology, IHCIT 2022
Issue date: 2022
Publication year: 2022
Article number: 123441I
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510657601
Document type: Conference article (CA)
Conference name: 2022 International Conference on Intelligent and Human-Computer Interaction Technology, IHCIT 2022
Conference date: July 22, 2022 - July 24, 2022
Conference location: Zhuhai, China
Conference code: 183645
Sponsor: Academic Exchange Information Centre (AEIC)
Publisher: SPIE
Abstract: In view of the strong subjectivity of traditional salt dome recognition methods and the poor effect of existing deep learning algorithms on salt dome edge recognition, this paper proposes a salt dome recognition algorithm based on reverse attention mechanism, which uses u-net model as the backbone network, adds reverse attention module at the jump connection to extract edge structure information, and finally uses feature splicing to fuse feature information to improve the segmentation performance of network model. Experimental results show that the network achieves good results in salt dome segmentation, and effectively improves the problem of unclear edge segmentation. © 2022 SPIE.
Number of references: 7
Main heading: Domes
Controlled terms: Deep learning - Salt deposits
Uncontrolled terms: Attention mechanisms - Back-bone network - Jump connections - Net model - Recognition algorithm - Recognition methods - Reverse attention - Salt dome recognition - Salt domes - U-net
Classification code: 408.2 Structural Members and Shapes - 461.4 Ergonomics and Human Factors Engineering - 505.1 Nonmetallic Mines

DOI: 10.1117/12.2655333
Funding Details: Number: YCS21213256, Acronym: -, Sponsor: -; Number: 21JK0847, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: Shaanxi Province 2021 Key R&D Program Projects(2021GY-138)"Research and Implementation of Salt Dome Recognition Method Based on Image Segmentation", Postgraduate Innovation and Practice Training Project, Xi'an Shiyou University(YCS21213256) Shaanxi Provincial Education Department Scientific Research Program Project(21JK0847)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

325. Simulation research on fire and explosion risk in oil storage tank area of oil depot

Accession number: 20221311850643
Authors: Xue, Zhaomei (1)
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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12160
Part number: 1 of 1
Issue title: International Conference on Computational Modeling, Simulation, and Data Analysis, CMSDA 2021
Issue date: 2022
Publication year: 2022
Article number: 121600X
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510651968
Document type: Conference article (CA)
Conference name: 2021 International Conference on Computational Modeling, Simulation, and Data Analysis, CMSDA 2021
Conference date: December 3, 2021 - December 5, 2021
Conference location: Sanya, China
Conference code: 177774
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: The oil stored in oil depot storage tanks is flammable, explosive and easy to diffuse, once a fire and explosion accident occurs, it will cause heavy losses. In this paper, the fire and explosion accidents in oil storage tank area are simulated and analyzed. The oil steam cloud is formed due to the leakage of underground oil storage tank area and the evaporation of oil vapor. Firstly, for the underground oil storage tank area, TNT equivalent analysis method is used to analyze the influence range of the oil steam cloud explosion when encountering ignition source. Then for the aboveground storage tank area, the pool fire mathematical model is used to determine the influence degree of fire. Finally, based on the above analysis, the corresponding risk control measures are put forward. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.
Number of references: 6
Main heading: Risk analysis
Controlled terms: Accidents - Explosions - Oil tanks - Fires - Risk assessment
Uncontrolled terms: Control measures - Explosion risk - Fire and explosion - Fire and explosion accidents - Fire risks - Oil depot - Oil storage tank - Oil vapours - Simulation research - Storage tank
Classification code: 523 Liquid Fuels - 619.2 Tanks - 914.1 Accidents and Accident Prevention - 914.2 Fires and Fire Protection - 922 Statistical Methods
DOI: 10.1117/12.2627586
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

326. Parameter design and response research of ahead detection half-coil induction logging

Accession number: 20223812766812
Authors: Wu, Jie (1); Gao, Ziyi (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 188-192
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the deepening of oil and gas exploration, drilling has developed from vertical wells to directional wells, cluster wells, and then to horizontal wells, well factories and other complex structures. Advanced steerable drilling technology is required to prevent well collisions, avoid obstacles, etc., to ensure that the wellbore trajectory is drilled along the expected trajectory, and to ensure the best oil production capacity. This paper mainly studies the parameter design of induction logging based on the half-coil principle and calculates the influence of the operating frequency on the induced electromotive force of the receiving coil. It provides a theoretical basis for tool design and an analytical tool for the interpretation and evaluation of logging responses. The research shows that: the half-coil is sensitive to the working frequency; the signal strength of the half-coil increases first and then decreases with the increase of the frequency; when the frequency is small, the signal strength is less affected by the distance between transmit and receiver coil, and when the frequency is high, the signal strength increases. The strength is greatly affected by the distance between transmit and receiver coil, and the signal is seriously attenuated. © 2022 IEEE.
Number of references: 5
Main heading: Induction logging
Controlled terms: Horizontal drilling - Horizontal wells - Infill drilling - Oil well drilling - Oil well logging - Petroleum prospecting - Signal receivers
Uncontrolled terms: Ahead detection - Coil induction - Component - Exploration drilling - Half-coil - Oil and gas exploration - Parameter designs - Receiver coil - Response research - Signal strengths
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1109/ICMSP55950.2022.9859007
Funding Details: Number: YCS22113115, Acronym: -, Sponsor: -;
Funding text: Acknowledgement The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported by Postgraduate Innovation and Practice Ability Training Program of Xi'an Shivou University, under Grant YCS22113115.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

327. Mechanical behavior of graphene magnesium matrix composites based on molecular dynamics simulation (*Open Access*)

Accession number: 20221712041716
Title of translation:
Authors: Ming, Zhi-Fei (1); Song, Hai-Yang (1); An, Min-Rong (1)
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Corresponding author: Song, Hai-Yang(hysong@xsyu.edu.cn)

Source title: Wuli Xuebao/Acta Physica Sinica
Abbreviated source title: Wuli Xuebao
Volume: 71
Issue: 8
Issue date: April 20, 2022
Publication year: 2022
Article number: 086201
Language: Chinese
ISSN: 10003290
CODEN: WLHPAR
Document type: Journal article (JA)
Publisher: Institute of Physics, Chinese Academy of Sciences
Abstract: Magnesium alloy is regarded as a lightest engineering structural metal material due to its low density, but its wide application is limited due to poor plastic deformation behavior. Therefore, the comprehensive mechanical properties of enhanced magnesium alloy have become a research focus in the material science. Here, the effect of graphene on the deformation behavior and that on the mechanical properties of magnesium under tensile loading are studied by molecular dynamics simulation. The results show that the introduction of graphene can significantly improve the mechanical properties of pure magnesium. Comparing with pure magnesium, the Young's modulus and the first peak stress of the graphene magnesium matrix (GR/Mg) composites are increased by about 27.5% and 36.5% respectively, which is mainly due to the excellent mechanical properties of graphene. The results also indicate that the embedded position of graphene has little effect on the Young's modulus or peak stress of the GR/Mg composites, but it will significantly affect the plastic deformation behavior of the GR/Mg composites after the second peak stress. With the increase of the embedded height of graphene, the average flow stress of the GR/Mg composites first increases in the later stage of plastic deformation. When the embedded height reaches 0.4L, the average flow stress of the GR/Mg composites reaches a maximum value, and then decreases. This phenomenon of the Gr/Mg composites can be explained by the plastic deformation behavior of the magnesium matrix above and below graphene. The embedded position of graphene has a great influence on the plastic deformation behavior of the upper and lower magnesium matrix of the GR/Mg composites. When the embedded height of graphene is small, the plastic deformation capability of magnesium matrix under graphene is strong and dislocation slip is easy to occur. And when the embedded height of graphene is large, the plastic deformation capabilities of the two parts of magnesium matrix above and below graphene are equal, and their plastic deformation behavior tends to be synchronous. The results show that the plastic deformation behavior of the GR/Mg composite is the same as that of pure magnesium, and the phase transition from HCP to BCC and then to HCP occurs in the process of the plastic deformation. The phase transition mechanism of magnesium matrix is also analyzed in detail. The results of this study have certain theoretical guiding significance in designing the high performance graphene metal matrix composites.
Number of references: 30
Main heading: Magnesium alloys
Controlled terms: Metallic matrix composites - Graphene - Elastic moduli - Polymer matrix composites - Plastic flow - Molecular dynamics
Uncontrolled terms: Average flows - Deformation behavior - Deformation capability - Magnesium matrix composite - matrix - Mechanical behavior - Peak stress - Plastic deformation behavior - Pure magnesium - Young modulus
Classification code: 531 Metallurgy and Metallography - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally - 815.1 Polymeric Materials - 951 Materials Science
Numerical data indexing: Percentage 2.75E+01%, Percentage 3.65E+01%, Volume 4.00E-04m3
DOI: 10.7498/aps.71.20211753
Funding Details: Number: YCS20211044, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: * Project supported by the National Natural Science Foundation of China (Grant No. 11572259), the Key Project of the Natural Science Foundation of Shaanxi Province, China (Grant No. 2021JZ-53), and the Program for Graduate Innovation and Practical Ability Training Fund of Xi'an Shiyou University, China (Grant No. YCS20211044). † Corresponding author. E-mail: hysong@xsyu.edu.cnProject supported by the National Natural Science Foundation of China (Grant No. 11572259), the Key Project of the Natural Science Foundation of Shaanxi Province, China (Grant No. 2021JZ-53), and the Program for Graduate Innovation and Practical Ability Training Fund of Xi'an Shiyou University, China (Grant No. YCS20211044).
Compendex references: YES
Open Access type(s): All Open Access, Gold

Database: Compendex
Data Provider: Engineering Village

328. BJT Performance Test Device

Accession number: 20223812766774
Authors: Liu, Yongchao (1); He, Bei (1)
Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xsyu, Shanxi Provience, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 116-119
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: BJT is called bipolar junction transistor, also known as transistor. In the design, we have no distortion, top distortion, bottom distortion, bidirectional distortion, and crossover distortion analog output for the input of 20mv, 1kHz sine wave signal. For no distortion, top distortion and bottom distortion, we can achieve different distortion waveforms by adjusting the static operating point of the bipolar common emitter amplifier circuit; for bidirectional distortion, increase the gain of the amplifier circuit to make the output The waveform with bidirectional distortion occurs; for crossover distortion, the push-pull amplifier circuit is controlled by the bias of the diode and the switch to realize the waveform with crossover distortion and eliminate the waveform of crossover distortion. The general idea of the system is to send a command request to the msp430 through the LCD screen, control the relay through the output of the msp430, and then control the signal output to generate waveforms with no distortion, top distortion, bottom distortion, bidirectional distortion, and crossover distortion. Finally, the data output is sampled through the msp430, and the sampled signal is transmitted to the host computer for the calculation of the total harmonic distortion. Finally, the host computer transmits it to the msp430, and the msp430 will pass the band-pass filter. The degree value is transmitted to the LCD screen for display. © 2022 IEEE.
Number of references: 5
Main heading: Harmonic distortion
Controlled terms: Bandpass filters - Bipolar transistors - Diode amplifiers - Liquid crystal displays - Timing circuits
Uncontrolled terms: Amplifier circuits - BJT working state - Host computers - LCD screens - Performance tests - Sine-wave signals - Test device - Total harmonic distortions - Waveforms - Working state
Classification code: 703.2 Electric Filters - 713.1 Amplifiers - 713.4 Pulse Circuits - 714.2 Semiconductor Devices and Integrated Circuits - 716.1 Information Theory and Signal Processing
Numerical data indexing: Frequency 1.00E+03Hz
DOI: 10.1109/ICMSP55950.2022.9859079
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

329. Atomic-scale insight into mechanical properties and deformation behavior of crystalline/amorphous dual-phase high entropy alloys

Accession number: 20222612276165
Authors: Li, R.N. (1); Song, H.Y. (1); An, M.R. (1); Xiao, M.X. (1)

Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Song, H.Y.(hysong@xsyu.edu.cn)
Source title: Physics Letters, Section A: General, Atomic and Solid State Physics
Abbreviated source title: Phys Lett Sect A Gen At Solid State Phys
Volume: 446
Issue date: September 15, 2022
Publication year: 2022
Article number: 128272
Language: English
ISSN: 03759601
CODEN: PYLAAG
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The effect of amorphous phase thickness, crystal grain size and element content on the deformation mechanism and mechanical properties of the crystalline/amorphous dual-phase high entropy alloys (HEAs) are investigated by molecular dynamics simulation. The results indicate that with the increase of amorphous phase thickness or the decrease of grain size, the plastic deformation mode of the HEA gradually changes from dislocation slip in crystalline phase to the movement of shear band dominated by amorphous phase. The results also show that changing the component content of the crystalline phase can not only increase the strength of the HEA, but also improve its plasticity to a certain extent, so as to obtain the HEA with high strength and good plasticity. © 2022 Elsevier B.V.
Number of references: 59
Main heading: Molecular dynamics
Controlled terms: Entropy - Grain size and shape - High-entropy alloys - Plasticity
Uncontrolled terms: Amorphous phasis - Crystalline phasis - Deformation behavior - Dual phase - Dual phasis - Dual-phase high entropy alloy - Dynamics simulation - High entropy alloys - Molecular dynamic simulation - Phase thickness
Classification code: 531 Metallurgy and Metallography - 543.1 Chromium and Alloys - 545.2 Iron Alloys - 641.1 Thermodynamics - 801.4 Physical Chemistry - 951 Materials Science
DOI: 10.1016/j.physleta.2022.128272
Funding Details: Number: YCS20211061, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53) , and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS20211061).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

330. Research Progress and Application Prospect of Directionally Solidified Mg Alloys

Accession number: 20221511958381
Title of translation:
Authors: Jia, Hongmin (1); Chang, Jianxiu (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Jia, Hongmin(hmjia12s@alum.imr.ac.cn)
Source title: Cailiao Daobao/Materials Reports
Abbreviated source title: Cailiao Daobao/Mater. Rep.
Volume: 36
Issue: 6
Issue date: March 25, 2022
Publication year: 2022
Article number: 20060149
Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review
Abstract: Mg and its alloys show great advantages in lightweight, energy saving and emission reduction for their low density and high specific strength, and attract increasing attention in automobile, electronics, aerospace and other

fields. However, the problems such as low strength, poor deformability, high chemical activity and poor corrosion resistance still limit the widespread applications of Mg and its alloys. Thus, the development of Mg alloys with high-performance is still the focus of recent studies. Various methods have been explored to improve the mechanical properties and deformability of Mg alloys, such as alloying, heat treatment and development of new Mg-based composites, but few researches are focused on the relationship between the solidification characteristics and the properties of Mg alloys. Exploration into the solidification characteristic and control of solidification path not only have scientific significance but also can provide a theoretical basis for alloy design and fabrication. Both are beneficial to the extensive application of Mg alloys. Designed microstructure can be obtained by directional solidification technology through adjusting the solidification parameters, which makes it convenient to obtain the relationships among composition, microstructure, processing parameter and performance. In recent years, lots of experimental and theoretical studies have been carried out and shed light on the knowledge of microstructural evolution, growth orientation and mechanical properties of directionally solidified Mg alloys. In this work, the development of directionally solidified Mg alloys, including the newest research progress and the existing problems are summarized, and their potential application is prospected.
Number of references: 55
Main heading: Solidification
Controlled terms: Deformation - Heat treatment - High strength alloys - Corrosion resistance - Corrosion resistant alloys - Magnesium alloys - Energy conservation - Microstructure - Emission control
Uncontrolled terms: Application prospect - Directionally solidified - Energy-saving and emission reductions - Growth directions - Low-high - Lower density - Mg alloy - Microstructure evolutions - Property - Solidification characteristics
Classification code: 451.2 Air Pollution Control - 525.2 Energy Conservation - 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 539.1 Metals Corrosion - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 802.3 Chemical Operations - 951 Materials Science
DOI: 10.11896/cldb.20060149
Funding Details: Number: 2020JQ-773, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by Natural Science Foundation of Shaanxi Province of China (2020JQ-773).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

331. Catalytic Performance of Ni/N-rGO in Selective Hydrogenation of Phenol to Cyclohexanone

Accession number: 20220211450977
Title of translation: Ni/N-rGO
Authors: Huang, Guoqiang (1); Xu, Haisheng (1); Li, Shanjian (1); Gao, Pengcheng (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Xu, Haisheng(xhs74@xsyu.edu.cn)
Source title: Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)
Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
Volume: 38
Issue: 1
Issue date: January 10, 2022
Publication year: 2022
Pages: 151-157
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Science Press
Abstract: With self-made graphite oxide (GO) as raw material and urea as nitrogen source, N-doped reduced graphene oxide (N-rGO) carrier was prepared by hydrothermal method. Catalysts with different nickel loading Ni/N-rGO were prepared by impregnation method. The Ni/N-rGO catalysts were characterized by N2 adsorption-desorption and XRD, SEM. The effects of catalyst preparation conditions (active component loading, addition of urea, H2 reduction temperature) and reaction conditions (reaction temperature, reaction pressure, reaction time) on catalytic performance in the selective hydrogenation of phenol to cyclohexanone catalyzed by Ni/N-rGO catalysts were investigated. Results show that the conditions of active components loading mass fraction of 20%, urea/GO

mass ratio of 30 and H2 reduction temperature of 450 , this 20%Ni/N-rGO catalyst has large specific surface area and suitable pore structure, and the metal nickel dispersion is relatively uniform. Under the optimum conditions of reaction temperature of 150 , reaction pressure of 0.4 MPa, reaction time of 2.0 h, 20%Ni/N-rGO catalyst/phenol mass ratio of 0.35, the conversion rate of phenol is 91.93% and the selectivity of cyclohexanone is 61.75%, respectively. However, the catalytic performance of 20%Ni/N-rGO catalyst remarkably decreases after 5 times reuse, with phenol conversion and cyclohexanone selectivity decreasing to 82.17% and 50.93% respectively.
Number of references: 18
Main heading: Urea
Controlled terms: Catalyst selectivity - Hydrogenation - Phenols - Pore structure - Doping (additives) - Loading - Nickel oxide - Graphene oxide - Reduction - Metabolism - Nickel
Uncontrolled terms: Active components - Catalytic performance - Cyclohexanones - Graphite oxide - N-doped - Nitrogen doped graphene - Oxides catalysts - Reduced graphene oxides - Selective hydrogenation -]+ catalyst
Classification code: 548.1 Nickel - 691.2 Materials Handling Methods - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 2.00E+01%, Percentage 5.093E+01%, Percentage 6.175E+01%, Percentage 8.217E+01%, Percentage 9.193E+01%, Pressure 4.00E+05Pa, Time 7.20E+03s
DOI: 10.3969/j.issn.1001-8719.2022.01.018
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

332. Software design of host computer for intelligent microwave switch based on Qt

Accession number: 20223812766782
Authors: Li, Zhouli (1); He, Bei (1); Liu, Yongchao (1)
Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xsyu, Shanxi Provience, Xi'an, China
Corresponding author: He, Bei(905188835@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 713-716
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In industrial production, the level detection and control of closed silos is of great significance to intelligent manufacturing and production. The intelligent microwave switch developed by this project team is a non-contact level meter that uses the principle of microwave beam obstruction to detect the position of materials. It has been widely used in the field of calcium carbide production. Based on the Qt platform, this paper develops the special control and detection host computer software for the intelligent microwave switch on the PC side. It communicates with the intelligent microwave switch through the RS-485 bus. The host computer sends query and control commands to the intelligent microwave switch, receives and parses the data packets sent back by the intelligent microwave switch, and then displays and stores the real-time operation and measurement data on the host computer. The software facilitates the staff to monitor the material position information in the silo, and also provides a means for subsequent equipment maintenance and failure analysis.
Number of references: 5
Main heading: Computer software

Controlled terms: Manufacture - Microwaves - Software design
Uncontrolled terms: Communications protocols - Detection and controls - Host computer software - Host computers - Industrial production - Intelligent Manufacturing - Intelligent microwave switch - Level detections - Microwave switch - Qt
Classification code: 537.1 Heat Treatment Processes - 711 Electromagnetic Waves - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.5 Computer Applications - 913.4 Manufacturing
DOI: 10.1109/ICMSP55950.2022.9859091
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

333. Research on innovative human capital for China's economic development based on STI model (*Open Access*)

Accession number: 20230313388897
Authors: Yang, Qingqing (1); Chen, Ding (1)
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Yang, Qingqing(qingqing177@163.com)
Source title: Applied Mathematics and Nonlinear Sciences
Abbreviated source title: Appl. Math. Nonlinear Sci.
Issue date: 2022
Publication year: 2022
Language: English
E-ISSN: 24448656
Document type: Article in Press
Publisher: Sciendo
Abstract: The study uses a modified Kalman filter to analyse the impact of innovative human capital's contribution to China's economic development. The Kalman filter-STI model is used, and the growth rates of labour force, physical capital and innovative human capital and their contributions to economic growth are further calculated. The analysis employing the Kalman filter-STI model leads to the following results: In 2015, the sum of innovative human capital in each region increased by 6.15% compared to 2010. From 2005 to 2021, the number of scientific and technical papers included in three international systems in China decreased from 45% to 31% in Beijing, from 34% to 21% in Shanghai, and decreased in Jilin and Gansu. Jiangsu Province is the province with the largest increase in the share, from 13% to 26%. © 2022 Qingqing Yang et al., published by Sciendo 2022.
Number of references: 35
Main heading: Kalman filters
Controlled terms: Economic and social effects - Economics - Personnel
Uncontrolled terms: Capital contributions - Chinese economy - Economic development - Economic growths - Human capitals - Innovative human capital - International system - Kalman filter algorithms - Labor force - STI model
Classification code: 912.4 Personnel - 971 Social Sciences
Numerical data indexing: Percentage 1.30E+01% to 2.60E+01%, Percentage 3.40E+01% to 2.10E+01%, Percentage 4.50E+01% to 3.10E+01%, Percentage 6.15E+00%
DOI: 10.2478/amns.2021.2.00292
Funding text: The present study was funded from the following sources:
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

334. Motion capture and recognition based on wearable technology

Accession number: 20221411884534
Authors: Jiang, Renwei (1); Li, Feng (1); Wang, Yu (2); Wang, Jinlong (1)
Author affiliation: (1) Wuhan Sports University, Wuhan; 430079, China; (2) Xi'an Shiyou University, Xi'an; 710000, China
Corresponding author: Jiang, Renwei(daibo1967@sina.com)
Source title: Proceedings - 2022 14th International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2022

Abbreviated source title: Proc. - Int. Conf. Meas. Technol. Mechatronics Autom., ICMTMA
Part number: 1 of 1
Issue title: Proceedings - 2022 14th International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2022
Issue date: 2022
Publication year: 2022
Pages: 384-387
Language: English
ISBN-13: 9781665499781
Document type: Conference article (CA)
Conference name: 14th International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2022
Conference date: January 15, 2022 - January 16, 2022
Conference location: Changsha, China
Conference code: 177604
Sponsor: Changsha University of Science and Technology; Huaiyin Institute of Technology
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: To reduce the error of machine recognition method in students' sports training test, this paper designs a motion capture and recognition system based on wearable technology. The system consists of human posture measurement terminal, assessment controller and display terminal. The hardware design adopts ARM control circuit, STM32f controller and WiFi transmission module; In the software design, the motion attitude determination based on feature extraction and OpenGL visualization method are mainly used to transform the human body's attitude trajectory into recognizable quantitative data. The algorithm is tested in LabView environment and the results show that the scheme has high precision and good user interface. It can also realize real-time motion monitoring, motion tracking and positioning. © 2022 IEEE
Number of references: 7
Main heading: Software design
Controlled terms: Application programming interfaces (API) - Data visualization - Sports - User interfaces - Wearable computers - Wi-Fi - Wireless local area networks (WLAN)
Uncontrolled terms: ARM - Machine recognition - Motion capture - Motion capture system - Motion recognition - Posture recognition - Recognition methods - Sport test - Sports trainings - Wifi
Classification code: 722.2 Computer Peripheral Equipment - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 902.2 Codes and Standards
DOI: 10.1109/ICMTMA54903.2022.00080
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

335. Three-dimensional 1T-SnS2 wrapped with graphene for sodium-ion battery anodes with highly reversible sodiation/desodiation

Accession number: 20220211451787
Authors: Li, Zhao (1); Zheng, Jialu (1); Xiao, Meixia (1); Jiang, Hao (1); Wang, Lei (1); Song, Haiyang (1); Gao, Huan-Huan (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Zhao(lizhao@xsyu.edu.cn)
Source title: Scripta Materialia
Abbreviated source title: Scripta Mater
Volume: 211
Issue date: April 1, 2022
Publication year: 2022
Article number: 114500
Language: English
ISSN: 13596462
CODEN: SCMAF7
Document type: Journal article (JA)
Publisher: Acta Materialia Inc

Abstract: Sodium-ion batteries have attracted tremendously significant attention as an alternative to Li-ion batteries due to the similar electrochemical properties. However, owing to the larger atomic radius of sodium, the sodium-ion batteries have been inevitably suffered from the inferior electrochemical reaction kinetics and descending cyclic stability, limiting its practical applications. Here, sodium-ion batteries based on 3D 1T-SnS2/RGO composite electrode with highly reversible sodiation/desodiation process are realized through a facile CVD process and spray coating. It displays excellent initial specific charge and discharge capacities (766.7 mAh g-1 and 768.8 mAh g-1), after 100th cycle, the charge and discharge capacities are 648.1 mAh g-1 and 650.8 mAh g-1, respectively, with 84.6% capacities retention ratio, indicating the excellent reversibility and high electrochemical reaction kinetics. The composite sodium-ion battery anode still delivers high specific capacities of 865.6 mAh g-1, 758.2 mAh g-1, 678.5 mAh g-1, 581.2 mAh g-1 and 503.8 mAh g-1 at the current density of 0.1 C, 0.5 C, 1 C, 2 C and 5 C, respectively, indicating its excellent reversible sodiation/desodiation reaction and rate capability. This work confirms the high potential of the SnS2-based anode for SIBs from its highly reversible capacity and excellent rate capability and points out the significance of the rational design of three-dimensional composite anode with high reversibility and electrochemical reaction kinetics. © 2022 Acta Materialia Inc.
Number of references: 47
Main heading: Anodes
Controlled terms: Lithium-ion batteries - Reaction kinetics - Association reactions - Kinetics - Tin oxides - Graphene - IV-VI semiconductors - Sulfur compounds - Electric discharges - Sodium-ion batteries - Metal ions - Semiconducting tin compounds
Uncontrolled terms: Anode - Atomic radius - Battery anodes - Composites electrodes - Cyclic stability - Electrochemical reactions - Rate capabilities - Reduced graphene oxides - Reversibility - Sodium ion batteries
Classification code: 531.1 Metallurgy - 631.1 Fluid Flow, General - 701.1 Electricity: Basic Concepts and Phenomena - 702.1.2 Secondary Batteries - 712.1 Semiconducting Materials - 712.1.2 Compound Semiconducting Materials - 714.1 Electron Tubes - 761 Nanotechnology - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Magnetic flux density 1.00E00T, Percentage 8.46E+01%
DOI: 10.1016/j.scriptamat.2022.114500
Funding Details: Number: 51702257,51801155, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JQ-595,2021JQ-603, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 21JK0848, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: Young Scientists Fund;
Funding text: Authors acknowledge Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 21JK0848), Natural Science Foundation Research Project of Shaanxi Province (No. 2021JQ-595 and 2021JQ-603), and the Young Scientists Fund of the National Natural Science Foundation of China (No. 51702257 and 51801155).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

336. Promotion by Methane on the Hydrocracking Reaction of Polycyclic Aromatic Hydrocarbon

Accession number: 20222012124034
Title of translation:
Authors: Shen, Zhibing (1); Ren, Zhaoyang (1); Fu, Rao (1); Tang, Ruiyuan (1); Liang, Shengrong (1); Zhang, Juntao (1); Chen, Yifan (1)
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Corresponding author: Shen, Zhibing(szb@xsyu.edu.cn)
Source title: Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)
Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
Volume: 38
Issue: 3
Issue date: May 10, 2022
Publication year: 2022
Pages: 623-631
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)

Publisher: Science Press
Abstract: The supported Zn-Ag/H# catalyst was prepared by wet impregnation method and characterized by means of XRD, SEM, XPS, Py-IR, NH3-TPD and N2 adsorption-desorption. By introducing methane into the hydrocracking reaction of polycyclic aromatic hydrocarbon, the promotion of methane on the hydrocracking reaction of polycyclic aromatic hydrocarbon under the action of Zn-Ag/H# catalyst was studied, and the effects of methane introduction ratio, reaction temperature and reaction pressure on the naphthalene conversion rate and the selectivity of benzene, toluene and xylene (BTX) in the hydrogenation of polycyclic aromatic hydrocarbon were investigated. The results show that the Zn-Ag/H# catalyst is abundant in moderate-strong acid sites. After Zn is loaded, the catalyst contains Zn2+ and the Zn species incorporated into the zeolite skeleton; the total acid content decreases while the Lewis/Brönsted (L/B) acid content ratio increases. Under the reaction pressure of 3.5 MPa, reaction temperature of 400 , LHSV of 4 h-1, gas/oil volume ratio of 800, and the mixed atmosphere of hydrogen and methane, naphthalene was used as model compound for hydrocracking reaction under the action of Zn-Ag/H# catalyst; as a result, the naphthalene conversion is 99.82%, and the liquid yield is 80.88%. By comparison, under the hydrogen atmosphere, the total selectivity of BTX and the selectivity of benzene, toluene and xylene are significantly enhanced. The participation of methane in the reaction is beneficial to improve BTX selectivity and liquid phase yield and promoting the selectivity of products containing methyl side chains in the naphthalene hydrocracking reaction products. Also, the results provide a new way for the efficient utilization of valuable heavy oil resources. © 2022, Editorial Office of Acta Petrolei Sinica(Petroleum Processing Section). All right reserved.
Number of references: 29
Main heading: Methane
Controlled terms: Hydrogen - Naphthalene - Polycyclic aromatic hydrocarbons - Zinc - Benzene - Naphthas - Zeolites - Hydrocracking - Ammonia - Aromatization - Crude oil - Heavy oil production - Catalyst selectivity - Toluene - Xylene
Uncontrolled terms: Acid content - Benzene- toluenes - N 2 adsorption - Naphthalene conversion - Reaction pressure - Reaction temperature - Wet impregnation method - XRD - Zn-ag/h# catalyst -]+ catalyst
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 513.3 Petroleum Products - 546.3 Zinc and Alloys - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 8.088E+01%, Percentage 9.982E+01%, Pressure 3.50E+06Pa, Time 1.44E+04s
DOI: 10.3969/j.issn.1001-8719.2022.03.014
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

337. An amphiprotic paper-based electrode for glucose detection based on layered carbon nanotubes with silver and polystyrene particles

Accession number: 20221311858276
Authors: Zheng, Yajun (1); Li, Yu (1); Fan, Libin (1); Yao, Hedan (1); Zhang, Zhiping (1)
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Source title: Analytical Methods
Abbreviated source title: Anal. Methods
Volume: 14
Issue: 12
Issue date: February 25, 2022
Publication year: 2022
Pages: 1268-1278
Language: English
ISSN: 17599660
E-ISSN: 17599679
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: In this work, a flexible amphiprotic amino-bonded carbon nanotube-Ag nanoparticle/polystyrene (CNT-NH2-Ag/PS) paper electrode was fabricated to measure glucose in human body fluids by a combination of vacuum filtration and high temperature baking. The front side of the fabricated paper electrode was hydrophobic and conductive, whereas its back side was hydrophilic and nonconductive. In the fabrication process, the coating sequence of CNT-NH2, Ag and PS was critical to determine the performance of the resulting CNT-NH2-Ag/PS electrode besides other

parameters (e.g., amount of soluble starch, PS and Ag nanoparticles, type and amount of CNT-NH2, and electrode sensing area). Based on a series of experimental observations, the possible mechanism of glucose detection on the paper electrode was proposed, in which glucose was more favorable to migrate to the hydrophilic back side of the paper and interact with the active species (e.g., O2-) on the electrode surface. The electrochemical results showed that the CNT-NH2-Ag/PS paper electrode maintained stable electrochemical properties even after five cycles of use and 60 days of storage in air. The amphiprotic paper electrode demonstrated excellent sensing performance for glucose with a linear range of 1 μM to 1000 μM, a low detection limit of 0.2 μM, and a sensitivity of 31 333.0 μA mM-1 cm-2. The fabricated paper electrode was also successfully applied to detect different levels of glucose in complex human body fluids such as saliva, urine, and serum. These features make this type of paper electrode promising for glucose measurement. © 2022 The Royal Society of Chemistry
Number of references: 80
Main heading: Glucose
Controlled terms: Body fluids - Starch - Carbon nanotubes - Fabrication - Hydrophilicity - Metal nanoparticles - Silver nanoparticles - Electrochemical electrodes
Uncontrolled terms: Fabrication process - Glucose detection - Highest temperature - Human body fluids - Hydrophilics - Hydrophobics - Performance - Polystyrene particle - Silver particles - Vacuum filtration
Classification code: 461.2 Biological Materials and Tissue Engineering - 761 Nanotechnology - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 933.1 Crystalline Solids
Numerical data indexing: Age 1.644E-01yr, Electric current 3.33E-04A, Size 1.00E-02m, Size 1.00E-06m to 1.00E-03m, Size 2.00E-07m
DOI: 10.1039/d1ay01950c
Funding Details: Number: Z19257, Acronym: -, Sponsor: -; Number: 21777128, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JC-33,2021GY-247, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: We are grateful for funding from the National Natural Science Foundation of China (No. 21777128), the Natural Science Basic Research Program of Shaanxi Province of China (Grant No. 2019JC-33, and 2021GY-247), and the Youth Innovation Team of Shaanxi Universities (No. Z19257).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

338. Preparation of carbon dioxide, propylene oxide, and norbornene dianhydride terpolymers catalyzed via dinuclear cobalt complexes: Effective improvement of thermal, mechanical, and degradation properties

Accession number: 20223312584195
Authors: Wang, Wen-Zhen (1); Zhao, Chen (1); Li, Lei-Lei (1); Liu, Shuang (1); Zhang, Yi-Le (1); Luo, Liang (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Wen-Zhen(wzwang@xsyu.edu.cn)
Source title: Polymer
Abbreviated source title: Polymer
Volume: 256
Issue date: September 21, 2022
Publication year: 2022
Article number: 125188
Language: English
ISSN: 00323861
CODEN: POLMAG
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Dinuclear cobalt complex salen[Co(III)TFA]2 (salen = 3,5-di-tert-butyl- salicylaldehyde-3,3-diaminobiphenylamine, TFA = trifluoroacetic acid) was synthesized and used to catalyze the preparation of novel polycarbonate terpolymers (PPCEA) of carbon dioxide, propylene oxide and norbornene dianhydride. The results showed high catalyst reactivity under mild conditions, generating a polymer with maximum Mn of 2.3 × 105 g/mol and a narrow molecular weight distribution PDI of 1.01. The 5% thermal weight loss temperature (Td,-5%) of PPCEA can reach 310 °C, which is 150 °C higher than conventional polypropylene carbonate. In addition, its mechanical properties were also improved. The tensile strength increased from10.8 MPa to 22.8 MPa, and elongation at break decreased from 430% to 106%. The polymer has good degradability as well. Furthermore, based on the polymerization results, the corresponding polymerization mechanism is proposed in this paper. © 2022 Elsevier Ltd

Number of references: 56
Main heading: Carbon dioxide
Controlled terms: Catalysts - Cobalt compounds - Copolymerization - Molecular weight distribution - Polypropylenes - Propylene - Synthesis (chemical) - Tensile strength
Uncontrolled terms: Cobalt Catalyst - Conversion of carbon dioxide - Copolymerisation - Dinuclear - Dinuclear cobalt catalyst - Functional adjustment - Poly(propylene carbonate) - Polypropylene carbonate - Ternary copolymerization
Classification code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers - 815.2 Polymerization - 931.3 Atomic and Molecular Physics
Numerical data indexing: Molar mass 5.00E+00g/mol, Percentage -5.00E+00%, Percentage 4.30E+02% to 1.06E+02%, Percentage 5.00E+00%, Pressure 2.28E+07Pa, Temperature 4.23E+02K, Temperature 5.83E+02K
DOI: 10.1016/j.polymer.2022.125188
Funding Details: Number: YCS21212108, Acronym: -, Sponsor: -; Number: 21901200,52073228, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-489, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This research was funded by the National Natural Science Foundation of China (NO. 52073228 , NO. 21901200), the Xi'an Shiyou University Postgraduate Innovation and Proactical Ability Training Project (NO. YCS21212108), the Nature Science Foundation of Shaanxi Province, PR China (No. 2019JQ-489).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

339. Effect of graphene on the mechanical properties of metallic glasses: Insight from molecular dynamics simulation

Accession number: 20220411508184
Authors: Zhao, T.Q. (1); Song, H.Y. (1); An, M.R. (1); Xiao, M.X. (1)
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding authors: Song, H.Y.(hysong@xsyu.edu.cn); An, M.R.(amr_lr@126.com)
Source title: Materials Chemistry and Physics
Abbreviated source title: Mater Chem Phys
Volume: 278
Issue date: February 15, 2022
Publication year: 2022
Article number: 125695
Language: English
ISSN: 02540584
CODEN: MCHPDR
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The effect of the graphene on the mechanical properties of the Cu50Zr50 metallic glass (MG) is investigated by molecular dynamics simulation method. The results show that the introduction of graphene can increase the strength of the MG and also enhance its plastic deformation ability. The results also indicate that the mechanical properties and deformation behavior of the MG/graphene nanolaminates (MGGNLs) are closely related to the graphene embedded position. It is worth highlighting that there is a threshold for the embedding position of graphene, which makes the plastic deformation of the MGGNL reach uniform deformation. With the increase of graphene insertion distance, the plastic deformation mode of the MGGNL changes from the interaction of multiple shear bands (SBs) to uniform deformation, and ultimately to a dominant SB propagation. The results indicate that the high-strength and high-plasticity MGGNLs can be obtained by introducing graphene and optimizing its insertion position. © 2022
Number of references: 39
Main heading: Molecular dynamics
Controlled terms: Plastic deformation - Metallic glass - Glass - Graphene - Zircaloy - Copper alloys
Uncontrolled terms: (metallic) glass - Deformation behavior - Deformation modes - Embeddings - Mechanical deformation - Molecular dynamics simulation methods - Multiple shear bands - Nano-laminates - Plastic deformation abilities - Uniform deformation
Classification code: 531 Metallurgy and Metallography - 544.2 Copper Alloys - 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally - 812.3 Glass
DOI: 10.1016/j.matchemphys.2022.125695

Funding Details: Number: YCS19211009, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS19211009).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

340. Preparation of CsPbBr3 perovskite nanocrystals with controllable morphology and in-situ photoluminescence of formation kinetics (*Open Access*)

Accession number: 20222112148846
Title of translation: CsPbBr3
Authors: Chen, Xue-Lian (1); Ju, Bo (1); Jiao, Hu-Po (1); Li, Yan (1); Zhong, Yu-Jie (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Chen, Xue-Lian(chenxl@xsyu.edu.cn)
Source title: Wuli Xuebao/Acta Physica Sinica
Abbreviated source title: Wuli Xuebao
Volume: 71
Issue: 9
Issue date: May 5, 2022
Publication year: 2022
Article number: 096802
Language: Chinese
ISSN: 10003290
CODEN: WLHPAR
Document type: Journal article (JA)
Publisher: Institute of Physics, Chinese Academy of Sciences
Abstract: Cesium-lead halide perovskite nanocrystals (CsPbX3 (X = Br, Cl, I) PNCs) have become ideal luminescent materials for wide color gamut display devices, white LED lighting and high-efficiency solar cells, due to adjustable energy band gap, high fluorescence quantum yield, narrow fluorescence emission peak, and ultra-high defect tolerance. The preparation of CsPbX3 PNCs with controllable size and morphology is a prerequisite for obtaining efficient and stable photovoltaic/photovoltaic devices. In this report, the CsPbBr3 PNCs with different shapes are prepared by adding different concentrations of dodecanedioic acid (DDDA) ligands at room temperature through using ligand-assisted reprecipitation method. Utilizing the X-ray diffractometer, transmission electron microscopy, ultraviolet spectrophotometer, fluorescence spectrometers (PL), the phase structure, microstructure and optical properties of the nanocrystals are investigated. The results show that the presence of DDDA ligands have no influence on the phase structure of nanocrystal products, they all present a cubic phase structure. Surprisingly, the morphology of the nanocrystals gradually transforms from nanocubes into nanoplatelets with ~5 layers in thickness as the concentration of DDDA increases. In addition, the PL spectrum shows a significant blue shift from 509 nm to 478 nm. By using the in-situ homemade PL device with ultra-high time resolution (~100 ms), the real-time monitoring PL spectra of nanocrystals in the formation process are measured. The results demonstrate that nanocrystals undergo rapid nucleation and focusing of size distribution growth to generate nanocubes in the absence of DDDA ligand. When the DDDA ligand is present, nanocrystals are mainly nanoplatelets in the early growth stage due to the decelerated reaction. As the reaction proceeds, nanocubes can emerge and grow gradually while the nanoplatelets disappear when the concentrations of DDDA ligands are 25% and 50%. As the concentration is further increased to 75%, almost nanoplatelets could be formed after the nucleation stage and growth stage. Unexpectedly, preformed nanoplatelets are unstable for the prolonged reaction time as a result of the high surface energy, and they will eventually transform into isotropic nanocubes through dissolution-recrystallization pathway, indicating that the process in the later stage is controlled mainly by thermodynamics. Our findings offer an efficient strategy to synthesize the perovskite nanocrystals with controllable size and morphology. Copyright © 2022 Acta Physica Sinica. All rights reserved.
Number of references: 31
Main heading: Nanocrystals
Controlled terms: Nucleation - Cesium compounds - Lead compounds - Morphology - Perovskite - Bromine compounds - Growth kinetics - Phase structure - Energy gap - Fluorescence - Blue shift - Display devices - High resolution transmission electron microscopy - Ligands

Uncontrolled terms: Controllable morphology - Controllable size - Growth stages - In-situ photoluminescence - Nanocubes - Nanoplatelet - Perovskite nanocrystal - PL spectra - Shape transformation - Ultra-high
Classification code: 482.2 Minerals - 722.2 Computer Peripheral Equipment - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 761 Nanotechnology - 801.4 Physical Chemistry - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics - 933.1 Crystalline Solids - 933.1.2 Crystal Growth - 951 Materials Science
Numerical data indexing: Percentage 2.50E+01%, Percentage 5.00E+01%, Percentage 7.50E+01%, Size 5.09E-07m to 4.78E-07m, Time 1.00E-01s
DOI: 10.7498/aps.71.20212228
Funding Details: Number: 2021GY-133, Acronym: -, Sponsor: -; Number: YCS19212058, Acronym: -, Sponsor: -; Number: 62104191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XJTU, Sponsor: Xi’an Jiaotong University;
Funding text: * Project supported by the National Natural Science Foundation of China (Grant No. 62104191), the Key Research Foundation of Shanxi Province, China (Grant No. 2021GY-133), the State Key Laboratory of Metal Material Strength of Xi'an Jiaotong University, China, and the Postgraduate Innovation and Practical Ability Training Program of Xi' an Shiyou University, China (Grant No. YCS19212058). † Corresponding author. E-mail: chenxl@xsyu.edu.cnProject supported by the National Natural Science Foundation of China (Grant No. 62104191), the Key Research Foundation of Shanxi Province, China (Grant No. 2021GY-133), the State Key Laboratory of Metal Material Strength of Xi'an Jiaotong University, China, and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University, China (Grant No. YCS19212058).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

341. Optimization and correction of RF moisture content measurement system

Accession number: 20223812766807
Authors: Dang, Ruirong (1); Gao, Wei (1); Gao, Yuehan (1)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Key Laboratory of Drilling Rig Control, Xi'an, China
Corresponding author: Dang, Ruirong(1061085600@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 218-221
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The water content of crude oil is an important parameter in the process of oil exploitation. Measuring the water content of crude oil in real time and accurately can effectively evaluate the production status and productivity of oil wells. According to the characteristics that the dielectric constants of oil and water media are greatly different and the high-frequency electromagnetic signal is sensitive to the dielectric constant, according to the designed antenna structure and measurement circuit, and the characteristics that the dielectric constant of water is affected by temperature, the frequency of excitation signal is optimized, and the temperature detection circuit is added. Through the repeated experiment on the water content of crude oil, the measurement error of water content is calibrated, A high-precision RF crude oil moisture content measuring instrument has been formed. It is verified through the built system experiment platform that the system has the advantages of low power consumption, strong real-time performance, low cost and strong reliability. It has great production guiding significance and value for the optimization of oilfield production and the realization of intelligent well completion. © 2022 IEEE.

Number of references: 5
Main heading: Antennas
Controlled terms: Crude oil - Electric excitation - Moisture - Moisture determination - Well completion
Uncontrolled terms: Antenna structures - Antennas measurement - Electromagnetic signals - High-frequency electromagnetics - Measurement system - Moisture content measurement - Oil exploitation - Optimisations - Real- time - Water media
Classification code: 512.1 Petroleum Deposits - 701.1 Electricity: Basic Concepts and Phenomena - 944.2 Moisture Measurements
DOI: 10.1109/ICMSP55950.2022.9859117
Funding Details: Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JZ-37, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: Acknowledgments This paper was supported by National Natural Science Foundation of China (41874158); Natural Science Foundation of Shaanxi Province (2019JZ-37).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

342. Progress in analysis detection of pesticide residues by flexible surface-enhanced Raman scattering substrate

Accession number: 20220811698125
Title of translation:
Authors: Huang, Jian (1); Su, Meijuan (1); Yang, Tingting (1); Wang, Qi (1); Zou, Derong (1); Qu, Sixu (1); Wang, Li (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Su, Meijuan(1349588849@qq.com)
Source title: Jingxi Huagong/Fine Chemicals
Abbreviated source title: Jingxi Huagong
Volume: 39
Issue: 2
Issue date: February 15, 2022
Publication year: 2022
Pages: 247-254
Language: Chinese
ISSN: 10035214
CODEN: JIHUFJ
Document type: Journal article (JA)
Publisher: Fine Chemicals
Abstract: Surface-enhanced Raman spectroscopy (SERS) is a sensitive and specific analytical technology based on the fingerprint information of probe molecules (molecular vibration, rotation information, etc). With the help of precious metal nanomaterials with excellent plasma properties, SERS can be used for the analysis and detection of single-component or complex multi-component trace pesticide residues. Among them, flexible SERS substrate has the characteristics of high porosity, low preparation cost, flexibility, folding and bending, etc. It has incomparable advantages over rigid SERS substrates in the extraction, filtration and concentration of probe molecules in complex sample systems. Flexible SERS substrates are mainly based on biobased materials, polymer and carbon materials to support and fix the modified surface to provide spectral enhancement of precious metal nanomaterials. The common preparation methods and applications of these three types of flexible SERS substrates are reviewed. The latest research progress in the application of flexible SERS substrates to different pesticide residues is introduced by making full use of the advantages of "fingerprint" of SERS. Finally, the problems to be solved urgently for the development and application of SERS technology are put forward. © 2022, Editorial Office of FINE CHEMICALS. All right reserved.
Number of references: 57
Main heading: Substrates
Controlled terms: Trace analysis - Trace elements - Heavy metals - Molecules - Vibration analysis - Pesticides - Probes - Raman spectroscopy - Metal analysis - Nanostructured materials - Precious metals - Surface scattering - Raman scattering
Uncontrolled terms: Analyse and detection - Analyse of pesticide residue - Enhanced Raman scattering - Flexible substrate - Flexible surfaces - Pesticide residue - Preparation - Surface enhanced Raman - Surface enhanced Raman spectroscopy - Surface-enhanced raman scattering

Classification code: 531 Metallurgy and Metallography - 547.1 Precious Metals - 741.1 Light/Optics - 761 Nanotechnology - 801 Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 931 Classical Physics; Quantum Theory; Relativity - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids
DOI: 10.13550/j.jxhg.20210838
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

343. Design of microcalorimetric mass flowmeter based on constant power

Accession number: 20223812766919
Authors: Zhang, Pingyi (1); Dang, Ruirong (1); Zhang, Mimi (1); Zhao, Fanfan (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 334-337
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this paper, a design method of a thermal mass flowmeter based on constant power is proposed. The purpose is to measure the flow of a small amount of fluid. The principle is to arrange two temperature sensors in the pipeline to heat the speed-measuring temperature sensor. The principle calculates the flow. The polynomial least squares method is used to establish the mathematical model between the fluid flow and the sensor output voltage, and the output signal is processed by the single chip microcomputer. The experimental results show that the relative error of the designed thermal mass flowmeter is within 1.5%. The flowmeter has the advantages of large measurement range, high measurement accuracy and good repeatability. © 2022 IEEE.
Number of references: 11
Main heading: Flow measurement
Controlled terms: Design - Flow of fluids - Flowmeters - Heat convection - Least squares approximations - Temperature sensors
Uncontrolled terms: Constant power - Design method - Fluid-flow - Least-squares- methods - Mass flowmeters - Measuring temperature - Thermal - Thermal flowmeter - Thermal mass flowmeters - Thermal-equilibrium
Classification code: 631.1 Fluid Flow, General - 641.2 Heat Transfer - 921.6 Numerical Methods - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements - 944.5 Temperature Measuring Instruments
Numerical data indexing: Percentage 1.50E+00%
DOI: 10.1109/ICMSP55950.2022.9859132
Funding Details: Number: 21XJZZ0058, Acronym: -, Sponsor: -; Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT This work is supported by National Natural Science Foundation of China (No.41874158) and Xi'an Science and Technology Plan Project (No.21XJZZ0058).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

344. Metal-organic framework derived binary-metal oxide/MXene composite as sulfur host for high-performance lithium-sulfur batteries

Accession number: 20215211387690
Authors: Wei, Anke (1); Wang, Lei (1); Li, Zhao (1)
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Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 899
Issue date: April 5, 2022
Publication year: 2022
Article number: 163369
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: As a promising high-energy chemical power source, lithium-sulfur batteries have attracted extensive attention due to their high theoretical specific capacity (1675 mAh g-1) and high theoretical energy density (2600 Wh kg-1). However, some prominent problems restrict the development of lithium-sulfur batteries, including poor intrinsic conductivity of sulfur, larger volume expansion, and the dissolution of polysulfide. Herein, the porous Zn-Co oxide derived from MOFs (metal-organic framework) coated by highly conductive MXene (ZnCo2O4@Ti3C2) is developed as an efficient sulfur immobilizer for lithium-sulfur batteries (LSBs). Benefitting from the high electronic conductivity of MXene, chemical binding sites of metal oxide for polysulfides, and porous structure for ion transfer, the ZnCo2O4@Ti3C2/S composite demonstrates a balanced high electrochemical performance. A high initial discharge capacity of 1283.9 mAh g-1 with a high initial coulombic efficiency of 98.7% at a low current density of 0.1 C. In addition, this sample exhibits outstanding cycling performance at a high current density of 0.5 C. The results showed that the design strategy of MOFs-derived materials has great potential to promote the development of high-performance LSBs. © 2021 Elsevier B.V.
Number of references: 52
Main heading: Lithium sulfur batteries
Controlled terms: Binary alloys - Cobalt compounds - Metal-Organic Frameworks - Lithium batteries - Metals - Polysulfides - Binding sites - Cobalt alloys - Zinc alloys
Uncontrolled terms: Binary metal oxides - Energy - High conductivity - Lithium/sulfur batteries - Metalorganic frameworks (MOFs) - Mxene - Performance - Polysulphides - Specific capacities - Strong adsorption
Classification code: 531.1 Metallurgy - 546.3 Zinc and Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 702.1.1 Primary Batteries - 702.1.2 Secondary Batteries - 801.2 Biochemistry - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 818.2.1 Synthetic Rubber
Numerical data indexing: Percentage 9.87E+01%
DOI: 10.1016/j.jallcom.2021.163369
Funding Details: Number: YCS19211012, Acronym: -, Sponsor: -; Number: 51702257, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 21JK0848, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors gratefully acknowledge financial support from the National Natural Science Foundation of China (51702257), Scientific Research Program Funded by Shaanxi Provincial Education Department (21JK0848), and Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (YCS19211012).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

345. Propagation characteristics of ultrasonic signals in gas-liquid two-phase flow

Accession number: 20223812766576
Authors: Dang, Ruirong (1); Gao, Yuehan (1); Gao, Wei (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP

Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 721-724
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Research on the propagation and attenuation characteristics of ultrasonic waves in gas-liquid two-phase flow. According to the related theory of ultrasound, using COMSOL multiphysics simulation software, through the geometric modeling, meshing and full The definition of local parameters is used to study the propagation and attenuation characteristics of ultrasonic signals in different media compared with gas. The propagation process of ultrasonic signals in two-phase flow at different times and the attenuation characteristics of ultrasonic signals in different gas phases are simulated. The results show that with the increase of the gas phase, the attenuation amplitude of the ultrasonic signal increases continuously. © 2022 IEEE.
Number of references: 7
Main heading: Two phase flow
Controlled terms: Acoustic fields - Computer software - Gases
Uncontrolled terms: Attenuation characteristics - Different gas - Different gas ratio - Gas ratio - Gas-phases - Gas/liquid two phase flow - Multiphysics simulations - Propagation characteristics - Two phases flow - Ultrasonic signals
Classification code: 631.1 Fluid Flow, General - 723 Computer Software, Data Handling and Applications - 751 Acoustics, Noise. Sound
DOI: 10.1109/ICMSP55950.2022.9859213
Funding Details: Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENTS This paper was supported by National Natural Science Foundation of China (41874158).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

346. Resource utilization of medical waste under COVID-19: Waste mask used as crude oil fluidity improver (*Open Access*)

Accession number: 20221912082439
Authors: Wang, Peng (1); Gu, Xuefan (1); Xue, Ming (1); Li, Yongfei (1, 2); Dong, Sanbao (2); Chen, Gang (1, 2); Zhang, Jie (1, 2)
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Corresponding author: Zhang, Jie(zhangjie@xsyu.edu.cn)
Source title: Journal of Cleaner Production
Abbreviated source title: J. Clean. Prod.
Volume: 358
Issue date: July 15, 2022
Publication year: 2022
Article number: 131903
Language: English
ISSN: 09596526
CODEN: JCROE8
Document type: Journal article (JA)

Publisher: Elsevier Ltd
Abstract: The disposal of medical waste has become an increasing environmental issue since the COVID-19 epidemic outbreaks. Conventional disposal methods have produced waste of fossil resources and environmental problems. In this study, the waste medical mask-derived materials were tested as viscosity reducer and pour point depressant to evaluate the possibility of being used as crude oil fluidity improver. The results show that the materials derived from the three parts of the waste medical mask can reduce the viscosity and pour point of each crude oil samples from different oilfields in China. The middle layer of the medical mask (PP-2) displays the highest efficiency, and the viscosity reduction rate and maximum pour point reduction reaches 81% and 8.3 °C at 500 ppm, respectively. A probable mechanism of improving rheological properties of the crude oil samples by the medical mask-derived materials was further proposed after the differential scanning calorimetry (DSC) analysis and the wax crystal morphology analysis. We hope this work could provide a way to solve the current environmental issues under COVID-19. © 2022 Elsevier Ltd
Number of references: 50
Main heading: Viscosity
Controlled terms: Fluidity - Environmental protection - Differential scanning calorimetry - Crude oil - Waste disposal
Uncontrolled terms: Derived materials - Disposal methods - Environmental issues - Flow improvers - Fossil resources - Medical wastes - Oil samples - Pour points - Resources utilizations - Waste medical mask
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 454.2 Environmental Impact and Protection - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 931.2 Physical Properties of Gases, Liquids and Solids - 944.6 Temperature Measurements
Numerical data indexing: Percentage 8.10E+01%, Temperature 2.813E+02K
DOI: 10.1016/j.jclepro.2022.131903
Funding Details: Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 21JP094, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2019ZDLGY06-03, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2020JQ-775, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The work was supported financially by National Science Foundation of China (51974252), Shaanxi Provincial Key Research and Development Program (2019ZDLGY06-03), Natural Science Basic Research Program of Shaanxi (2020JQ-775), Scientific Research Program Funded by Shaanxi Provincial Education Department (21JP094), and the Youth Innovation Team of Shaanxi Universities. And we thank the work of Modern Analysis and Testing Center of Xi'an Shiyou University.The work was supported financially by National Science Foundation of China (51974252), Shaanxi Provincial Key Research and Development Program (2019ZDLGY06-03), Natural Science Basic Research Program of Shaanxi (2020JQ-775), Scientific Research Program Funded by Shaanxi Provincial Education Department (21JP094), and the Youth Innovation Team of Shaanxi Universities . And we thank the work of Modern Analysis and Testing Center of Xi'an Shiyou University.
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

347. Focusing Plasma Desorption/Ionization Mass Spectrometry

Accession number: 20225013226865
Authors: Xiang, Zhicheng (1); Zheng, Yajun (1); Huang, Yajie (1); Shi, Jun (1); Zhang, Zhiping (1)
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Source title: Analytical Chemistry
Abbreviated source title: Anal. Chem.
Volume: 94
Issue: 49
Issue date: December 13, 2022
Publication year: 2022
Pages: 17090-17101
Language: English
ISSN: 00032700
E-ISSN: 15206882
CODEN: ANCHAM

Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: A plasma-based source named focusing plasma desorption/ionization (FPDI) is described, which applies a high direct current voltage between a metal wire inside a polymeric hollow truncated cone and a piece of a one-sided coated conducting paper substrate. The conducting paper acts as both the counter electrode and the sample carrier. Upon the generation of a visible plasma beam, it would directly ionize the samples spotted on the conducting paper substrate or located around the plasma beam. The signal intensity of target analytes in mass spectrometric analysis is dependent highly on whether the conducting paper substrate is grounded or not, the type of conducting paper substrate, the inside diameter of the polymeric hollow truncated cone tip, the metal wire tip-to-polymer tip distance, the polymer tip-to-paper substrate distance, the applied voltage, and the helium flow rate. Based on the experimental observation, a plausible mechanism is proposed for the generation of the plasma beam from FPDI. Compared to the available low-temperature plasma, flowing atmospheric-pressure afterglow, and helium plasma ionization sources, FPDI has demonstrated higher sensitivity and better compatibility with commercial mass spectrometers without any extra power supplies. As a proof of concept, FPDI coupled with a mass spectrometer has also been applied for the discrimination of different brands of gasoline and determination of solid tablets and pesticides with limits of detection in the range of 2.2 to 30.7 ng mL-1
Number of references: 52
Main heading: Mass spectrometers
Controlled terms: Atmospheric ionization - Atmospheric pressure - Desorption - Electric grounding - Glow discharges - Helium - Mass spectrometry - Temperature
Uncontrolled terms: Desorption ionization - Direct current voltage - High direct-current - Ionization mass spectrometry - Metal wires - Paper substrate - Plasma beam - Plasma desorption - Polymer tips - Truncated cone
Classification code: 443.1 Atmospheric Properties - 641.1 Thermodynamics - 701.1 Electricity: Basic Concepts and Phenomena - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally
Numerical data indexing: Mass density 2.20E-06kg/m3 to 3.07E-05kg/m3
DOI: 10.1021/acs.analchem.2c03237
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

348. Downhole Vibration Acquisition Method based on Compressed Sensing Technology

Accession number: 20223812766915
Authors: Lyu, Fangxing (1); Li, Yan (1); Zhang, Yanli (1); Fang, Xin (2); Li, Fei (1); Hu, Cong (3)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 460-464
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: The high-frequency measurement of downhole vibration signal is vital for the analyses of abnormal vibration signal in the process of drilling. In this work, an acquisition method of downhole vibration high-frequency measurement signal based on compressed sensing technology is proposed. Moreover, the establishment method of sparse dictionary and observation matrix is studied in-depth, and an OMP algorithm against spectrum leakage is proposed. The performance of the proposed method has been investigated via simulations by varying the applied signals over 100 times. The result demonstrated that the proposed approach captures the high-frequency signal at the equivalent sampling rate of 390 MS/s by utilizing a low-speed ADCs with a sampling rate of 65 MS/s and a pseudo random binary sequence. This method provides a new way to acquire the high-frequency measurement data of downhole vibration, and provides favorable data support for mastering the comprehensive law of downhole vibration and diagnosing downhole abnormal vibration. © 2022 IEEE.
Number of references: 11
Main heading: Compressed sensing
Controlled terms: Binary sequences - Signal sampling - Technology transfer - Vibration analysis
Uncontrolled terms: Abnormal vibration - Compressed-Sensing - Downhole vibration - High-frequency measurement - Measurements of - Observation matrix - Sampling rates - Sensing technology - Sparse dictionaries - Vibration signal
Classification code: 716.1 Information Theory and Signal Processing - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.2 Data Processing and Image Processing - 922 Statistical Methods
DOI: 10.1109/ICMSP55950.2022.9859126
Funding Details: Number: S202110705134, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Guangxi Key Laboratory of Automatic Detecting Technology and Instruments, Guilin University of Electronic Technology; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This research was funded by the National Natural Science Foundation of China, grant number U20B2029, the Key Research and Development Program of Shaanxi, grant numbers 2021KW-33 and 2022KW-25, and supported by Provincial College Students' Innovation and Entrepreneurship Training Program, grant number S202110705134, Guangxi Key Laboratory of Automatic Detecting Technology and Instruments.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

349. Numerical Simulation Method of Borehole Time Domain Electromagnetic Logging

Accession number: 20223812766912
Authors: Wu, Jie (1); Wang, Yirui (1); Jiang, Liming (2)
Author affiliation: (1) Xi'an Shiyou University, Xi'an; 710061, China; (2) Logging Co., Ltd., Cnpc, Xi'an; 710065, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 348-352
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The principle of time-domain electromagnetic method for open-hole drilling is studied. And use COMSOL finite element software to carry out simulation analysis, calculate induced electromotive force, and obtain logging data. In this research, the numerical solution calculated by the COMSOL model is compared with the analytical solution, and the causes of errors are analyzed from the perspective of skin effect, which proves the correctness of the numerical

solution. Finally, the response analysis of the time-domain electromagnetic method is carried out, and the results show that the source distance has little effect on the results; when the formation conductivity is in the water layer at 10 S/m, it is generally detected with this data; when the magnetic core conductivity is 10000 S/m, the most good. © 2022 IEEE.
Number of references: 10
Main heading: Electromagnetic logging
Controlled terms: Computer software - Numerical methods - Numerical models - Time domain analysis
Uncontrolled terms: COMSOL - Finite element software - Hole-drilling - Induced electromotive force - Numerical simulation method - Numerical solution - Open holes - Simulation analysis - Time domain electromagnetic methods - Time domain electromagnetics
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism - 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.6 Numerical Methods
Numerical data indexing: Electrical conductivity 1.00E+01S/m, Electrical conductivity 1.00E+04S/m
DOI: 10.1109/ICMSP55950.2022.9859122
Funding Details: Number: YCS22113122, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the Practice Ability Training Program of Xi'an Shiyou University,under Grant YCS22113122.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

350. Uncertainty principles for doubly periodic functions

Accession number: 20220811689692
Authors: Wei, Xin (1); Qu, Feifei (2); Liu, Hua (2); Bian, Xiaoli (2)
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Corresponding author: Wei, Xin(xwei@xsyu.edu.cn)
Source title: Mathematical Methods in the Applied Sciences
Abbreviated source title: Math Methods Appl Sci
Volume: 45
Issue: 11
Issue date: July 30, 2022
Publication year: 2022
Pages: 6499-6514
Language: English
ISSN: 01704214
E-ISSN: 10991476
CODEN: MMSCDB
Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: This paper studies uncertainty principles for doubly periodic functions. Firstly, the means and the variances of time and of frequency for doubly periodic signal functions are provided. Also, the phase and the amplitude derivatives of doubly periodic signal functions are properly defined. Based on these definitions, we establish two versions of uncertainty principles. An example is presented to illustrate these results. © 2022 John Wiley & Sons, Ltd.
Number of references: 13
Uncontrolled terms: Doubly periodic - Periodic function - Periodic signal - Phase derivatives - Signal function - Uncertainty principles
DOI: 10.1002/mma.8182
Funding Details: Number: 11802208,12101453, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017KJ118, Acronym: -, Sponsor: Tianjin Municipal Education Commission;
Funding text: The authors thank the anonymous reviewers for their helpful and valuable suggestions on improving this paper. This paper is supported by National Natural Science Foundation of China (NSFC) (11802208), NSFC (12101453), and Scientific research project of Tianjin Municipal Education Commission (2017KJ118).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

351. Relationship between tight reservoir diagenesis and hydrocarbon accumulation: An example from the early Cretaceous Fuyu reservoir in the Daqing oil field, Songliao Basin, China

Accession number: 20213710900364
Authors: Er, Chuang (1, 2); Zhao, Jingzhou (1, 2); Li, Yangyang (3); Si, Shanghua (1, 2); Bai, Yubin (1, 2); Wu, Weitao (1, 2); Han, Qiyan (4)
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Corresponding author: Er, Chuang(chuang-er@hotmail.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109422
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: It is crucial to determine the sequence of reservoir tightening and hydrocarbon accumulation for analyzing the accumulation dynamics, oil migration mode, and oil distribution pattern of tight oil reservoirs. The tight sandstone reservoirs in the Fuyu reservoir occur in both the Daqing Anticline (DA) and Sanzhao Sag (SS), which were used as examples for the qualitative and semiquantitative analyses conducted herein. By integrating the porosity and permeability data, thin section imaging, cathode luminescence, scanning electronic microscopy, and energy dispersive spectra, the diagenesis processes including compaction, calcite cementation and replacement, illite precipitation, quartz overgrowth, and dissolution were analyzed. Typical diagenetic processes and successive orders were established to have occurred in the following sequence: (1) compaction, early calcite cementation, and chlorite coating; (2) dissolution, quartz overgrowth, and kaolinite filling pores; (3) late calcite cementation, calcite replacing feldspar, and quartz; and (4) late illite (feldspar illitization). Utilizing fluid inclusion, isotopic analysis of C and O, and burial history, calcite cementation was determined to be related to the thermal decarboxylation of organic matter, showing that the dominant forming-temperature spanned 60°C–100 °C and that a large amount of calcite cement formed before the Middle-Nenjiang stage (the Early Campanian). Illite precipitation was determined to be related to feldspar illitization with a dominant forming temperature spanning 120°C–140 °C. The illite was mainly developed in the Late-Mingshui stage (the Late Campanian) in the DA. In the SS, illite was formed between the Late-Nenjiang stage (the Middle Campanian) and Late-Mingshui stage. The Fuyu reservoir experienced three–four periods of hydrocarbon charging, with the main charging period occurring in the Late Cretaceous (Late-Mingshui stage). The Fuyu reservoir became tight (porosity © 2021 Elsevier B.V.
Number of references: 72
Main heading: Calcite
Controlled terms: Compaction - Carboxylation - Cementing (shafts) - Sedimentology - Fluid inclusion - Petroleum reservoir engineering - Quartz - Dissolution - Feldspar - Hydrocarbons - Isotopes - Porosity - Kaolinite
Uncontrolled terms: Diagenetic history - Diagenetics - Forming temperature - Fuyu reservoir - Hydrocarbon accumulation - Illitization - Petroleum accumulations - Porosity evolutions - Songliao basin - Tight oil
Classification code: 481.1 Geology - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 631 Fluid Flow - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.20E+01%, Temperature 3.33E+02K, Temperature 3.73E+02K, Temperature 3.93E+02K, Temperature 4.13E+02K
DOI: 10.1016/j.petrol.2021.109422
Funding Details: Number: 41702132, Acronym: NNSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was funded by the National Natural Science Foundation of China (41702132).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

352. Research on univariate anomaly diagnosis of gas pipeline measurement data based on Random Forest algorithm (*Open Access*)

Accession number: 20223012391707
Authors: Quan, Qing (1, 2); Li, Dan (3); Wang, Shouxi (1, 2)
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2294
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012004
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 5th International Symposium on Big Data and Applied Statistics, ISBDAS 2022
Conference date: April 22, 2022 - April 24, 2022
Conference location: Xining, China
Conference code: 180392
Publisher: Institute of Physics
Abstract: The basis of univariate anomaly diagnosis of pipeline system is that univariate time series can reflect fault information of the system. Random Forest belongs to random sampling with put back, which can efficiently process high-dimensional data. This paper firstly combines measurement data with control graph theory, obtains sample data of different modes by Monte Carlo method. Then, Gini Impurity values of random forest algorithm are introduced to sort and optimize the feature of sample data. Finally, the Random Forest is used to realize the high precision intelligent recognition of different modes of the measurement data control chart, and the univariate anomaly diagnosis of the gas pipeline measurement data is realized combining with the fault knowledge base. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Decision trees
Controlled terms: Clustering algorithms - Knowledge based systems - Monte Carlo methods
Uncontrolled terms: Anomaly diagnosis - Faults information - Measurement data - Pipeline systems - Random forest algorithm - Random forests - Random sampling - Sample data - Univariate - Univariate time series
Classification code: 723.4.1 Expert Systems - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
DOI: 10.1088/1742-6596/2294/1/012004
Funding Details: Number: 51704236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors thank the financial support from the National Natural Science Foundation of China (51704236).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

353. Hyperspectral remote sensing image classification based on spectral-spatial feature fusion and PSO algorithm (*Open Access*)

Accession number: 20221211804537
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.

Volume: 2189
Part number: 1 of 1
Issue: 1
Issue title: 2021 International Conference on Communication Technology and Information Technology, ICCTIT 2021
Issue date: February 11, 2022
Publication year: 2022
Article number: 012010
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2021 International Conference on Communication Technology and Information Technology, ICCTIT 2021
Conference date: December 3, 2021 - December 5, 2021
Conference location: Virtual, Online
Conference code: 177254
Publisher: IOP Publishing Ltd
Abstract: Hyperspectral images(HSI) have rich spectral information and spatial information. In the classification of hyperspectral images, the combination of spectral information and spatial information has become an effective means to obtain good classification results. Specifically, firstly, PCA algorithm is introduced to extract the spectral information of the image. Secondly, a bilateral filter is introduced for each band to extract the spatial information of the image. Thirdly, the image is classified by using SVM to get the final classification result. Considering that the performance of SVM depends on the choice of parameters, particle swarm optimization algorithm (PSO) is combined with the proposed method to find the optimal penalty parameters and kernel parameters. We find that the classification accuracy is effectively improved by using PCA, bilateral filtering and optimizing SVM-PSO parameters on this basis. Experimental results based on one real hyperspectral dataset show that the proposed algorithm can achieve higher classification accuracy in a shorter time than other algorithms. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Classification (of information)
Controlled terms: Remote sensing - Spectroscopy - Particle swarm optimization (PSO) - Nonlinear filtering - Image classification - Support vector machines
Uncontrolled terms: Classification accuracy - Classification results - Features fusions - Hyperspectral Remote Sensing Image - Information information - Particle swarm optimization algorithm - Remote sensing image classification - Spatial features - Spatial informations - Spectral information
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/2189/1/012010
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

354. Whole-line fault analysis method for unbalanced distribution networks with inverter interfaced distributed generators (*Open Access*)

Accession number: 20221712030271
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Source title: IET Generation, Transmission and Distribution
Abbreviated source title: IET Gener. Transm. Distrib.
Volume: 16
Issue: 15
Issue date: August 2022
Publication year: 2022
Pages: 3016-3026
Language: English

ISSN: 17518687
E-ISSN: 17518695
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: The integration of the inverter interfaced distributed generators (IIDGs) challenges the conventional fault analysis in distribution networks. However, the existing analysis methods mainly focus on the fault occurring at the network buses and little research has been done to analyse the whole-line faults. To extend the fault analysis methods, this paper proposed a phase domain estimation method. The new method was designed to analyse the whole-line faults in unbalanced distribution networks, considering the control strategy and fault-ride-through (FRT) capability of IIDG. A canonical method was developed and a compensation method was utilised, avoiding constructing the entire bus matrix and predefining the fault boundary conditions. Moreover, the new method is robust and can be used to analyse the simultaneous faults as well. Finally, the proposed method was programmed in MATLAB and different scenarios were tested on an unbalanced network. The calculation results were examined by the simulations, which verified the effectiveness of the new method. The new method can analyse whole-line fault in unbalanced networks with IIDGs connection, extending the current fault analysis methods and providing foundations for relay protection. © 2022 The Authors. IET Generation, Transmission & Distribution published by John Wiley & Sons Ltd on behalf of The Institution of Engineering and Technology.
Number of references: 34
Main heading: MATLAB
Controlled terms: Electric inverters - Electric equipment protection - Distributed power generation - Relay protection - Electric power system protection
Uncontrolled terms: Analysis method - Distributed generators - Domain estimations - Estimation methods - Fault analysis - Fault analysis methods - Line faults - Network bus - Phase domain - Unbalanced distribution networks
Classification code: 704.2 Electric Equipment - 706.1 Electric Power Systems - 706.1.2 Electric Power Distribution - 723.5 Computer Applications - 921 Mathematics
DOI: 10.1049/gtd2.12493
Funding Details: Number: 2021JG#22, Acronym: -, Sponsor: -; Number: 2021JM#404, Acronym: -, Sponsor: -; Number: KY2021#56, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JM#542,2021JM#542, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the Natural Science Basic Research Program of Shaanxi (No. 2020JM542, 2021JM542), the Science and Technology Basic Research Program of Shaanxi (No. 2021JM404), the Scientific Research Fund Project of Shaanxi Railway Institute under Grant (No. KY202156), the Education and Teaching Research Project (No. 2021JG22), and the National Science Foundation of China (No. U20B2029).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

355. Leakage Analysis of Residential Water Supply Network Based on Night Minimum Flow Method and Auto-Regressive Moving Average Model

Accession number: 20222412229673
Authors: Yingzhuo, Xu (1); Jieru, Zhao (1); Jun, Zhou (2)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 724-727
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022

Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Urban water supply system is an important part of public facilities. The quality of water supply pipe network directly affects the living standard of residents, and the leakage of water supply pipe network will cause a lot of waste of water resources. In this article, the night minimum flow method and the normal distribution model are used to analyze the leakage of the community water supply network and determine the leakage threshold of the community. At the same time, Auto-Regressive Moving Average (ARMA) model is used to predict the state of water supply network, and leakage warning is timely. In this article, the effectiveness of the proposed model is verified by experiments, which provides a method for timely sensing the state of the community water supply pipe network and controlling leakage. © 2022 IEEE.
Number of references: 10
Main heading: Water supply
Controlled terms: Normal distribution - Water quality - Water resources - Water supply systems
Uncontrolled terms: Leakage analysis - Minimum flow - Network-based - Night minimum flow method - Normal distribution model - Pipe networks - Public facilities - The auto-regressive moving average model - Urban water supply system - Water supply networks
Classification code: 444 Water Resources - 445.2 Water Analysis - 446.1 Water Supply Systems - 922.1 Probability Theory
DOI: 10.1109/ICSP54964.2022.9778461
Funding Details:
Funding text: Thanks to Xi'an Shiyou University Graduate Innovation and Practical Ability Training Program for funding this article.ACKNOWLEDGMENT Thanks to Xi’an Shiyou University Graduate Innovation and Practical Ability Training Program for funding this article. The authorization number is YCS21213253.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

356. The simulation analysis of sealing performance of cone-cone premium tubing connection under combined loads

Accession number: 20230113328450
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2403
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012033
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 International Conference on Mechanical, Aerospace Technology and Materials Application, MATMA 2022
Conference date: September 23, 2022 - September 25, 2022
Conference location: Chengdu, China
Conference code: 185167
Publisher: Institute of Physics
Abstract: Under the complex downhole loads, premium tubing connections often suffer from seal failure and threaded connection failure, leading to tubing string leakage and even safety accidents. Therefore, this paper focuses on the cone-cone premium tubing connection, simulating the make-up process and downhole load conditions, establishing three dimensional finite element models of premium tubing connections, analyzing the distribution of equivalent stress

and contact pressure on sealing surface, shoulder and thread. The results show that the stress is mainly concentrated on the shoulder and sealing surface under the make-up torque. The equivalent stress on the shoulder shows a trend of increasing first and then stabilizing. The equivalent stress at the sealing surface tends to be stable first and then decreases. Under the combined loads, the overall equivalent stress of connection increases. The contact pressure decreases slightly in the area of sealing surface and the shoulder inflection point. It may cause joint failure and leakage, when the internal pressure is over 80MPa and the axial compressive load is greater than 800kN, which will lead to the maximum equivalent stress of the threaded part exceed 5.5% of the yield strength. © Published under licence by IOP Publishing Ltd.
Number of references: 9
Main heading: Tubing
Controlled terms: Safety engineering
Uncontrolled terms: Combined loads - Contact pressures - Downholes - Equivalent stress - Failure connections - Seal failure - Sealing performance - Simulation analysis - Threaded connection - Tubing connections
Classification code: 619.1 Pipe, Piping and Pipelines - 914 Safety Engineering
Numerical data indexing: Force 8.00E+05N, Percentage 5.50E+00%, Pressure 8.00E+07Pa
DOI: 10.1088/1742-6596/2403/1/012033
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

357. In-fiber humidity sensor based on Black Phosphorus-Polyvinyl alcohol (*Open Access*)

Accession number: 20215011327810
Authors: Shao, Min (1); Sun, Haonan (1); Zhang, Rong (1); Li, Lipin (2); Liu, Yinggang (1); Qiao, Xueguang (3)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 68
Issue date: January 2022
Publication year: 2022
Article number: 102782
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: An in-fiber humidity sensor based on black phosphorus (BP)-polyvinyl alcohol (PVA) is proposed and experimentally demonstrated. The sensing head is fabricated by depositing BP-PVA film on single mode fiber–up taper–thin-core fiber–up taper–single mode fiber structure. Experimental results reveal that the maximum sensitivity is 0.6106 nm/%RH in the relative humidity (RH) range of 40–50 %RH, and a low instability of 3% is realized, which reveals the combination of BP and PVA can not only improve the sensor's humidity sensitivity, but also enhance the stability of the BP in air. Meanwhile, the measurement error brings by temperature is 0.16 %RH/ and the response time is 0.8 s for human breathing measurement, which indicate its good application potential in humidity sensing. © 2021 Elsevier Inc.
Number of references: 19
Main heading: Humidity sensors
Controlled terms: Phosphorus - Polyvinyl alcohols - Single mode fibers - Optical fiber fabrication
Uncontrolled terms: Breathing measurement - Fibre structure - Human breathing - Humidity sensing - Humidity sensitivity - In-fiber - Maximum sensitivity - Relative humidity range - Single-mode fibers - Thin-core fibers
Classification code: 443.2 Meteorological Instrumentation - 741.1.2 Fiber Optics - 804 Chemical Products Generally - 815.1.1 Organic Polymers
Numerical data indexing: Percentage 1.60E-01%, Percentage 3.00E+00%, Percentage 4.00E+01% to 5.00E+01%, Size 6.106E-10m, Time 8.00E-01s
DOI: 10.1016/j.yofte.2021.102782
Funding Details: Number: YSC19112034, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: This work is supported by the National Natural Science Foundation of China (61805197) and Graduate Student Innovation Fund of Xi'an Shiyou University (YSC19112034).This work is supported by the National Natural Science Foundation of China (61805197) and Graduate Student Innovation Fund of Xi'an Shiyou University (YSC19112034).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

358. Simulation research on vibration parameters model of drill string

Accession number: 20220311466713
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Source title: Fuel
Abbreviated source title: Fuel
Volume: 315
Issue date: May 1, 2022
Publication year: 2022
Article number: 122351
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The study of transmission characteristics of drill string is the key to complete acoustic teletransmission while drilling. In this paper, by analyzing the influence of structural cross-section changes on acoustic transmission characteristics in drill string, using acoustic vibration theory, the transfer matrix of vibration parameters at four ends of tapered cross-section rod is analyzed, and the channel model of vibration parameters of drill string is constructed. Through simulation comparison, the transfer admittance curve of the drill string structure is obtained, which can accurately characterize the resistance characteristics of the channel structure, and can more accurately reflect the influence of the transition zone structure in the drill string on the channel, making the results closer to the actual system characteristics. © 2021 Elsevier Ltd
Number of references: 18
Main heading: Vibration analysis
Controlled terms: Infill drilling - Drills - Drill strings - Transfer matrix method - Acoustic wave transmission
Uncontrolled terms: Acoustic transmission - Modeling analyzes - Parameter model - Simulation research - Tele-transmission - Telemetry while drilling - Transmission characteristics - Vibration parameter model - Vibration parameters - While drillings
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 751.1 Acoustic Waves - 921 Mathematics
DOI: 10.1016/j.fuel.2021.122351
Funding Details: Number: 51874238, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14030103, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: The authors acknowledge the Class a Strategic Leading Science and Technology Subproject of the Chinese Academy of Sciences (Grant: XDA14030103), the National Natural Science Foundation of China (Grant: 51874238).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

359. Modeling fluctuating pressure in the eccentric annulus with a four-parameter rheological method (*Open Access*)

Accession number: 20220911719833
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Corresponding author: Liu, Zhikun(Lzk12431@xsyu.edu.cn)
Source title: Energy Reports
Abbreviated source title: Energy Rep.
Volume: 8
Issue date: July 2022
Publication year: 2022
Pages: 1405-1417
Language: English
E-ISSN: 23524847
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The existing calculation models of fluctuating pressure are mainly based on Bingham fluid, power-law fluid and Heba fluid. These rheological models have certain limitations in the scope of application, and it is difficult to accurately describe the actual rheological curves of most drilling fluids. Based on evaluating the calculation model of power-law fluid pressure in eccentric annulus, the constitutive equation of the four-parameter rheological model is extended, and the calculation formula of annular pressure loss is established. In this research, we consider the calculation formula of annular flow under different boundary conditions. The model of fluctuating pressure in the eccentric annulus is obtained using cubic spline interpolation and Gauss integral equation. Compared with the experimental data from concentric annulus and eccentric annulus, the calculated results are in good agreement with the experimental results, compared with the laboratory test data, the error is within the range of ±10%, indicating that the model is sufficiently accurate to meet the requirements of field operations. In addition, the sensitivities of trip rate, drilling fluid flow index and drill string to wellbore size ratio are analyzed. Under the condition of totally eccentric annulus, the gradient of surge pressure decreases to around 50% of that for concentric annulus. The tripping velocity should be strictly limited for operations in the narrow annular space. © 2022
Number of references: 25
Main heading: Drilling fluids
Controlled terms: Interpolation - Integral equations - Drill strings - Boreholes - Infill drilling - Flow of fluids
Uncontrolled terms: Calculation formula - Calculation models - Concentric annuli - Eccentric annulus - Fluctuating pressures - Fluctuation pressure - Four-parameter rheological model - Parameter analysis - Power law fluid - Rheological models
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 631.1 Fluid Flow, General - 921.2 Calculus - 921.6 Numerical Methods
Numerical data indexing: Percentage 5.00E+01%, Percentage 1.00E+01%
DOI: 10.1016/j.egyr.2022.01.230
Funding Details: Number: 2019QNKYCTXD04,PLC2020036,PLC2020055, Acronym: -, Sponsor: -; Number: 51974248,52004214, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PRP/open-2010, Acronym: CUP, Sponsor: China University of Petroleum, Beijing; Number: -, Acronym: CDUT, Sponsor: Chengdu University of Technology; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation;
Funding text: This research was financially supported by the National Natural Science Foundation, China (Nos. 52004214 and No. 51974248), the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing (PRP/open-2010), the Youth Innovation Team of Xi'an Shiyou University, China (No. 2019QNKYCTXD04), and Open Fund (PLC2020036 and PLC2020055) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), China .This research was financially supported by the National Natural Science Foundation, China (Nos. 52004214 and No. 51974248), the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing (PRP/open-2010), the Youth Innovation Team of Xi'an Shiyou University, China (No. 2019QNKYCTXD04), and Open Fund (PLC2020036 and PLC2020055) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), China.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

360. Parameter optimization design of near-bit electromagnetic wave antenna system

Accession number: 20223812766769
Authors: Wu, Jie (1); Zhu, Yusha (1); Liu, Limeng (2)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 469-472
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Under the same formation conditions, when the tool selects different working parameters, the obtained responses are also different. In both cases without drill collar and with drill collar, the paper will adopt the single-transmitter and double-receiver coil structure with the transmitter coil tilted and the receiver coil vertical, analyzing the impact of different parameters on the logging response, these parameters including transmit frequency, coil source spacing, receiver spacing, and drill collar conductivity. The results show that the response is the best when the frequency is 2MHz, the distance between the transmitter and receivers is 0.5m, the distance between the two receivers is 0.15m, and the conductivity of the drill collar is 1000S/m. These conclusions will provide a theoretical basis for the development of near-bit electromagnetic wave resistivity tools. © 2022 IEEE.
Number of references: 5
Main heading: Drills
Controlled terms: Antennas - Circular waveguides - Drill collars - Electromagnetic logging - Electromagnetic waves - Infill drilling - Transmitters
Uncontrolled terms: Antenna system - Coil structures - Formation condition - Near bit - Optimization design - Parameter optimization - Receiver coil - Tilted coils - Wave antennas - Working parameters
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 603.2 Machine Tool Accessories - 701 Electricity and Magnetism - 711 Electromagnetic Waves - 714.3 Waveguides
Numerical data indexing: Electrical conductivity 1.00E+03S/m, Frequency 2.00E+06Hz, Size 1.50E-01m, Size 5.00E-01m
DOI: 10.1109/ICMSP55950.2022.9859071
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

361. Asphaltene precipitation and reservoir damage characteristics of CO2 flooding in different microscopic structure types in tight light oil reservoirs

Accession number: 20220111414069
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Source title: Fuel

Abbreviated source title: Fuel
Volume: 312
Issue date: March 15, 2022
Publication year: 2022
Article number: 122943
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Asphaltene precipitation is often accompanied by CO2 injection in tight light oil reservoirs. In tight oil reservoirs, the traditional studies of reservoir damage by asphaltene precipitation after CO2 flooding have limitations that the influence of reservoir microscopic pore structure characteristic parameters is not considered. In order to accurately evaluate the asphaltene precipitation characteristics and reservoir damage degree of different microscopic structure types, SEM, high pressure mercury injection and NMR have been used. In this study, the asphaltene precipitation characteristics under different CO2 flooding conditions have been clarified. The damage degree of asphaltene precipitation on the pore throat blockage characteristics, porosity, permeability and wettability of different types of reservoirs and the effect on oil displacement efficiency have been evaluated. The results show that the Chang 8 reservoir can be divided into type I, type II, and type III. The percolation capacity and storage space of the three pore structure reservoirs decrease successively. The asphaltene precipitation of three types of reservoirs increases with the increase of threshold pressure and injection volume. The blockage rate of large and small pores is the highest in type III reservoirs, followed by type II reservoir, and type I reservoir is the lowest. The oil displacement efficiency is the highest for type II reservoir and the lowest for type I reservoir. Asphaltene precipitation has little effect on porosity of three types of reservoirs, but has high damage on permeability. Asphaltene precipitation easily causes wettability reversal to lipophilicity and the reversal index increases with the injection pressure. The wettability reversal index of type I reservoir is the highest and that of type III reservoir is the lowest. The surfactant can be injected in reservoir to reduce the wettability reversal index caused by asphaltene precipitation. This paper has evaluated the asphaltene precipitation characteristics of CO2 flooding in tight light oil reservoirs, which further supplements the mechanism of CO2 flooding and provides reference and guidance for the optimization of field parameters. © 2021 Elsevier Ltd
Number of references: 54
Main heading: Reservoirs (water)
Controlled terms: Nuclear magnetic resonance - Enhanced recovery - Molecular structure - Petroleum reservoir engineering - Pore structure - Floods - Efficiency - Solvents - Asphaltenes - Porosity - Oil well flooding - Carbon dioxide - Petroleum reservoirs - Wetting
Uncontrolled terms: Asphaltene precipitation - CO2 flooding - Floodings - Light oil reservoirs - Precipitation characteristics - Reservoir damage - Reversal index - Tight light oil reservoir - Type II - Wettability reversal
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 513 Petroleum Refining - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics
DOI: 10.1016/j.fuel.2021.122943
Funding Details: Number: 52004221, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019D-5007-0204, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: 21JY034, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors greatly acknowledge the National Natural Science Foundation of China (No. 52004221), Petro China Innovation Foundation (2019D-5007-0204), Scientific Research Program Funded by Shaanxi Provincial Education Department (Grant No.21JY034). Xiang Li, Weipeng Yang and Jun Lu acknowledge the McDougall School of Petroleum Engineering at The University of Tulsa for the support of this research.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

362. Formation and characterization of a CuPt-A type ordered structure in cadmium zinc telluride single crystals

Accession number: 20220911740848
Authors: Li, Wanzhong (1); Sun, Jian (2); Deng, Chong (1)
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Source title: CrystEngComm
Abbreviated source title: Crystengcomm
Volume: 24
Issue: 8
Issue date: February 28, 2022
Publication year: 2022
Pages: 1612-1621
Language: English
E-ISSN: 14668033
CODEN: CRECF4
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Cadmium zinc telluride (CdZnTe) single crystals have been widely utilized in various photoelectron devices such as radiation detectors and solar cells. Different types of ordered phases have also been investigated in CdZnTe thin films grown on various substrates, which have been confirmed to have great influence on the properties of materials and performance of devices. This work, for the first time, provides direct evidence of the existence of a CuPt-A type ordered structure in CdZnTe bulk single crystals. The structure and distribution of the ordered phases have been comprehensively investigated by transmission electron microscopy (TEM). The results indicated that such a CuPt-A type ordered structure with two variants exhibits the same structure feature as that previously reported in CdZnTe thin films. In contrast, no ordering phenomenon can be found in CdTe single crystals, which has proved that the ordering is caused by the introduction of Zn2+ ions. With the help of a series tilting experiment, the alternately arranged Cd2+ and Zn2+ ions at {111} planes along direction have been confirmed to be the reason for the formation of such ordered phase. The local enrichment of Zn2+ has also been confirmed for the ordered phase, which is also the reason why it was only found at the Zn-rich head of the ingot. Based on the experimental results, the possible crystal structure and the formation mechanism of such ordered CdZnTe have also been proposed accordingly. This journal is © The Royal Society of Chemistry.
Number of references: 45
Main heading: Single crystals
Controlled terms: Cadmium alloys - Cadmium telluride - Crystal structure - II-VI semiconductors - Zinc compounds - Zinc alloys - Semiconductor alloys - Thin films - High resolution transmission electron microscopy - X ray detectors
Uncontrolled terms: Bulk single crystals - Cadmium zinc tellurides - Ordered phasis - Ordered structures - Ordering phenomena - Performance of devices - Property - Structure features - Thin-films - Various substrates
Classification code: 546.3 Zinc and Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 712.1 Semiconducting Materials - 741.3 Optical Devices and Systems - 804 Chemical Products Generally - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.1039/d1ce01494c
Funding Details: Number: 19JK0659, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2021JQ-606, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: The authors are truly grateful for the support from the Scientific Research Program Funded by Shannxi Provincial Education Department (Program No. 19JK0659) and the Natural Science Basic Research Program of Shaanxi (Program No. 2021JQ-606).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

363. Experimental study on the shear-slip characteristics of natural fractures in shale reservoirs (*Open Access*)

Accession number: 20221111777673
Authors: Shi, Zhaolong (1, 2); Chen, Junbin (1, 2); Gong, Diguang (1, 2); He, Shunan (3); Jiang, Xu (1, 2); Sun, Chen (1, 2); Fan, Lingyi (1, 2)
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Source title: Energy Science and Engineering
Abbreviated source title: Energy Sci. Eng.
Volume: 10

Issue: 4
Issue date: April 2022
Publication year: 2022
Pages: 1240-1250
Language: English
E-ISSN: 20500505
Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: The injection of high-pressure fluid and the propagation of hydraulic fractures (HF) can impact the stress state of natural fractures (NF) in shale reservoirs, which will lead to shear slip in NF that are in a critical stress state. However, the NF mechanics response mechanism during hydraulic fracture (HF) approximation has not been well investigated, especially under triaxial stress and injection conditions. This work focuses on the NF shear-slip characteristics during HF through experimental investigation. Each shale sample contains a single rough NF in the tests, and high-pressure fluid is injected through a pre-drilled hole at the top of the sample. Meanwhile, the deformation (axial deformation and radial deformation), axial stress, and injection pressure of the sample during the experiment were recorded in real-time. The experimental results show that the NF will initiate in tension or shear mode during the HF approaching process, and the fracture will produce shear slip in both initiation modes. In addition, the deviator stress, confining pressure, hydraulic fracture approach angle, and fracture surface roughness all affect the degree of shear slip in natural fractures (NF). The results further reveal the mechanical response mechanism of NF during hydraulic fracturing and provide a reference for optimizing hydraulic fracturing process measures. © 2022 The Authors. Energy Science & Engineering published by Society of Chemical Industry and John Wiley & Sons Ltd.
Number of references: 38
Main heading: Fracture
Controlled terms: Hydraulic fracturing - Shale - Stresses - Surface roughness - Deformation
Uncontrolled terms: Energy - Fracture interactions - High-pressure fluids - Hydraulic fracture/natural fracture interaction - Natural fracture - Response mechanisms - Shale reservoir - Shear slip - Stress state
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1002/ese3.1062
Funding Details: Number: YCS2111309, Acronym: -, Sponsor: -; Number: 51874239, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The project was supported by the National Natural Science Foundation of China (Project No.51874239); The Project on Cultivation of Graduate Innovation and Practice Ability of Xi'an Shiyou University, China (Project No. YCS2111309).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

364. Detection Method of Casing Joint based on Computer Vision

Accession number: 20223812766778
Authors: Zhao, Yao (1); Zhang, Jiatian (1); Guo, Liang (1); Zhang, Zhiwei (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Corresponding author: Zhang, Jiatian(zhjt208@163.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1006-1009
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022

Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the current problem of low detection efficiency and high detection error when manually inspecting the casing joint for calibration depth in the visual inspection of oil and gas wells, a casing joint intelligent recognition based on YOLOv5 algorithm is proposed, which can realize the intelligent detection of casing joint. Firstly, a large number of pictures of oil and gas well casing joints were collected and the dataset was made by data enhancement method. Then, the enhanced dataset which was annotated with Labelimg tool was sent to YOLOv5 network for training. Finally, use the best trained weights for testing result. The test results show that the method has a high detection accuracy, short detection time, wide applicability, and great advancement and practicality in casing joint detection. © 2022 IEEE.
Number of references: 12
Main heading: Large dataset
Controlled terms: Computer vision - Natural gas wells
Uncontrolled terms: Casing joint - Current problems - Detection efficiency - Detection error - Detection methods - Oil and gas well - Targets detection - Visual inspection - Visual logging - Yolov5
Classification code: 512.2.1 Natural Gas Fields - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 741.2 Vision
DOI: 10.1109/ICMSP55950.2022.9859086
Funding Details: Number: YCS22113137, Acronym: -, Sponsor: -;
Funding text: This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113137)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

365. Prototype Study of Down-View and Array Side-View Visualization Logging Tool

Accession number: 20223812766896
Authors: Su, Juan (1); Huang, Jintao (1); Guo, Liang (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 111-115
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Downhole TV logging technology has been widely used in oil and gas well recognition, evaluation and intervention activities. Aiming at the problems existing in single-camera and dual-camera logging tools in visual logging, a logging method using multi-camera combination is proposed, and a visual logging tool prototype is designed to obtain 360-degree video images of wellbore by using array camera. The principle and working mode of the prototype are introduced, and the scheme design and system structure of the prototype are expounded. Through the modular design of the instrument, the function of obtaining axial and radial video image data of the wellbore is realized respectively.

The information of the wellbore can be obtained through one downhole operation, which fills the vacancy of domestic visual logging in this aspect. © 2022 IEEE.
Number of references: 11
Main heading: Cameras
Controlled terms: Boreholes - Oil field equipment - Oil well logging
Uncontrolled terms: Array side-view - Downhole TV - Downholes - Evaluation activity - Intervention activities - Logging tools - Oil and gas well - Side view - Visual logging - Wellbore
Classification code: 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 742.2 Photographic Equipment
DOI: 10.1109/ICMSP55950.2022.9858983
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

366. Design of Electric Actuator Control System Based on Internet of Things

Accession number: 20223812766770
Authors: Wu, Yinchuan (1); Cao, Kang (1); Yang, Chen (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 533-536
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Due to the remote laying position of some oil and gas pipelines, higher requirements are put forward for the control of existing electric actuators. Therefore, this paper designs an electric actuator control system based on Internet of Things, which solves the distance problem of manipulating electric actuators. The whole system is composed of the three-layer Internet of Things architecture of perception layer, transmission layer and application layer. The system can collect and upload the temperature, pressure, flow rate and the valve state of the electric actuator. According to the results of data processing, the control software is used to control the state of the actuator, and the relevant parameters of the oil and gas pipeline operation state are displayed in real time. The experimental results show that the system designed in this paper has stable performance, high accuracy and real-time performance, and can meet the industrial control of electric actuators in oil and gas pipelines. © 2022 IEEE.
Number of references: 9
Main heading: Internet of things
Controlled terms: Actuators - Control systems - Data handling
Uncontrolled terms: 4g - Actuators control systems - Application layers - Control software - Internet of things architectures - Layer transmission - Oil-and-Gas pipelines - Pressure flow - Three-layer - Transmission layers
Classification code: 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 731.1 Control Systems - 732.1 Control Equipment
Numerical data indexing: Mass 4.00E-03kg
DOI: 10.1109/ICMSP55950.2022.9859072
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

367. Hydraulic Fracture Initiation for Perforated Wellbore Coupled with The Effect of Fluid Seepage

Accession number: 20220094181
Authors: Wang, Haiyang (1); Zhou, Desheng (1, 2); Liu, Shun (1); Wang, Xiaoxiang (1); Ma, Xianlin (1)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding author: Wang, Haiyang(wang_hai_yang@126.com)
Source title: SSRN
Issue date: April 28, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: Hydraulic fracturing technology is one of the most effective well stimulation techniques for low-permeability reservoirs, however, the mechanism of the fracture initiation and propagation is not fully understood. Based on Biot's consolidation theory and linear elasticity theory, this paper develops a general analytical model to investigate the hydraulic fracture initiation from arbitrarily spiral perforation or oriented perforation coupled with the effect of fluid seepage. The analytical solution can be used to determine formation breakdown pressure, the location and direction of an initial crack, and to investigate the factors that affect the formation breakdown pressure and the fracture initiation position. The calculation results show that the direction of fracture initiation does not always align with the direction of the maximum horizontal principal stress and may deviate from the 0° direction of the perforation circumferential angle to the 90° direction. The seepage effect of fracturing fluid can significantly reduce the formation breakdown pressure and increase the possibility of fracture initiation from the tip of perforation. The smaller the formation depth and transfer factor (TF) are, the more favorable the fracture initiation at the tip of the perforation is. With the increase of the Biot coefficient, the formation breakdown pressure decreases significantly. To avoid the failure of cement sheath induced by the fracture initiation from the bottom of perforation, the low-viscosity fracturing fluid with a stronger seepage effect and the casings with harder materials and lower transfer coefficient are recommended. © 2022, The Authors. All rights reserved.
Number of references: 30
Main heading: Hydraulic fracturing
Controlled terms: Boreholes - Fracture - Fracturing fluids - Horizontal wells - Low permeability reservoirs - Mechanical permeability - Oil field equipment - Petroleum reservoir engineering - Pressure effects - Seepage
Uncontrolled terms: Fluid seepages - Formation breakdown pressure - Fracture initiation - Horizontal wellbores - Perforated horizontal wellbore - Perforated vertical wellbore - Seepage effects - Vertical wellbore - Wellbore - Wells stimulation
Classification code: 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931.1 Mechanics - 951 Materials Science
Compendex references: YES
Preprint ID: 4095849
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

368. Hydraulic fracture initiation for perforated wellbore coupled with the effect of fluid seepage (*Open Access*)

Accession number: 20223412613041
Authors: Wang, Haiyang (1); Zhou, Desheng (1, 2); Liu, Shun (1); Wang, Xiaoxiang (1); Ma, Xianlin (1); Yao, Tuanqi (1)
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Corresponding author: Wang, Haiyang(wang_hai_yang@126.com)
Source title: Energy Reports
Abbreviated source title: Energy Rep.
Volume: 8
Issue date: November 2022
Publication year: 2022
Pages: 10290-10298
Language: English
E-ISSN: 23524847
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Hydraulic fracturing technology is one of the most effective well stimulation techniques for low-permeability reservoirs, however, the mechanism of the fracture initiation and propagation is not fully understood. Based on Biot's consolidation theory and linear elasticity theory, this paper develops a general analytical model to investigate the hydraulic fracture initiation from arbitrarily spiral perforation or oriented perforation coupled with the effect of fluid seepage. The analytical solution can be used to determine formation breakdown pressure, the location and direction of an initial crack, and to investigate the factors that affect the formation breakdown pressure and the fracture initiation position. The calculation results show that the direction of fracture initiation does not always align with the direction of the maximum horizontal principal stress and may deviate from the 0° direction of the perforation circumferential angle to the 90° direction. The seepage effect of fracturing fluid can significantly reduce the formation breakdown pressure and increase the possibility of fracture initiation from the tip of perforation. The smaller the formation depth and transfer factor (TF) are, the more favorable the fracture initiation at the tip of the perforation is. With the increase of the Biot coefficient, the formation breakdown pressure decreases significantly. To avoid the failure of cement sheath induced by the fracture initiation from the bottom of perforation, the low-viscosity fracturing fluid with a stronger seepage effect and the casings with harder materials and lower transfer coefficient are recommended. © 2022 The Author(s)
Number of references: 32
Main heading: Hydraulic fracturing
Controlled terms: Analytical models - Boreholes - Cements - Fracture - Fracturing fluids - Horizontal wells - Low permeability reservoirs - Oil field equipment - Oil wells - Petroleum reservoir engineering - Pressure effects - Seepage
Uncontrolled terms: Fluid seepages - Formation breakdown pressure - Fracture initiation - Horizontal wellbores - Perforated horizontal wellbore - Perforated vertical wellbore - Seepage effects - Vertical wellbore - Wellbore - Wells stimulation
Classification code: 412.1 Cement - 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics - 931.1 Mechanics - 951 Materials Science
DOI: 10.1016/j.egyr.2022.08.011
Funding Details: Number: YCS21211005, Acronym: -, Sponsor: -; Number: 51874242,51934005,51974253,52174032, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant Nos. 51874242 , 51934005 , 51974253 and 52174032) and Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University, China (Grant Nos. YCS21211005).This work was supported by the National Natural Science Foundation of China (Grant Nos. 51874242, 51934005, 51974253 and 52174032) and Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University, China (Grant Nos. YCS21211005).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

369. Evaluation Method of Oilfield Stimulation Effect Based on Grey Relation Analysis with Combination Weighting

Accession number: 20222412230140
Authors: Hu, Hongtao (1); Liu, Jialin (1); Guan, Xin (2)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China; (2) Exploration & Development, Resarch of Petroleum, Beijing, China
Corresponding author: Hu, Hongtao(huhongtao@xsyu.edu.cn)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1

Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 108-110
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: At present, most of the domestic oilfields have entered the middle and late stages of development, and it is usually necessary to take a variety of oilfield stimulation measures to maintain stable production, and the effects of oilfield stimulation measures need to be evaluated by evaluation indicators. The conventional grey relation analysis method uses the same evaluation index weight value to calculate, which cannot well reflect the evaluation index to the evaluation of the effect of oilfield stimulation measures. In this paper, an evaluation method based on combination empowerment grey correlation analysis for the effect of oilfield stimulation measures is proposed. For the evaluation indicators of oilfield stimulation measures, the subjective weights and objective weights of the evaluation indicators are respectively determined by the analytic hierarchy process and the entropy weight method, and the final weights of the evaluation indicators are obtained by comprehensive calculation. Then, the gray relation analysis method is used to calculate the correlation degree of oilfield stimulation measures, so as to obtain the evaluation results of the effect of oilfield stimulation measures. Compared with the traditional method, the evaluation results obtained by this method are more consistent with the actual situation of the oilfield. © 2022 IEEE.
Number of references: 9
Main heading: Analytic hierarchy process
Controlled terms: Entropy - Oil field development - Petroleum reservoir evaluation
Uncontrolled terms: Analysis method - Combination weighting - Entropy weight method - Evaluation index - Evaluation indicators - Evaluation methods - Evaluation results - Gray relation analysis - Oilfield stimulation - Stimulation measure
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 641.1 Thermodynamics - 961 Systems Science
DOI: 10.1109/ICSP54964.2022.9778581
Funding Details:
Funding text: We are grateful to the innovation and practice ability training program of Xi'an Petroleum University for their contributions to this paper.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

370. Research on Recognition Method of Oil Downhole Perforation Image

Accession number: 20223812766824
Authors: Wu, Yinchuan (1); Yang, Chen (1); Yan, Zhengguo (1); Cao, Kang (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 890-893
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)

Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problem that the downhole of wellbore panorama is complex and the perforation area is difficult to accurately locate and identify, a complete set of perforation area recognition scheme is constructed. The downhole visualization system is used to collect images, and the wellbore plane expansion map is obtained after correction and expansion. USM method is used to enhance the filtered image. Using edge detection and morphological operation, the area characteristics of perforating contour extraction are drawn to realize the identification of wellbore perforating area. Finally, the image fusion technology is used to verify the recognition results. The experimental results show that the scheme constructed in this paper can effectively identify the perforation area and reasonably test the recognition effect, which lays the foundation for quantitative measurement and morphological classification of perforation under fuzzy complex downhole. © 2022 IEEE.
Number of references: 7
Main heading: Extraction
Controlled terms: Boreholes - Image enhancement - Image fusion - Mathematical morphology - Oil field equipment - Oil wells - Perforating
Uncontrolled terms: Complete sets - Downholes - Images processing - Linear fusions - Morphological operations - Perforation extraction - Recognition methods - USM - Visualization system - Wellbore
Classification code: 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations
DOI: 10.1109/ICMSP55950.2022.9859021
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

371. Research on Visual Logging Technology with Crawler in Horizontal Well

Accession number: 20223812766925
Authors: Wu, Chenxi (1); Yan, Zhengguo (1); Zhang, Jiatian (1); Ren, Xing (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Corresponding author: Zhang, Jiatian(zhjt208@163.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 99-102
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Horizontal wells have been widely used in various oil fields because of their advantages of greatly increasing the contact area between the well and the oil layer. In view of the problems of low oil and gas output and high water content in the middle and late development of horizontal wells, the CVL (Crawler VideoLog) horizontal well Crawler visualization logging technology is proposed. The paper introduces the working principle and related performance parameters of the crawler and VideoLog visual logging tool. Starting from the difficulties of horizontal well logging

technology, the process principle and logging technology composition of the CVL system are introduced in detail. By analyzing the practical application of the crawler in the 4 horizontal wells to be tested, the actual well conditions of the horizontal wells are understood, which provides a new idea for the horizontal well logging technology. The practical results show that the combination of the CVL system realizes climbing and viewing, which makes it possible to observe the actual situation of the inner wall of the horizontal well, and provides a basis for operators to analyze the dynamic proportion of oil and gas. © 2022 IEEE.
Number of references: 7
Main heading: Horizontal wells
Controlled terms: Oil field development - Oil well logging
Uncontrolled terms: Contact areas - Crawler - High water content - Latest development - Logging tools - Oil and gas - Output water - Performance parameters - Visual logging - Well conditions
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1109/ICMSP55950.2022.9859139
Funding Details: Number: YCS22113134, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113134)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

372. Research on endoscope detection system of oil pipeline

Accession number: 20223812766891
Authors: Li, Jincheng (1); Zhang, Jiatian (1); Yan, Zhengguo (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Shaanxi Province for Gas & Oil Logging and Control Technology, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 330-333
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In recent years, in view of the corrosion and leakage of oil pipelines, it is necessary to dig and clean the old oil pipelines and repair them, so as to test the repair effect. By comparing with several traditional methods of oil pipeline detection, in order to meet the needs of rapid detection and real-time detection, a method of intuitive detection of the internal situation of oil pipeline is summarized. The detection method is to use network video remote monitoring to display the images of each position in the oil pipeline in real time. According to the actual situation of each position and the actual experience method, it is helpful to understand the real situation of the oil pipeline, to determine the location of the defect, and to detect the actual effect after repairing the pipeline. © 2022 IEEE.
Number of references: 5
Main heading: Pipeline corrosion
Controlled terms: Petroleum pipelines
Uncontrolled terms: Detection system - Detection time - Oil pipeline detection - Oil pipelines - Pipeline detection - Rapid detection - Real time monitoring - Real-time detection - Tubing corrosion - Visual detection
Classification code: 511.1 Oil Field Production Operations - 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines
DOI: 10.1109/ICMSP55950.2022.9858977

Funding Details: Number: YCS22113130, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This research funded by Xi'an Shiyou University Graduate Student Innovation and Practice Ability Training Program. (YCS22113130)This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University(YCS22113130)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

373. Segmentation Algorithm of Downhole Perforation Image Based on Morphology and Region Growth

Accession number: 20223812766917
Authors: Yan, Zhengguo (1); Hui, Wenbo (1)
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Corresponding author: Yan, Zhengguo(zhgyan@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 709-712
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the segmentation and extraction of downhole perforating image, a method of perforating target segmentation based on mathematical morphology and interactive region growth was proposed based on the expansion and change image of wellbore visualization detection. Firstly, the image was preprocessed by gray scale transformation and median filter, and the image was rough segmented by region growth algorithm. Then, the edge burrs and internal cavities were further removed by morphological opening operation and expansion operation. Finally, the perforation area was calculated by connecting domain marking contour points and Green's formula. The results show that the proposed method can effectively eliminate background interference and achieve target extraction for perforating images. © 2022 IEEE.
Number of references: 10
Main heading: Image segmentation
Controlled terms: Extraction - Mathematical morphology - Median filters - Perforating
Uncontrolled terms: Downholes - Image-based - Images segmentations - Morphological open operation - Perforation - Region growth - Regional growth - Segmentation algorithms - Target segmentation - Wellbore
Classification code: 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 802.3 Chemical Operations
DOI: 10.1109/ICMSP55950.2022.9859130
Funding Details: Number: YCS22113129, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi'an Shiyou University (YCS22113129).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

374. Main controlling factors of tight conglomerate oil enrichment above source kitchen in Mahu sag, Junggar Basin

Accession number: 20221111792827
Title of translation:
Authors: Tang, Yong (1); Song, Yong (2); Guo, Xuguang (2); Zhao, Jingzhou (3, 4); Wu, Tao (2); Huang, Liliang (2); He, Wenjun (2); Wu, Weitao (3, 4); Wu, Heyuan (3, 4)
Author affiliation: (1) PetroChina Xinjiang Oilfield Company, Karamay; 834000, China; (2) Research Institute of Exploration and Development, PetroChina Xinjiang Oilfield Company, Karamay; 834000, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Key Laboratory of Hydrocarbon Accumulation of Shaanxi Province, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding authors: Wu, Weitao(wtwu@xsyu.edu.cn); Wu, Weitao(wtwu@xsyu.edu.cn)
Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 43
Issue: 2
Issue date: February 2022
Publication year: 2022
Pages: 192-206
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The tight conglomerate oil province in Mahu sag, Junggar Basin is known as one of the biggest with the largest reserves in the world, so it is necessary to analyze the reservoir types and distribution characteristics, explore the main controlling factors of hydrocarbon enrichment, and indicate the direction of exploration and deployment of Mahu sag. The study shows that the large conglomerate oil province above source kitchen in Mahu sag is composed of multiple oil reservoir groups in the fan delta sedimentary system, and in each oil reservoir group, there is a cluster of lenticular sandy conglomerate reservoirs, showing the distribution characteristics of "one sandbody, one reservoir; one fan, one oilfield". The lithology of oil reservoirs in Mahu sag is conglomerate of the underwater distributary channel subfacies at the front of fan delta, with an average porosity of 7.8% and the mean permeability of 1.59 mD, which is classified as tight oil reservoir, with the characteristics of "tightening before accumulation". The oil reservoirs in Mahu sag are mainly dominated by conglomerate oil reservoirs, followed by fault-lithologic oil reservoirs, without uniform oil-water interface, unified pressure system or obvious edge/bottom water. The enrichment of tight oil in the large conglomerate oil province above source kitchen in Mahu sag is mainly controlled by four elements including fan, source, fault, and slope, i.e., the fan delta deposit integrated with reservoir and cap rock, the high-quality source rock, the widespread faults connected with source rocks and the gentle slope with weak deformation setting. The oil reservoirs are mainly enriched above the gentle slope, and the major hydrocarbon source rocks and subfacies conglomerate reservoirs at the front of fan delta are connected by the faults connected with source rocks.
Number of references: 39
Main heading: Landforms
Controlled terms: Quality control - Rocks - Petroleum reservoirs - Phase interfaces - Hydrocarbons - Petroleum prospecting - Lithology - Oils and fats - Petroleum reservoir engineering
Uncontrolled terms: Distribution characteristics - Fan delta - Junggar Basin - Mahu sag - Main controling factor of enrichment - Main controlling factors - Oil reservoirs - Source rocks - Tight conglomerate - Tight oil
Classification code: 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 801.4 Physical Chemistry - 804.1 Organic Compounds - 913.3 Quality Assurance and Control
Numerical data indexing: Percentage 7.80E+00%
DOI: 10.7623/syxb202202003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

375. Research on the test method of AFDX end system

Accession number: 20222412229669
Authors: Wang, KuiSheng (1); Li, WanShan (1); Wang, Li (2); Zhang, Yao (1)

Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China; (2) Airborne Network Bus Xiangteng Microelectronics Technology CO.,LTD, Xi'an, China
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 806-809
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the wide application of the AFDX (Avionics Full Duplex Switched Ethernet) network, the demand for AFDX terminal system testing increases daily. However, the content of AFDX is complex, the testing-related work is tedious, and the testing work of the system puts a significant burden on the testers. Therefore, it is essential to implement the research of AFDX terminal system testing methods to improve the efficiency of terminal system testing. This paper analyzes the AFDX network protocol and proposes a test method by studying the terminal system test requirements. © 2022 IEEE.
Number of references: 5
Main heading: Ethernet
Controlled terms: Supply chains - System theory - Testing
Uncontrolled terms: Afdx - Avionics full duplex switched ethernets - End-systems - Ethernet networks - Related works - System testing - Terminal systems - Test Environment - Test method - Testing method
Classification code: 722.3 Data Communication, Equipment and Techniques - 911.3 Inventory Control - 912 Industrial Engineering and Management - 913 Production Planning and Control; Manufacturing - 961 Systems Science
DOI: 10.1109/ICSP54964.2022.9778456
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

376. The thermal-fluid-solid coupling effect in nuclear reactor vessel with direct vessel injection

Accession number: 20223412606378
Authors: Weng, Yu (1); Wang, Haitao (2); Wang, Haijun (3); Liu, Jialun (4); Pan, Jie (1); Deng, Zhian (1)
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Corresponding author: Weng, Yu(wengyu009@hotmail.com)
Source title: Progress in Nuclear Energy
Abbreviated source title: Prog. Nucl. Energy
Volume: 152
Issue date: October 2022
Publication year: 2022
Article number: 104364
Language: English
ISSN: 01491970
CODEN: PNENDE
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Different from conventional cold leg safety injection, a newly designed reactor type CAP1400 directly connects the injection pipeline of the emergency cooling system with the pressure vessel. However, these structures

have been found to potentially have adverse effects on the pressure vessel. This paper employs both physical experiment and numerical analysis to investigate the dynamic oscillating load and the structural response. A 1:9 scale model is adopted for the experimental section. The uncertainty of the measurement quantities is within 3%. The CFD code and the FEM code are used to simulate the transient fluid flow and solid structure deformation, respectively. The sequential coupling method is used for the thermal-fluid-solid coupling calculation. The overall error of the calculation is within ±10%. The result shows that the fluctuation of the physical quantity near the wall is caused by turbulence eddy and thermal mixing, and the flow, heat transfer and structural deformation near the wall of the pressure vessel are closely coupled. The effect of the turbulence eddy can be seen within the entire range of frequency measured, while that of the thermal mixing can be seen only within the low frequency range. The influence law of the loop flow ratio, the flow rate of the downcomer and the loop temperature difference in the structural response are obtained. Through the research of this paper, the law of interaction between the thermal-fluid load and the structural response under direct safety injection is more deeply understood. Thus, it provides a design reference for the safety of reactors. © 2022
Number of references: 30
Main heading: Pressure vessels
Controlled terms: Codes (symbols) - Computational fluid dynamics - Deformation - Flow of fluids - Heat transfer - Mixing - Nuclear reactors - Structural design - Turbulence - Uncertainty analysis
Uncontrolled terms: Coupling effect - Direct vessel injection - Fluid-solid coupling - Nuclear reactor vessels - Oscillating load - Safety injection - Structural response - Thermal fluids - Thermal mixing - Thermal-fluid-solid coupling
Classification code: 408.1 Structural Design, General - 619.2 Tanks - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 802.3 Chemical Operations - 922.1 Probability Theory - 931.1 Mechanics
DOI: 10.1016/j.pnucene.2022.104364
Funding Details: Number: GX2119, Acronym: -, Sponsor: -; Number: U20B2036, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-402, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was financially supported by the Natural Science Basic Research Program of Shaanxi (Program No. 2021JM-402), Beilin District Science and technology project (Program No. GX2119), and Joint Funds of the National Natural Science Foundation of China (Program No. U20B2036).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

377. Low Cross Sensitivity and Temperature Compensation Fiber Bragg Grating Accelerometer Based on Miniature Slide Rail

Accession number: 20223312570083
Authors: Fan, Wei (1, 2); Duan, Lina (2); Gao, Hong (2); Liu, Qinpeng (2); Qiao, Xueguang (1)
Author affiliation: (1) Northwest University, School of Physics, Xi'an; 710127, China; (2) Xi'an Shiyou University, School of Science, Xi'an; 710065, China
Corresponding author: Qiao, Xueguang(xgqiao@nwu.edu.cn)
Source title: IEEE Sensors Journal
Abbreviated source title: IEEE Sensors J.
Volume: 22
Issue: 17
Issue date: September 1, 2022
Publication year: 2022
Pages: 16912-16919
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to meet the needs of accelerometers in vibration monitoring, a fiber Bragg grating (FBG) accelerometer based on a miniature slide rail is proposed. The accelerometer consists of two FBGs, a miniature slide rail, two spring plungers, and a mass block. Since the motion of the two fiber gratings is in opposite directions, the induced displacement of the center wavelength can wipe one another out. So, the effect of temperature can be reduced and the sensitivity of the fiber grating can be improved. Through theoretical analysis and experimental verification, the resonant frequency, sensitivity, and lateral immunity of the sensor are studied. The experimental

results show that the effect of temperature on the sensor structure is reduced to 0.3 pm/°C in the range of 22.5 °C-90 °C. The resonant frequency of the accelerometer is 200 Hz, and the FBG accelerometer has a broad frequency range from 0.5 to 150 Hz, with a corresponding sensitivity range from 307.3 to 319.2 pm/g, and the lateral immunity is less than 0.5%. The sensor is simple in structure and easy to manufacture. Therefore, it has great prospects for application in structural health monitoring and other fields. © 2001-2012 IEEE.
Number of references: 22
Main heading: Accelerometers
Controlled terms: Fiber Bragg gratings - Springs (components) - Temperature distribution - Temperature sensors
Uncontrolled terms: <italic xmlns:ali=" - > - Bragg grating - Compensation - Fiber gratings - Immunity - Sensitivity - Vibration - Xmlns:mml=" - Xmlns:xlink=" - Xmlns:xsi="
Classification code: 601.2 Machine Components - 641.1 Thermodynamics - 943.1 Mechanical Instruments - 944.5 Temperature Measuring Instruments
Numerical data indexing: Frequency 2.00E+02Hz, Frequency 5.00E-01Hz to 1.50E+02Hz, Percentage 5.00E-01%, Size 3.00E-13m, Size 3.073E-10m to 3.192E-10m
DOI: 10.1109/JSEN.2022.3194155
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

378. Research on Flow Measurement Based on Thermal Diffusion Method

Accession number: 20223812766958
Authors: Liu, Shenghu (1); Zhang, Mimi (1); Dang, Ruirong (1); Zhao, Fanfan (1)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Oil and Gas Well Monitoring and Control, Xi'an Shiyou University, Xi'an, China
Corresponding author: Dang, Ruirong(1061085600@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 285-288
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the main characteristics of high water cut, low liquid production and low permeability of oilfield production wells in my country and the good development prospects of thermal flow monitoring, this paper will establish a theoretical model and measurement method for flow measurement based on thermal method. This paper analyzes the measurement principle of constant temperature difference method in detail, adopts ARM, PT1000 temperature sensor and Linux operating system to obtain temperature data and analyze and process it, so as to achieve the purpose of flow measurement. It mainly uses a heating rod to heat the fluid. Two platinum resistors are used to reflect the temperature and speed of the fluid. The flow rate can be calculated from the heat balance relationship. The experimental test shows that the system is stable and easy to implement, and has great practical value in flow measurement of low-yield wells. © 2022 IEEE.
Number of references: 8
Main heading: Linux
Controlled terms: Flow measurement - Specific heat
Uncontrolled terms: Balance principle - Constant temperature differences - Diffusion method - Heat balance - Heat balance principle - High water-cut - Low permeability - Measurement-based - Oilfield production - On flow

Classification code: 631.1 Fluid Flow, General - 641.1 Thermodynamics - 723 Computer Software, Data Handling and Applications - 943.2 Mechanical Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859180
Funding Details: Number: 41874158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: National Youth Foundation of China;
Funding text: This work is supported by National Natural Science Foundation of China (No.41874158).ACKNOWLEDGMENT This work is supported by National Foundation of China (No.41874158).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

379. The study of Water Cut Detection Methods for Crude Oil

Accession number: 20223812766878
Authors: Gong, Yu (1); Gao, Guo-Wang (1); Zhao, Peng (2); Wu, Dan (1); Wang, Fei (1); Yan, Su-Li (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 152-155
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Crude oil water content is one of the most important parameters in the petrochemical industry and high accuracy water content testing plays an important role in the development of oil fields and the improvement of crude oil recovery. At present, there are two main types of crude oil water content testing methods: manual testing and dynamic testing, and dynamic testing can be divided into two types: contact and non-contact measurement. Existing crude oil water content detection techniques, detection principles and advantages and disadvantages are introduced, and the latest developments in water content detection technology are mentioned, such as combining elements from other fields to improve the accuracy or online performance of water content detection. With the development of testing technology, real-time online, high accuracy, multi-element fusion and intelligence will be the new trend for future development. © 2022 IEEE.
Number of references: 13
Main heading: Testing
Controlled terms: Crude oil - Electromagnetic waves - Oil fields
Uncontrolled terms: Conductivity method - Content detection - Crude oil moisture content testing - Dynamic testing - Electrical conductivity - Electrical conductivity method - Electromagnetic wave method - Oil moisture content - Oil/water - Wave method
Classification code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 711 Electromagnetic Waves
DOI: 10.1109/ICMSP55950.2022.9858958
Funding Details: Number: YCS21113140, Acronym: -, Sponsor: -; Number: 2021GY-168, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: ACKNOWLEDGMENT This project is supported by the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi 'an Shiyou University (YCS21113140), Shaanxi Provincial Key Research and Development Program(2021GY-168). Shaanxi Provincial Key Research and Development Program(2019GY-100). Shaanxi Provincial Key Research and Development Program (2022GY-435).

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

380. Design of Virtual While-drilling Attitude Sensors

Accession number: 20223812766943
Authors: Ding, Xudong (1); Wang, Xi (2); Li, Fei (2); Liu, Yuan (2); Zhang, Guanghui (2); Lei, Ge (2)
Author affiliation: (1) China Oilfield Services Limited, Beijing; 100000, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 308-311
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Before downhole application, the pre-development test of the main controller of the rotary steerable tool often needs to be verified repeatedly, and in the actual development test, there may be test conditions that cannot be covered by the actual attitude sensor test process, as well as device damage due to operation errors, so that the testing effect can not meet the actual test and development needs. Because of the above problems, this paper studies the virtual while-drilling attitude sensor based on SP6000. According to the design, this method compiles and downloads the simulation model into the hardware-in-loop simulation box. Then, connect it with the main controller through the I/O interface, running the simulation attitude sensor model, and output attitude signals to the main controller in real-time. Finally, the attitude parameters calculated by the main controller are compared with the hardware in loop simulation cabinet output of the real-time running attitude sensor model to judge the experiment's success. © 2022 IEEE.
Number of references: 10
Main heading: Controllers
Controlled terms: Design - Infill drilling - Well testing
Uncontrolled terms: Attitude measurement - Attitude sensors - Downholes - Hardware in loop simulation - Pre-development - Real- time - Sensors models - Test condition - Virtual attitude sensor - While drillings
Classification code: 511.1 Oil Field Production Operations - 732.1 Control Equipment
DOI: 10.1109/ICMSP55950.2022.9859164
Funding Details: Number: YCS22113139, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENTS This research was funded by the National Science Foundation of China (Grant No. U20B2029)the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability (YCS22113139).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

381. Turbine Parameters' Effect on Output Power Performance using a DOE Method

Accession number: 20223812766879
Authors: Zhang, Yulin (1); Cheng, Lihao (2); Zhao, Jinchao (2); Li, Fei (2)
Author affiliation: (1) China Oilfied Services Limited, Beijing; 101149, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Fei(lif@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 520-523
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Turbine is a critical component of while drilling turbine generator, and its structural parameters are vital to output performance. The turbine's output performance was improved to solve further and analyze the mutual influence of multiple factors on the output power of the turbine's vital structural parameters. Three critical influencing factors are proposed based on the turbine's basic principle and mathematical model, and the DOE (Design of Experiment) test is designed. First, the prioritized effects of turbine angle, turbine radius, and blade height were analyzed on output power. Then, the output power of the turbine can be adjusted by selecting an appropriate range of turbine structure parameters further to improve the overall output performance of the turbine generator. The research results show that the priority of the turbine's key structural parameters on power is the blade height, turbine angle, and turbine radius; within the range of turbine angle, turbine radius, and blade height variation, the turbine output power can reach about 10007000W. © 2022 IEEE.
Number of references: 7
Main heading: Design of experiments
Controlled terms: Infill drilling - Turbine components - Turbogenerators - Turbomachine blades
Uncontrolled terms: Direction drilling tool - Drilling tool - Output performance - Output power - Parameters effects - Power performance - Structural parameter - Turbine parameters - While drilling generator - While drillings
Classification code: 511.1 Oil Field Production Operations - 617 Turbines and Steam Turbines - 705.2 Electric Generators - 901.3 Engineering Research
Numerical data indexing: Power 1.0007E+07W
DOI: 10.1109/ICMSP55950.2022.9858959
Funding Details: Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

382. Predictive analysis of three-phase flow measurement data model

Accession number: 20223812766945
Authors: Dang, Ruirong (1); Zhao, Fanfan (1)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Oil and Gas Well Monitoring and Control, Xi'an Shiyou University, XI'an, China

Corresponding author: Dang, Ruirong(1061085600@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 63-66
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper is based on data analysis, and on the basis of previous research, using the data obtained by the three-phase flow measuring instrument to conduct research on the three-phase flow rate and moisture content prediction, and establish a response time domain and frequency based on the moisture content meter. The support vector machine regression model (SVR Model) of domain eigenvalues is used to predict the moisture content calibration results of simulated well performance experiments with different flow rates. The model verification results show that the interpretation model can achieve higher moisture content prediction accuracy, and Comparing the proportion of moisture content in indoor experiments to achieve the target of interpretation accuracy of predicted moisture content. On the basis of the interpretation method research, the actual logging data is interpreted. Helps in calculating the production of oil wells in different regions. © 2022 IEEE.
Number of references: 8
Main heading: Forecasting
Controlled terms: Flow measurement - Flow rate - Frequency domain analysis - Moisture - Moisture determination - Regression analysis - Support vector machines - Time domain analysis
Uncontrolled terms: Flow data - Measurement data - Model establishment - Moisture content predictions - Production wells - Support vector machine regressions - Three-phase flow - Three-phase flow data - Time domain - Time frequency
Classification code: 631 Fluid Flow - 631.1 Fluid Flow, General - 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.3 Mathematical Transformations - 922.2 Mathematical Statistics - 943.2 Mechanical Variables Measurements - 944.2 Moisture Measurements
DOI: 10.1109/ICMSP55950.2022.9859166
Funding Details: Number: 41874158, Acronym: -, Sponsor: National Youth Foundation of China;
Funding text: ACKNOWLEDGMENT This work is supported by National Foundation of China (No.41874158).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

383. Numerical Simulation Research on Dual-frequency Processing of Oil-based Mud Electrical Imaging Logging

Accession number: 20223812766792
Authors: Gao, Jianshen (1); Li, Dan (1); Lu, Chunli (2); Jiang, Liming (2); Zhu, Kairan (1); Xue, Fei (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1

Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 830-835
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Based on the 3D finite element program of oil-based mud electrical imaging logging, this paper studies the dual-frequency processing method of oil-based mud electrical imaging logging, including the working principle of the dual-frequency correction method, the measurement response signal and variation law of the numerical simulation model, the equivalent circuit model of oil-based mud electrical imaging logging, the rapid calculation method of three parameters, formation resistivity, formation permittivity and mud-cake thickness, and the influence laws of each parameter is summarized. The results show that the dual-frequency correction method eliminates the influence of high-resistivity mud and mud-cake on the formation resistivity measurement, thereby expanding the measurement range of formation resistivity, and also obtains the dielectric constant information of the formation, which enriches the application range of this method. At the same time, the thickness information of mud cake can be obtained in combination with oil-based mud parameters, which provides technical support for understanding mud intrusion. © 2022 IEEE.
Number of references: 6
Main heading: Numerical methods
Controlled terms: Equivalent circuits - Image processing - Numerical models - Processing
Uncontrolled terms: Correction method - Dual frequency - Dual-frequency correction - Electrical imaging - Formation dielectric constant - Formation resistivity - Frequency correction - Imaging logging - Oil-based mud - Standoff
Classification code: 723.2 Data Processing and Image Processing - 913.4 Manufacturing - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859101
Funding Details: Number: 41804115, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: КННК, Sponsor: China National Petroleum Corporation; Number: 2021-JM-413,2021DJ3901, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province;
Funding text: ACKNOWLEDGMENTS Thanks to the support by the China Natural Science Foundation (no. 41804115), Natural Science Foundation of Shanxi Province, China (no. 2021-JM-413) , and this study originates from the project: "Development of High-definition Resistivity Imager in Oil-based Mud" (2021DJ3901) of China National Petroleum Corporation.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

384. Research on suppression of high peak-to-average ratio based on logging cable OFDM system

Accession number: 20223812766805
Authors: Wu, Zhao-Xue (1); Gao, Guo-Wang (1); Zhao, Peng (2); Wu, Dan (1); Wang, Fei (1); Yan, Su-Li (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022

Issue date: 2022
Publication year: 2022
Pages: 652-656
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Logging cable communication systems is an important part of oil exploration and acquisition operations, and Orthogonal Frequency Division Multiplexing (OFDM) technology is a superior multi-carrier modulation technology widely used in mobile communications. The use of OFDM technology can significantly increase the transmission rate of logging data, but the system performance is degraded due to the high peak-to-average power ratio (PAPR) generated by the Fourier inversion transforms (IFFT) of the data by OFDM technology. Therefore, many techniques have emerged to overcome the high PAPR problem, such as limiting class techniques, compression extension techniques, partial transmission sequence (PTS), etc. In this paper, the partial transmission sequence algorithm (PTS) and the improved iterative PTS (IPTS) algorithm in OFDM system is simulated and verified from the subcarrier splitting method and the number of subsequence splitting blocks, and the results show that the IPTS algorithm significantly reduces the algorithm complexity compared with the PTS algorithm and can effectively suppress the high peak-to-average ratio problem. © 2022 IEEE.
Number of references: 10
Main heading: Peak to average power ratio
Controlled terms: Cables - Computational complexity - Data communication systems - Data transfer - Iterative methods - Orthogonal frequency division multiplexing
Uncontrolled terms: Cable communications - Logging cables - Multiplexing technologies - Orthogonal frequency division multiplexing systems - Orthogonal frequency-division multiplexing - Partial transmission sequence - Peak to average ratios - Peakto-average power ratios (PAPR) - Ratio problem - Sequence algorithms
Classification code: 713.1 Amplifiers - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859115
Funding Details: Number: YCS21113140, Acronym: -, Sponsor: -; Number: 2021GY-168, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: ACKNOWLEDGMENT This project is supported by the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi 'an Shiyou University (YCS21113140), Shaanxi Provincial Key Research and Development Program(2021GY-168). Shaanxi Provincial Key Research and Development Program(2019GY-100).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

385. Virtual while-drilling Direction and Inclination (D&I) sensor

Accession number: 20223812766951
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 446-450
Language: English
ISBN-13: 9781665486583

Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The traditional attitude measurement algorithm is accompanied by the high measurement cost of the attitude sensor while drilling, the difficulty of data acquisition, and the strong interference of the test environment during the testing process. This paper proposes a virtual six-axis attitude sensor while drilling. Based on the MATLAB platform as the host computer and the National Instruments (NI) data acquisition card as the lower computer, this paper realizes the design of the virtual measurement-while-drilling attitude sensor. MATLAB GUI was used to design the system interface, the callback function was used to link the attitude inversion algorithm for data calculation, the computer interface was connected to the data acquisition card to complete the data output, finally, a hardware-in-the-loop (HIL) system was formed. The system can be used to preliminarily verify the attitude correction algorithm of down-hole drilling tools, provide a theoretical basis for its compensation scheme, and reduce problems such as excessive cost in the process of instrument development by simulating the working environment. The test results show that the output data error of the designed virtual-while-drilling attitude sensor is less than 0.4% and has high accuracy. © 2022 IEEE.
Number of references: 16
Main heading: Data acquisition
Controlled terms: Computer hardware - Hardware-in-the-loop simulation - Infill drilling - Inverse problems - MATLAB - Synthetic apertures
Uncontrolled terms: Attitude inverse solution - Attitude measurement - Attitude sensors - Data acquisition cards - Direction sensors - Hardware in the loops - Inclination sensors - Inverse solution - Virtual instrument - While drillings
Classification code: 511.1 Oil Field Production Operations - 716.2 Radar Systems and Equipment - 722 Computer Systems and Equipment - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 921 Mathematics
Numerical data indexing: Percentage 4.00E-01%
DOI: 10.1109/ICMSP55950.2022.9859172
Funding Details: Number: 20JS125, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: ACKNOWLEDGMENT This dissertation was supported by the National Natural Science Foundation of China (U20B2029), the Natural Science Foundation of Shaanxi Province (2021KW-33), Shaanxi Province Ministry of Education Research Program (20JS125).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

386. Sensing properties of nonmetal doped blue phosphorene toward NO and NO2 molecules: A first-principles study

Accession number: 20221611988048
Authors: Chen, Guo-Xiang (1); Wang, Rui-Xue (1); Li, Han-Xiao (1); Chen, Xiao-Na (1); An, Guo (1); Zhang, Jian-Min (2)
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Source title: International Journal of Quantum Chemistry
Abbreviated source title: Int J Quantum Chem
Volume: 122
Issue: 15
Issue date: August 5, 2022
Publication year: 2022
Article number: e26919
Language: English
ISSN: 00207608

E-ISSN: 1097461X
CODEN: IJQCB2
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: First-principles calculations based on density functional theory (DFT-D2 method) are adopted to systematically investigate the structure stability and sensing properties of NO and NO2 adsorbed on single nonmetals (B, C, and Si) and double nonmetals (1B1C, 1C1Si, and 1B1Si) doped blue phosphorene. The results show the chemisorption of the gas molecules absorbed on single nonmetal doped blue phosphorene with large adsorption energy, charge transfer, and small adsorption distance. Similarly, for gas molecules absorbed on double nonmetal doped blue phosphorene, while NO interaction with 1C1Si co-doped blue phosphorene is weak. There is a strong hybridization between gas molecules and doped substrates due to the enhancing interaction, resulting in an increasing adsorption ability for gas molecules. We find that the conductivity and work function change caused by nonmetal doping is the main reason for improving the sensitivity of gas molecules, which shows more possibilities for practical gas sensor applications. Therefore, nonmetal doped blue phosphorene provides a new direction for detecting NO and NO2 in the gas sensing field. © 2022 Wiley Periodicals LLC.
Number of references: 60
Main heading: Molecules
Controlled terms: Chemical detection - Chemisorption - Calculations - Density functional theory - Gas detectors - Silicon compounds - Nitrogen oxides - Charge transfer - Gases - Adsorption - Chemical sensors
Uncontrolled terms: Blue phosphorene - Density-functional-theory - DFT-d2 - First principle calculations - First-principle study - Gas molecules - Gas sensing - Nonmetal doping - Sensing property - Structure stability
Classification code: 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments
Numerical data indexing: Size 5.08E-02m
DOI: 10.1002/qua.26919
Funding Details: Number: 11804273,11947112, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ#334, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: National Natural Science Foundation of China, Grant/Award Numbers: 11804273, 11947112; Natural Science Basic Research Program of Shaanxi, Grant/Award Number: 2019JQ334 Funding informationThis work is supported by the National Natural Science Foundation of China (11804273 and 11947112), the Natural Science Basic Research Program of Shaanxi (2019JQ334).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

387. Development of low frequency and high sensitivity fiber optic accelerometer based on multi-stage flexure hinges

Accession number: 20223412609035
Authors: Li, Huidong (1, 2); Gao, Hong (2); Fan, Wei (1, 2); Zhou, Rui (1); Qiao, Xueguang (1)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 73
Issue date: October 2022
Publication year: 2022
Article number: 103018
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: In order to reduce the stiffness of the flexure hinges, a low-frequency fiber Bragg grating (FBG) accelerometer based on multi-stage flexure hinges is designed. According to the series–parallel connection theory of springs, the acceleration response and anti-interference characteristics of the accelerometer are experimentally studied. The experimental results shows that the accelerometer with multi-stage hinges has a wide flat frequency

band and high sensitivity. The resonant frequency is 84.2 Hz, the response sensitivity of the external vibration signal is 927.21 pm/G in the range of 1–60 Hz and the lateral interference degree is 5.8 %. It shows that the acceleration sensing performance of the accelerometer is good. On this basis, changing the hinge radius, thickness or the size of the mass block can further expand the measurement range of the accelerometer, which is expected to be applied in the field of low-frequency oil and gas seismic exploration. © 2022
Number of references: 16
Main heading: Fiber Bragg gratings
Controlled terms: Accelerometers - Electric connectors - Hinges - Natural frequencies - Petroleum prospecting
Uncontrolled terms: Fiber bragg grating accelerometer - Fiber optic accelerometer - Flexure hinge - Frequency sensitivity - High sensitivity - Low-high - Lower frequencies - Multi-stage flexure hinge - Multi-stages - Structural damping
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 704.1 Electric Components - 943.1 Mechanical Instruments
DOI: 10.1016/j.yofte.2022.103018
Funding Details: Number: 61735014,61927812,62105261, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 22JK0502, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported in part by the National Natural Science Foundation of China (Nos. 61735014 , 61927812 , 62105261), Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No.22JK0502) Thanks are due to Prof. Jin Wen for valuable discussion and to Prof. Qinpeng Liu for assistance with the experiments.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

388. Design of MIL-1394 bus simulation card

Accession number: 20222412230146
Authors: Wang, Kuisheng (1); Ning, Yuejie (1); Zheng, Fei (2); Li, Wanshan (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1140-1143
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the development of MIL-1394 (Military 1394) products, users need to buy simulation equipment withdifferent functions when building simulation network. It is not only expensive,but also a burden for users to be familiar with the configuration mode and application interface of different equipment. Combined with IEEE-1394B (Institute of Electronic Engineers 1394b) and SAE AS5643 (Society of Automotive Engineers Aerospace Standard 5643) protocols, this paper designs a Mil-1394 bus four node simulation card, which is used to simulate the functions of CC (Control Computer) and RN (Remote Node) nodes in 1394 bus. It has four independent 1394 nodes and supports bus data recording error injection and other functions to realize the data transmission of 1394 bus network. © 2022 IEEE.
Number of references: 4
Main heading: Buses
Uncontrolled terms: 1394 bus - Application interfaces - Building simulation - Bus simulation - Configuration modes - SAE as5643 - Simulation card - Simulation equipments - Simulation network - User need
Classification code: 663.1 Heavy Duty Motor Vehicles

DOI: 10.1109/ICSP54964.2022.9778589
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

389. Submergence depth modeling of oil well reservoirs and applications

Accession number: 20213010670327
Authors: Liu, Tianshi (1); Zheng, Min (1); Song, Xinai (1); Wu, Ying (1); Zhang, Rong (1)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109234
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: In oilfield production, it is important to be able to acquire the reservoir status of oil wells in real time, especially for low or ultra-low permeability oil wells. In this paper, based on the reservoir percolation characteristics of the oil layer and combined with the oil well permeability, liquid pressure and oil well pressure formulas, the non-homogeneous linear differential equation for oil well pressure is derived, based on which a submergence depth model of oil well reservoirs is established. The parameter merging is applied to reduce the parameter dimension of the submergence depth model; this approach substantially reduces the parameter dimension and application complexity and effectively improves the model application range. The model not only conforms to the reservoir percolation law of the oil layer but also applies to the balance laws of other substances with potential energy balancing ability. The application methods studied (namely, the extraction of the greatest common divisor, the weighted dichotomy and least-squares curve fitting) successively reduce the calculation error and expand the application scope. The least-squares curve fitting method causes the submergence depth error to reach the minimum of the 2-norm, and the number of iterations can be accurately assessed by the convergence speed of halving the numerical calculation error in every iteration. This method is suitable not only for the zero submergence depth case in the initial state but also for non-zero submergence depth cases. The experimental results show that the proposed submergence depth model for oil well reservoirs accurately reflects the change laws of submergence depth and time. Combined with the proposed application methods, the corresponding submergence depth can be obtained at any time point. The model and application methods provide strong support for formulating scientific oil production plans and implementing reasonable production methods for oil wells. © 2021 Elsevier B.V.
Number of references: 54
Main heading: Oil wells
Controlled terms: Low permeability reservoirs - Convergence of numerical methods - Crude oil - Differential equations - Iterative methods - Least squares approximations - Curve fitting - Solvents - Mechanical permeability - Petroleum reservoir engineering - Errors - Potential energy
Uncontrolled terms: Application method - Calculation error - Depth models - Dynamic fluid level - Least Square Curve Fitting - Monotonically increasing function - Oil well reservoir - Oilfield production - Submergence depth model - Weighted dichotomy
Classification code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 921.2 Calculus - 921.6 Numerical Methods
DOI: 10.1016/j.petrol.2021.109234
Funding Details: Number: 2019JM-174, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the Natural Science Basic Research Plan in Shaanxi Province of China (2019JM-174).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

390. Oil test liquid level monitoring system based on the IoT

Accession number: 20223812766563
Authors: Li, Pan (1); Zhang, Nailu (1); Yang, Lu (1)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Oil and Gas Well Measurement and Control Technology, Xi'an Shiyou University, Xi'an, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 429-433
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the continuous advancement of the automation and intelligence of oil and gas exploration, development, production and management, the IoT technology had entered the core position of oil field exploration. Real-time dynamic monitoring of oil test liquid level at well completion was very important. Accurate and reliable monitoring data was the basis of oil test analysis. The traditional monitoring method and system of oil test liquid level were difficult to meet the needs of intelligent oil field construction. Therefore, the oil test fluid surface monitoring system based on the IoT was designed to calculate the real-time dynamic fluid surface and the well pressure recovery curve. The system was simple in field operation, and the liquid level monitoring data was accurate and reliable, which proved that the system had a typical application value in improving the level of oilfield automation and intelligent production management and monitoring. © 2022 IEEE.
Number of references: 8
Main heading: Liquids
Controlled terms: Information management - Internet of things - Monitoring - Oil field development - Petroleum prospecting
Uncontrolled terms: Fluid surface - Gas development - Gas management - IoT - Level monitoring systems - Liquid level - Liquid level monitoring - Oil and gas exploration - Oil test - Test liquid
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications
DOI: 10.1109/ICMSP55950.2022.9859197
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

391. Numerical study of back-propagation suppression and intake loss in an air-breathing pulse detonation engine

Accession number: 20221912083321
Authors: Wang, Zhiwu (1); Yang, Yuxuan (1); Huang, Jingjing (2); Wang, Yafei (1); Wei, Lisi (1); Qin, Weifeng (1)
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Source title: Aerospace Science and Technology
Abbreviated source title: Aerosp Sci Technol
Volume: 126
Issue date: July 2022

Publication year: 2022
Article number: 107566
Language: English
ISSN: 12709638
Document type: Journal article (JA)
Publisher: Elsevier Masson s.r.l.
Abstract: In order to reduce the back-propagation pressure and the back-propagation distance of burnt gas in the air-breathing pulse detonation engine effectively, two back-propagation suppression structures were proposed in this paper. The influences of channel width (D) and unit length (L) in the corresponding back-propagation suppression structure on the intake loss and the back-propagation characteristics were studied by the 2-D numerical simulation which was based on stoichiometric propane/air mixture to obtain the optimal structure. The grid independence and the reliability of numerical simulation were verified. The simulation results indicated that the back-propagation suppression structure with a flow channel formed by the annular cavities and the convergent sections was the structure with the optimal back-propagation suppression performance. And the following two methods were proved to be effective in this paper. By the means of propagating the pressure wave along the arc-shaped channel, the propagation distance of the pressure wave increased, which resulted in an attenuation of the back-propagation pressure. And the back-propagation pressure was reduced by the way of making the pressure wave propagate toward the downstream of the engine after colliding with the wall of the annular cavity and offsetting with the expansion wave. © 2022 Elsevier Masson SAS
Number of references: 36
Main heading: Structural optimization
Controlled terms: Numerical models - Air intakes - Backpropagation - Channel flow - Pulse detonation engines
Uncontrolled terms: Air-breathing pulse detonation engines - Annular cavity - Back Propagation - Back-propagation suppression structure - Burnt gas - Pressure oscillation - Pressure waves - Propagation distances - Propagation pressures - Total-pressure loss
Classification code: 631.1 Fluid Flow, General - 654.2 Rocket Engines - 723.4 Artificial Intelligence - 921 Mathematics - 921.5 Optimization Techniques
DOI: 10.1016/j.ast.2022.107566
Funding Details: Number: 2017009, Acronym: -, Sponsor: -; Number: 91741116, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JM-149,2022JZ-20, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 3102020OMS702, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was financially supported by the National Natural Science Foundation of China through Grant No. 91741116 , the Natural Science Foundation of Shaanxi Province of China through Grant No. 2022JZ-20 and 2020JM-149 , the Fundamental Research Funds for the Central Universities through Grant No. 3102020OMS702 , and Science and Technology Foundation for Selected Overseas Scholar of Shaanxi Province of China through Grant No. 2017009 .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

392. Application research of plunger drainage and production control system based on effusion surface

Accession number: 20223812766929
Authors: Yang, Lu (1); Zhang, Nailu (1); Li, Pan (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 663-667
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)

Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The effusion height of gas well is one of the important factors affecting the efficient production of gas well. The real-time, accurate monitoring and comprehensive analysis of effusion surface are of great significance for gas well drainage and gas production. At present, the bottom hole effusion was analyzed and calculated by gas production and water cut analysis, pressure gradient method and critical flow method. The monitoring error of gas wells is large, which is difficult to meet the requirements of field production. Therefore, a plunger drainage and production control system based on the effusion surface was developed. The system continuously monitors the casing effusion surface by acoustic method, and WIFI wireless data is transmitted to the monitoring and calculation platform. Through the height of the effusion surface and the gas well temperature, the compression factor z is introduced to establish the calculation model of bottom hole pressure, and calculate the height of the effusion surface accurately in real time to ensure the efficient and stable production of effusion by the plunger. The system realized the real-time monitoring, analysis and calculation of bottom hole pressure and effusion surface height, and had high application value for the efficient production of natural gas. © 2022 IEEE.
Number of references: 6
Main heading: Gases
Controlled terms: Bottom hole pressure - Control systems - Gradient methods - Natural gas wells - Wi-Fi - Wireless local area networks (WLAN)
Uncontrolled terms: Calculation models - Gas well - Gas well effusion surface - Plunger drainage - Pressure calculation - Production control systems - Well bottom pressure - Well bottom pressure calculation model - WIFI wireless data transmission - Wireless data transmission
Classification code: 512 Petroleum and Related Deposits - 512.2.1 Natural Gas Fields - 723 Computer Software, Data Handling and Applications - 731.1 Control Systems - 902.2 Codes and Standards - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859144
Funding Details: Number: YCS22113110, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This project is supported by the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi'an Shiyou University (YCS22113110).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

393. An Accurate Mathematical Model and Experimental Research of Pressure Distribution in the Spool Valve Clearance Film

Accession number: 20225013222789
Authors: Chen, Jia (1); Li, Fei (1); Yang, Yi (1)
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Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3524734
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: As an actuator control element of the electrohydraulic system in aerospace, airplanes, and other equipment, the spool valve is prone to the "hydraulic lock"problem, which may cause major accidents of these electrohydraulic systems. The grooves engraved on the spool can effectively eliminate this problem by migrating the uneven pressure distribution in the clearance film between the sleeve and the spool. The effect of migrating uneven pressure distribution

depends on the groove parameters. This paper proposed an accurate mathematical model with rectangular grooves to investigate the effect. Unlike previous mathematical models based on the Reynolds equation, the proposed model is based on the Navier-Stokes equation, which is more valid in the range where the clearance film thickness is much less than the groove depth. Meanwhile, the mathematical model takes the distributions, width, depth, and the number of grooves into consideration. Then, the proposed mathematical model was used to investigate the effects of mitigating the uneven pressure distribution under various parameters of grooves. To verify the accuracy of the mathematical model, the volume flow leakage in the clearance film obtained by the proposed model and the Reynolds equation, respectively, is compared with that obtained by the experimental test. The comparison results indicate that the results obtained by the Reynolds equation could reach a maximum of 14.75% different from the experimental results, while the results obtained by the NS equation are only 5.57% different under the same conditions, implying that the mathematical model derived from the NS equation is more accurate. © 2022 Jia Chen et al.
Number of references: 27
Main heading: Navier Stokes equations
Controlled terms: Hydraulic actuators - Hydraulics - Pressure distribution - Reels - Reynolds equation
Uncontrolled terms: Actuator control - Control elements - Electro-hydraulics - Experimental research - Groove parameters - Major accidents - Model-based OPC - Rectangular groove - Reynolds's equations - Spool valves
Classification code: 631.1 Fluid Flow, General - 632.1 Hydraulics - 691.2 Materials Handling Methods - 732.1 Control Equipment - 921.2 Calculus - 931.1 Mechanics
Numerical data indexing: Percentage 1.475E+01%, Percentage 5.57E+00%
DOI: 10.1155/2022/3524734
Funding text: This work was supported by the National Science Foundation of China (Grant No. U20B2029), National Natural Science Foundation of China (Grant No. 52174005), Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant No. 2020JQ-776), (Grant No. 2021KW-33), and (Grant No. 2022JM-305).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

394. Modeling and Simulation of Electromagnetic Anti-collision While Drilling

Accession number: 20223812766809
Authors: Dang, Bo (1); Zhang, Mingmin (1); Yang, Ling (1); Fang, Xiangteng (1); Liu, Changzan (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1-4
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Most of the traditional electromagnetic anti-collision technologies are passive and need to run instruments in adjacent wells, which seriously affects the normal production of the drilled well. This paper presents an active electromagnetic anti-collision monitoring method while drilling using the transient electromagnetic method. Based on the static model, the dynamic model of electromagnetic anti-collision monitoring while drilling is established and a transverse probe is set on one side of the drill collar to apply periodic transient currents. As the probe rotates to different directions, the magnetic field on the casing of the target well will change. This method does not need to run

instruments in adjacent wells, which can improve the real-time performance of anti-collision monitoring. In addition, when the probe rotates to different directions, it can maximize the acquisition of surrounding formation information, realize multi-target detection. It provides a new idea for downhole electromagnetic anti-collision. © 2022 IEEE.
Number of references: 14
Main heading: Multiphysics
Controlled terms: Collision avoidance - Infill drilling - Probes - Transient analysis
Uncontrolled terms: Anti collision - Anticollision monitoring - Collision monitoring - COMSOL multiphysic - Drilled wells - Electromagnetics - Model and simulation - Multi-physics - Transient electromagnetic methods - While drillings
Classification code: 511.1 Oil Field Production Operations - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICMSP55950.2022.9859119
Funding Details: Number: YCS22113100, Acronym: -, Sponsor: -; Number: 51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: ACKNOWLEDGMENT The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250 and in part by CNOOC Limited Scientific Research Project, under Grant YXKYZX082021. The Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University under Grant YCS22113100.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

395. Mechanical properties and corrosion behavior of a friction stir processed magnesium alloy composite AZ31B-SiC

Accession number: 20221311833002
Authors: Lu, Yongxin (1); Li, Wangxin (1, 2); Luo, Fan (1); Feng, Hongfeng (1); Gao, Qian (1); Ma, Yuhang (1); Yang, Mingxiao (1)
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Source title: Materialpruefung/Materials Testing
Abbreviated source title: Materialpruefung
Volume: 64
Issue: 3
Issue date: March 2022
Publication year: 2022
Pages: 314-322
Language: English
ISSN: 00255300
CODEN: MTPRAJ
Document type: Journal article (JA)
Publisher: Walter de Gruyter GmbH
Abstract: The optimization of friction stir processing (FSP) parameters of magnesium alloy composite (AZ31B-SiC) based on orthogonal test was researched. The results show that the distribution of silicon carbide (SiC) particles, microhardness, tensile property, and fracture mode are greatly affected by the change in process parameters. The results show that the composite was made with a rotating speed of 750 rev·min-1, a traversing speed of 30 mm·min-1, and a processing time of three; the distribution of SiC particles is even, the microhardness difference of composite is small, the tensile property is better, and the ductile fracture is the main fracture mode. Besides, the existence of SiC and the number of FSP have a certain influence on the corrosion performance of the magnesium alloy composite (AZ31B-SiC), and the corrosion resistance of the FSP sample is obviously better than that of the AZ31B magnesium alloy. © 2022 Walter de Gruyter GmbH, Berlin/Boston.
Number of references: 23
Main heading: Silicon carbide
Controlled terms: Friction - Corrosion resistance - Sodium chloride - Ductile fracture - Corrosive effects - Magnesium alloys - Friction stir welding - Microhardness - Corrosion resistant alloys
Uncontrolled terms: Corrosion behaviour - Corrosion property - Fracture mode - Friction stir - Friction stir processing - Magnesium alloy composite - Optimisations - Silicon-carbides particles - Weight loss

Classification code: 531 Metallurgy and Metallography - 538.2.1 Welding Processes - 539.1 Metals Corrosion - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Size 3.00E-02m
DOI: 10.1515/mt-2021-2063
Funding Details: Number: S202010705008,S202110705031, Acronym: -, Sponsor: -; Number: YCS20213190,YCS21211071, Acronym: -, Sponsor: -; Number: 2020JQ-770,2021JQ-594, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: Research funding: This study was financially supported by the National Innovation and Entrepreneurship Training Program for College Students of Xi'an Shiyou University (Program Nos. S202010705008 and S202110705031), Program for Graduate Innovation Fund of Xi'an Shiyou University, China (Nos. YCS20213190 and YCS21211071), and Natural Science Basic Research Program of Shaanxi (Program Nos. 2021JQ-594 and 2020JQ-770).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

396. Visual observation technology and equipment for underground boreholes in coal mines

Accession number: 20223812766861
Authors: Wang, Bo (1); Wang, Xiaoxin (2)
Author affiliation: (1) Xi'an Research Institute, China Coal Technology & Engineering Group Corp., Xi'an, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1126-1129
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: There are various methods for exploration of underground geological information in coal mines. Visual observation of underground boreholes in coal mines based on the principle of optical imaging can intuitively observe the geological information inside the boreholes, and provide accurate and reliable visual image information for the exploration of geological information around the roadway and mining areas. This paper introduces the principle, equipment composition and construction method of borehole visualization observation technology, and analyzes the function of visualization observation technology and equipment combined with field application cases, and puts forward the direction of miniaturization, high resolution and comprehensive detection of related technology and equipment. © 2022 IEEE.
Number of references: 17
Main heading: Visualization
Controlled terms: Boreholes - Coal - Coal mines - Construction equipment - Geology
Uncontrolled terms: Equipment composition - Geological information - Image - Image information - Mining areas - Optical imaging - Technology and equipments - Underground - Visual image - Visual observations
Classification code: 405.1 Construction Equipment - 481.1 Geology - 503.1 Coal Mines - 524 Solid Fuels
DOI: 10.1109/ICMSP55950.2022.9858939
Funding Details: Number: 2022JM-314,2022JQ-260, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

Funding text: This work was supported by the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2022JQ-260 and No. 2022JM-314)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

397. Design of Quenching Cooling Water Control System Based on PLC

Accession number: 20223812766932
Authors: Xu, Jingtian (1); Zhang, Rui (1); Zhang, Ailing (1)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Oil and Gas Well Measurement and Control Technology, Xi'an Shiyou University, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 635-638
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problems of inconvenient remote operation of a petroleum steel pipe factory and unstable cooling water pressure, insufficient or short-term water shortage in the water supply system, this paper designs a variable frequency constant pressure system using industrial computer + Siemens S 7-300PLC +mathbf{P} ROFIBUS bus technology Water supply control system. The system selects the continuous PID controller FB41 function block in Siemens industrial communication programming software STEP7 V5.6 to control the operating frequency of the frequency converter, so as to realize variable frequency and constant pressure water supply. The upper monitor realizes the real-time monitoring of on-site working conditions, alarm screen display, historical data storage, printing and other functions through the configuration software WinCC6.4, and uses industrial Ethernet to communicate with the industrial computer. The system satisfies the production requirements, facilitates remote monitoring, and improves the work efficiency of operators and the automation level of enterprises. © 2022 IEEE.
Number of references: 10
Main heading: Water supply
Controlled terms: Computer control systems - Cooling water - Digital storage - Display devices - Three term control systems - Water supply systems
Uncontrolled terms: Constant pressures - F b41 - Frequency conversion constant pressure water supply - Frequency conversions - Industrial computers - S7-300 PLC - Siemens - Variable frequencies - Water control - WinCC
Classification code: 446.1 Water Supply Systems - 722.1 Data Storage, Equipment and Techniques - 722.2 Computer Peripheral Equipment - 723.5 Computer Applications - 731.1 Control Systems
DOI: 10.1109/ICMSP55950.2022.9859148
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

398. Design and implementation of FC-AE-ASM data acquisition and forwarding system

Accession number: 20222412229880
Authors: Wang, KuiSheng (1); Zhang, Yao (1); Wang, Li (2); Ning, YueJie (1)

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China; (2) Airborne Network Bus, Xi'an Xiangteng Microelectronics Technology Co., Ltd, Xi'an, China
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1374-1377
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The FC-AE-ASM (Fibre Channel-Avionics Environment-Anonymous Subscriber Message) data acquisition and forwarding system collects and forwards FC link data. As it's core and foundation, the software provides a strong basis for real-time monitoring of FC communication status, which will directly affect the performance of the whole system. In this paper, based on the analysis of FC-AE-ASM fiber channel protocol, the software function and architecture design are proposed, and the design idea of data acquisition and forwarding is introduced emphatically. The software and system hardware can meet the requirements of high bandwidth fiber channel data acquisition and forwarding. © 2022 IEEE.
Number of references: 5
Main heading: Data acquisition
Controlled terms: Fibers - Network architecture - Software design
Uncontrolled terms: Acquisition and forwarding system - Architecture designs - Avionic environment - Design and implementations - Fiber channel - Fibre channel protocols - Function designs - Performance - Real time monitoring - Software functions
Classification code: 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 723.5 Computer Applications
DOI: 10.1109/ICSP54964.2022.9778386
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

399. Fluid-solid interaction analysis for perforation gun jamming and strength considering effects of blasting height and phase angle

Accession number: 20222312196279
Title of translation:
Authors: Dou, Yihua (1, 2); Zhu, Xiaodong (1, 2); Fan, Yongjun (1, 2); Li, Mingfei (1, 2)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) CNPC Xibu Drilling Engineering Company Limited, Urumqi; 830000, China
Corresponding authors: Li, Mingfei; Li, Mingfei
Source title: Zhendong yu Chongji/Journal of Vibration and Shock
Abbreviated source title: J Vib Shock
Volume: 41
Issue: 9
Issue date: May 15, 2022
Publication year: 2022
Pages: 167-173
Language: Chinese
ISSN: 10003835
Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society

Abstract: Safety accidents, such as, perforation gun jamming and damage often occur in process of perforation operation to affect process of exploration and development. Here, firstly, the 3D finite element model of perforating charge-perforating gun-perforating fluid-casing pipe-sandstone was established. Combined with ALE(arbitrary Lagrangian-Eulerian) algorithm, the fluid-structure interaction among perforating fluid-jet-gun-casing pipe-sandstone was realized, and effects of different blasting heights and phase angles on burr and stress intensity of perforating gun in jet penetration process were analyzed. The results showed that when the blasting height of a single projectile is 12 mm, the burr is 4.1 mm, and the maximum stress is 1 075 MPa, the diameter of the stress area around channel exceeding material yield limit can reach 61 mm; when the blasting height is 18 mm, the burr is 3.9 mm and the maximum stress is 997 MPa, the diameter of the stress area exceeding material yield limit can reach 45 mm; when the blasting height is 24 mm, the burr is 3.6 mm and the maximum stress is 912 MPa, the diameter of the stress area exceeding material yield limit can reach 38 mm; with increase in blasting height, burr height, maximum stress and damage area of perforating gun material decrease; when the blasting height is 12 mm and the phase angle is 30°, 60° and 90°, respectively, the burr height changes little compared with the situation of a single projectile, the diameter of the stress area exceeding material yield limit is 55 mm, 42 mm and 66 mm, respectively; in this stress area, under high detonation pressure, the perforating gun can bulge outward, this is called "bulging gun" to cause the accident of perforation gun jamming, so the strength safety of perforating gun is better when the phase angle is 60°; this study can solve problems of analysis terminated unexpectedly and velocity overrun overflow in energy accumulation detonation simulation to provide an idea for studying perforation detonation penetration.
Number of references: 16
Main heading: Accidents
Controlled terms: Blasting - Detonation - Fluid structure interaction - Projectiles - Sandstone
Uncontrolled terms: Blast height - Burr height - Casing pipe - Fluid solid interaction - Fluid-solid coupling - Gun jam - Material yield limit - Maximum stress - Perforating guns - Phase angles
Classification code: 482.2 Minerals - 631.1 Fluid Flow, General - 914.1 Accidents and Accident Prevention
Numerical data indexing: Pressure 7.50E+07Pa, Pressure 9.12E+08Pa, Pressure 9.97E+08Pa, Size 1.20E-02m, Size 1.80E-02m, Size 2.40E-02m, Size 3.60E-03m, Size 3.80E-02m, Size 3.90E-03m, Size 4.10E-03m, Size 4.20E-02m, Size 4.50E-02m, Size 5.50E-02m, Size 6.10E-02m, Size 6.60E-02m
DOI: 10.13465/j.cnki.jvs.2022.09.022
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

400. Design of viscosity reduction system for heavy oil based on ultrasonic

Accession number: 20223812766804
Authors: Feng, Xudong (1); Dang, Bo (1); Qin, Hongwei (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 799-802
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: At present, the pipeline transportation of heavy oil mainly adopts heating transportation technology, which consumes a lot of energy and may cause condensation accidents. Therefore, the research and application of pipeline heavy oil cold transportation technology is very necessary. High-power ultrasound can reduce the viscosity of heavy oil to increase its fluidity. This technology has the advantages of low cost and no harm to the environment, and has a good development prospect in the application of heavy oil cold transportation. This paper studies the ultrasonic viscosity reduction technology for heavy oil, and designs the ultrasonic viscosity reduction system based on the analysis of the ultrasonic viscosity reduction mechanism, including the parameters, materials, structure design of the ultrasonic transducer and the circuit design of the ultrasonic generator. The ultrasonic viscosity reduction system was tested on the indoor test platform, and the viscosity reduction effect and influencing factors of the system were analyzed through the test. The experimental results show that the viscosity reduction rate of heavy oil samples can reach more than 40% irreversibly after the system is applied to the heavy oil samples for 20 minutes at room temperature, and the same viscosity reduction effect can be achieved only by using water bath heating method, which requires the water temperature to be above 60°C. Therefore, ultrasonic viscosity reduction system has more advantages than the traditional heating viscosity reduction method, which provides a valuable reference for the application of ultrasonic viscosity reduction technology. © 2022 IEEE.
Number of references: 10
Main heading: Crude oil
Controlled terms: Heavy oil production - Nanocomposites - Petroleum transportation - Pipelines - Ultrasonic transducers - Viscosity
Uncontrolled terms: Oil based - Oil samples - Reduction effects - Reduction systems - Reduction technologies - Transportation technology - Ultrasonic generator - Ultrasonic viscosity - Ultrasonic viscosity reduction - Viscosity reduction
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 753.2 Ultrasonic Devices - 761 Nanotechnology - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics
Numerical data indexing: Percentage 4.00E+01%, Temperature 3.33E+02K, Time 1.20E+03s
DOI: 10.1109/ICMSP55950.2022.9859114
Funding Details: Number: 41874158, Acronym: -, Sponsor: National Natural Science Foundation of China;
Funding text: Thanks for the support of the National Natural Science Foundation of China (41874158)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

401. Optimization Method of Drilling Rig Scheduling Task Assignment Based on Kmeans-ACO Algorithm (*Open Access*)

Accession number: 20230213357057
Authors: Ni, Weijun (1); Guo, Shuai (1); Wang, Liupeng (1); Li, Aixin (1)
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Source title: Advances in Transdisciplinary Engineering
Abbreviated source title: Adv. Transdiscipl. Eng.
Volume: 30
Part number: 1 of 1
Issue title: Moving Integrated Product Development to Service Clouds in the Global Economy - Proceedings of the 21st ISPE Inc. International Conference on Concurrent Engineering, CE 2014
Issue date: December 6, 2022
Publication year: 2022
Pages: 970-977
Language: English
ISBN-13: 9781643683522
Document type: Conference article (CA)
Conference name: 2nd International Conference on Applied Mathematics, Modeling and Computer Simulation, AMMCS 2022
Conference date: August 13, 2022 - August 14, 2022
Conference location: Wuhan, China
Conference code: 185441
Publisher: IOS Press BV

Abstract: Aiming at the lack of research on the assignment model of drilling rig scheduling tasks in China, and it is difficult to meet the field requirements of this model in practical applications, a drilling rig scheduling task assignment optimization scheme combining Kmeans algorithm and ACO algorithm is established. Firstly, the wellhead coordinate data in the well site is divided into blocks using the clustering feature of Kmeans, and the algorithm optimization coefficient is determined by the required number of wells in the block. Secondly, the ant colony algorithm is used to calculate and plan the paths for the wellheads in different blocks to realize the optimization of the ant colony algorithm. The results show that compared with the traditional ant colony, the rig scheduling task allocation model established by the Kmeans-ACO algorithm has a smaller distance and a better path. © 2022 The authors and IOS Press.
Number of references: 9
Main heading: Ant colony optimization
Controlled terms: Artificial intelligence - Clustering algorithms - Infill drilling - Scheduling algorithms
Uncontrolled terms: ACO algorithms - Algorithm optimization coefficient - Algorithms optimizations - Ant colonies algorithm - Assignment models - K-means - Optimization method - Rig scheduling - Scheduling tasks - Tasks assignments
Classification code: 511.1 Oil Field Production Operations - 723.4 Artificial Intelligence - 903.1 Information Sources and Analysis - 921.5 Optimization Techniques
DOI: 10.3233/ATDE221121
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

402. Adaptive spatially weighted fuzzy c-means clustering for image segmentation

Accession number: 20222412229865
Authors: Li, Xiaohe (1); Qu, Zhan (2)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China; (2) Xi'an Shiyou University, School of Petroleum Engineering, Xi'an, China
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1920-1923
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Fuzzy c-means (FCM) clustering algorithm is a popular algorithm in the field of image segmentation. In this paper, an adaptive spatially weighted FCM clustering (ASWFCM) is proposed, to improve the performance of image segmentation. Through defining the weight of each pixel neighborhood and incorporating the spatial weights into the traditional Fuzzy c-means objective function, the image information which related to local spatial is integrated into the segmentation approach. Because of those spatial weights of neighboring pixels are fully adapted to the local image content and can effectively detect the anisotropy of neighborhood, the proposed algorithm improves the robust to noise. Both synthetic and real image experimental results verify the accuracy and the robustness of the ASWFCM method. © 2022 IEEE.
Number of references: 12
Main heading: Image segmentation
Controlled terms: Clustering algorithms - Fuzzy systems - Image enhancement - Pixels
Uncontrolled terms: Adaptive spatially weighted FCM clustering - Clusterings - FCM clustering - Fuzzy c-mean clustering algorithm - Fuzzy C-Means clustering - Fuzzy c-means clustering algorithms - Images segmentations - Neighbourhood - Performance - Weighted fuzzy c-means
Classification code: 903.1 Information Sources and Analysis - 961 Systems Science
DOI: 10.1109/ICSP54964.2022.9778366

Funding Details: Number: 51974255, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2013BS021, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENT This work is supported by the National Natural Science Foundation of China under grant No. 51974255 as well as The Youth Foundation of Xi'an Shiyou University under grant No. 2013BS021.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

403. Rock Lithology Forward Prediction while Drilling Based on LSTM

Accession number: 20222412229717
Authors: Tian, Yajuan (1); Liu, Tianyang (2)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an, China; (2) Xi'an Shiyou University, School of Computer Science, Xi'an, China
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 746-749
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The lithology prediction while drilling is a crucial issue in drill engineering and geo-steering. We produce a drilling engineering parameters-based forward lithology prediction method by LSTM. The testing result shows that LSTM could get over 86% prediction accuracy. With this actual data test, we can conclude that our method can provide lithology prediction beyond the drill bit to guide the drill work and geo-steering. And all the results demonstrate its ability, generalization, and reliability. © 2022 IEEE.
Number of references: 5
Main heading: Lithology
Controlled terms: Drills - Forecasting - Infill drilling - Long short-term memory
Uncontrolled terms: Component - Drilling engineering - Engineering parameters - Forward prediction - Generalisation - Lithology prediction - LSTM - Prediction accuracy - Prediction methods - Prediction while drilling
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 603.2 Machine Tool Accessories
Numerical data indexing: Percentage 8.60E+01%
DOI: 10.1109/ICSP54964.2022.9778726
Funding Details: Number: 2021JM-400,2022JM-301, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: ACKNOWLEDGMENT The project is supported by The Natural Science Foundation of Shaanxi Province (2021JM-400 and 2022JM-301).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

404. Research on end-to-end binocular stereo matching algorithm based on image segmentation

Accession number: 20223212545635
Authors: Tian, Yajuan (1); Yin, Lei (2); Chang, Wenwen (2); Qiang, Xinjian (2)
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Corresponding author: Yin, Lei(502571827@qq.com)

Source title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Abbreviated source title: Int. Conf. Comput. Vis., Image Deep Learn. Int. Conf. Comput. Eng. Appl., CVIDL ICCEA
Part number: 1 of 1
Issue title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Issue date: 2022
Publication year: 2022
Pages: 1189-1192
Language: English
ISBN-13: 9781665459112
Document type: Conference article (CA)
Conference name: 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Conference date: May 20, 2022 - May 22, 2022
Conference location: Virtual, Changchun, China
Conference code: 181070
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Binocular stereo matching will lead to low texture and repeated texture due to uneven illumination and occlusion, and the matching accuracy will be reduced. To solve this problem, the image preprocessing methods of Gaussian filter preprocessing and super-pixel segmentation are adopted, and the processed image area is used as the input of the real-time end-to-end stereo matching algorithm stereonet network to assist the stereo matching algorithm to estimate the parallax. This method can expand the stereo disparity estimation under the low resolution features, effectively reduce the memory consumption, improve the running speed, and improve the recognition of the edge region of the disparity map. The algorithm in this paper is verified by the standard data of the Middlebury test platform. The results show that the algorithm in this paper can achieve a relatively accurate result in a fast time in the ill-conditioned region, which has certain engineering significance for the realization of real-time stereo matching algorithm. © 2022 IEEE.
Number of references: 17
Main heading: Image segmentation
Controlled terms: Binocular vision - Geometrical optics - Stereo image processing - Textures
Uncontrolled terms: Binocular stereo - End to end - Gaussian filtering - Image preprocessing - Images segmentations - Stereo matching algorithm - Stereo-matching - Stereonet - Uneven illuminations
Classification code: 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 741.2 Vision
DOI: 10.1109/CVIDLICCEA56201.2022.9825417
Funding Details: Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: ACKNOWLEDGMENT The research work of this paper is supported by the basic research program of Natural Science in Shaanxi Province. The project number is 2021JM-400. The project name is the research on super-resolution data enhancement and feature analysis method of cast thin sections.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

405. Reservoir production prediction with optimized artificial neural network and time series approaches

Accession number: 20222112143588
Authors: Li, Weirong (1); Wang, Linjun (1); Dong, Zhenzhen (1); Wang, Ruifei (1); Qu, Bochao (1)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi, China
Corresponding author: Dong, Zhenzhen(dongzhenzhen1120@hotmail.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 215
Issue date: August 2022
Publication year: 2022
Article number: 110586
Language: English
ISSN: 09204105
Document type: Journal article (JA)

Publisher: Elsevier B.V.
Abstract: Numerical simulation of oil reservoirs is one of the most commonly used methods for reservoir production prediction, but its accuracy is based on accurate geological modeling and high-quality history matching. Therefore, numerical simulation is time-consuming and costly and requires extensive information. Traditional back-propagation neural networks and their improved algorithms are widely used for production prediction, but they are not suitable for time-series prediction problems. Based on variations in oil production, this study proposes a reservoir production prediction model based on a combined convolutional neural network (CNN) and a long short-term memory (LSTM) neural network model optimized by the particle swarm optimization (PSO) algorithm. First, the model extracts important temporal data features through the upper CNN, which is next imported to the lower LSTM network to further extract correlation features in the time dimension; then, it iteratively optimizes the key hyperparameters in the CNN-LSTM model through the PSO algorithm; finally, it uses the trained model for reservoir prediction. Compared with the training results of the LSTM neural network and CNN model, the PSO–CNN-LSTM model has higher prediction accuracy in time-series production prediction. Our proposed hybrid model is a data-driven method and is based on routinely available production data. Quick and accurate production prediction can lead to better informed operational decisions and optimization of recovery and economics. © 2022 Elsevier B.V.
Number of references: 39
Main heading: Long short-term memory
Controlled terms: Brain - Convolution - Convolutional neural networks - Forecasting - Iterative methods - Numerical methods - Numerical models - Particle swarm optimization (PSO) - Petroleum reservoir engineering - Petroleum reservoirs - Time series
Uncontrolled terms: Convolutional neural network - Hybrid network models - Long short-term memory network - Memory modeling - Memory network - Neural network model - Particle swarm optimization algorithm - Production prediction - Time series forecasts - Times series
Classification code: 461.1 Biomedical Engineering - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.5 Optimization Techniques - 921.6 Numerical Methods - 922.2 Mathematical Statistics
DOI: 10.1016/j.petrol.2022.110586
Funding Details: Number: -, Acronym: TAMU, Sponsor: Texas A and M University; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: We would like to thank the Project "Shale Oil Development Study of Chang7 Panke Field" and Project "Fracturing Design Optimization of Multistage Fractured Horizontal Wells in the Lower Temple Bay Field, Yanchang Oilfield" for their support and valuable discussion. We would like to thank the following people for their constructive discussions and suggestions for this study: John A. Lee from Texas A&M University and Xianlin Ma from Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

406. Application of big data technology in petroleum engineering intelligent information system

Accession number: 20221712026984
Authors: Huan, Liang (1); Haojie, Meng (1); Tian, Xue (1); Hui, Mu (1); Zihan, Yang (1); Lihao, Zhou (1); Yunpeng, Zhang (1)
Author affiliation: (1) Xi'an Shiyou University, Xi'an, China
Corresponding author: Huan, Liang(447901974@qq.com)
Source title: 2022 IEEE International Conference on Electrical Engineering, Big Data and Algorithms, EEBDA 2022
Abbreviated source title: IEEE Int. Conf. Electr. Eng., Big Data Algorithms, EEBDA
Part number: 1 of 1
Issue title: 2022 IEEE International Conference on Electrical Engineering, Big Data and Algorithms, EEBDA 2022
Issue date: 2022
Publication year: 2022
Pages: 191-194
Language: English
ISBN-13: 9781665416061
Document type: Conference article (CA)
Conference name: 2022 IEEE International Conference on Electrical Engineering, Big Data and Algorithms, EEBDA 2022

Conference date: February 25, 2022 - February 27, 2022
Conference location: Changchun, China
Conference code: 178616
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The traditional IE system takes a long time to query petroleum information and has poor information management effect. Based on this, a petroleum engineering information system based on big data technology is designed. In the hardware design, the performance index of the sensor is designed, and the voltage conversion module is set inside the E-ECU(Engineering problem processing electronic control unit) chip. In terms of software design, the petroleum engineering information management module is established to ensure the standardization of system design, integrate big data technology, build petroleum information database, shorten data query time, and then realize petroleum information management. The system test shows that the information query time of the system designed in this paper is less than 0.1ms, the information management effect is better, and it is of great promotion value. © 2022 IEEE.
Number of references: 8
Main heading: Search engines
Controlled terms: Big data - Gasoline - Information management - Software design - Information use - Control systems - Information systems - Systems analysis
Uncontrolled terms: Big data technology - Data technologies - E-ECU chip - Engineering information systems - Hardware design - Intelligent information systems - Performance indices - Poor information - Query time - Voltage conversion
Classification code: 523 Liquid Fuels - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 731.1 Control Systems - 903.2 Information Dissemination - 903.3 Information Retrieval and Use - 912.3 Operations Research - 961 Systems Science
Numerical data indexing: Time 1.00E-04s
DOI: 10.1109/EEBDA53927.2022.9744991
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

407. Design of Innovation and Entrepreneurship Education Ecosystem in Universities Based on User Experience (*Open Access*)

Accession number: 20223212532690
Authors: Sheng, Dan (1); Wang, Yulong (2)
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Corresponding author: Sheng, Dan(shengdan01@xsyu.edu.cn)
Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3266326
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The conventional college innovation and entrepreneurship education ecosystem is not considered to be designed for low energy consumption, and there is confusion in function switching, which leads to a large value of packet loss rate in system transmission. In this paper, we analyze the construction of college innovation and entrepreneurship education ecosystem and construct the scientific ecosystem of college innovation and entrepreneurship education based on user experience so as to realize college. At the same time, it takes into account the principle of green and low energy consumption of system hardware and software design, in which the hardware part selects S3C6410 RISC microcontroller as the core component to build the structure of educational ecological controller, connects a 16 bit buffer in parallel outside the controller, uses the buffer as the actual conversion port, specifies the function switching bearing interface, uses a protocol conversion chip, and designs the data acquisition circuit structure. The software part builds a model of user experience elements, sets to get an ecological interaction

interface under the interoperability between the model and information data, and uses JAVA programming to realize functional modules according to the deviation of educational information shown by users. The experimental results show that the educational ecosystem designed in this paper has high data throughput, high fault tolerance, and low packet loss rate and system energy consumption, which verifies the effectiveness of the system. © 2022 Dan Sheng and Yulong Wang.
Number of references: 31
Main heading: Ecosystems
Controlled terms: Computer software - Controllers - Data acquisition - Energy utilization - Fault tolerance - Functional programming - Software design
Uncontrolled terms: Core components - Entrepreneurship education - Green energy - Hardware and software design - Low energy consumption - Packets loss rate - Protocol conversion - System hardware - System softwares - Users' experiences
Classification code: 454.3 Ecology and Ecosystems - 525.3 Energy Utilization - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 732.1 Control Equipment
DOI: 10.1155/2022/3266326
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

408. Modeling and analysis of steam-water two-phase flow distribution and wall temperature distribution in parallel heated pipes with different manifold types

Accession number: 20221311873574
Authors: Liu, Jialun (1); Pan, Jie (2); Tang, Linghong (1); Su, Xiaohui (1)
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Source title: Applied Thermal Engineering
Abbreviated source title: Appl Therm Eng
Volume: 210
Issue date: June 25, 2022
Publication year: 2022
Article number: 118387
Language: English
ISSN: 13594311
CODEN: ATENFT
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In solar tower receiver, boiler water-wall and various heat exchangers, the uneven distribution of two-phase flow often occurs among parallel heated pipes, which seriously reduces the operating efficiency and may further induce heat transfer deterioration and soaring wall temperature. In this paper, a coupling model for the flow distribution and heat transfer process of steam-water two-phase flow in parallel heated pipes was established based on the discrete methods. In the present model, two main improvements were proposed as below. On one hand, the calculated equations for the pressure drop and the phase distribution of two phase fluid in both the combining T-junction and dividing T-junction were established to consider the coupling effects of the inlet manifold and outlet manifold on the flow distribution characteristics. On the other hand, the calculation module for the heat transfer and wall temperature along the branch pipes was also coupled in the present model with considering of different heat transfer regions (saturated nucleate boiling region, liquid deficient region, and superheated steam region) along the pipe. The present model was then verified and used to investigate the effects of system pressure, inlet fluid flow, inlet steam quality and manifold type on the flow distribution characteristics of high temperature and high pressure steam-water in parallel vertical upward pipes, and the effect of the uneven distribution of the gas-liquid two phases on the system safety was analyzed and evaluated. It was found that gas phase preferentially enters the first branch pipe near the inlet of the dividing manifold affected by buoyancy, and this results that the inlet steam quality of the corresponding branch pipe is always obviously higher than that of the subsequent pipes. As the system pressure decreases, the outlet fluid enthalpy distribution and outlet wall temperature distribution among branch pipes become more uneven. Moreover, the outlet fluid enthalpy and outlet wall temperature of the branch pipes closer to the inlet of the dividing manifold increase

sharply with the decrease of system pressure. In the U-type parallel pipe system, the branch pipes away from the inlet of the dividing manifold are more prone to wall overheating at the outlet, while the opposite is true for the Z-type parallel pipe system. © 2022 Elsevier Ltd
Number of references: 42
Main heading: Two phase flow
Controlled terms: Heat exchangers - Heat transfer - High pressure effects - Steam - Temperature distribution - Deterioration - Enthalpy - Quality control - Boilers
Uncontrolled terms: Branch pipes - Combining manifold - Coupling models - Heated pipes - High temperature and high pressure steam - High temperature and high pressure steam-water - Parallel heated pipe - Steam/water - Two-phase flow distribution - Wall-temperature distribution
Classification code: 614 Steam Power Plants - 616.1 Heat Exchange Equipment and Components - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 641.2 Heat Transfer - 913.3 Quality Assurance and Control - 951 Materials Science
DOI: 10.1016/j.applthermaleng.2022.118387
Funding Details: Number: U20B2036, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022JQ-542,51906202, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the Joint Fund of the National Natural Science Foundation of China (Grant No. U20B2036), Natural Science Basic Research Program of Shaanxi Province (Grant No. 2022JQ-542), National Natural Science Foundation of China (Young Scientistic Program) (Grant No. 51906202), and Open Fund of Science and Technology on Thermal Energy and Power Laboratory (No.TPL2020B02).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

409. Research progress in hollow nanocomposite materials for lithium-sulfur batteries cathodes

Accession number: 20222912384643
Authors: Ma, Ying (1, 2); Wang, Lei (1); Li, Zhao (1); Wei, Anke (2)
Author affiliation: (1) College of New Energy, Xi'an Shiyou University, Xi'an, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Wang, Lei(leiw@xsyu.edu.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 922
Issue date: November 20, 2022
Publication year: 2022
Article number: 166276
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The rapid growth in demand for high energy density electrochemical energy storage devices has stimulated the research community to develop novel battery systems beyond traditional Li-ion systems, to break through the limitations of energy and power densities. Lithium-sulfur batteries (LSBs) are considered to be one of the most promising batteries due to their high energy densities. However, severe problems have restricted their development during the progress of LSBs, including the poor conductivity of sulfur, the volume expansion during discharge, and the shuttle effect caused by polysulfides. Relevant studies have shown that hollow nanocomposites can alleviate the above-mentioned problems when used as cathode carriers for LSBs, attribute to versatile advantages of large specific surface area, adjustable pore structure, and controllable morphology. Therefore, an increasing number of researchers have conducted extensive research on the synthesis and applications of hollow nanocomposites. In this paper, we reviewed the synthesis methods, microstructure, and electrochemical properties of hollow nanoboxes, nanospheres, nanotubes, and metal-organic frameworks (MOFs) dodecahedron nanostructures used as cathode materials for LSBs, and discussed the main factors affecting the performance of LSBs and its future development. © 2022 Elsevier B.V.
Number of references: 150
Main heading: Nanocomposites
Controlled terms: Cathodes - Electric discharges - Lithium sulfur batteries - Lithium-ion batteries - Morphology - Organometallics - Pore structure

Uncontrolled terms: Battery systems - Electrochemical energy storage devices - Growth in demands - Higher energy density - Hollow nanocomposite - Lithium/sulfur batteries - Rapid growth - Research communities - Sulfur cathodes - Volume expansion
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 702.1.2 Secondary Batteries - 761 Nanotechnology - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics - 951 Materials Science
DOI: 10.1016/j.jallcom.2022.166276
Funding Details: Number: YCS20211062, Acronym: -, Sponsor: -; Number: 51702257, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022JQ-109, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 21JK0848, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors gratefully acknowledge financial support from the National Natural Science Foundation of China (51702257), Natural Science Foundation Research Project of Shaanxi Province (No. 2022JQ-109), Scientific Research Program Funded by Shaanxi Provincial Education Department (21JK0848), and Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (YCS20211062).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

410. Adsorption Equilibrium and Adsorption Kinetics of Rare Earth Elements in Coal Rocks (*Open Access*)

Accession number: 20224413022357
Authors: Bosheng, Pan (1); Zhixiang, Zhou (1); Hengyi, Du (1); Zongzhen, Wang (1); Kai, Huang (1); Yalong, Zhang (1); Shun, Liu (1); Jianbin, Liu (1)
Author affiliation: (1) Xi'an Shiyou University, Xi'an; 710065, China
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Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2350
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012009
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 International Conference on Advanced and Emerging Materials, AEM 2022
Conference date: August 26, 2022 - August 28, 2022
Conference location: Wuhan, Virtual, China
Conference code: 183296
Publisher: Institute of Physics
Abstract: The adsorption pattern and mechanism of rare earth elements on coal reservoirs are still unclear, leading to difficulties in the application of rare earth elements in monitoring the fracturing effect of coal reservoirs. Through indoor adsorption experiments, the adsorption equilibrium and adsorption kinetics of rare earth elements Nd, Y and La on coal rocks were studied to simulate the adsorption of rare earth elements tracers on coal reservoirs and to explore the adsorption pattern of rare earth elements on coal rocks under different initial concentrations of rare earth elements, different adsorption times and different rare earth element types. The experimental results showed that the Langmuir isotherm equation fitted best, and the adsorption of rare earth elements on coal samples belonged to unimolecular layer adsorption, and the maximum adsorption of rare earth elements Nd, Y and La on coal samples at 25°C were 41.052 mg/kg, 34.301 mg/kg and 95.465 mg/kg, respectively. The proposed secondary kinetic equation can better describe the adsorption process of rare earth elements on coal rocks, indicating that chemisorption is the controlling step of the adsorption rate, with the coal samples showing the fastest adsorption rate for La elements and the slowest adsorption rate for Nd elements. The results of this study provide a reference for the application of rare earth elements in the evaluation of fracturing effects in coal reservoirs. © 2022 Institute of Physics Publishing. All rights reserved.
Number of references: 14
Main heading: Adsorption

Controlled terms: Adsorption isotherms - Coal - Integral equations - Kinetics - Rare earth elements - Rare earths - Rocks
Uncontrolled terms: Adsorption equilibrium - Adsorption kinetics - Adsorption patterns - Adsorption rates - Coal reservoirs - Coal rock - Coal sample - Rare earth element la - Rare earth element nd - Rare earth element Y
Classification code: 524 Solid Fuels - 547.2 Rare Earth Metals - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 921.2 Calculus - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Mass 3.4301E-05kg, Mass 4.1052E-05kg, Mass 9.5465E-05kg, Temperature 2.98E+02K
DOI: 10.1088/1742-6596/2350/1/012009
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

411. Analysis on the Application of Dependent Information System Optimization Algorithm in Music Education in Colleges and Universities (*Open Access*)

Accession number: 20222212164423
Authors: Mao, Nan (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Mao, Nan(mn1990@xsyu.edu.cn)
Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4102280
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Although the influence of pop music is huge and the emergence of pop music talents is also increasing, its education has great problems. Moreover, both theoretical research and professional discipline construction are still very backward. In order to improve the efficiency of music teaching in colleges and universities, this paper applies the information system optimization algorithm to the intelligent analysis of music education in colleges and universities, selects the appropriate method for music information processing, and builds the music education system in colleges and universities on this basis. At the same time, this paper compiles a music system questionnaire for the two main groups (teachers and students) who use the music system to understand the needs of teachers and students for the music system. Then, this paper analyzes the feasibility of the system, constructs an intelligent music education system in colleges and universities, and verifies the effect of the system in combination with experiments. In addition, this paper evaluates the music information processing and educational effect of the system in combination with the actual situation and counts the test results. The test results verify the reliability of the system in this paper. © 2022 Nan Mao.
Number of references: 20
Main heading: Information use
Controlled terms: Students - Information systems - Optimization
Uncontrolled terms: Colleges and universities - Discipline constructions - Education systems - Information system optimization - Music education - Music information processing - Optimization algorithms - Professional disciplines - Teachers' - Theoretical research
Classification code: 903.2 Information Dissemination - 903.3 Information Retrieval and Use - 921.5 Optimization Techniques
DOI: 10.1155/2022/4102280
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

412. Effect of amorphous phase on the migration mechanism of basal/prismatic interface in Mg alloys

Accession number: 20223612688475
Authors: Shi, R. (1, 2); Song, H.Y. (1); Han, L. (1, 2)
Author affiliation: (1) College of New Energy, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Song, H.Y.(gsfshy@sohu.com)
Source title: Journal of Applied Physics
Abbreviated source title: J Appl Phys
Volume: 132
Issue: 7
Issue date: August 21, 2022
Publication year: 2022
Article number: 074301
Language: English
ISSN: 00218979
E-ISSN: 10897550
CODEN: JAPIAU
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: A dual-phase nanostructured amorphous/crystalline model is an effective method to improve the mechanical properties of Mg alloys. However, the fundamental strengthening mechanism related to the interaction between basal/prismatic (BP) and amorphous phase in the dual-phase Mg alloys is still unclear. Here, the effects of the size and spacing of amorphous nanopillars on the mechanical properties and the BP interface migration behavior of the bicrystalline Mg alloys are investigated by the molecular dynamics simulation method. The results show that due to the attraction of amorphous nanopillar to interfacial dislocations, the introduction of amorphous nanopillar reduces the yield stress of the bicrystalline Mg alloys, and the yield stress decreases with the increase of the amorphous nanopillar radius. The results indicate that the amorphous nanopillar has an obvious blocking effect on the migration of the BP interface, and the larger the radius of amorphous nanopillars (or the smaller the spacing of amorphous nanopillars), the more obvious the strengthening effect. In addition, the migration mechanism of the BP interface in the bicrystalline Mg alloys is analyzed in detail. © 2022 Author(s).
Number of references: 47
Main heading: Molecular dynamics
Controlled terms: Magnesium alloys - Yield stress
Uncontrolled terms: Amorphous phasis - Crystalline model - Dual phase - Dual phasis - Mg alloy - Migration mechanisms - Nano-structured - NanoPillar - Prismatic interfaces - Strengthening mechanisms
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 801.4 Physical Chemistry - 951 Materials Science
DOI: 10.1063/5.0097648
Funding Details: Number: YCS20211054, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JZ-53, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (NNSFC) (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2021JZ-53), and Program for Graduate Innovation Fund of Xi'an Shiyou University (No. YCS20211054).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

413. Runway line detection based on parallel reverse attention network

Accession number: 20225013240265
Title of translation:
Authors: Bai, Junqing (1); Zhang, Wenjing (1)
Author affiliation: (1) Xi'an Shiyou University, Xi'an; 710065, China
Source title: Zhongguo Guanxing Jishu Xuebao/Journal of Chinese Inertial Technology
Abbreviated source title: Zhongguo Guanxing Jishu Xuebao
Volume: 30
Issue: 5
Issue date: October 2022
Publication year: 2022
Pages: 609-614

Language: Chinese
ISSN: 10056734
Document type: Journal article (JA)
Publisher: Editorial Department of Journal of Chinese Inertial Technology
Abstract: Aiming at the problem that there is little effective information and difficult positioning when the long-distance runway line of the UAV is detected, a parallel anti-attention network is proposed. The network uses Res2Net as the backbone network, and first of all, the low-level features are fused with the high-level features by using a parallel fusion encoder to obtain the initial contour diagram of the runway line. On this basis, the channel feature pyramid and the axial reverse attention mechanism are fused to detect global and local feature information in the image to enhance the expression ability of the feature. The simulation results based on UAV landing image dataset show that the proposed algorithm can effectively detect the runway line, the MIoU reaches 86.3%, and the processing time of single frame is 25 ms, which has obvious advantages for the detection of long-distance small targets. © 2022, Editorial Department of Journal of Chinese Inertial Technology. All right reserved.
Number of references: 15
Main heading: Unmanned aerial vehicles (UAV)
Controlled terms: Channel coding - Image enhancement
Uncontrolled terms: Attention - Back-bone network - Channel-wise feature pyramid - Feature pyramid - High-level features - Initial contour - Line detection - Low-level features - Parallel decoder - Res2net
Classification code: 652.1 Aircraft, General - 716.1 Information Theory and Signal Processing - 722.3 Data Communication, Equipment and Techniques
Numerical data indexing: Percentage 8.63E+01%, Time 2.50E-02s
DOI: 10.13695/j.cnki.12-1222/o3.2022.05.008
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

414. Research and development of Integrated drilling engineering collaborative design system

Accession number: 20224312996650
Authors: Liu, Zhikun (1); Li, Ke (1); Zhang, Bing (1); Wang, Liupeng (1)
Author affiliation: (1) Xi'An Shiyou University Shanxi, Xi'an; 710075, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12339
Part number: 1 of 1
Issue title: Second International Conference on Cloud Computing and Mechatronic Engineering, I3CME 2022
Issue date: 2022
Publication year: 2022
Article number: 123390D
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510657502
Document type: Conference article (CA)
Conference name: 2nd International Conference on Cloud Computing and Mechatronic Engineering, I3CME 2022
Conference date: June 17, 2022 - June 19, 2022
Conference location: Chendu, China
Conference code: 183052
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: In view of the present domestic research status of drilling design, based on the characteristics of drilling engineering design under network environment, this paper puts forward the integration under the network environment the driller. Using computer database technology and network technology, the unified hardware and software platform to build design basis and data support, drilling engineering design, the cementing design, the functions and main features of the system are described in detail. The application of this system, enables multiple drilling engineering design or distribution in different parts of the design personnel, in the design and drilling engineering and geological drilling process fully. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.

Number of references: 7
Main heading: Computer hardware
Controlled terms: Infill drilling
Uncontrolled terms: Collaborative design - Collaborative design system - Component - Drilling engineering - Drilling engineering design - Information sharing - Integrated designs - Network environments - Network technologies - Research and development
Classification code: 511.1 Oil Field Production Operations - 722 Computer Systems and Equipment
DOI: 10.1117/12.2655007
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

415. Education Mode Reform of Colleges and Universities in Music Teaching under 5G Internet (*Open Access*)

Accession number: 20222512246246
Authors: Luo, Luo (1)
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Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 7701567
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The benefits of music education are immense and highly beneficial to students. Music positively impacts a child's academic performance, assists in developing social skills, and provides an outlet for creativity that is crucial to a child's development. This study combines 5G communication and music education to analyze the application of 5G in music education. The application principles of 5G technology in music education are investigated, and the role of digital technology in the development of music education is explored. Results show that the 5G has good application performance in music education, and as a result of 5G Internet technology, college and university music teaching approaches are becoming more diverse and teachers gradually introduce students to many musical styles and ideas, resulting in the expansion and development of music education and the transformation of traditional music education approaches into advanced musical educational techniques. Furthermore, in the context of the advanced communication era, the direction of music online education reform and innovation is correct, combining a 5G network environment with artificial intelligence. This study broadens the application scenario of 5G technology and offers suggestions for reforming and innovating music online education in the new era. © 2022 Luo Luo.
Number of references: 34
Main heading: 5G mobile communication systems
Controlled terms: E-learning - Engineering education - Music - Students
Uncontrolled terms: Academic performance - Application performance - Child's development - Colleges and universities - Digital technologies - Education modes - Internet technology - Music education - On-line education - Social skills
Classification code: 716.3 Radio Systems and Equipment - 901.2 Education
DOI: 10.1155/2022/7701567
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

416. Multi-Agent-Based Film Editing Collaboration System (*Open Access*)

Accession number: 20222912366032
Authors: Liang, Along (1)

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Corresponding author: Liang, Along(liangalong@xsyu.edu.cn)
Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 1327620
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: In order to realize the effective cooperation between editor agents in the film and television editing collaboration system, it is analyzed that the state change of the film and television editing and production process is affected by the cross influence of multiple factors. A single agent can no longer satisfy the current film and television production. From the point of view of system theory, this article constructs the learner agent in the film and television editing system by introducing a new cooperation mechanism - the multi-agent collaborative system model. Collaboration and cooperation between multiple agents and the reinforcement learning between multiple editor agents are realized based on the film and television editing system between multiple agents. The operation mechanism of the separate organization is organized together, cooperates with each other and works in harmony to complete the collaborative effect of the film and television editing system, and can improve the interaction efficiency between the editor agents. Agent film and television editing's cooperative learning approach allows for successful collaboration among editor agents. The Bayesian technique is utilized in this study to assess the likelihood of effective cooperation between two agents, and a trust model based on this method is presented, making up for the shortcomings of the existing collaborative learning system. The multi-agent collaboration system will be utilized for production in the film and television editing collaboration system. Many of the movie's scenes and segments are created using computer technology special effects, giving viewers a very unique experience and a feast for the eyes and ears. © 2022 Along Liang.
Number of references: 21
Main heading: Multi agent systems
Controlled terms: Learning systems - Reinforcement learning
Uncontrolled terms: 'current - Agent based - Collaboration systems - Editing systems - Film editing - Multi agent - Multiple agents - Multiple factors - Production process - Single-agent
Classification code: 723.4 Artificial Intelligence
DOI: 10.1155/2022/1327620
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

417. Training Load Prediction in Physical Education Teaching Based on BP Neural Network Model (*Open Access*)

Accession number: 20221712028611
Authors: Liu, Danqing (1); Li, Shoubang (1); You, Kun (1)
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Corresponding author: Liu, Danqing(liudanqing@xsyu.edu.cn)
Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4821208
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited

Abstract: Appropriate training load in physical education classes is conducive to improving students' health. In this study, a training model is proposed for the prediction of the training load of middle school students in physical education based on the backpropagation neural network (BPNN). Ninety students in the seventh, eighth, and ninth grades (30 for each grade) are selected, and the training load is divided into type I, type II, and type III and combined with the average heart rate values of students in each grade during physical training. Next, the principal component analysis is used to select the main components whose cumulative contribution rate is greater than 90%. The corresponding score matrix is used for BPNN model training. Results show that, for most students in all grades, the training load intensity belongs to type II, and the training intensity is moderate. The variance contribution rates of the first, second, third, and fourth principal components of the seventh, eighth, and ninth grades reported are about 60%, 15%, 10%, and 5%, respectively, and the cumulative contribution rate of the first four principal components has reached more than 90%. Comparing the predicted value with the actual value, the proposed model showed the highest prediction performance and can accurately predict the training load in physical education. © 2022 Danqing Liu et al.
Number of references: 28
Main heading: Students
Controlled terms: Backpropagation - Education computing - Forecasting - Neural networks - Principal component analysis
Uncontrolled terms: Back-propagation neural networks - BP neural networks model - Contribution rate - Load predictions - Middle school students - Physical education - Physical education teachings - Principal Components - Training model - Type II
Classification code: 723.4 Artificial Intelligence - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 1.00E+01%, Percentage 1.50E+01%, Percentage 5.00E+00%, Percentage 6.00E+01%, Percentage 9.00E+01%
DOI: 10.1155/2022/4821208
Funding Details: Number: 17BY047, Acronym: -, Sponsor: -;
Funding text: This work was supported by the Education Department of Shaanxi Provincial Government, Shaanxi Province Higher Education and Teaching Reform Research Project, The Exploration and Practice of the Teaching Mode of Integration of Inside and Outside Class in Colleges and Universities under the Background of Internet + (Project no. 17BY047)
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

418. Research on control system of small intelligent drilling rig based on lithology identification (*Open Access*)

Accession number: 20220811696524
Authors: Wu, Zebing (1); Wang, Jie (1); Xi, Kaikai (1); Guo, Yulun (1); Yang, Chenjuan (1); Jiang, Mengjie (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, China
Corresponding author: Wang, Jie(2804135375@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2181
Part number: 1 of 1
Issue: 1
Issue title: International Symposium on Artificial Intelligence and Intelligent Manufacturing, AIIM 2021
Issue date: February 7, 2022
Publication year: 2022
Article number: 012039
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2021 International Symposium on Artificial Intelligence and Intelligent Manufacturing, AIIM 2021
Conference date: November 26, 2021 - November 28, 2021
Conference location: Virtual, Online
Conference code: 177147
Publisher: IOP Publishing Ltd

Abstract: Intelligent oil drilling rig can automatically complete the whole drilling process without human intervention, and can integrate big data with drilling, geology, logging and other disciplines. Aiming at the problem of insufficient rock breaking capacity and complex and changeable drilling process, a small intelligent drilling rig control system is designed. The structural drilling parameter samples such as WOB and rotating speed obtained by the sensor are used for lithology identification in the software MATLAB by using the neural network pattern recognition toolbox and GRNN generalized regression neural network respectively, and the control block diagram of the automatic drilling system is designed in Matlab / Simulink. The neural network control algorithm is used to compare with the classical PID control, The results show that the overshoot and rise time are significantly reduced, and the effect is good. When applied to the oil rig to realize constant WOB drilling, it is conducive to reasonably select the bit type, timely adjust the drilling parameters and improve the drilling efficiency, so as to realize the real intelligence of the oil rig. © Published under licence by IOP Publishing Ltd.
Number of references: 22
Main heading: Pattern recognition
Controlled terms: Lithology - Infill drilling - MATLAB - Neural networks - Three term control systems - Drilling rigs
Uncontrolled terms: Breaking capacity - Drilling parameters - Drilling process - Human intervention - Intelligent drilling - Lithology identification - Oil-drilling rig - Oil-rigs - Rock breaking - Rotating speed
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 723.5 Computer Applications - 731.1 Control Systems - 921 Mathematics
DOI: 10.1088/1742-6596/2181/1/012039
Funding Details: Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: -, Acronym: IDRC, Sponsor: International Development Research Centre; Number: -, Acronym: FQRNT, Sponsor: Fonds Québécois de la Recherche sur la Nature et les Technologies; Number: -, Acronym: FRQNT, Sponsor: Fonds de recherche du Québec – Nature et technologies;
Funding text: We wish to thank the many people of Intag who participated in this project. Thank you to botanists Miguel Angel Chinchero, Jenny Elizabeth Correa, Gabriela Cruz, and Carlos Morales for their help in the field and lab; to Miriam Harder, Silvana Bolanos, Alonzo Andrengo, and Carmen Navarette for their assistance with interviews; to Carlos Zorilla of DECOIN and to Ana Mariscal of Fundacion Cambugan for their help with fieldwork logistics and information; to Oliver Coomes, Sylvia Wood, Ignacia Holmes, and Aerin Jacob for their insightful comments on results and earlier versions of this article; and to Jake Brennan for his assistance with soil sampling and interviews, and constructive comments on this article. This study was funded by the International Development and Research Centre (IDRC), the National Science and Engineering Council of Canada (NSERC), the Fonds de Recherché Nature et Technologies Quebec (FQRNT), and the Theo Hills foundation.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

419. Effects of structural changes on the monopole acoustic transducers

Accession number: 20223812766820
Authors: Wu, Jie (1); Song, Dongxu (1)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi, Xi'an; 710061, China
Corresponding author: Song, Dongxu(1772372295@qq.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 90-93
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China

Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In acoustic logging, piezoelectric transducers are usually used as transmitters and receivers to achieve excitation of sound sources and reception of signals. With the improvement of the instrument level, there are stricter requirements for the structural parameters of the transducer. In this paper, the finite element method of COMSOL is used to simulate and analyze the structure of regular and irregular monopole transducers. The influence of the thickness of FRP, the thickness of piezoelectric ceramics and the change of structure on the eigenfrequency of the transducer and the maximum total linear displacement of the transducer are discussed. The results show that the increase of the thickness of the FRP and the decrease of the thickness of the piezoelectric ceramic will make the eigenfrequency increase almost linearly, while the maximum total linear displacement decreases as a whole. When the structure changes fundamentally (truncated cone-shaped transducer), when the bottom surface radius of the piezoelectric ceramic remains unchanged, when the top surface radius changes, its eigenfrequency decreases almost linearly with the increase of the top surface radius, and compared with the regular transducer model, the eigenfrequencies of the irregular model are hardly changed by the change of the structure, and the maximum total displacement of the line also tends to decrease with the change of the top surface radius. © 2022 IEEE.
Number of references: 5
Main heading: Finite element method
Controlled terms: Acoustic emission testing - Acoustic logging - Acoustic transducers - Piezoelectric ceramics - Piezoelectricity
Uncontrolled terms: Cone-shaped - Eigenfrequency - Linear displacements - Monopole transducer - Sound source - Structural parameter - Structure change - Top surface - Transmitter and receiver - Truncated cone
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 708.1 Dielectric Materials - 751.2 Acoustic Properties of Materials - 752.1 Acoustic Devices - 812.1 Ceramics - 921.6 Numerical Methods - 941.2 Acoustic Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859017
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

420. Recognition method of drilling conditions based on support vector machine

Accession number: 20221411913457
Authors: Wang, Kuisheng (1); Liu, Yuhao (1); Li, Peng (1)
Author affiliation: (1) Xi'An Shiyou University, College of Computer, Xi'an, China
Source title: 2022 IEEE 2nd International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Abbreviated source title: IEEE Int. Conf. Power, Electron. Comput. Appl., ICPECA
Part number: 1 of 1
Issue title: 2022 IEEE 2nd International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Issue date: 2022
Publication year: 2022
Pages: 233-237
Language: English
ISBN-13: 9781665442763
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Conference date: January 21, 2022 - January 23, 2022
Conference location: Shenyang, China
Conference code: 177741
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the proposal of oilfield digital transformation and intelligent development, intelligent analysis technology has become an important means to solve the problem of oil and gas research and generation. Aiming at the problem of working condition identification in the process of drilling, based on the monitoring data collected in the process of drilling, a drilling condition identification method based on support vector machine is proposed in this paper. The grid search algorithm is used to optimize the support vector machine, and then combined with 10000 measured data on the drilling site to compare and verify the recognition accuracy. The results show that the recognition rate of drilling conditions based on the optimized the support vector machine is more than 95%, which shows that this method can

recognize drilling conditions, improve drilling efficiency to a certain extent, and meet the requirements of efficient utilization of oilfield data resources. © 2022 IEEE.
Number of references: 13
Main heading: Support vector machines
Controlled terms: Condition monitoring - Infill drilling - Learning algorithms - Vectors
Uncontrolled terms: Condition - Condition identification - Digital transformation - Drilling operation - Grid-search algorithm - Intelligent analysis - Oil and gas - Recognition methods - Support vectors machine - Working condition identification
Classification code: 511.1 Oil Field Production Operations - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 921.1 Algebra
Numerical data indexing: Percentage 9.50E+01%
DOI: 10.1109/ICPECA53709.2022.9718844
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

421. Research of Drilling Simulation System Based on Unity 3D

Accession number: 20221411913572
Authors: Wang, Kuisheng (1); Li, Peng (1); Liu, Yuhao (1)
Author affiliation: (1) Xi'An Shiyou University, College of Computer, Xi'an, China
Source title: 2022 IEEE 2nd International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Abbreviated source title: IEEE Int. Conf. Power, Electron. Comput. Appl., ICPECA
Part number: 1 of 1
Issue title: 2022 IEEE 2nd International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Issue date: 2022
Publication year: 2022
Pages: 288-292
Language: English
ISBN-13: 9781665442763
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Power, Electronics and Computer Applications, ICPECA 2022
Conference date: January 21, 2022 - January 23, 2022
Conference location: Shenyang, China
Conference code: 177741
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Taking the oil drilling well site as the model, analyze the drilling movement process, and realize the dynamic simulation of the oil drilling process. We establish the 3D model of the oil derrick and import it into Unity 3D software. With the help of the animation system and physics engine of the software, carry out the dynamic simulation and interaction design of the oil well site equipment movement and realize the movement control of the equipment model in the virtual scene such as ascending, descending and rotating motion. The drilling string lifting experiment results show that the designed drilling engineering simulation system has great three-dimensional, interactive and realistic characteristics, which lays a foundation for the establishment of the virtual drilling simulation training system platform. © 2022 IEEE.
Number of references: 12
Main heading: 3D modeling
Controlled terms: Oil wells - Oil well drilling - Infill drilling - Simulation platform - Computer software
Uncontrolled terms: 3D models - 3d-modeling - Drilling engineering - Drilling simulations - Dynamics simulation - Modeling analyzes - Oil drilling - Simulation systems - Unity 3d - VR technology
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications
DOI: 10.1109/ICPECA53709.2022.9718992
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

422. Research on acoustic logging signal processing method based on wavelet transform

Accession number: 20223812766950
Authors: Tang, Jun (1); Zhou, Jiacheng (1); Wan, Dandan (1); Bai, Chenbo (1)
Author affiliation: (1) Electronic Engineering College, Xi'an Shiyou University, Xi'an, China
Corresponding author: Zhou, Jiacheng(cheng085208@163.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 761-764
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The wave of different components produced by the Sound wave logging is superimposed to each other, and the arrival time cannot be effectively analyzed using a conventional method. Wavelet analysis has good localized properties in the time domain and frequency domain, and it is easy to analyze and process sound wave logging signals. This paper mainly analyzes the characteristics of acoustic signals in acoustic logging, and uses wavelet transform for signal processing. Firstly, select the appropriate wavelet function according to the characteristics of the logging signal. Secondly, analyze the instantaneous frequency of the acoustic signal, and identify the first wave position of various acoustic components in the logging signal. In Finally, obtain the information of each sound wave component, and determine its sound wave component parameters, including time difference, main frequency, energy, etc. Using wavelet transform to analyze the sound wave signal can clearly get the change of each component of the sound wave with time, especially the position of the first wave of each component. The wavelet transform provides an effective method to extract the sonic components of sonic logging signals. © 2022 IEEE.
Number of references: 11
Main heading: Wavelet transforms
Controlled terms: Acoustic logging - Acoustic waves - Acoustics - Frequency domain analysis - Processing - Time domain analysis
Uncontrolled terms: Acoustic signals - Arrival time - Continuous Wavelet Transform - Conventional methods - Longitudinal waves - Processing method - Signal-processing - Transverse waves - Wave components - Wavelets transform
Classification code: 751 Acoustics, Noise. Sound - 751.1 Acoustic Waves - 751.2 Acoustic Properties of Materials - 913.4 Manufacturing - 921 Mathematics - 921.3 Mathematical Transformations - 941.2 Acoustic Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859171
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

423. A Novel Portable Apple Non-destructive Testing System Based on Regression Algorithm

Accession number: 20224913219146
Authors: Li, Juanni (1); Wang, Yiran (1); Ma, Kefei (1); Guan, Yangjuan (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, China
Corresponding author: Li, Juanni(ayykikilee@163.com)
Source title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022

Abbreviated source title: Int. Conf. Comput. Sci., Electron. Inf. Eng. Intell. Control Technol., CEI
Part number: 1 of 1
Issue title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Issue date: 2022
Publication year: 2022
Pages: 658-661
Language: English
ISBN-13: 9781665476164
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Conference date: September 23, 2022 - September 25, 2022
Conference location: Virtual, Online, China
Conference code: 184575
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This study mainly takes apples as the research object, and uses near-infrared spectroscopy as the means to establish the relationship model between the reflected light and sugar content of apples. The objective is to implement the optical detection concept to achieve non-destructive fruit sugar content detection using cellphones. This technique increases the speed of detection, lowers the cost of detection, and effectively supports the management of fruits both before and after production. © 2022 IEEE.
Number of references: 5
Main heading: Nondestructive examination
Controlled terms: Bridge decks - Fruits - Infrared devices - Near infrared spectroscopy
Uncontrolled terms: Apple sugar content - Near infrared light - Non destructive testing - Reflected light - Regression algorithms - Relationship model - Research object - Research use - Sugar content - Testing systems
Classification code: 401.1 Bridges - 821.4 Agricultural Products
DOI: 10.1109/CEI57409.2022.9950163
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

424. Application of Support Vector Machine Based on Particle Swarm Optimization in Classification and Prediction of Heart Disease

Accession number: 20222412230167
Authors: Xue, Tian (1); Jieru, Zhao (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computing, Xi'an, China
Corresponding author: Xue, Tian(1030379166@qq.com)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 857-860
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This heart disease is the number one killer of Chinese residents' health. Early detection of heart disease and timely treatment are of great significance to every heart disease patient. In this article, by mining the physical index

data of patients with heart disease, aiming at the problem that the optimal parameters in the traditional support vector machine model are difficult to find, particle swarm optimization is used to optimize, and a classification prediction model of heart disease based on particle swarm optimization support vector machine is established. The experimental results show that compared with the traditional support vector machine model, the optimized model improves the prediction accuracy by 1.33%, and also shortens the model training time, which helps to improve the diagnosis efficiency of heart disease. © 2022 IEEE.
Number of references: 10
Main heading: Particle swarm optimization (PSO)
Controlled terms: Cardiology - Diagnosis - Diseases - Forecasting - Heart - Patient treatment - Support vector machines - Vectors
Uncontrolled terms: Classification of heart disease - Data preprocessing - Heart disease - Heart disease prediction - Model optimization - Optimal parameter - Physical indices - Prediction of heart disease - Support vector machine models - Support vectors machine
Classification code: 461.2 Biological Materials and Tissue Engineering - 461.6 Medicine and Pharmacology - 723 Computer Software, Data Handling and Applications - 921.1 Algebra - 921.5 Optimization Techniques
Numerical data indexing: Percentage 1.33E+00%
DOI: 10.1109/ICSP54964.2022.9778616
Funding Details:
Funding text: ACKNOWLEDGMENT We are very grateful to Xi'an Shiyou University Graduate Student Innovation and Practice Ability Training Program for funding this article. The authorization number is YCS21213252.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

425. Accurate Evaluation of Cascaded Four-wave Mixing Products Generation in Fiber with Optical Feedback Based on Multilayer Perceptron

Accession number: 20224813191542
Authors: Wen, Jin (1); Sun, Wei (1); Qin, Weijun (1); He, Chenyao (1); Xiong, Keyu (1); Liang, Bozhi (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an, China
Source title: 2022 IEEE International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale, 3M-NANO 2022 - Proceedings
Abbreviated source title: IEEE Int. Conf. Manip., Manuf. Meas. Nanoscale, 3M-NANO - Proc.
Part number: 1 of 1
Issue title: 2022 IEEE International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale, 3M-NANO 2022 - Proceedings
Issue date: 2022
Publication year: 2022
Pages: 407-410
Language: English
ISBN-13: 9781665475433
Document type: Conference article (CA)
Conference name: 2022 IEEE International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale, 3M-NANO 2022
Conference date: August 8, 2022 - August 12, 2022
Conference location: Tianjin, China
Conference code: 184382
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The introduction of optical feedback mechanism enhances the cascaded four-wave mixing (CFWM) effect in high nonlinear fiber, and the machine learning algorithm is used to optimize and predict the bandwidth and number of the CFWM products through controlling parameters in high nonlinear fiber, such as fiber length, pump power and feedback coefficient. Compared with the single pass situation, the results show that the bandwidth is increased to 300 nm with up to 41 products, and the products number is also improved by introducing optical feedback strategy. The comparison between the simulation results and machine learning results demonstrated that the neural network model has the potential for analyzing and predicting the CFWM products in the high nonlinear fiber with a feedback system. The model is characterized by MSE below 0.01 and improves the time efficiency by 81.9%. This research can pave the way for realizing cross-over studies bridge between nonlinear fiber optics and machining learning. © 2022 IEEE.
Number of references: 14
Main heading: Bandwidth

Controlled terms: Feedback control - Fibers - Four wave mixing - Learning algorithms - Learning systems - Machine learning - Multilayers - Optical feedback - Optical multilayers - Optical signal processing
Uncontrolled terms: Cascaded four-wave mixing - Feed-back based - Feedback mechanisms - High nonlinear - In-fiber - Machining learning - Multi layer perceptron networks - Multilayers perceptrons - Non-linear fiber - Product generation
Classification code: 716.1 Information Theory and Signal Processing - 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 731.1 Control Systems - 741.3 Optical Devices and Systems
Numerical data indexing: Percentage 8.19E+01%, Size 3.00E-07m
DOI: 10.1109/3M-NANO56083.2022.9941668
Funding Details: Number: 2018KJXX-042, Acronym: -, Sponsor: -; Number: 61505160, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: SKLST202108, Acronym: SKLTOP, Sponsor: State Key Laboratory of Transient Optics and Photonics; Number: 2019JM-084, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: ACKNOWLEDGMENT This work was supported by the National Natural Science Foundation of China under Grant No. 61505160, the Innovation Capability Support Program of Shaanxi (Program No. 2018KJXX-042), the Natural Science Basic Research Program of Shaanxi (Program No. 2019JM-084), the State Key Laboratory of Transient Optics and Photonics (SKLST202108).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

426. Design and analysis of LNG cold energy cascade utilization system integrating light hydrocarbon separation, organic Rankine cycle and direct cooling

Accession number: 20222912367755
Authors: Pan, Jie (1, 2); Li, Mofan (1); Li, Ran (1); Tang, Linghong (3); Bai, Junhua (1)
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Source title: Applied Thermal Engineering
Abbreviated source title: Appl Therm Eng
Volume: 213
Issue date: August 2022
Publication year: 2022
Article number: 118672
Language: English
ISSN: 13594311
CODEN: ATENFT
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: To effectively recover the cold energy released in the liquefied natural gas (LNG) regasification process, this paper constructs a novel LNG cold energy cascade integrated utilization system. In the system, the LNG cold energy in low temperature zone is used for light hydrocarbon separation (LHS), and the remaining cold energy is divided into two parts. One part is used for organic Rankine cycle (ORC) as well as data center cooling (DCC), and the other part is used for cold warehouse cooling (CWC). The thermodynamic and economic analysis of the system is carried out in detail, and the multi-objective optimization based on NSGA-II is implemented to investigate the optimal performance. The results show that the net power output of the system is 4259.72 kW, much larger than that of the LNG cold energy single utilization system for LHS in reference, and the cold energy for data center and cold warehouse is equivalent to saving 12685.87 kW electric energy. Furthermore, the revenue of the system in 20 years is 2.9982 × 109 $, more than that of the reference system. Through the net present value analysis, it is found that the system is more sensitive to the ethane price than to electric price. © 2022 Elsevier Ltd
Number of references: 53
Main heading: Liquefied natural gas
Controlled terms: Cooling - Economic analysis - Hydrocarbons - Multiobjective optimization - Rankine cycle - Separation - Temperature - Thermoanalysis

Uncontrolled terms: Cold energy - Direct cooling - Economics analysis - Hydrocarbon separation - Light hydrocarbon - Light hydrocarbon separation - Liquefied natural gas cold energy - Organic rankine cycle - Organics - Thermo dynamic analysis
Classification code: 523 Liquid Fuels - 641.1 Thermodynamics - 641.2 Heat Transfer - 801 Chemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 911.2 Industrial Economics - 921.5 Optimization Techniques
Numerical data indexing: Age 2.00E+01yr, Power 1.268587E+07W, Power 4.25972E+06W
DOI: 10.1016/j.applthermaleng.2022.118672
Funding Details: Number: 51774237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This study was supported by the National Natural Science Foundation of China (Grant No. 51774237).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

427. Analysis of response characteristics of ground-well transient electromagnetic method

Accession number: 20223812766785
Authors: Su, Yachao (1); Song, Xijin (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 5-8
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The ground-well transient electromagnetic method is a new electromagnetic exploration method derived from the traditional transient electromagnetic method, which can greatly improve the exploration efficiency. In this paper, based on the theory of ground-well TEM, COMSOL finite element software is used to establish the ground-well exploration model, and the corresponding characteristics of transient electromagnetic under different emission current intensity and after the abnormal body conductivity changes under the condition of inhomogeneous formation are studied respectively, laying a foundation for the subsequent inversion work. © 2022 IEEE.
Number of references: 5
Main heading: Transient analysis
Uncontrolled terms: COMSOL - Electromagnetics - Exploration methods - Exploration model - Finite element software - Ground-well detection - The response characteristic - Transient electromagnetic methods - Transient electromagnetics
DOI: 10.1109/ICMSP55950.2022.9859094
Funding Details: Number: 42004064, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT National Natural Science Foundation of China (42004064);
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

428. Improved KCF algorithm and its application to target lost prediction

Accession number: 20223812766897

Authors: Fei, Yu-Qi (1); Gao, Guo-Wang (1); Wu, Dan (1); Wang, Fei (1); Wang, Ze-Tian (1)
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Corresponding author: Gao, Guo-Wang(wwgao@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 996-1000
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to solve the tracking drift problem in the obscured environment and reduce the failure rate of target tracking in the obscured scene, this paper proposes a target loss warning mechanism in the obscured situation based on the traditional KCF algorithm, which uses the analysis of the 3D response map during the target tracking process, and uses the response maximum (Fmax) and the average value of the response between 2 adjacent frames to measure the tracking status of the target and determine whether the target has tracking drift. At the same time, the APCE evaluation criterion is used to reduce unnecessary model updates and increase the speed of computation. The simulation results demonstrate that the target loss warning mechanism can accurately warn the KCF algorithm when tracking drift occurs, and the tracking success rate and tracking accuracy can be improved by 9.5% and 5.3% respectively compared to the traditional target tracking algorithm in the occlusion scenario. © 2022 IEEE.
Number of references: 21
Main heading: Target tracking
Controlled terms: Clutter (information theory) - Failure analysis
Uncontrolled terms: APCE - Correlation filters - Drift problem - Failure rate - Filter algorithm - ITS applications - Kernel correlation filter - Target loss - Targets tracking - Warning mechanisms
Classification code: 716.1 Information Theory and Signal Processing
Numerical data indexing: Percentage 5.30E+00%, Percentage 9.50E+00%
DOI: 10.1109/ICMSP55950.2022.9858984
Funding Details: Number: YCS21213226, Acronym: -, Sponsor: -; Number: 2020KJRC0095, Acronym: -, Sponsor: -; Number: 2021GY-168,2022GY-435, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: ACKNOWLEDGMENT This project is supported by Shaanxi Provincial Key Research and Development Program (2021GY-168) and (2022GY-435), Xi'an Science and Technology Plan (2020KJRC0095), the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi 'an Shiyou University (YCS21213226).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

429. Study on the Influence of AC Stray Current on Buried Long Distance Pipeline

Accession number: 20223812766594
Authors: Zhang, Yansong (1); Li, Lin (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022

Publication year: 2022
Pages: 683-686
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the rapid development of China's national economy and long-distance pipeline, the problems of parallel and cross laying of pipelines, transmission lines and railways are becoming increasingly prominent. AC interference corrosion threatens the safety of tube body, anticorrosive coating and cathodic protection equipment. The widespread application of UHV transmission lines puts forward higher requirements for pipeline design and operation safety. In order to reduce the harm of high-voltage transmission lines to pipelines, the mechanism of the influence of ac stray current on pipelines was analyzed, an experimental platform of AC interference corrosion was built, the influence of ac stray current density on corrosion rate was studied by weight loss method of corrosion specimens, and the protection measures and evaluation conditions of stray current were proposed. © 2022 IEEE.
Number of references: 11
Main heading: Corrosion rate
Controlled terms: Cathodic protection - Corrosion resistant coatings - Electric lines - Pipeline corrosion - Pipelines - Underground corrosion
Uncontrolled terms: AC interference - AC stray current - Anti-corrosive coatings - Long distance pipelines - National economy - Pipeline transmission - Pipeline weightlessness - Protective measures - Stray current - Transmission-line
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 619.1 Pipe, Piping and Pipelines - 706.2 Electric Power Lines and Equipment
DOI: 10.1109/ICMSP55950.2022.9859236
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

430. Wireless Localization Using Combined RSS-AOA Measurements With Anchor Position Uncertainty

Accession number: 20231513884214
Authors: Wang, Qi (1); Jiang, Xianshun (1); Li, Fei (1)
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Source title: 2022 4th International Conference on Frontiers Technology of Information and Computer, ICFTIC 2022
Abbreviated source title: Int. Conf. Front. Technol. Inf. Comput., ICFTIC
Part number: 1 of 1
Issue title: 2022 4th International Conference on Frontiers Technology of Information and Computer, ICFTIC 2022
Issue date: 2022
Publication year: 2022
Pages: 659-662
Language: English
ISBN-13: 9798350321951
Document type: Conference article (CA)
Conference name: 4th International Conference on Frontiers Technology of Information and Computer, ICFTIC 2022
Conference date: December 2, 2022 - December 4, 2022
Conference location: Virtual, Online, China
Conference code: 187555
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Received signal strength (RSS) and angle of arrival (AOA) measurements have been widely applied in wireless localization due to their specific merits, e.g., easy access of measurements and simple system structure.

Recently, these two types of measurements have been successfully combined to achieve better localization accuracy over either AOA-only or RSS-only localization. In the existing work, the anchor positions are usually assumed to exactly known. Unfortunately, in practice, they are inevitably subject to errors, which induces uncertainties for localization. The uncertainties directly affect the localization accuracy, as anchor positions also act as measurements in the localization process. In this paper, we propose a combined RSS-AOA localization method, which is able to deal with anchor position uncertainty. The main idea is to model the position uncertainty as Gaussian noise and formulate the location estimation problem with the maximum likelihood (ML) criterion. Then, tight approximation and proper relaxation are utilized to obtain a convex problem. Numerical examples demonstrate the performance superiority of the proposed method, compared with some state-of-art methods. © 2022 IEEE.
Number of references: 12
Main heading: Direction of arrival
Controlled terms: Gaussian noise (electronic) - Maximum likelihood estimation - Numerical methods - Uncertainty analysis
Uncontrolled terms: Aoa (angleof-arrival) - Localisation - Localization accuracy - Measurement system - Position uncertainties - Received signal angle - Received signal strength - SDP - Uncertainty - Wireless localization
Classification code: 716.1 Information Theory and Signal Processing - 921.6 Numerical Methods - 922 Statistical Methods - 922.1 Probability Theory
DOI: 10.1109/ICFTIC57696.2022.10075208
Funding Details: Number: YCS22215315, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022JQ-641, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: Research supported in part by Natural Science Basic Research Plan in Shaanxi Province of China under Grant No. 2022JQ-641, in part by the Postgraduate Innovation and Practice Ability Development Fund of Xi'an Shiyou University under Grant No. YCS22215315, and in part by National Natural Science Foundation of China under Grant No. U20B2029
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

431. On the Innovative Work and Development of Library Reader Service in the Era of Artificial Intelligence (*Open Access*)

Accession number: 20222412208001
Authors: Zhang, Xinwen (1)
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Source title: Wireless Communications and Mobile Computing
Abbreviated source title: Wireless Commun. Mobile Comput.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3779660
Language: English
ISSN: 15308669
E-ISSN: 15308677
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: With the continuous development of science and technology, the automated management of libraries has been continuously improved in order to better serve readers and improve the work efficiency of library managers. This paper mainly discusses the innovative path of library automation in the new era of artificial intelligence. Combined with the development of our school's library in recent years, it is discussed to create a new situation of public library service for readers by creating an atmosphere, caring for disadvantaged groups, innovating reader activities, and expanding service content. According to the design idea and implementation process of the ant colony optimization neural network model, we propose a global search strategy - ant colony optimization algorithm - as the learning algorithm of the neural network model for library reader service evaluation. © 2022 Xinwen Zhang.
Number of references: 27
Main heading: Libraries
Controlled terms: Ant colony optimization - Artificial intelligence

Uncontrolled terms: Automated management - Continuous development - Development of science and technologies - Disadvantaged groups - Library automation - Library services - Neural network model - Public library - School libraries - Work efficiency
Classification code: 723.4 Artificial Intelligence - 903.4.1 Libraries - 921.5 Optimization Techniques
DOI: 10.1155/2022/3779660
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

432. Research on Failure Risk Prediction System Based on BP Neural Network

Accession number: 20222412229504
Authors: Yu, FeiYuan (1); Gao, Weixin (1); Yan, Huan (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xian, China
Corresponding author: Gao, Weixin(965919342@qq.com)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1636-1640
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Pipe transport is an important part of the national economic infrastructure. As its corrosion is more serious, it is necessary to predict the failure pressure of the corrosion pipe. A prediction method based on neural network is proposed for how to accurately predict the failure pressure of corrosion pipeline. According to different corrosion pipe blasting test data, analysis, screening out of factors affecting pipe failure pressure; after the BP neural network is trained, it is used for predictions for pipeline failure pressure. Through example verification, the results show that the training model based on the BP neural network is the highest in the hidden layer is 12, reaching 93.8%, compared to other methods, which proves better fit of this prediction model. Degree and prediction accuracy, © 2022 IEEE.
Number of references: 15
Main heading: Pipelines
Controlled terms: Failure (mechanical) - Forecasting - Multilayer neural networks - Pipeline corrosion
Uncontrolled terms: BP neural networks - Corrosion defect - Economic infrastructure - Failure pressure - Failure risk - Neural-networks - Prediction methods - Prediction systems - Risk predictions - Safety evaluations
Classification code: 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines
Numerical data indexing: Percentage 9.38E+01%
DOI: 10.1109/ICSP54964.2022.9778511
Funding Details: Number: 2020GY, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by the Key R&D Province (2020GY? 179) and Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS21113143)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

433. Three-dimensional interwell electromagnetic detection

Accession number: 20214711200985
Authors: Song, Xijin (1); Wang, Xuelong (1); Jia, Huiqin (1); Ren, Zhiping (1); Lei, Lin (1); Xiao, Junren (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Corresponding author: Song, Xijin(sxj@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 209
Issue date: February 2022
Publication year: 2022
Article number: 109839
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Electromagnetic methods play an important role in the exploration and development of oil and gas resources and metal minerals. The ground electromagnetic method is largely limited by the detection depth and resolution in actual work. In order to improve the detection accuracy and working efficiency of interwell electromagnetic detection, this paper proposes a three-dimensional inter-well electromagnetic detection method. The method utilises one or more production wells in the production well pattern to construct a transmission galvanic couple source, which effectively reduces the shielding effect of the metal casing on the transmission signal in the well and improves the transmission signal power. The downhole and the ground receiving arrays were used for simultaneous observation, with high observation network density and detection accuracy. With pseudo-random multi-frequency signals as excitation, the working efficiency of the electromagnetic detection is significantly improved. The downhole receiving array makes the measuring electrode closer to the target geological body, increasing the response signal intensity of the anomalous body. Meanwhile, the impact of electromagnetic interference on the ground is effectively reduced, and the detection depth is increased. The ground receiving array is composed of multiple measurements points located on concentric circular measuring lines, which is beneficial for the identification of the azimuth and angle information of underground geological targets. A detection model for anomalous bodies with different parameters in the formation was established. Numerical results show that for anomalous bodies with different resistivities in the formation, the electric field response curves on the ground and the downhole receiving arrays are significantly different. Because the emission source is located on the symmetry axis of the model, the excited field is distributed axisymmetrically. The ground observation response can effectively identify anomalous bodies with different azimuths and electrical parameters in the formation. The downhole observation response is sensitive to the upper and lower interfaces of the abnormal body, and the depth information of the abnormal body can be accurately determined. The calculation results of the oilfield water injection dynamic monitoring model show that the electric field response curves on the ground receiving arrays of different measuring lines can effectively reflect the water injection process of the underground reservoir, including the direction of water penetration and the change in reservoir resistivity. The research results show that this method can better identify the resistivity characteristics, azimuth information, and depth information of anomalous downhole bodies, while effectively delineating the reservoir boundary and revealing reservoir changes. This provides a theoretical basis and technical ideas for the three-dimensional electromagnetic detection of complex interwell geological bodies. © 2021 Elsevier B.V.
Number of references: 39
Main heading: Electric lines
Controlled terms: Electric excitation - Feature extraction - Electric fields - Electromagnetic shielding - Geology - Energy resources - Efficiency - Electromagnetic pulse
Uncontrolled terms: Detection depths - Downholes - Electromagnetic detection - Electromagnetic methods - Features extraction - Interwell - Pseudo-random - Pseudo-random electromagnetic method - Receiving arrays - Three dimensional detection
Classification code: 481.1 Geology - 525.1 Energy Resources and Renewable Energy Issues - 701 Electricity and Magnetism - 701.1 Electricity: Basic Concepts and Phenomena - 706.2 Electric Power Lines and Equipment - 913.1 Production Engineering
DOI: 10.1016/j.petrol.2021.109839
Funding Details: Number: 41604122, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research was funded by National Natural Science Foundation of China under grant number 41604122 .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

434. A study of aspect-level sentiment analysis based on deep learning

Accession number: 20232214152732
Authors: Chen, Yenan (1); Li, Yingjia (1); Ma, Juntao (1)

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Source title: Proceedings - 2022 2nd International Symposium on Artificial Intelligence and its Application on Media, ISAIAM 2022
Abbreviated source title: Proc. - Int. Symp. Artif. Intell. its Appl. Media, ISAIAM
Part number: 1 of 1
Issue title: Proceedings - 2022 2nd International Symposium on Artificial Intelligence and its Application on Media, ISAIAM 2022
Issue date: 2022
Publication year: 2022
Pages: 6-9
Language: English
ISBN-13: 9781665485418
Document type: Conference article (CA)
Conference name: 2nd International Symposium on Artificial Intelligence and its Application on Media, ISAIAM 2022
Conference date: June 10, 2022 - June 12, 2022
Conference location: Virtual, Online, China
Conference code: 188420
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The study of aspect-level sentiment analysis using deep learning methods is one of the more important research directions in the field of natural language processing in recent years. In this paper, we address the problem of insufficient extraction of deep semantic features in existing aspect-level sentiment analysis research, design and build a sentiment analysis model based on the pre-trained language model BERT, fuse BiLSTM and GCN deep learning methods, analyze the sentiment tendency on the collected product review dataset, design relevant experiments to compare in the same application scenario, and verify the effectiveness of the proposed model. © 2022 IEEE.
Number of references: 10
Main heading: Sentiment analysis
Controlled terms: Deep learning - Learning systems - Product design - Semantics
Uncontrolled terms: Analysis models - Aspect-level - BERT - Design and build - Language processing - Learning methods - Natural languages - Research designs - Semantic features - Sentiment analysis
Classification code: 461.4 Ergonomics and Human Factors Engineering - 723.2 Data Processing and Image Processing - 913.1 Production Engineering
DOI: 10.1109/ISAIAM55748.2022.00009
Funding Details: Number: YCS22113164, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT We thank the postgraduate innovation and practical ability training program of Xi'an University of Petroleum for funding this paper. The authorization number is YCS22113164.We thank the postgraduate innovation and practical ability training program of Xi'an University of Petroleum for funding this paper. The authorization number is YCS22113164.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

435. The Role of Music Therapy in the Emotional Regulation and Psychological Stress Relief of Employees in the Workplace (*Open Access*)

Accession number: 20220711626775
Authors: Mao, Nan (1)
Author affiliation: (1) Music Department, Xi'An Shiyou University, Shanxi, Xi'an; 710065, China
Corresponding author: Mao, Nan(maonan_vip@outlook.com)
Source title: Journal of Healthcare Engineering
Abbreviated source title: J. Healthc. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4260904
Language: English
ISSN: 20402295
E-ISSN: 20402309
Document type: Journal article (JA)

Publisher: Hindawi Limited
Abstract: With the increasing global attention to the problem of staff stress, scholars in the fields of sociology, psychology, and medicine are seeking effective solutions. Music therapy has entered the field of vision of scholars with its unique advantages and is used to maintain the mental health of workers in various industries and improve work efficiency. To solve the problem of employees' psychological pressure, ordinary psychotherapy is mainly done through conversation. At present, the psychological pressure generated by employees in the workplace is obviously unable to be treated by ordinary psychological treatment methods. Music therapy can play its role in this situation. This article collects a large amount of data through surveys to obtain the job satisfaction data of medical care, education, and restaurant staff for the corresponding occupations, analyzes the data, and considers the role of music therapy in this type of industry to relieve the psychological pressure of relevant staff. In the end, it is concluded that music therapy can stimulate employees' creative inspiration, eliminate employee fatigue, and eliminate some potential unfavorable factors. It can also enhance the friendship between employees, improve employee work efficiency and employees' sense of corporate identity, and reduce employee pain sense. In general, music therapy can have a positive impact in many areas, especially in corporate applications, which can have a positive impact on employees in many aspects in the workplace. © 2022 Nan Mao.
Number of references: 24
Main heading: Efficiency
Controlled terms: Stress relief - Job satisfaction
Uncontrolled terms: Creatives - Effective solution - Large amounts of data - Mental health - Music therapy - Psychological stress - Psychological treatments - Treatment methods - Work efficiency - Workers'
Classification code: 912.4 Personnel - 913.1 Production Engineering
DOI: 10.1155/2022/4260904
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

436. Pmsm Position Tracking Based On Improved Sliding Mode Reaching Law And Nonlinear Disturbance Observer

Accession number: 20232014084851
Authors: Yan, Hongliang (1); Zhang, Jianan (1); Long, Hulin (1)
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Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 12253
Part number: 1 of 1
Issue title: International Conference on Automation Control, Algorithm, and Intelligent Bionics, ACAIB 2022
Issue date: 2022
Publication year: 2022
Article number: 122530J
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510655072
Document type: Conference article (CA)
Conference name: 2022 International Conference on Automation Control, Algorithm, and Intelligent Bionics, ACAIB 2022
Conference date: March 25, 2022 - March 27, 2022
Conference location: Qingdao, China
Conference code: 188171
Sponsor: Academic Exchange Information Center (AEIC)
Publisher: SPIE
Abstract: In order to improve the position tracking accuracy and system control performance of permanent magnet synchronous motor in a complex environment, an improved backstepping sliding mode position tracking control method based on traditional sliding mode control is proposed. The sliding mode reaching law is optimized, the exponential reaching law is combined with the power reaching law, and the traditional symbolic function is replaced by the

hyperbolic tangent function. According to the backstepping control principle, the appropriate Lyapunov function and virtual control quantity are obtained, and the position servo system controller is obtained by combining the sliding mode control. Aiming at the influence of parameter perturbation and external uncertain disturbance on the motor, the nonlinear disturbance observer is used to estimate it and feedback it to the backstepping sliding mode controller for compensation. Finally, the simulation in Matlab/Simulink shows that this method improved the response speed of position tracking, reduced the tracking error, and improved the anti-interference ability. © 2022 SPIE.
Number of references: 16
Main heading: Sliding mode control
Controlled terms: Backstepping - Controllers - Exponential functions - Hyperbolic functions - Inverse problems - Lyapunov functions - MATLAB - Permanent magnets - Position control - Servomechanisms - Synchronous motors - Tracking (position) - Uncertainty analysis
Uncontrolled terms: Disturbance observer - Hyperbolic tangent function - Inverse sliding mode control - Nonlinear disturbance - Nonlinear disturbance observer - Reaching law - Sliding modes - Sliding-mode control - Tracking accuracy - Tracking system
Classification code: 704.1 Electric Components - 705 Electric Generators and Motors - 705.3.1 AC Motors - 723.5 Computer Applications - 731.1 Control Systems - 731.3 Specific Variables Control - 732.1 Control Equipment - 921 Mathematics - 922.1 Probability Theory - 961 Systems Science
DOI: 10.1117/12.2639381
Funding Details: Number: 15JS084, Acronym: -, Sponsor: -; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This paper is funded by the Shaanxi Provincial Department of Education Key Laboratory Project (15JS084) and the innovative and practical ability training program of graduate students in Xi 'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

437. Low-dose CT image reconstruction based on a deep neural network

Accession number: 20223512639521
Authors: Li, Jing (1); Huang, Xiaoyan (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Li, Jing(lijing@xsyu.edu.cn)
Source title: IEEE Joint International Information Technology and Artificial Intelligence Conference (ITAIC)
Abbreviated source title: ITAIC - IEEE Jt. Int. Inf. Technol. Artif. Intell. Conf.
Volume: 2022-June
Part number: 1 of 1
Issue title: IEEE 10th Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2022
Issue date: 2022
Publication year: 2022
Pages: 1356-1359
Language: English
ISSN: 26932865
ISBN-13: 9781665422079
Document type: Conference article (CA)
Conference name: 10th IEEE Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2022
Conference date: June 17, 2022 - June 19, 2022
Conference location: Chongqing, China
Conference code: 181640
Sponsor: Chengdu Global Union Institute of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; IEEE Harbin Section
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Computed tomography (CT) technology plays an important role in the field of medicine. It helps the doctor give the accurately judgement of lesions through the clear CT image. But the patients can't afford a large amount of radiation to obtain the clear CT image. Therefore, the problem of low-dose CT image reconstruction is particularly prominent. This paper presents a low-dose CT image reconstruction method based on deep learning algorithm. The multi-layers convolution network is constructed to deeply mine the features of the input data, so as to weaken the noise signal in the original data and obtain a clear and identifiable reconstructed image. This method aims at the processing of low-dose projection data, avoids the radiation damage of the irradiated party, and reduces the energy loss of the

equipment. Through the analysis of the experimental results, this paper summarizes the future work in image detail information capture and database expansion, so as to improve the overall image reconstruction quality. © 2022 IEEE.
Number of references: 12
Main heading: Image reconstruction
Controlled terms: Computerized tomography - Deep neural networks - Energy dissipation - Image enhancement - Learning algorithms - Medical imaging - Network layers - Radiation damage
Uncontrolled terms: Computed tomograph - Computed tomography images - Deep learning - Dose computed tomographies - Image reconstruction methods - Images reconstruction - Large amounts - Low dose - Multi-layers - Tomographs
Classification code: 461.1 Biomedical Engineering - 461.4 Ergonomics and Human Factors Engineering - 525.4 Energy Losses (industrial and residential) - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 723.5 Computer Applications - 746 Imaging Techniques
DOI: 10.1109/ITAIC54216.2022.9836873
Funding Details: Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENTS This study was supported by neural network based visual sensing algorithm research project from Xi’an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

438. Research on Features of Learning Engagement Based on Random Forest

Accession number: 20223812766872
Authors: Wang, Ping (1); Liu, Ke-Man (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1088-1093
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Learning engagement is an important factor affecting the classification of learning effects. In order to solve the problem of accurate classification of learning effect in small sample data set of professional courses, this paper uses the Random Forest algorithm to analyze the learning engagement on the classification of learning effect. Firstly, the data of 173 students in the course of digital transmission principle and system from 2019 to 2021 are taken as samples to abstract the learning features including behavioral and cognitive engagement. Seven machine learning algorithms, including Random Forest and Gradient Boosting Decision Tree (GBDT), are used to train and learn to evaluate the accuracy of the learning effect model. Among them, the classification accuracy of random forest algorithm and GBDT can reach 80.77% and 89%, respectively. Finally, the feature importance of Random Forest is used to analyze the factors affecting the learning effect. The importance of behavioral engagement accounts for 41%, and cognitive engagement accounts for 59%. The results show that taking learning engagement as the evaluation model and index system of learning effect can guide the course teaching scientifically and reasonably. © 2022 IEEE.
Number of references: 6
Main heading: Decision trees
Controlled terms: Adaptive boosting - Classification (of information) - Learning systems - Random forests

Uncontrolled terms: Data set - Digital transmission - Feature importance - Gradient boosting - Learning effects - Learning engagement - Random forest algorithm - Random forests - Small sample datum - Transmission systems
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
Numerical data indexing: Percentage 4.10E+01%, Percentage 5.90E+01%, Percentage 8.077E+01%, Percentage 8.90E+01%
DOI: 10.1109/ICMSP55950.2022.9858950
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

439. Energy spectrum logging interpretation platform study

Accession number: 20223812766952
Authors: Li, Changxing (1); Qiao, Weijie (1); Li, Yongkai (1); Tian, Yongyong (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 197-200
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the rapid development of logging in our country, the problems of logging are increasing day by day. In order to understand the situation of underground well more directly on the surface, this paper will design an energy spectrum logging interpretation platform. On the basis of data format conversion to VIS, the energy spectrum is analyzed by smoothing, peak-seeking, stacking, drift correction, counting and curve conversion, from which the changing state of elements is obtained and the water absorption of perforated layer is analyzed Adaptive filtering is used to eliminate curve noise, and curve stitching, translation and depth correction are carried out. Through energy spectrum analysis and curve data editing, the related information of oil well data interpretation is obtained, then, NULL neutron lifetime, C/O ratio and C/H ratio are used to interpret the data, and the interpretation results are output by WYSIWYG. © 2022 IEEE.
Number of references: 6
Main heading: Carbon
Controlled terms: Adaptive filtering - Adaptive filters - Curve fitting - Data handling - Oil wells - Oxygen - Spectroscopy - Spectrum analysis - Water absorption
Uncontrolled terms: Carbon to oxygen ratio - Curve conversion - Data format conversion - Drift correction - Energy spectrum - Energy spectrum logging - Hydrocarbon ratio - Logging interpretation - Oxygen ratios - Stackings
Classification code: 512.1.1 Oil Fields - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations - 804 Chemical Products Generally - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859173
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

440. Design of multi-channel data acquisition and transmission system

Accession number: 20223812766937
Authors: Lu, Jian (1); Liu, Feng (1); Guo, Yingna (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 729-732
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at a multi-channel data acquisition and transmission system based on FPGA, the design scheme, functional circuit and logic design method of the system are introduced in detail. The system uses FPGA as the control core to control TLC2543 analog-to-digital converter and complete the circulation acquisition of 11-channel analog data. The transmission end uses Ethernet chip RTL8201 to communicate with the upper computer, which can monitor the data changes of each channel. The correctness of each function module is verified by software simulation. The design can meet the requirements of multi-channel signal acquisition and transmission. © 2022 IEEE.
Number of references: 7
Main heading: Field programmable gate arrays (FPGA)
Controlled terms: Analog to digital conversion - Computer software - Data acquisition - Data communication systems - Data handling - Ethernet - Integrated circuit design - Signal processing
Uncontrolled terms: Analog-to-digital conversions - Analogue-to-digital conversion - Data acquisition and transmissions - Data acquisition system - Design method - Design scheme - Functional circuits - Multichannel data - System use - Transmission systems
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 716.1 Information Theory and Signal Processing - 721.2 Logic Elements - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICMSP55950.2022.9859158
Funding Details:
Funding text: ACKNOWLEDGMENT This research is supported by the foundation project: Xi’an Shiyou University’s Graduate Innovation and Practical Ability Training Program.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

441. Research on RF data transmission technology based on intelligent water injection system

Accession number: 20231313803179
Authors: Xue, Baoshan (1)
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Corresponding author: Xue, Baoshan(xbs961010@163.com)
Source title: 2022 4th International Academic Exchange Conference on Science and Technology Innovation, IAECST 2022
Abbreviated source title: Int. Acad. Exch. Conf. Sci. Technol. Innov., IAECST

Part number: 1 of 1
Issue title: 2022 4th International Academic Exchange Conference on Science and Technology Innovation, IAECST 2022
Issue date: 2022
Publication year: 2022
Pages: 821-824
Language: English
ISBN-13: 9798350320008
Document type: Conference article (CA)
Conference name: 4th International Academic Exchange Conference on Science and Technology Innovation, IAECST 2022
Conference date: December 9, 2022 - December 11, 2022
Conference location: Virtual, Online, China
Conference code: 187297
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The most important part in oilfield exploitation is to carry out oilfield water injection operation to improve the recovery efficiency of the oilfield. To solve the data transmission problem of layered water injection system in oilfield, this paper designs a radio frequency data transmission technology based on water injection system. The system uses the minimum system to realize the data transmission from ground to underground water injection Wells. The underground capture device captures the electronic tag carrying data instructions and extracts and processes the data. Finally, the data is transmitted to different reservoir water distributors through the downhole reader and the water distributors are scheduled to realize intelligent water injection. Wireless data transmission is used to improve the efficiency of reservoir water injection. © 2022 IEEE.
Number of references: 12
Main heading: Radio waves
Controlled terms: Data communication systems - Data transfer - Efficiency - Groundwater - Oil fields - Radio frequency identification (RFID) - Radio transmission
Uncontrolled terms: Data transmission technologies - Data-transmission - Intelligent water injection - Oilfield exploitation - Oilfield waters - Radio-frequency-identification - Reservoir water - RF data - Technology-based - Water injection systems
Classification code: 444.2 Groundwater - 512.1.1 Oil Fields - 711 Electromagnetic Waves - 716.3 Radio Systems and Equipment - 731.1 Control Systems - 913.1 Production Engineering
DOI: 10.1109/IAECST57965.2022.10062001
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

442. Prediction of PM2.5 concentration in Xi 'an city based on BP neural network

Accession number: 20222412230171
Authors: Zhang, Xianwei (1); Liu, Dawei (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China
Corresponding author: Zhang, Xianwei(xwzhang@xsyu.edu.cn)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1646-1651
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: In view of the deficiency of the traditional PM2.5 concentration prediction model, this paper proposes a PM2.5-hour concentration multi-step prediction model based on BP neural network, combining pm2.5 influencing factors with its historical concentration data as input to the prediction model. Firstly, according to the air quality detection data from December 1, 2019 to November 30, 2020 in Xi'an, the correlation analysis of the effects of PM10, SO2, NO2, CO and O3 air pollutants on PM2.5 concentration was carried out. Then, based on the analysis results of relevant influencing factors, the current forecast values of PM10, SO2, NO2, CO, O3 and the historical concentration of the k-order of PM2.5 were determined as input values of the neural network, and the optimal value of the historical concentration order k was determined by trial. The BP neural network model is used to simulate and predict pm2.5 concentrations in different times in Xi'an, and the final results show that the prediction model can obtain accurate prediction values in each time. © 2022 IEEE.
Number of references: 10
Main heading: Forecasting
Controlled terms: Air quality - Neural networks - Nitrogen oxides - Quality control
Uncontrolled terms: BP neural networks - Concentration data - Concentration prediction - Model-based OPC - Multi-step prediction - Pm2.5 - PM2.5 concentration - Pollution prevention - Prediction modelling - Xi'an cities
Classification code: 451.2 Air Pollution Control - 804.2 Inorganic Compounds - 913.3 Quality Assurance and Control
Numerical data indexing: Size 5.1308E+01m
DOI: 10.1109/ICSP54964.2022.9778625
Funding Details: Number: 2020GY-038,2021GY-083, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2020JM-543, Acronym: -, Sponsor: Social Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by the Shaanxi Province Social Science Foundation Project(2020JM-543) and the Key Research and Development Program of Shaanxi Province (2020GY-038, 2021GY-083).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

443. Application of Risk Assessment Model for Breast Cancer

Accession number: 20222412229965
Authors: Yang, HuaiZhou (1); Luo, Tian (1); Liu, ChenZhuo (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 844-847
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Looking for a risk assessment model is of great significance for predicting, preventing and diagnosing breast cancer. This paper collects relevant data from SEER database(Survey, Epidemiology, and End Results), uses SVM (Support Vector Machine) and random forest in data mining to predict the possibility of breast cancer, and discusses the application value of Gail breast cancer risk assessment model. Finally, the prediction results based on three risk assessment models are analyzed. The analysis results show that the prediction accuracy rate of Gail model is more excellent. © 2022 IEEE.
Number of references: 8
Main heading: Support vector machines
Controlled terms: Data mining - Decision trees - Diseases - Forecasting - Risk assessment
Uncontrolled terms: Accuracy rate - Breast Cancer - Breast cancer risk assessments - Gail model - Prediction accuracy - Random forests - Risk assessment - modelling - Support vectors machine

Classification code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 914.1 Accidents and Accident Prevention - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
DOI: 10.1109/ICSP54964.2022.9778357
Funding Details: Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENT This work is supported by the graduate student innovation and practice ability training program of Xi'an Shiyou University. Here, thanks to the Xi'an Shiyou University and my teacher.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

444. Research on parameter Identification method of permanent magnet synchronous motor

Accession number: 20223812766791
Authors: Li, Fei (1); Yue, Jialong (1); Ma, Xueying (1); Cheng, Lihao (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 881-884
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Rotary steerable system in directional drilling is considered the development trend of modern technology. A permanent magnet synchronous motor is used as an activation module in the rotary steerable system. However, the downhole environment is complex, and there are unknown disturbances, which puts higher requirements accurate motor control in directional drilling. Thus, it is essential to acquire precise measurements of motor parameters. This paper proposes a parameter identification method for a permanent magnet synchronous motor. Firstly, the resistance, DQ axis inductance, and flux linkage identification of permanent magnet synchronous motor are theoretically analyzed, and formulas are derived. Then the resistance, inductance, and flux linkage of the motor are simulated and analyzed by Simulink. The simulation results show that the maximum error of the parameter identification method is 2.25%; Finally, the parameter identification experiment is carried out on the actual motor with known parameters. The test data show that the maximum error of motor parameter identification is 2.5%. The experimental results show that the preliminary simulation and experimental results verify the feasibility and accuracy of the proposed identification method. This indicates that this paper's permanent magnet synchronous motor parameter identification method has a certain practical value. © 2022 IEEE.
Number of references: 5
Main heading: Permanent magnets
Controlled terms: Flux linkage - Inductance - Infill drilling - Parameter estimation - Rotating machinery - Synchronous motors
Uncontrolled terms: Flux linkages - Motor flux - Motor inductance - Motor parameters - Motor resistance - Parameter identification methods - Parameters identification - Permanent Magnet Synchronous Motor - PMSM - Rotary steerable systems
Classification code: 511.1 Oil Field Production Operations - 601.1 Mechanical Devices - 701.1 Electricity: Basic Concepts and Phenomena - 701.2 Magnetism: Basic Concepts and Phenomena - 703.1 Electric Networks - 704.1 Electric Components - 705.3.1 AC Motors
Numerical data indexing: Percentage 2.25E+00%, Percentage 2.50E+00%

DOI: 10.1109/ICMSP55950.2022.9859100
Funding Details: Number: YCS22113099, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability (Grant No. YCS22113099).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

445. Advances in silver nanomaterials substrates for the surface-enhanced Raman scattering

Accession number: 20224713139239
Authors: Bao, Shiqian (1); Ma, Chengju (1); Li, Dongming (1); Li, Mi (1); Zhang, Yao (1); Jin, Jiasheng (1)
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Corresponding author: Ma, Chengju(chengjuma@xsyu.edu.cn)
Source title: Chinese Journal of Analysis Laboratory
Abbreviated source title: Chin. J. Anal. Lab.
Volume: 41
Issue: 10
Issue date: 2022
Publication year: 2022
Pages: 1221-1226
Language: Chinese
ISSN: 10000720
Document type: Journal article (JA)
Publisher: Youke Publishing Co.,Ltd
Abstract: Surface enhanced raman scattering SERS technology has a wide application prospect in the environmental protectionfood industrymedical testingbiological detection and other fields. The material and structure of SERS substrates are key factors affecting SERS performanceand silver nanomaterial SERS substrates have been widely used. In this paperand the enhancement mechanism of SERS substrates was introduced. Subsequentlythe research progress of SERS substrates based on pure-silver nanomaterials and silverr-based composite nanomaterials were reviewed. The faced problems in the development of silver nanomaterials SERS substrates were discussedand the development trend was also analyzed and prospected. © 2022, Youke Publishing Co.,Ltd. All rights reserved.
Number of references: 46
Main heading: Raman scattering
Controlled terms: Environmental technology - Nanostructured materials - Raman spectroscopy - Silver - Substrates - Surface scattering
Uncontrolled terms: Application prospect - Biological detection - Enhanced Raman scattering - Food industries - Key factors - SERS substrate - Silver nanomaterial - Surface enhanced Raman - Surface enhanced raman scattering - Surface enhanced Raman Scattering (SERS)
Classification code: 454 Environmental Engineering - 547.1 Precious Metals - 741.1 Light/Optics - 761 Nanotechnology - 931 Classical Physics; Quantum Theory; Relativity - 933.1 Crystalline Solids
DOI: 10.13595/j.cnki.issn1000-0720.2021.083002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

446. Evaluation of Green Manufacturing Mode of Automobile Manufacturing Enterprises based on SSA-BPNN Model

Accession number: 20223612681410
Authors: Yang, Ruijuan (1); Song, Jiale (1); Guo, Mingcheng (1)
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Source title: MEMAT 2022 - 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology
Abbreviated source title: MEMAT - Int. Conf. Mech. Eng., Intell. Manuf. Autom. Technol.
Part number: 1 of 1
Issue title: MEMAT 2022 - 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology
Issue date: 2022
Publication year: 2022
Pages: 342-346
Language: English
ISBN-13: 9783800757619
Document type: Conference article (CA)
Conference name: 2nd International Conference on Mechanical Engineering, Intelligent Manufacturing and Automation Technology, MEMAT 2022
Conference date: January 7, 2022 - January 9, 2022
Conference location: Guilin, Virtual, China
Conference code: 181662
Publisher: VDE VERLAG GMBH
Abstract: This paper proposes a new green manufacturing mode of automobile manufacturing enterprises namely SSA-BPNN evaluation model, based on sparrow search algorithm (SSA) and BP neural network (BPNN). The model uses stable SSA algorithm to optimize the acquisition of initial weights and thresholds of BP neural network. Experiments show that the SSA-BPNN evaluation model proposed in this paper has high accuracy, generalization ability and stability, and can provide decision support for selection. © VDE VERLAG GMBH Berlin Offenbach.
Number of references: 7
Main heading: Neural networks
Controlled terms: Decision support systems
Uncontrolled terms: Automobile manufacturing enterprise - BP neural networks - BP neural networks model - Evaluation models - Green manufacturing - Initial weights - Model use - Model-based OPC - Network evaluation - Search Algorithms
Classification code: 723 Computer Software, Data Handling and Applications - 912.2 Management
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

447. Air Visibility Detection Based on Convolutional Neural Networks

Accession number: 20223812766914
Authors: Gan, Wei (1); Li, Yuanlong (1); Li, Conghao (1); Ou, Pukang (1); Du, Zhuangzhuang (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 67-70
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: The reduced visibility caused by smog often causes serious traffic accidents, and even brings a large number of casualties and incalculable economic losses. With the development of science and technology, haze visibility detection methods have become a research hotspot in the field of image processing and computer vision. Due to the low accuracy, poor generalization ability and long time consumption of traditional image recognition methods, this paper uses deep learning theoretical knowledge to establish a convolutional neural network model, process and identify smog images, and select test set data to verify the model and detect the level of air visibility. © 2022 IEEE.
Number of references: 10
Main heading: Convolutional neural networks
Controlled terms: Air pollution - Convolution - Deep learning - Image processing - Image recognition - Learning systems - Losses - Neural network models - Statistical tests - Visibility
Uncontrolled terms: Component - Convolutional neural network - Deep learning - Detection methods - Development of science and technologies - Economic loss - Hotspots - Image processing and computer vision - Reduced visibility - Visibility detections
Classification code: 451 Air Pollution - 461.4 Ergonomics and Human Factors Engineering - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 741.2 Vision - 911.2 Industrial Economics - 922.2 Mathematical Statistics
DOI: 10.1109/ICMSP55950.2022.9859125
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

448. Design of Environmental Power Consumption Monitoring System Based on OneNET

Accession number: 20223812766957
Authors: Li, Changxing (1); Pang, Yunlong (1); Li, Yongkai (1); Tian, Yongyong (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 648-651
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the development of industry in our country, the industrial pollution becomes more and more serious. In order to reduce the environmental pollution in the industrial production process, the environmental protection department should real-time monitor the use of the pollution control equipment in the sewage enterprises, to solve this problem, a monitoring system of environmental protection power consumption based on OneNET cloud platform is designed. The monitoring system is designed by Modular rocket and is divided into power acquisition terminal, data collection and processing and cloud platform. ATT7022 three-phase electric metering chip is used to collect the electric quantity of the electric quantity collection terminal, then the data is processed by STM32F103 chip, and the data is sent to Lora Intelligent Gateway through Lora module to collect the data, send it to your PC via WiFi or 4G, and then display the data in real time via a visualization program on the cloud. © 2022 IEEE.
Number of references: 6
Main heading: Pollution control equipment
Controlled terms: Data acquisition - Data handling - Data visualization - Electric power utilization - Monitoring - Pollution control - Sewage - Terminals (electric)
Uncontrolled terms: Att7022 - Cloud platforms - Electric quantity - Environmental pollutions - Industrial pollution - Industrial production - Lora - Monitoring system - One NET - Stm32f103

Classification code: 452.1 Sewage - 704.1 Electric Components - 706.1 Electric Power Systems - 723.2 Data Processing and Image Processing - 723.5 Computer Applications
DOI: 10.1109/ICMSP55950.2022.9859179
Funding Details: Number: YCS22113119, Acronym: -, Sponsor: -;
Funding text: This research is supported by the foundation project: Xi'an Shiyou University's Graduate Innovation and Practical Ability Training Program.The project number is YCS22113119.Acknowledgment This research is supported by the foundation project: Xi'an Shiyou University's Graduate Innovation and Practical Ability Training Program.The project number is YCS22113119.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

449. Design of a mobile manipulator control system

Accession number: 20223812766907
Authors: Li, Changxing (1); Song, Guanlin (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 503-506
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the continuous development of technology and the continuous strengthening of safety performance requirements, mobile manipulators are used in more and more applications. For this reason mobile robotic arms need to improve openness and scalability to meet different production requirements, and the robotic arm control system is an important platform to achieve these requirements. In this paper, a mobile robotic arm control system is designed and developed to meet the realistic requirements of the Ackermann structured trolley equipped with a six-axis robotic arm configuration. The main contents include the kinematic analysis of the mobile robotic arm, the Cartesian spatial trajectory planning of the robotic arm and the design of the mobile robotic arm control system. © 2022 IEEE.
Number of references: 6
Main heading: Robotic arms
Controlled terms: Control systems - Kinematics - Manipulators - Robot programming - Space flight - Spacecraft equipment
Uncontrolled terms: Component - Kinematics models - Manipulator control system - Mobile manipulator - Mobile manipulator control system - Six-axis - Six-axis manipulator - Space trajectories - Space trajectory planning - Trajectory Planning
Classification code: 655.1 Spacecraft, General - 656.1 Space Flight - 723.1 Computer Programming - 731.1 Control Systems - 731.5 Robotics - 931.1 Mechanics
DOI: 10.1109/ICMSP55950.2022.9858999
Funding Details: Number: YCS22113132, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This research is supported by the foundation project: Xi'an Shiyou University's Graduate Innovation and Practical Ability Training Program.The project number is YCS22113132.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

450. Research of Sentiment Analysis Model Fusing Local and Global Information

Accession number: 20222412229763
Authors: Wang, Xiaoxiao (1); Li, Xiaojia (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 777-780
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: BERT is widely used pre-trained language model in the field of sentiment analysis. The success of the BERT lies in the powerful role of the self-attention mechanism in Transformer. BERT has shown to be effective at capturing local contextual information in texts, but its ability to capture global information is more limited. In this paper, we propose LCF-GCN model, which uses Graph Convolutional Networks (GCN) to continuously fit adjacency information to capture global features and applies semantic distance calculation to improve local feature extraction based on BERT. The fusion and interaction of local information and global information of domain data are considered comprehensively through the above methods. We conduct comparative experiments on the housing review datasets. Experimental results show that LCF-GCN improves the accuracy of polarity extraction and f1 of aspect extraction task. © 2022 IEEE.
Number of references: 11
Main heading: Semantics
Controlled terms: Convolution - Convolutional neural networks - Extraction - Sentiment analysis
Uncontrolled terms: BERT - Convolutional networks - Global feature - Global informations - Graph convolutional network - LCF-graph convolutional network - Local feature - Local feature and global feature - Sentiment analysis
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations
DOI: 10.1109/ICSP54964.2022.9778653
Funding Details: Number: 2022GY-035,2021GY-138, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: This work was financially supported by the Key Research and Development Program of Shanxi Province(2022GY-035,2021GY-138).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

451. Reliability Analysis Based on Pipeline Leak Detection

Accession number: 20223812766825
Authors: Wang, Jielin (1); Li, Lin (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022

Issue date: 2022
Publication year: 2022
Pages: 280-284
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to analysis of pipeline systems including equipment failure mode and cause, calculate the reliability of the unit or system, study the influence of the unit or system failure of pipe to find the weak link in the system, improve and enhance the reliability of the system is put forward concrete and effective measures, according to the result of reliability analysis to determine the optimal equipment spare coefficient, maintenance ability, Material plans, etc. The reliability analysis of different pipe sections of the same pipeline system can accurately understand the weak links, respectively prioritize, grasp the best opportunity to reduce risks, eliminate the hidden accident in the bud, avoid the occurrence of accidents, and control the risk factors within the allowable range of the manager. © 2022 IEEE.
Number of references: 11
Main heading: Reliability analysis
Controlled terms: Accidents - Leak detection - Piping systems - Risk assessment - Systems engineering - Water pipelines
Uncontrolled terms: Equipment failures - Fault treepipeline leakage - Leaks detections - Pipeline leaks - Pipeline systems - Rarefaction waves - System reliability - System reliability analyse - System study - Weakest links
Classification code: 446.1 Water Supply Systems - 619.1 Pipe, Piping and Pipelines - 914.1 Accidents and Accident Prevention - 961 Systems Science
DOI: 10.1109/ICMSP55950.2022.9859022
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

452. SnO2/Graphene incorporated optical fiber Mach-Zehnder interferometer for methane gas detection

Accession number: 20224513070471
Authors: Fu, Haiwei (1); Wang, Xiaoling (1); Ding, Jijun (1); Yan, Xingyu (1); Zhao, Ziliang (1); Zhang, Ze (1)
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Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 74
Issue date: December 2022
Publication year: 2022
Article number: 103126
Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: Detecting methane gas in the environment quickly and accurately is critical to preventing poisoning and leaks. This study describes a methane (CH4) gas optical fiber sensor that is coated with SnO2/graphene. The SnO2/graphene nanocomposites were prepared by a solution-based method. An microfiber bi-taper structure is fabricated by the flame melting biconical method. And the previously manufactured SnO2/graphene methane sensitive material was then coated in the microfiber interferometer (MFI) area using the drop coating method. Methane molecules can be absorbed by the SnO2/graphene material on the fiber's surface. And it can provide the conditions for charge transfer, which leads to the change of transmission spectrum intensity. The sensing response of the sensor for methane concentration is investigated in the range of volume fraction 0–35%. The SnO2/graphene sensitive material coated

fiber sensor with a low-cost and simple fabrication process provide prospects in applications widely. © 2022 Elsevier Inc.
Number of references: 27
Main heading: Methane
Controlled terms: Charge transfer - Graphene - Interferometers - Microfibers - Optical fiber fabrication - Optical fibers
Uncontrolled terms: CH 4 - Doped graphene - Fiber Mach-Zehnder interferometers - Gas detection - Graphene nanocomposites - Interference - Methane gas - Micro-fiber - Sensitive materials - Taper structure
Classification code: 741 Light, Optics and Optical Devices - 741.1.2 Fiber Optics - 761 Nanotechnology - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 941.3 Optical Instruments
Numerical data indexing: Percentage 0.00E00% to 3.50E+01%
DOI: 10.1016/j.yofte.2022.103126
Funding Details: Number: YCS21211081, Acronym: -, Sponsor: -; Number: 2019GY-176, Acronym: -, Sponsor: -;
Funding text: This work was supported by Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-176), the Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS21211081).This work was supported by Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-176), the Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS21211081).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

453. Practical Exploration on the Construction of Theoretical Courses of Composition Technology in the Age of Artificial Intelligence (*Open Access*)

Accession number: 20223812767274
Authors: Luo, Luo (1)
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Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3099312
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The theory of composition technology is to study the basic knowledge and skills of musicology, instrumental music, composition, and composition technology, including harmony, polyphony, musical form, orchestration, and so on, and then to analyze, create, and edit music. The current theory of composition technology has resulted in the phenomenon of relatively single form. The current method is the traditional way of composing music through the creation of composers. The defect is that various elements cannot be integrated together, and the meaning of music cannot be perfectly presented. In order to solve these problems, this paper proposes the use of recurrent neural network algorithm and backpropagation algorithm in artificial intelligence algorithm. It aims to study how to innovatively integrate the composition technology theory course with the current network technology. And it utilizes recurrent neural networks in artificial intelligence to help design part of the analysis of musical characteristics, through the evaluation of the music effect generated by automatic composition. The results show that the accuracy of note prediction obtained by the automatic composition method on the basis of objective evaluation is 81.93%, 90.15%, and 92.62%, respectively, on Top1, Top2, and Top3, which basically meet the current basic requirements for composition technology theory. © 2022 Luo Luo.
Number of references: 23
Main heading: Recurrent neural networks
Controlled terms: Music
Uncontrolled terms: 'current - Artificial intelligence algorithms - Automatic composition - Composition method - Current theories - Music composition - Network technologies - Neural networks algorithms - Objective evaluation
Classification code: 971 Social Sciences
Numerical data indexing: Percentage 8.193E+01%, Percentage 9.015E+01%, Percentage 9.262E+01%

DOI: 10.1155/2022/3099312
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

454. Classification of physical examination indicators using multi-label classification model for mass spectrometry data

Accession number: 20222412229738
Authors: Xu, Manxiang (1); Han, Jiaxin (1); Wang, Yu (1); Ji, Yingchao (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 810-813
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The abnormality of physical examination indexes is an essential basis for measuring the health of the human body and can help doctors make the medical diagnosis quickly. The purpose of this paper is to classify whether the physical examination indexes are abnormal or not using mass spectrometry data to assist in improving the diagnosis and identification of human system diseases. The MLSMOTE algorithm is used to solve the problem of imbalance of medical data sample categories in the experiment, and then a multi-label classification model is used to classify the data. © 2022 IEEE.
Number of references: 12
Main heading: Classification (of information)
Controlled terms: Computer aided diagnosis - Mass spectrometry
Uncontrolled terms: Component - Data sample - Human bodies - Human-systems - Imbalance datum - Mass spectrometry data - Medical data - Multi-labels - Resampling
Classification code: 461.1 Biomedical Engineering - 716.1 Information Theory and Signal Processing - 723.5 Computer Applications - 801 Chemistry - 903.1 Information Sources and Analysis
DOI: 10.1109/ICSP54964.2022.9778759
Funding Details: Number: 2022GY-035,2021GY-138, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: ACKNOWLEDGMENT This work was financially supported by the Key Research and Development Program of Shanxi Province(2022GY-035,2021GY-138).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

455. Research on oil drilling BOM microservice system based on big data

Accession number: 20222412229700
Authors: Zhang, Pengxin (1); Fang, Ming (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP

Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 484-487
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Currently, the design and preparation of the drilling BOM are based on previous construction experience and with reference to some statistical methods. A significant drawback of doing so is that the sample data for manual statistical reference is small and the calculation results are easily affected by extreme data. For the massive data generated in the drilling process of oil, in order to fully exploit the value of data and improve the utilization rate of materials, this paper integrates data mining algorithms into the selection of drilling materials, designs and implements a microservice system for drilling materials list based on big data mining and performs intelligent analysis on the selection of drilling materials to achieve the purpose of reducing material consumption. The system is based on microservice architecture, and a RESTful style communication mechanism is used between all services, which reduces the complexity of individual services and improves the reliability, scalability, and efficiency of the whole business system. © 2022 IEEE.
Number of references: 8
Main heading: Data mining
Controlled terms: Big data - Infill drilling
Uncontrolled terms: Big data mining - Bill of materials - Calculation results - Drilling process - Intelligent analysis - Massive data - Microservice system - Oil drilling - Sample data - Utilization rates
Classification code: 511.1 Oil Field Production Operations - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICSP54964.2022.9778704
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

456. Design and analysis of intelligent cases push system for drilling accident based on cloud platform

Accession number: 20222412229905
Authors: Zhao, Yifan (1); Li, Tiantai (1); Zuo, Xiongdi (1); Zhu, Xiulan (1)
Author affiliation: (1) Xi'an Shiyou University, College of Petroleum Engineering, Xi'an, China
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1122-1126
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.

Abstract: With the increasing complexity of oil drilling operations, the probability of accidents in drilling operations has increased dramatically, which seriously affects the quality and efficiency of drilling operations. This paper studies the drilling accident case retrieval method by monitoring the well leak and well kick risks in real time during the drilling process, which can assist engineers in making decisions to reduce the losses due to the occurrence of well leak and well kick accidents. Based on the cloud platform environment, this paper investigates the method of building an intelligent cases push system for drilling accident with the architecture of microservices. By analyzing and designing the system, it provides users with the functions of real-time monitoring of drilling operations and accident case recommendation, and lays the foundation for the intelligent construction of drilling and completion operations. © 2022 IEEE.
Number of references: 8
Main heading: Accidents
Controlled terms: Electric power transmission networks - Infill drilling
Uncontrolled terms: Accident case - Cloud platforms - Design and analysis - Drilling accident case - Drilling operation - Intelligent recommendation - Microservice - Oil drilling operation - Push systems - Well kick
Classification code: 511.1 Oil Field Production Operations - 706.1.1 Electric Power Transmission - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICSP54964.2022.9778417
Funding Details: Number: YCS21213171, Acronym: -, Sponsor: -;
Funding text: This work was supported by Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University under grant YCS21213171.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

457. Design of Online and Offline Integration Teaching System for Body Sense Dance Based on Cloud Computing

Accession number: 20220111419420
Authors: He, Yun (1)
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Source title: Journal of Interconnection Networks
Abbreviated source title: J. Interconnect. Netw.
Volume: 22
Issue date: July 1, 2022
Publication year: 2022
Article number: 2147001
Language: English
ISSN: 02192659
E-ISSN: 17936713
Document type: Journal article (JA)
Publisher: World Scientific
Abstract: Traditional teaching methods are limited to time and place, and the performance of dance teaching resource management is poor. This paper designs a dance teaching resource management system based on cloud computing. The functional structure of the system includes the core cloud computing teaching and teaching management application. The data management module is used to store the processed data in the data file, and respond to the retrieval request of dance teaching content publishing module and the remote image resource positioning request of multi-media management module. Design user courseware on demand process, using the existing dance teaching resources to learn. The experimental results show that the designed system has good performance, high stability and compatibility, and strong data storage capacity of teaching resources. © 2022 World Scientific Publishing Company.
Number of references: 28
Main heading: Cloud computing
Controlled terms: Digital storage - E-learning - Information management - Natural resources management - Resource allocation - Teaching
Uncontrolled terms: Body-sense - Cloud-computing - Offline - Performance - Resource management - Somatosensory - Somatosensory dance - Teaching methods - Teaching resources - Teaching systems
Classification code: 722.1 Data Storage, Equipment and Techniques - 722.4 Digital Computers and Systems - 912.2 Management
DOI: 10.1142/S0219265921470010

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

458. Phase Retrieval Based on Enhanced Generator Conditional Generative Adversarial Network

Accession number: 20223812766874
Authors: Pu, Shasha (1); Li, Lan (1); Xiang, Yu (1); Qiu, Xiaolong (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 825-829
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Phase retrieval refers to the recovery of the original image using only the Fourier amplitude of the image. Due to the small amount of information contained in the Fourier amplitude, the common network structure cannot achieve accurate reconstruction of the image when the oversampling rate of the image is low. It is the key issue of phase retrieval to improve the structure of the neural network. We propose an application of end-to-end adversarial network to solve phase retrieval problems by adding a U-Net model to the conditional generative adversarial network(U-NetCGAN). This desired approach realizes multi-scale recognition and fusion of image features and improves the quality of image reconstruction. The experimental results show that the model is significantly better than the traditional phase retrieval algorithm. Compared to other algorithms, the evaluation indicators of PSNR and SSIM values in our approach have increased about 6 dB and 0.1, respectively. © 2022 IEEE.
Number of references: 15
Main heading: Generative adversarial networks
Controlled terms: Image enhancement - Image reconstruction
Uncontrolled terms: Amount of information - Common networks - Conditional generative adversarial network - Fourier amplitudes - Key Issues - Network structures - Original images - Over-sampling rates - Phase retrieval - U-net
Classification code: 723.4 Artificial Intelligence
Numerical data indexing: Decibel 6.00E+00dB
DOI: 10.1109/ICMSP55950.2022.9858954
Funding Details: Number: YCS21112082, Acronym: -, Sponsor: -; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by Natural Science Basic Research Plan in Shaanxi Province of China (No.2021JM-399) and the Graduate Student Innovation Fund of Xi'an Shiyou University (No. YCS21112082).ACKNOWLEDGMENT This work is supported by Natural Science Basic Research Plan in Shaanxi Province of China (No.2021JM-399) and the Graduate Student Innovation Fund of Xi'an Shiyou University (No. YCS21112082).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

459. Time optimal trajectory planning of five degrees of freedom manipulator based on PSO algorithm

Accession number: 20223812766888
Authors: Jiang, Zhengshuai (1); Zhang, Qizhi (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1059-1062
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: According to the kinematic constraints of the manipulator, a time-optimized 3-5-3 polynomial interpolation algorithm based on particle swarm optimization in joint space is proposed, which solves the shortcomings of polynomial interpolation trajectory planning with high order and no convex hull. Particle swarm optimization is simple in structure, easy to implement, and easy to adjust parameters. It directly selects the polynomial interpolation time as a variable, searches in the target space, and obtains the shortest interpolation time under the specified speed constraint. The simulation is carried out on the experimental platform, and compared with the traditional 3-5-3 polynomial interpolation of position, velocity and acceleration curves, it is proved that the method can achieve shorter running time and better stability of the manipulator. © 2022 IEEE.
Number of references: 14
Main heading: Manipulators
Controlled terms: Degrees of freedom (mechanics) - Interpolation - Particle swarm optimization (PSO) - Polynomials - Robot programming - Simulation platform - Swarm intelligence - Trajectories
Uncontrolled terms: Interpolation algorithms - Kinematic constraints - Particle swarm - Particle swarm optimization - Polynomial interpolation - PSO algorithms - Swarm optimization - Time optimization - Time-optimal trajectory planning - Trajectory Planning
Classification code: 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.4 Artificial Intelligence - 723.5 Computer Applications - 731.5 Robotics - 921.1 Algebra - 921.5 Optimization Techniques - 921.6 Numerical Methods - 931.1 Mechanics
DOI: 10.1109/ICMSP55950.2022.9858972
Funding Details: Number: YCS22113106, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work is supported by Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22113106)This work is supported by Graduate Student Innovation and Practice Training Program of Xi 'an Shiyou University. (YCS22113106)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

460. Design of Intelligent Home Control System Based on Image Recognition

Accession number: 20223812766899
Authors: Li, Changxing (1); Li, Yongkai (1); Li, Conghao (1); Pang, Yunlong (1); Li, Yuanlong (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 770-773
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Thanks to modern life rhythm too fast, people go out to work, the rain fail to close the window, or while sleeping too much noise outside interfere with sleep, and the traditional intelligent window control system design is adopted in the form of humidity sensor and external environment of the detection, misjudgment situation occurs when air humidity is too large, so this article use the embedded technology, Through the establishment of neural network in the system, the image acquisition module to collect pictures for training, real-time access to the weather, determine whether it is raining outside, reduce the probability of the control system to the environment misjudgment, in addition to add harmful gas detection, to meet people's requirements for intelligent home life. © 2022 IEEE.
Number of references: 11
Main heading: Image recognition
Controlled terms: Control systems - Humidity control - Intelligent buildings
Uncontrolled terms: Air humidity - Component - Control system designs - External environments - Intelligent furniture - Intelligent home - Intelligent window - Jupyter notebook - Security - Window control
Classification code: 402 Buildings and Towers - 723.5 Computer Applications - 731.1 Control Systems
DOI: 10.1109/ICMSP55950.2022.9858986
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

461. Study of DC chopper circuit based on MATLAB software

Accession number: 20231413855968
Authors: Chen, Xiao (1); Li, Lin (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an, China
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Source title: Proceedings - 2022 2nd International Conference on Electronic Information Engineering and Computer Technology, EIECT 2022
Abbreviated source title: Proc. - Int. Conf. Electron. Inf. Eng. Comput. Technol., EIECT
Part number: 1 of 1
Issue title: Proceedings - 2022 2nd International Conference on Electronic Information Engineering and Computer Technology, EIECT 2022
Issue date: 2022
Publication year: 2022
Pages: 83-86
Language: English
ISBN-13: 9798350399561
Document type: Conference article (CA)
Conference name: 2nd International Conference on Electronic Information Engineering and Computer Technology, EIECT 2022
Conference date: October 28, 2022 - October 30, 2022
Conference location: Virtual, Online, China
Conference code: 187413

Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this paper, we introduce the background of the DC boost chopper circuit and its application area, build the system model of the DC boost chopper circuit that used Matlab software's Simulink module, and record the settings of each module parameter, calculate the output voltage theoretical value, output current theoretical value, frequency, and other circuit parameters, record the input and output voltage and current waveforms and observed values, and compare and evaluate the findings. Obtain the output voltage and current waveforms, along with the original data and waveforms, analyze their output voltage and current trends as that of the duty cycle and load type change, and record their waveform graphs. This introduces a brand new theory for interpreting DC chopper circuits in the field of power electrical components. © 2022 IEEE.
Number of references: 11
Main heading: Choppers (circuits)
Controlled terms: Application programs - Electric loads - Electric network analysis - MATLAB - Timing circuits
Uncontrolled terms: Circuit application - DC boost chopper circuit - DC choppers - Duty-cycle - Load type - Output current - Output voltages - Theoretical values - Voltage and current waveforms - Waveforms
Classification code: 703.1.1 Electric Network Analysis - 706.1 Electric Power Systems - 713.4 Pulse Circuits - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 921 Mathematics
DOI: 10.1109/EIECT58010.2022.00022
Funding Details: Number: YCS22253003, Acronym: -, Sponsor: -;
Funding text: This work is supported by the Graduate Student Innovation and Practice Ability Training Program of Xi 'an Shiyou University. (YCS22253003)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

462. City Gas Pipeline Leakage Detection Based on Infrared Imaging Studies

Accession number: 20223812766572
Authors: Zhu, Bing (1); Li, Hua (1); Wang, Bo (1); Ma, Yuyan (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 392-395
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Pipelines are one of the most important modes of transportation for urban natural gas, the security is paramount. In order to study on gas leakage problem of city gas pipeline, according to the principle of similarity to build experimental platform, in this paper, an infrared imager was selected for gas leak detection experiments on gas pipelines, control variable method is used to design a set of comparative experiments, by separate changing light conditions, defect size, and temperature conditions, verify the impact of these conditions change detection results of the experiment. Experiments show that the infrared imaging technology can effectively detect the urban natural gas pipeline leakage, and points out the factors that affect the test results. © 2022 IEEE.
Number of references: 11
Main heading: Leak detection
Controlled terms: Gases - Natural gas - Natural gas pipelines - Thermography (imaging) - Urban transportation

Uncontrolled terms: City gas - Component - Experimental platform - Gas leakages - Infrared imagers - Leakage problems - Leaks detections - Pipeline leakage detection - The gas leak
Classification code: 432 Highway Transportation - 433 Railroad Transportation - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 742.1 Photography
DOI: 10.1109/ICMSP55950.2022.9859208
Funding Details: Number: YCS22113116, Acronym: -, Sponsor: -; Number: 11927801, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT This work was supported in part by the Nation Natural Science Foundation of China under Grant 11927801 and in part by the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University under Grant YCS22113116.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

463. Design of Buck Topology PID Compensation Network Based on Matlab

Accession number: 20223812766882
Authors: Li, Lin (1); Zhang, Boyang (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 944-947
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this paper, the dynamic small signal analysis of Buck converter's main circuit in CCM working mode is carried out, and the small signal model is derived in detail by using the switching element average model method. Then design a PID compensation network to compensate the main circuit. Using Matlab software to simulate the compensation network compensation before and after the open loop transfer function of the bode diagram. Compared with the bode diagram before and after compensation, the results show that after the compensation network design, better performance is obtained and the high frequency interference can be suppressed better. © 2022 IEEE.
Number of references: 12
Main heading: DC-DC converters
Controlled terms: Bode diagrams - Design - MATLAB
Uncontrolled terms: Buck converters - Buck topology - Compensation network - Main circuit - Matlab modeling - Network-based - PID compensation network - Small signal model - Small-signal analysis - Working mode
Classification code: 704.1 Electric Components - 723.5 Computer Applications - 731.1 Control Systems - 921 Mathematics
DOI: 10.1109/ICMSP55950.2022.9858962
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

464. Research on Detecting and Tracking Algorithm of UAV Intrusion Based on YOLOv5+DeepSort

Accession number: 20223212545372
Authors: Yang, Huaizhou (1); Ge, Yujie (1)
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Source title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Abbreviated source title: Int. Conf. Comput. Vis., Image Deep Learn. Int. Conf. Comput. Eng. Appl., CVIDL ICCEA
Part number: 1 of 1
Issue title: 2022 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Issue date: 2022
Publication year: 2022
Pages: 1209-1212
Language: English
ISBN-13: 9781665459112
Document type: Conference article (CA)
Conference name: 3rd International Conference on Computer Vision, Image and Deep Learning and International Conference on Computer Engineering and Applications, CVIDL and ICCEA 2022
Conference date: May 20, 2022 - May 22, 2022
Conference location: Virtual, Changchun, China
Conference code: 181070
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to accurately detect and track intruding UAVs for the phenomenon of 'black flight' and 'indiscriminate flight', this paper proposes an improved YOLOv5 algorithm combined with the DeepSort tracking algorithm, which adds the convolutional block attention module (CBAM) to the Neck module of the YOLOv5s network to enhance the extraction of network features. DIOU-NMS is introduced to improve the problem of missed detection due to the obscured UAV targets. The tracking part uses the DeepSort algorithm, in which the Kalman filter is used for predicting and updating the next frame position of the target, and DIOU is used to solve the problem of secondary matching failure. Experiments show that the proposed method can effectively identify and track UAVs, and furthermore reduce the problems of missed detection and target ID misdetection that occur after obstacle occlusion. © 2022 IEEE.
Number of references: 7
Main heading: Unmanned aerial vehicles (UAV)
Controlled terms: Aircraft detection - Convolution
Uncontrolled terms: Attention mechanisms - Convolutional block attention mechanism - Matchings - Missed detections - Network features - Target ID - Targets tracking - Tracking algorithm - Tracking parts
Classification code: 652.1 Aircraft, General - 716.1 Information Theory and Signal Processing - 716.2 Radar Systems and Equipment
DOI: 10.1109/CVIDLICCEA56201.2022.9823976
Funding Details: Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENTS This work is supported by the graduate student innovation and practice ability training program of Xi’an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

465. Analysis of association rules between serum mass spectrometry data and physical examination data

Accession number: 20230313404665
Authors: Wang, Yu (1); Han, Jiaxin (1); Xu, Manxiang (1); Ji, Yingchao (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China
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Source title: 2022 3rd International Conference on Big Data, Artificial Intelligence and Internet of Things Engineering, ICBAIE 2022
Abbreviated source title: Int. Conf. Big Data, Artif. Intell. Internet Things Eng., ICBAIE
Part number: 1 of 1
Issue title: 2022 3rd International Conference on Big Data, Artificial Intelligence and Internet of Things Engineering, ICBAIE 2022
Issue date: 2022

Publication year: 2022
Pages: 549-552
Language: English
ISBN-13: 9781665451604
Document type: Conference article (CA)
Conference name: 3rd International Conference on Big Data, Artificial Intelligence and Internet of Things Engineering, ICBAIE 2022
Conference date: July 15, 2022 - July 17, 2022
Conference location: Virtual, Online, China
Conference code: 185433
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Physical examination data and serum mass spectrometry data are obtained through the blood, serum mass spectrometry data are so inextricably linked between the patient's serum mass spectrometry data and the physical examination data, using the Association Analysis Algorithm in data mining to correlate the attributes of serum mass spectrometry data and physical examination data, the analysis results obtained have an important reference value for the process of decision designation and are of great significance for the development of medical blood testing. © 2022 IEEE.
Number of references: 7
Main heading: Data mining
Controlled terms: Association rules - Mass spectrometry
Uncontrolled terms: Analysis algorithms - Apriori algorithms - Association analysis - Blood serum - Blood testing - Component - Correlation analysis - FP-growth algorithm - Mass spectrometry data - Reference values
Classification code: 723.2 Data Processing and Image Processing - 801 Chemistry - 903.1 Information Sources and Analysis
DOI: 10.1109/ICBAIE56435.2022.9985909
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

466. The Optimized ORB Algorithm Based on Region Partition

Accession number: 20223812766854
Authors: Gan, Wei (1); Li, Conghao (1); Li, Yuanlong (1); Ou, Pukang (1); Du, Zhuangzhuang (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 965-968
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problems of low matching accuracy and slow matching speed of ORB feature matching algorithm under complex environments, an improved ORB algorithm based on region division and RANSAC algorithm was proposed. By dividing the image into regions, the similarity algorithm is used to extract the regions with high similarity, then the ORB algorithm is used to extract the feature points of similar regions. The results can effectively improve the operation efficiency of image feature point extraction. The improved ORB algorithm combined with

RANSAC algorithm to eliminate the wrong matching point pairs that get more accurate matching results. Experimental results show that compared with the original method, the improved algorithm has better accuracy and real-time performance. © 2022 IEEE.
Number of references: 11
Main heading: Image enhancement
Uncontrolled terms: Complex environments - Component - Feature matching algorithms - Feature points matching - Image stitching - Matching speed - Matchings - RANSAC algorithm - Region partition - The ORB algorithm
DOI: 10.1109/ICMSP55950.2022.9859052
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

467. Design and implementation of vehicle detection recognition and behavior analysis system

Accession number: 20222412229834
Authors: Mu, YongDong (1); Wang, KuiSheng (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 634-638
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: At present, the identification and behavior analysis for vehicle detection are established in the intelligent vehicle detection + manual experience analysis, such a significant shortcoming is the failure to effectively combine intelligent detection and intelligent analysis, in response to unexpected situations, the efficiency of the response formed a constraint. In the face of the above problems, this paper designs and implements a system that can do both intelligent vehicle detection and intelligent behavior analysis at the same time. Through the system to quickly display the results of detection and analysis to help users and traffic management departments to carry out overall planning of transportation, which can effectively reduce traffic congestion, improve road utilization, reduce traffic accidents, improve the traffic environment, and save energy. The system is based on microservice architecture, and the RESTFUL style is used between services to reduce the complexity of services and also improve the reliability, scalability and efficiency of the business system. © 2022 IEEE.
Number of references: 8
Main heading: Behavioral research
Controlled terms: Intelligent vehicle highway systems - Motor transportation - Traffic congestion - Vehicles
Uncontrolled terms: Analysis system - Behavior analysis - Behavioral analysis - Design and implementations - Design and implements - Intelligent analysis - Intelligent behavior - Intelligent detection - Microservice system - Vehicles detection
Classification code: 406.1 Highway Systems - 461.4 Ergonomics and Human Factors Engineering - 723.5 Computer Applications - 971 Social Sciences
DOI: 10.1109/ICSP54964.2022.9778816
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

468. A High-accessibility Identification Technology for Butt Joint Weld Defects

Accession number: 20222412229733
Authors: Wang, Dan (1); Gao, Weixin (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xian, China
Corresponding author: Wang, Dan(269216768@qq.com)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 890-893
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problem of defect detection of butt joint weld images, this paper proposes to use the distance invariance and angle invariance of Log-Polar transformation to transform the position and shape of the defect into a simple two-dimensional plane translation of a typical defect image. Defect area calibration problem. In addition, in order to improve the detection rate and recognition accuracy of defect identification, a defect identification based on sparse description is proposed, which uses three major knowledges: extracting typical samples from massive data, building non-parametric models, and solving sparse solutions based on the optimal direction method. system to identify the calibrated SDR. On this basis, combined with the 0-norm minimization problem and the OMP algorithm to solve the sparse coefficient, further intelligent determination of defect types is realized. Experiments show that the recognition rate of the dictionary matrix obtained by limited sample training has reached more than 98.5%. © 2022 IEEE.
Number of references: 14
Main heading: Defects
Controlled terms: Butt welding - Welds
Uncontrolled terms: Butt joint weld - Component - Defect detection - Defect identification - Identification technology - Log-polar transform - Optimal direction - Optimal direction method - Sparse solvers - Weld defects
Classification code: 538.2 Welding - 538.2.1 Welding Processes - 951 Materials Science
Numerical data indexing: Percentage 9.85E+01%
DOI: 10.1109/ICSP54964.2022.9778752
Funding Details: Number: 2020GY-179, Acronym: -, Sponsor: -; Number: YCS21113137, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by the Key R&D plan of Shananxi Province (2020GY-179) and Graduate innovation program of Xi'an Petroleum University (YCS21113137).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

469. Research on the fault identification method of oil pumping unit based on residual network

Accession number: 20222412229783
Authors: Hu, Hongtao (1); Li, Min (1); Dang, Chen (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Xi'an, China
Corresponding author: Hu, Hongtao(huhongtao@xsyu.edu.cn)
Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 940-943

Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Oil extraction by pumping units is still the mainstream production method in China's oil fields, and the indicator diagram is an important basis for judging the working condition of pumping units. Analysis of indicator diagrams is the most common and effective method for diagnosing pumping unit faults. However, the traditional analysis of indicator diagrams mainly relies on manual experience, the workload is large and the recognition accuracy is easily affected by human factors. This paper proposes a model based on the ResNet-34 residual network to identify the indicator diagrams, which adds a residual block structure to the traditional convolutional neural network to establish a direct connection between the upper layer input and the lower layer output and achieves the recognition and classification of six power diagrams through parameter adjustment. The training accuracy reached 91.0%, which is about 7.7 percentage points higher than that of the AlexNet network, and the experiment shows that the model has high diagnostic accuracy. © 2022 IEEE.
Number of references: 11
Main heading: Graphic methods
Controlled terms: Convolution - Convolutional neural networks - Multilayer neural networks - Oil fields - Pumping plants - Pumps
Uncontrolled terms: Convolutional neural network - Fault identifications - Faults diagnosis - Identification method - Indicator diagram - Oil extraction - Oil pumping unit - Pumping unit - Residual network - Unit-based
Classification code: 446 Waterworks - 512.1.1 Oil Fields - 618.2 Pumps - 716.1 Information Theory and Signal Processing
Numerical data indexing: Percentage 9.10E+01%
DOI: 10.1109/ICSP54964.2022.9778681
Funding Details:
Funding text: We are grateful to the innovation and practice ability training program of Xi'an Petroleum University for their contributions to this paper.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

470. Application of Adversarial Network Model in Robot Inspection Heterophony Detection

Accession number: 20224913219214
Authors: Zhao, WenTing (1); Cuan, Ying (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China
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Source title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Abbreviated source title: Int. Conf. Comput. Sci., Electron. Inf. Eng. Intell. Control Technol., CEI
Part number: 1 of 1
Issue title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Issue date: 2022
Publication year: 2022
Pages: 790-793
Language: English
ISBN-13: 9781665476164
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Conference date: September 23, 2022 - September 25, 2022
Conference location: Virtual, Online, China
Conference code: 184575
Sponsor: IEEE

Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: With the rapid development of industrial technology, inspection robots need to monitor more and more equipment during inspection, and the demand for fault detection of equipment is increasing. It is particularly important to detect abnormal sounds of equipment such as air compressors in gas collecting stations. The deep convolutional ADversarial network is applied to the abnormal sound detection of air compressor, and the network module of optimized feature learning is introduced before the spectrograph learning of the network, and the structural similarity function is introduced to finally distinguish whether the sound is normal or not. Through simulation experiments, the improved deep convolutional adversarial network algorithm realizes abnormal sound detection of air compressor in gas collecting station, and the discrimination accuracy of abnormal sound is enhanced, which achieves the purpose of abnormal monitoring through equipment sound in actual industry. © 2022 IEEE.
Number of references: 20
Main heading: Deep learning
Controlled terms: Compressibility of gases - Convolution - Convolutional neural networks - Fault detection - Gas compressors - Inspection - Robotics - Spectrographs
Uncontrolled terms: Abnormal sound detection - Abnormal sounds - Adversarial networks - Deep convolutional adversarial network - Deep learning - Similarity functions - Sound detection - Spectrograms - Structural similarity - Structural similarity function
Classification code: 461.4 Ergonomics and Human Factors Engineering - 618.1 Compressors - 716.1 Information Theory and Signal Processing - 731.5 Robotics - 741.3 Optical Devices and Systems - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1109/CEI57409.2022.9950131
Funding Details: Number: YCS21213259, Acronym: -, Sponsor: -;
Funding text: This work was supported by Fund Project Key R&D Project of Shaanxi Province (No.2019KW-045) and Xi 'an Shiyou University Graduate Innovation and Practical Ability Training Project (No. : YCS21213259)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

471. Research on the Application of Kalman Filter Algorithm in Aircraft Trajectory Analysis

Accession number: 20222412229727
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 196-199
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In recent years, the air traffic flow has increased exponentially. To ensure flight safety during the flight, it is necessary to monitor and predict the trajectory in real-time, and use the trajectory system to assist the controller to manage and monitor the aircraft. The main research content of this subject includes the trajectory prediction algorithm and its error analysis in trajectory prediction. In this paper, a domestic civil aviation trajectory data is collected as a sample, the geographic information system is used to process the sample data, a flight motion model is established based on the data, and the Kalman filtering algorithm is used to predict the sample data. The final result of the filtered trajectory is the same as the original trajectory., indicating that the Kalman filter is very suitable for trajectory prediction research. © 2022 IEEE.
Number of references: 8
Main heading: Forecasting

Controlled terms: Air navigation - Air traffic control - Air transportation - Aircraft - Aircraft detection - Flight paths - Information filtering - Kalman filters
Uncontrolled terms: Air traffic flows - Aircraft trajectory - Aviation control - Flight safety - Flight trajectory - Kalman filter algorithms - Sample data - Targets tracking - Trajectory analysis - Trajectory prediction
Classification code: 431.1 Air Transportation, General - 431.5 Air Navigation and Traffic Control - 652 Aircraft and Avionics - 652.1 Aircraft, General - 716.2 Radar Systems and Equipment - 903.1 Information Sources and Analysis
DOI: 10.1109/ICSP54964.2022.9778746
Funding Details: Number: 2020GY-038,2021GY-083, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: 2020JM-543, Acronym: -, Sponsor: Social Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by the Shaanxi Province Social Science Foundation Project(2020JM-543) and the Key Research and Development Program of Shaanxi Province (2020GY-038, 2021GY-083).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

472. Research on book recommendation algorithm based on attribute comprehensive similarity

Accession number: 20222412229822
Authors: Chi, Xiuting (1); Huang, Quanzhou (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 66-69
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The common problems of less user information and missing item ratings in recommended systems greatly affect the accuracy of recommending users. Aiming at this problem, a collaborative filtering algorithm based on comprehensive similarity of attributes is proposed. Its application in book recommendation improves the utilization of resources and the quality of recommendation service, and improves the accuracy of book recommendation. © 2022 IEEE.
Number of references: 6
Main heading: Collaborative filtering
Controlled terms: Signal filtering and prediction
Uncontrolled terms: Attribute similarity - Book recommendation - Collaborative filtering algorithms - Component - Comprehensive attribute similarity - Items ratings - ITS applications - Recommendation algorithms - Recommended systems - User information
Classification code: 716.1 Information Theory and Signal Processing - 903.1 Information Sources and Analysis
DOI: 10.1109/ICSP54964.2022.9778801
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

473. Technical Research on Digital Twin of Oil Rig Winch

Accession number: 20222412229835

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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1157-1160
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Aiming at the problems of high failure rate and difficulty in predicting the failure of oil rig winch during operation, this paper proposes a digital twin model construction method based on the idea of digital twin. From the physical entity establishment, twin model establishment, operation on data acquisition, model real-time drive, model verification and real-time feedback adjustment steps to realize the virtual reality interaction between the physical entity and digital twin winch. Finally, it can realize the visual monitoring and prediction of the oil rig winch fault. Ensure timely troubleshooting and predictive maintenance of the winch's life cycle data management to improve the overall automation level of drilling operations. © 2022 IEEE.
Number of references: 9
Main heading: Information management
Controlled terms: Data acquisition - Digital storage - Failure analysis - Forecasting - Life cycle - Virtual reality
Uncontrolled terms: Acquisition models - Construction method - Failure rate - Fault prediction - Model construction - Oil rig winch - Oil-rigs - Real interactions - Technical research - Virtual-real interaction
Classification code: 722.1 Data Storage, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICSP54964.2022.9778817
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

474. A Novel Low-rank and Sparse Decomposition Algorithm Based on Laplacian Distribution

Accession number: 20223812766871
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 969-972
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022

Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The principal component pursuit (PCP) method has an excellent performance in foreground/background separation, but this method is also acknowledged to have some drawbacks: 1) the poor robustness; 2) the choice of balancing parameters is a tricky matter. To address these problems, we propose a new low-rank and sparse decomposition model based on the nuclear norm and Laplacian scale mixture. This model uses the Laplacian scale mixture to approximate the sparse term to improve the robustness of PCP and reduce the difficulty of adjusting parameters. Experimental results show that our approach is more effective than the PCP algorithm. © 2022 IEEE.
Number of references: 14
Main heading: Mixtures
Controlled terms: Laplace transforms
Uncontrolled terms: Background separation - Foreground/background - Foreground/background separation - Laplacian scale mixture - Laplacians - Low-rank matrices - Low-rank matrix decomposition - Matrix decomposition - Principal Components - Scale mixtures
Classification code: 921.3 Mathematical Transformations
DOI: 10.1109/ICMSP55950.2022.9858949
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

475. Fault Analysis and Protection Research of High Current Grounding System

Accession number: 20223812766800
Authors: Song, Xijin (1); Shan, Shichao (1)
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Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 612-615
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: A zero-sequence component occurs when a single-phase grounding short circuit occurs in a high-current grounding system, but there is no zero-sequence component during normal operation. According to this feature, the zero-sequence component becomes the key factor for grounding short-circuit protection. This paper introduces the characteristics of high-current grounding system faults, deduces the formula of three-stage zero-sequence current protection, and proposes an effective protection scheme based on zero-sequence components. By scientifically setting parameters, the short-circuit fault of the neutral point directly grounded system is simulated and calculated on the Simulink platform. The scheme proposed in this paper has certain reference value for fault analysis and protection of large ground current system. © 2022 IEEE.
Number of references: 8
Main heading: Electric grounding
Controlled terms: Simulink - Timing circuits

Uncontrolled terms: Fault analysis - Fault protection - Grounding short circuit fault - Grounding systems - High current grounding system - High currents - Short-circuit fault - Three-stage zero sequence current protection - Zero sequence components - Zero sequence current protections
Classification code: 713.4 Pulse Circuits - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICMSP55950.2022.9859110
Funding Details: Number: YCS22113142, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENTS I'd like to thank my tutor for her guidance. This paper is supported by Xi'an Shiyou University Postgraduate Innovation and Practice Ability Training Program (YCS22113142).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

476. Research on Electrical Safety Monitoring System Based on Narrow-Band Internet of Things

Accession number: 20223812766832
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 624-628
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Because of the national attention to fire safety, the fire protection industry has developed rapidly. As an important part of fire safety, electrical safety monitoring system has always occupied an important position in the field of safety supervision. Due to the increasing material and cultural needs of the people, the system has higher requirements for network convenience, data accuracy and transmission stability. Therefore, the traditional electrical fire monitoring equipment uses wired equipment to collect information, which has the disadvantages of easy aging, high power consumption and low sensitivity. At the same time, for Zigbee, Wi-Fi, Bluetooth and other wireless technology networking acquisition systems, there are also shortcomings such as limited network transmission data and difficult remote mass data storage. Using the Internet of Things technology, a hardware and software system for electrical safety monitoring is designed. The system mainly includes STM32 processor and corresponding modules, which are responsible for collecting the current, voltage and temperature information of the measured circuit. The data are transmitted to the cloud platform server through the NB-IoT communication module, and the data information is received in real time by the mobile phone terminal, and the detector is remotely controlled. Through the actual test, the system collects data accurately, and the cloud platform storage is convenient for remote access, which has certain application value. © 2022 IEEE.
Number of references: 7
Main heading: Internet of things
Controlled terms: Accident prevention - Data communication systems - Data transfer - Digital storage - Fire protection - Fires - Monitoring - Technology transfer - Wi-Fi
Uncontrolled terms: Cloud platforms - Component - Electrical safety - Electrical safety monitoring system - Fire safety - Narrow bands - NB-IoT - Safety monitoring system - Safety supervision - STM32 processor

Classification code: 722.1 Data Storage, Equipment and Techniques - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 902.2 Codes and Standards - 914.1 Accidents and Accident Prevention - 914.2 Fires and Fire Protection
DOI: 10.1109/ICMSP55950.2022.9859030
Funding Details:
Funding text: ACKNOWLEDGMENT This research funded by Xi'an Shiyou University Graduate Student Innovation and Practice Ability Training Program.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

477. Research on 3D Periodontal Reconstruction Algorithm Based on Point Cloud Reconstruction

Accession number: 20223812766931
Authors: Gao, Fang (1); Gao, Guo-Wang (1); Wu, Dan (1); Wang, Fei (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1032-1035
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: 3D model reconstruction technology is the technical basis for reconstructing reality in virtual reality. 3D visualization of teeth is widely used and of great significance in the field of tooth extraction and repair. In this paper, for the three-dimensional point cloud reconstruction process of a single tooth, firstly, the camera parameters are recovered from the two-dimensional picture and the camera calibration position is estimated; Secondly, the coordinates of two-dimensional feature points are obtained according to the depth image and optimized by statistical filter; Then, the optimized point cloud coordinates are obtained, and the model is extended by Delaunay triangle expansion. Finally, the three-dimensional model is obtained. Structure from motion(sfm) method can effectively optimize the camera, and the point cloud data obtained after statistical filtering is more accurate. The extension can obtain a fine point cloud model, and the final 3D reconstruction result is better. © 2022 IEEE.
Number of references: 10
Main heading: Image segmentation
Controlled terms: 3D modeling - Cameras - Image reconstruction - Median filters - Three dimensional computer graphics - Virtual reality
Uncontrolled terms: 3D model reconstruction - 3D reconstruction - 3D Visualization - Images segmentations - Median filtering - Point-clouds - Reconstruction algorithms - SFM - Tooth extraction - Triangular expansion
Classification code: 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 742.2 Photographic Equipment
DOI: 10.1109/ICMSP55950.2022.9859147
Funding Details: Number: YCS21113131, Acronym: -, Sponsor: -; Number: 2019GY-100,2021GY-168,2022GY-435, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;

Funding text: ACKNOWLEDGMENT This project is supported by the Innovation and Practical Ability Cultivation Program for Postgraduates of Xi 'an Shiyou University (YCS21113131), Shaanxi Provincial Key Research and Development Program(2019GY-100), (2021GY-168) and(2022GY-435).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

478. Research on well capacity prediction algorithm based on improved sparrow search algorithm fused with SVR

Accession number: 20224913219244
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Source title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Abbreviated source title: Int. Conf. Comput. Sci., Electron. Inf. Eng. Intell. Control Technol., CEI
Part number: 1 of 1
Issue title: 2022 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Issue date: 2022
Publication year: 2022
Pages: 713-716
Language: English
ISBN-13: 9781665476164
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology, CEI 2022
Conference date: September 23, 2022 - September 25, 2022
Conference location: Virtual, Online, China
Conference code: 184575
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: China is a large industrial country. In the process of oilfield development, it is of great significance to predict and analyze the oil well productivity of the oilfield. Aiming at the problems that sparrow search algorithm (SSA) is easy to fall into local optimization, insufficient search space and slow convergence speed when dealing with complex optimization problems, this paper proposes an improved sparrow search algorithm (ISSA) and integrates it into the training of support vector regression (SVR), so as to avoid the problems of local optimization and over fitting caused by improper selection of initial parameters of support vector regression machine, The accuracy of oil well production capacity prediction is improved, and the oil field production data is used for comparative analysis and verification. © 2022 IEEE.
Number of references: 13
Main heading: Forecasting
Controlled terms: Learning algorithms - Machine learning - Oil field development - Oil wells - Regression analysis - Vector spaces
Uncontrolled terms: Capacity forecast - Capacity prediction - Improved sparrow search algorithm - Local optimizations - Prediction algorithms - Search Algorithms - Smart oilfield - Support vector regression machines - Support vector regressions - Well capacity
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 921 Mathematics - 922.2 Mathematical Statistics
DOI: 10.1109/CEI57409.2022.9950161
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

479. An Algorithm for Calculating the Optimal Zoning Scheme Based on Artificial Neural Network

Accession number: 20222412229873
Authors: Dong, Chuangchuang (1); Gao, Weixin (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1620-1624
Language: English
ISBN-13: 9781665478571
Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: A mathematical model with the least tie lines between subsystems and the least supply complexity is proposed, aiming at the problem of black-start partition after large-scale power outage in power grid. The minimum topology matrix and partition state matrix are constructed to describe the mathematical model more clearly. The solution of the mathematical model is transformed into a 0-1 optimization problem. In the light of the current situation that most 0-1 optimization problems are NP hard problems, Hopfield neural network is proposed to solve it. In this paper, the energy function considering the objective function and constraints is established, and the solution method is given. IEEE-118 nodes verify the effectiveness of the method proposed in this paper. © 2022 IEEE.
Number of references: 10
Main heading: Hopfield neural networks
Controlled terms: Computational complexity - Electric power transmission networks - Optimization - Outages - Topology
Uncontrolled terms: Black start - Energy functions - Hopfield - Large-scales - Neural-networks - Optimal zoning - Optimization problems - Partitioning scheme - Power outage - Tie-line
Classification code: 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques
DOI: 10.1109/ICSP54964.2022.9778377
Funding Details: Number: 2020GY-179, Acronym: -, Sponsor: -; Number: YCS21113127, Acronym: -, Sponsor: -;
Funding text: This paper is supported by the Key R&D Province (2020GY-179) and Xi’an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS21113127)ACKNOWLEDGMENT This paper is supported by the Key R&D (2020GY-179) and Xi’an Shiyou University Innovation and Practice Ability Training (YCS21113127).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

480. Research on a Portable Gel Physical Properties Analyzer

Accession number: 20222412229492
Authors: Yan, Huan (1); Gao, Weixin (1); Yu, Feiyuan (1)
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Source title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Abbreviated source title: Int. Conf. Intell. Comput. Signal Process., ICSP
Part number: 1 of 1
Issue title: 2022 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Issue date: 2022
Publication year: 2022
Pages: 1260-1264
Language: English
ISBN-13: 9781665478571

Document type: Conference article (CA)
Conference name: 7th International Conference on Intelligent Computing and Signal Processing, ICSP 2022
Conference date: April 15, 2022 - April 17, 2022
Conference location: Xi'an, China
Conference code: 179503
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Viscosity is an important physical property of gels widely used in the petroleum industry. In this paper, a non-contact and efficient measurement method is proposed. The motion process of the gel in the capillary is captured by a high-speed camera, and the gel image is obtained. Using the advantages of GPU in parallel computing, a corresponding image processing method is proposed. The physical viscosity measurement of four actual batches of gels shows that the method proposed in this paper can accurately obtain the actual physical properties, and the execution time of the method in this paper is significantly faster than the CPU serial method, which ensures the accuracy of the calculation of the physical properties of the analyzer. At the same time, the real-time performance of the calculation is improved. © 2022 IEEE.
Number of references: 11
Main heading: Viscosity
Controlled terms: Gels - High speed cameras - Image processing - Petroleum industry - Viscosity measurement
Uncontrolled terms: CUDA - Gel images - High-speed cameras - Image processing - methods - Measurement methods - Measurements of - Non-contact - Parallel com- puting - Physical viscosities - Poiseuille law
Classification code: 631.1 Fluid Flow, General - 723.2 Data Processing and Image Processing - 742.2 Photographic Equipment - 801.3 Colloid Chemistry - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids - 943.3 Special Purpose Instruments
DOI: 10.1109/ICSP54964.2022.9778491
Funding Details: Number: 2020GY-179, Acronym: -, Sponsor: -; Number: YCS21113141, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper is supported by the Key R&D Province (2020GY-179) and Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS21113141)This paper is supported by the Key R&D Province (2020GY-179) and Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS21113141)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

481. Simulation research on erosion thickness measurement of oil and gas pipeline based on array electromagnetic ultrasound

Accession number: 20223812766939
Authors: Wang, Yunlong (1); Gao, Guowang (1); Wu, Dan (1); Wang, Fei (1); Zhao, Peng (2); Yan, Suli (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 455-459
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE

Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the process of oil and gas exploitation, the formation sand is carried into the surface pipeline, which damages the pipe wall, elbow, pump valve and other conveying equipment. With the increase of pipeline service time, the evaluation of oil and gas pipeline erosion degree is very necessary to identify pipeline integrity, and can effectively prevent the occurrence of accidents. In order to realize the detection of bend erosion of oil and gas pipelines, this paper proposed a detection method based on electromagnetic ultrasound. For curved specimens, array electromagnetic ultrasound was adopted to construct a two-dimensional section structure model of boldsymbol{3times 3} array sensor. Com sol multi-physical field simulation software was used to optimize the probe parameters. The propagation process of ultrasonic wave in pipe wall under multi-probe excitation is simulated, and the results show that the array electromagnetic ultrasonic detection is better for measuring pipe bend. © 2022 IEEE.
Number of references: 10
Main heading: Erosion
Controlled terms: Computer software - Gases - Probes - Sols - Thickness measurement
Uncontrolled terms: Array sensors - Electromagnetic ultrasonic - Electromagnetics - Oil-and-Gas pipelines - Pipe walls - Pipeline erosion - The simulation analyse - Time-sharing - Time-sharing scanning
Classification code: 723 Computer Software, Data Handling and Applications - 804 Chemical Products Generally - 943.2 Mechanical Variables Measurements
DOI: 10.1109/ICMSP55950.2022.9859160
Funding Details: Number: YCS21113133, Acronym: -, Sponsor: -; Number: 2019GY-100 Sand 2021GY-168, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: ACKNOWLEDGMENT This project was supported by the Graduate Innovation and Practical Ability Training program of Xi 'an Shiyou University (YCS21113133) and the project of China National Offshore Oil Corporation (CNOOC) (Fund number 2019GY-100 Sand 2021GY-168)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

482. Application of seismic image enhancement technology based on single-frame super-resolution reconstruction

Accession number: 20223512649328
Authors: Zhao, Jingyu (1); Lou, Li (1)
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Source title: 2022 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2022
Abbreviated source title: IEEE Int. Conf. Artif. Intell. Comput. Appl., ICAICA
Part number: 1 of 1
Issue title: 2022 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2022
Issue date: 2022
Publication year: 2022
Pages: 643-647
Language: English
ISBN-13: 9781665499910
Document type: Conference article (CA)
Conference name: 2022 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2022
Conference date: June 24, 2022 - June 26, 2022
Conference location: Dalian, China
Conference code: 181710
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The clarity of seismic images has a great impact on the results of seismic data interpretation; therefore, high-resolution seismic images can provide finer geological information for seismic exploration. Coordinate-based Multilayer Perceptron(MLP) is easy for gradient-based optimization and machine learning, and represents a more compact order of magnitude than grid sampling. In this paper, we propose a combination of Random Fourier Features(RFF) and coordinate based MLP method to achieve super-resolution reconstruction of seismic images, taking one image coordinate as input and the output is the RGB value of the pixel at that location. Preprocessing the spatial coordinates of the image with Fourier feature mapping enables the MLP to learn higher frequency detail information and achieve super-resolution reconstruction of a single seismic image. Experiments show that the texture and edge details of the final processed seismic image are much clearer. © 2022 IEEE.

Number of references: 14
Main heading: Image enhancement
Controlled terms: Fourier transforms - Image reconstruction - Multilayer neural networks - Multilayers - Optical resolving power - Seismic prospecting - Seismic waves - Seismology - Textures
Uncontrolled terms: Fourier features - High resolution seismic - Image enhancement technologies - Multilayers perceptrons - Random fourier feature - Seismic data interpretations - Seismic image - Single frame super resolutions - Super-resolution reconstruction - Technology-based
Classification code: 481.4 Geophysical Prospecting - 484 Seismology - 484.1 Earthquake Measurements and Analysis - 741.1 Light/Optics - 921.3 Mathematical Transformations
DOI: 10.1109/ICAICA54878.2022.9844570
Funding Details: Number: 2021GY-138, Acronym: -, Sponsor: -; Number: YCS21213258, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work was finally supported by Shaanxi Provincial Key RESEARCH and development program in 2021 (2021GY-138) and the Project of Postgraduate Innovation and Practice Training Program of Xi'an University of Petroleum in 2021 (YCS21213258).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

483. Mathematical Model of Intelligent Monitoring System Based on BPNN and Convolutional Hierarchical Analysis Algorithm

Accession number: 20221812059156
Authors: Gao, Nan (1)
Author affiliation: (1) Xi'an Shiyou University, College of Science, Shaanxi, Xi'an; 710065, China
Corresponding author: Gao, Nan(Gaonanshanxi0355@mail.com)
Source title: Proceedings - 6th International Conference on Computing Methodologies and Communication, ICCMC 2022
Abbreviated source title: Proc. - Int. Conf. Comput. Methodol. Commun., ICCMC
Part number: 1 of 1
Issue title: Proceedings - 6th International Conference on Computing Methodologies and Communication, ICCMC 2022
Issue date: 2022
Publication year: 2022
Pages: 1678-1681
Language: English
ISBN-13: 9781665410281
Document type: Conference article (CA)
Conference name: 6th International Conference on Computing Methodologies and Communication, ICCMC 2022
Conference date: March 29, 2022 - March 31, 2022
Conference location: Erode, India
Conference code: 178761
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper proposes a mathematical model of an intelligent monitoring system composed of a combination of BPNN neural network and convolutional hierarchical analysis algorithm. Using the advantages of neural network, genetic algorithm overcomes the defect that neural network is easy to fall into local minimum error. Using the reconstruction feature based on lifting wavelet to determine whether the dynamic process is abnormal, the BPNN based on the reconstructed mean feature divides the five abnormal patterns into three categories. The three types of abnormal patterns are further identified by LSSVM based on the reconstructed shape features. The numerical simulation of MATLAB shows that the monitoring of various parameters in the well through the monitoring model has remarkable predictive ability, good real-time performance, powerful learning function, and an increase of 9.7% in accuracy, which has strong practicability. © 2022 IEEE.
Number of references: 24
Main heading: Convolution
Controlled terms: Genetic algorithms - MATLAB - Monitoring
Uncontrolled terms: Abnormal patterns - Analysis algorithms - BPNN - Convolutional hierarchical - Feature-based - Hierarchical analysis - Intelligent monitoring - Intelligent monitoring systems - Local minimums - Neural-networks
Classification code: 716.1 Information Theory and Signal Processing - 723.5 Computer Applications - 921 Mathematics

Numerical data indexing: Percentage 9.70E+00%
DOI: 10.1109/ICCMC53470.2022.9753881
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

484. Design and research of drill pipe auxiliary docking manipulator

Accession number: 20223812766779
Authors: Sun, Qihang (1); Liu, Feng (1)
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 134-137
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to solve the problems of low efficiency, time-consuming, labor-intensive and high risk of make a connection and put out of hole in oil exploitation engineering, based on the traditional single connection operation process, a dual-arm drill pipe auxiliary docking manipulator with PLC as the main controller is designed with reference to the spherical coordinate manipulator. This paper mainly describes the mechanical structure and control system of the double-arm drill pipe auxiliary docking manipulator, simplifies the control model to the control of the angle α between the manipulator and the column and the horizontal inclination angle of the mechanical claw through the inverse kinematics analysis and expounds the selection and working principle of the hardware and software of the control system, which has certain reference value for the automatic and intelligent development of oil exploitation equipment. © 2022 IEEE.
Number of references: 9
Main heading: Inverse kinematics
Controlled terms: Control systems - Drill pipe - Drills - Infill drilling - Inverse problems - Manipulators
Uncontrolled terms: Component - Dual arm - Labour-intensive - Make a connection - Mechanical control systems - Oil exploitation - Operation process - Single connection - Spherical coordinate manipulator - Spherical coordinates
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 731.1 Control Systems - 931.1 Mechanics
DOI: 10.1109/ICMSP55950.2022.9859087
Funding Details: Number: YCS21213222, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This paper was supported by Xi'an Shiyou University Postgraduate Innovation and Practical Ability Training Program.Fund project: Shaanxi Province Technology Innovation Guidance Special Fund (Project NO. YCS21213222).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

485. DSM and Optimization of Multihop Smart Grid Based on Genetic Algorithm (*Open Access*)

Accession number: 20222612267555
Authors: Zhu, Qi (1); Li, Yingliang (1); Song, Jiuxu (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Zhu, Qi(qzhu@xsyu.edu.cn)
Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 5354326
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Multihop smart grid is built on the basis of an integrated and high-speed communication network. Through the application of advanced sensing and measurement technology, equipment technology, control method, and advanced decision support system technology, the goal of reliable, safe, economic, efficient, environment-friendly, and safe use of the power grid is realized. In order to solve the problem of excessive demand for power supply, new energy power generation and demand response are proposed. According to the above background, the demand side economic scheduling problem is a complex optimization problem, which is difficult to be solved by ordinary algorithms. The adaptive global search algorithm based on a genetic algorithm can better solve complex optimization problems. The genetic algorithm proposed in this paper can effectively manage a large number of controllable loads in the selected area. The algorithm minimizes the cost and peak to the average ratio by changing the load. Home users can arrange their maximum load when the price is low. The peak load of residential buildings decreased from 98.5 kw/h to 90 kw/h, and the peak load decreased by about 7.53%. Through appropriate load dispatching, users minimize the daily electricity charge, which is reduced from 1352 yuan to 1245 yuan per day, and the daily electricity charge is reduced by about 7.25%. In addition, the advanced measurement, communication, and control means under the framework of the smart grid also play a key role in promoting all aspects of demand side management (DSM). © 2022 Qi Zhu et al.
Number of references: 26
Main heading: Genetic algorithms
Controlled terms: Artificial intelligence - Complex networks - Decision support systems - Electric load dispatching - Electric power system control - Electric power system economics - Electric power transmission networks - Electric utilities - Smart power grids
Uncontrolled terms: Complex optimization problems - Grid-based - High speed communication networks - Measurement technologies - Multi-hops - Optimisations - Peak load - Sensing technology - Smart grid - Technology equipment
Classification code: 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 722 Computer Systems and Equipment - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 731.2 Control System Applications - 911.2 Industrial Economics - 912.2 Management
Numerical data indexing: Percentage 7.25E+00%, Percentage 7.53E+00%, Power 9.00E+04W, Power 9.85E+04W
DOI: 10.1155/2022/5354326
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

486. Optimized Piano Music Education Model Based on Multimodal Information Fusion for Emotion Recognition in Multimedia Video Networks (*Open Access*)

Accession number: 20223812750993
Authors: Bai, Jie (1)
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Corresponding author: Bai, Jie(18404173@masu.edu.cn)
Source title: Mobile Information Systems
Abbreviated source title: Mob. Inf. Sys.
Volume: 2022

Issue date: 2022
Publication year: 2022
Article number: 1882739
Language: English
ISSN: 1574017X
E-ISSN: 1875905X
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Emotion is the important information that people transmit in the process of communication, and the change of emotional state affects people's perception and decision-making, which introduces the emotional dimension into human-computer interaction. The modes of emotional expression include facial expressions, speech, posture, physiological signals, text, and so on. Emotion recognition is essentially a multimodal fusion problem. This paper investigates the different teaching modes of the teachers and students of our school, designs the load capacity through the K-means algorithm, builds a multimedia network sharing classroom, and creates a piano music situation to stimulate students' learning interest, using audiovisual and other tools to mobilize students' emotions, using multimedia guidance to extend students' piano music knowledge, and comprehensively improve students' aesthetic ability and autonomous learning ability. Comparing the changes of students after 3 months of teaching, the results of the study found that multimedia sharing classrooms can be up to 50% ahead of traditional teaching methods in enhancing students' interest, and teachers' acceptance of multimedia network sharing classrooms is also high. © 2022 Jie Bai.
Number of references: 31
Main heading: Students
Controlled terms: Behavioral research - Decision making - Emotion Recognition - Human computer interaction - K-means clustering - Speech recognition
Uncontrolled terms: Emotion recognition - Emotional state - Model-based OPC - Multimedia networks - Multimedia video - Multimodal information fusion - Music education - Network sharing - Piano music - Video networks
Classification code: 461.4 Ergonomics and Human Factors Engineering - 723.2 Data Processing and Image Processing - 751.5 Speech - 903.1 Information Sources and Analysis - 912.2 Management - 971 Social Sciences
Numerical data indexing: Age 2.499E-01yr, Percentage 5.00E+01%
DOI: 10.1155/2022/1882739
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

487. Recent advances in evaluation, evolution and quantitative characterization of tight reservoirs: Introduction (*Open Access*)

Accession number: 20224313010913
Authors: Chang, Xiangchun (1); Yin, Shuai (2)
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Source title: Energy Geoscience
Abbreviated source title: Energy Geosci.
Volume: 3
Issue: 4
Issue title: SI: Tight Reservoirs
Issue date: October 2022
Publication year: 2022
Pages: 381-382
Language: English
E-ISSN: 26667592
Document type: Journal article (JA)
Publisher: KeAi Communications Co.
Number of references: 25
DOI: 10.1016/j.engeos.2022.04.002
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex

Data Provider: Engineering Village

488. Research on Water Content Prediction Method Based on LSTM Neural Network

Accession number: 20223112454417
Authors: Hu, Hongtao (1); Dang, Chen (1); Li, Min (1)
Author affiliation: (1) Xi'an Shiyou University, School of Computer Science, Shaanxi, Xi'an, China
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Source title: 2022 IEEE 5th International Conference on Artificial Intelligence and Big Data, ICAIBD 2022
Abbreviated source title: IEEE Int. Conf. Artif. Intell. Big Data, ICAIBD
Part number: 1 of 1
Issue title: 2022 IEEE 5th International Conference on Artificial Intelligence and Big Data, ICAIBD 2022
Issue date: 2022
Publication year: 2022
Pages: 190-193
Language: English
ISBN-13: 9781665499132
Document type: Conference article (CA)
Conference name: 5th IEEE International Conference on Artificial Intelligence and Big Data, ICAIBD 2022
Conference date: May 27, 2022 - May 30, 2022
Conference location: Virtual, Chengdu, China
Conference code: 180907
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the development of oilfields, water cut is an important indicator to reflect the development of oilfields. At present, most oilfields are derived by mathematical formulas or predicted by a single neural network, and the accuracy is not high. In order to improve the prediction accuracy of water content, this paper proposes a water content prediction model PSO-LSTM, which uses particle swarm algorithm to optimize the hyperparameters of long-term and short-term memory neural network. Taking the long-term and short-term memory neural network as the backbone of the model, the PSO algorithm is used to find its hyperparameters. Through experiments, the prediction accuracy R2 of the PSO-LSTM model proposed in this paper can reach 0.91. Compared with the LSTM neural network model and the BP neural network model, the accuracy is the highest, and the expected goal is achieved. © 2022 IEEE.
Number of references: 9
Main heading: Particle swarm optimization (PSO)
Controlled terms: Brain - Forecasting - Long short-term memory - Oil fields
Uncontrolled terms: Hyper-parameter - Long term memory - Moisture content predictions - Neural-networks - Particle swarm - Particle swarm optimization - Prediction accuracy - Short term memory - Short-term and long-term memory neural network - Swarm optimization
Classification code: 461.1 Biomedical Engineering - 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 921.5 Optimization Techniques
DOI: 10.1109/ICAIBD55127.2022.9820073
Funding Details:
Funding text: We are grateful to the innovation and practice ability training program of Xi'an Petroleum University for their contributions to this paper.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

489. Improving voltage profile of unbalanced Low-Voltage distribution networks via optimal placement and operation of distributed energy storage systems

Accession number: 20222812336101
Authors: Li, Yingliang (1); Cai, Heming (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Yingliang(yingliang.li@hotmail.com)
Source title: IET Renewable Power Generation
Abbreviated source title: IET. Renew. Power Gener.
Volume: 16
Issue: 13
Issue date: 5 October 2022

Publication year: 2022
Pages: 2748-2761
Language: English
ISSN: 17521416
E-ISSN: 17521424
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Distributed energy storage system (DESS) has flexible operating characteristics, and DESSs can be properly configured to effectively serve the voltage regulation of the active distribution network. The existing voltage regulation-oriented DESSs optimization configuration studies are usually based on the balanced network model to analyze the impact of energy storage operation characteristics on the system voltage, but the distribution network is actually three-phase unbalanced. To this end, a method for the sequence optimization of DESSs in unbalanced distribution networks based on voltage sensitivity analysis is proposed, and the optimal configuration of DESSs in unbalanced distribution networks is studied from the perspective of improving the network voltage performance. Firstly, the DESSs placement is determined based on the proposed comprehensive voltage sensitivity analysis method; secondly, taking into account the economy of system operation, optimize the capacity of DESSs with the goal of minimizing the investment and operation and maintenance cost of DESSs, and the model solved by the improved grey wolf optimization algorithm. Finally, numerical simulations are analyzed by two unbalanced distribution testing networks. The results show that the proposed method can effectively improve the voltage profile of the unbalanced distribution network while ensuring the economy of system operation. © 2022 The Authors. IET Renewable Power Generation published by John Wiley & Sons Ltd on behalf of The Institution of Engineering and Technology.
Number of references: 26
Main heading: Sensitivity analysis
Controlled terms: Data storage equipment - Economics - Electric power distribution - Energy storage - Investments - Voltage distribution measurement - Voltage regulators
Uncontrolled terms: Active distributions - Distributed energy storage systems - Low voltage distribution network - Operating characteristics - Optimal operation - Optimal placements - Systems operation - Unbalanced distribution networks - Voltage profile - Voltage sensitivity
Classification code: 525.7 Energy Storage - 706.1.2 Electric Power Distribution - 722.1 Data Storage, Equipment and Techniques - 732.1 Control Equipment - 921 Mathematics - 942.2 Electric Variables Measurements - 971 Social Sciences
DOI: 10.1049/rpg2.12485
Funding Details: Number: YCS22111015, Acronym: -, Sponsor: -; Number: 2021JM#404,52174005, Acronym: -, Sponsor: -; Number: 21JK0843, Acronym: -, Sponsor: -; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the Scientific Research Program of Shaanxi Provincial Education Department (No. 21JK0843), the Key Project of Enterprise Innovation and Development Joint Fund by National Natural Science Foundation of China (No.U20B2029), the Science and Technology Basic Research Program of Shaanxi (No. 2021JM404), the National Natural Science Foundation of China (52174005) and the Postgraduate Innovation and Practice Ability Training Program of Xi'an Shiyou University (YCS22111015).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

490. Modeling and Simulation of Rock Bits Based on Mega Drilling Data (*Open Access*)

Accession number: 20220811697369
Authors: Wu, Zebing (1); Jiang, Mengjie (1); Zheng, Weixin (1); Gu, Yabing (1); Zhai, Xiping (1); Yang, Chenjuan (1)
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Corresponding author: Jiang, Mengjie(20211040455@stumail.xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2179
Part number: 1 of 1
Issue: 1
Issue title: 2021 2nd International Conference on Modeling, Big Data Analytics and Simulation, MBDAS 2021
Issue date: January 28, 2022
Publication year: 2022
Article number: 012013
Language: English

ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2021 2nd International Conference on Modeling, Big Data Analytics and Simulation, MBDAS 2021
Conference date: November 14, 2021 - November 15, 2021
Conference location: Shenzhen, China
Conference code: 177142
Publisher: IOP Publishing Ltd
Abstract: Rock bits directly undertake the task of fracturing rock under earth during drilling operation. Accurate prediction of Rate of penetration (ROP) play an important role in reducing drilling costs and shortening the drilling cycle. This paper introduces ROP prediction methods including empirical mathematical modeling, computer simulation of bit-rock interaction and BP neural network model based on mega drilling data. The most significant factors affecting ROP are summarized as follows: weight on bit(WOB), rotation speed, rock formation properties, bit cutting structure, etc., which have a complex multi-parameter nonlinear relationship with ROP. The drilling data features complexity and big volume. Therefore machine learning is a best way to model the relationship between main factors and ROP. The advantages and disadvantages of the different ROP modeling methods are analyzed and compared. It shows that the BP neural network model based on mega drilling data demonstrates high accuracy, and is the future development direction in ROP prediction. © Published under licence by IOP Publishing Ltd.
Number of references: 38
Main heading: Rocks
Controlled terms: Forecasting - Complex networks - Neural networks
Uncontrolled terms: BP neural networks - BP neural networks model - Drilling data - Drilling data. - Model-based OPC - Penetration models - Rate of penetration - Rate of penetration modeling - Rock bit - Simulation
Classification code: 722 Computer Systems and Equipment
DOI: 10.1088/1742-6596/2179/1/012013
Funding Details: Number: 32539-T, Acronym: CONACYT, Sponsor: Consejo Nacional de Ciencia y Tecnología;
Funding text: The authors express their gratitude to Conacyt (project number 32539-T) and Servicios Industriales Peñoles (Monterrey, México) for funding this work. V. Reyes-Cruz thanks Conacyt and Servicios Industriales Peñoles (Monterrey México) for his PhD scholarship. The authors also thank M. Teresa Ramírez for her help in the construction of the Pourbaix diagrams.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

491. Study of Drilling Parameter Effects on Downlink Command Signal Transmission using the DOE Method

Accession number: 20223812766798
Authors: Li, Fei (1); Mei, Yu (1); Liu, Yuan (1); Zhang, Ruiqiong (1)
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Corresponding author: Li, Fei(lif@xsyu.edu.cn)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 201-204
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China

Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In the rotary steering drilling process, directional drilling engineers use downlink commands to control the drilling tool according to the wellbore trajectory, and actual downlink commands are affected by various transmission processes. To further investigate the effect of drilling parameters on downlink command transmission, shorten the drilling cycle, and improve the drilling efficiency by building a downlink command simulation model in Simulink to simulate the actual transmission process of the downlink signal in the well. The decoding correlation rate of downlink commands received by downhole tools was used as a measure for DOE tests. The Box-Behnken experimental design method was used to investigate the effect of drilling parameters on the magnitude of the decoding correlation rate of downlink command signals. After response surface analysis, the factors that significantly affect the decoding correlation of downlink commands are obtained. And the optimal solutions of each parameter are obtained when the decoding correlation rate reaches 0.96. © 2022 IEEE.
Number of references: 7
Main heading: Surface analysis
Controlled terms: Decoding - Design - Directional drilling - Infill drilling - Simulink
Uncontrolled terms: Box-Behnken - Box-behnken response surface design - Command signal - Downlink communications - Drilling parameters - Parameters effects - Response surface designs - Rotary steering - Signal generation - Signal transmission
Classification code: 511.1 Oil Field Production Operations - 723.2 Data Processing and Image Processing - 951 Materials Science
DOI: 10.1109/ICMSP55950.2022.9859107
Funding Details: Number: YCS22113144, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability(YCS22113144).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

492. Design of the Main Controller of Rotary Steerable System Based on FreeRTOS

Accession number: 20223612687615
Authors: Li, Fei (1); Chen, Shan (1); Lyu, Fangxing (1); Ma, Xueying (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Fei(lif@xsyu.edu.cn)
Source title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Abbreviated source title: Int. Conf. Commun., Inf. Syst. Comput. Eng., CISCE
Part number: 1 of 1
Issue title: 2022 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Issue date: 2022
Publication year: 2022
Pages: 183-186
Language: English
ISBN-13: 9781665498487
Document type: Conference article (CA)
Conference name: 4th International Conference on Communications, Information System and Computer Engineering, CISCE 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Shenzhen, China
Conference code: 181987
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: Rotary steerable system needs to coordinate multiple functions and modules in real-time. If a nested interrupt processing method is used, it may lead to erroneous interrupt cascades and result in unpredictable execution time and high stack requirements. This paper developed the main controller based on the FreeRTOS and provided a

preemptive task scheduling mechanism that can achieve the specified operation and response within a specific time. More specifically, the demand of the rotary steerable system was analyzed, and then the transplant of FreeRTOS to a DSP TMS320F28335 and task priorities assignment were introduced. Finally, the real-time performance of the main controller was tested through General Purpose Input/Output and DSP's load rates. The experiment results showed that the system achieved the required real-time performance and met the needs of the rotary steerable system. © 2022 IEEE.
Number of references: 5
Main heading: Controllers
Controlled terms: Multitasking - Rotating machinery - Scheduling algorithms
Uncontrolled terms: FreeRTOS - Main controller - Multiple function - Processing method - Real time performance - Real- time - Rotary steerable systems - Scheduling mechanism - Tasks scheduling - Unpredictable execution time
Classification code: 601.1 Mechanical Devices - 722.4 Digital Computers and Systems - 732.1 Control Equipment
DOI: 10.1109/CISCE55963.2022.9851090
Funding Details: Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant No. 2021KW-33 and 2022KW-25), and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

493. Research on infrared detection and intelligent identification technology of oil and gas pipeline leakage

Accession number: 20231513881744
Authors: Xu, Shibei (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
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Source title: Proceedings - 2022 International Conference on Artificial Intelligence, Information Processing and Cloud Computing, AIIPCC 2022
Abbreviated source title: Proc. - Int. Conf. Artif. Intell., Inf. Process. Cloud Comput., AIIPCC
Part number: 1 of 1
Issue title: Proceedings - 2022 International Conference on Artificial Intelligence, Information Processing and Cloud Computing, AIIPCC 2022
Issue date: 2022
Publication year: 2022
Pages: 133-136
Language: English
ISBN-13: 9781665462877
Document type: Conference article (CA)
Conference name: 2022 International Conference on Artificial Intelligence, Information Processing and Cloud Computing, AIIPCC 2022
Conference date: August 19, 2022 - August 21, 2022
Conference location: Kunming, China
Conference code: 187544
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: To address the actual problem of oil and gas pipeline leaks, this paper designs an experimental device to simulate the leak state by controlling the water flow rate of the tap, selects the infrared detection method to collect the images of the leak state using an infrared thermal imager, and then detects the leaks based on deep learning and AlexNet network for intelligent recognition of the images. The detection of oil and gas pipeline leaks is very important for oil and gas transportation, and effective detection can reduce leaks and the occurrence of accidents. © 2022 IEEE.
Number of references: 6
Main heading: Gases
Controlled terms: Deep learning - Flow of water - Gas pipelines - Image recognition - Petroleum transportation

Uncontrolled terms: Deep learning - Detection/identification - Experimental devices - Identification technology - Infrared detection - Intelligent identification - Oil and gas pipeline leakage - Oil-and-Gas pipelines - Pipeline leakage - Pipeline leaks
Classification code: 461.4 Ergonomics and Human Factors Engineering - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 631.1.1 Liquid Dynamics
DOI: 10.1109/AIIPCC57291.2022.00036
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

494. Three-dimensional Geoelectrical Forward Modeling and Numerical Simulation for NMR

Accession number: 20223812766819
Authors: Ren, Zhiping (1); Dang, Bo (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Shaanxi, Xi'an, China
Corresponding author: Dang, Bo(bodang521@126.com)
Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 512-515
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In order to accurately describe the distribution of groundwater, a three-dimensional NMR response model was established. By the finite element method, the forward calculation was achieved. The distribution of NMR kernel function with different resistivity in homogeneous half space was studied by numerical simulation. With the help of the A, H, K, Q model, the NMR response to cover layer resistivity and surrounding resistivity were discussed. It shows that the distribution characteristics of resistivity were very important for the calculation of NMR especially in the low resistance medium. It provides an important reference for the inversion of NMR in the complex environment. © 2022 IEEE.
Number of references: 9
Main heading: Numerical models
Controlled terms: Finite element method - Geometry - Groundwater - Nuclear magnetic resonance spectroscopy
Uncontrolled terms: Electric structure - Finite element - Forward modeling - Geoelectrical - Homogeneous half space - Kernel function - Response model - Three dimensional modelling - Underground water detecting - Water detecting
Classification code: 444.2 Groundwater - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1109/ICMSP55950.2022.9859016
Funding Details: Number: 2020KJXX-018, Acronym: -, Sponsor: -; Number: 41874158,51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YXKYZX082021, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: Acknowledgements The authors would like to thank the reviewers for their helpful suggestions, which have considerably improved the quality of the manuscript. This work was supported in part by the National Natural Science Foundation of China under Grant 51974250 and Grant 41874158, in part by the Youth Science and Technology Nova Project in Shaanxi Province, China, under Grant 2020KJXX-018 and in part by CNOOC Limited Scientific Research Project, under Grant YXKYZX082021.
Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

495. Application and Deconstruction of Exercise Prescription Formulation Based on K-Means Algorithm in the Prevention and Treatment of Chronic Diseases (*Open Access*)

Accession number: 20223312565851
Authors: Zhang, Quancheng (1)
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Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 1414119
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Chronic diseases, also known as chronic noncommunicable diseases, have the characteristics of a long period of symptoms, complex and diverse causes, relatively large damage to human health, and a relatively wide impact on the overall safety of society. This study mainly discusses the application of exercise prescription formulation based on K-means algorithm in the prevention and treatment of chronic diseases. Aiming at different groups of people with different physical conditions in different environments, this study established a comprehensive exercise prescription library and feedback channels. By comparing and analyzing the effects of different exercise exercises, people can provide scientifically standardized and suitable exercise and fitness programs for people with chronic diseases. The feasibility of the K-means algorithm in chronic disease prediction is confirmed by experiments, and the experimental time of the improved algorithm and the traditional algorithm is compared, and the efficiency of the improved algorithm is confirmed. Aiming at the privacy, complexity, missing data values, and other issues of chronic disease medical examination data, we have carried out perfect data preprocessing research. After 12 weeks of exercise intervention, the vital capacity of the exercise group increased significantly (5.83%) (P © 2022 Quancheng Zhang.
Number of references: 20
Main heading: K-means clustering
Controlled terms: Blood pressure - Diagnosis - Diseases
Uncontrolled terms: Chronic disease - Data values - Feedback channel - Human health - Improved * algorithm - K-mean algorithms - Medical examination data - Missing data - Non-communicable disease - Physical conditions
Classification code: 461.6 Medicine and Pharmacology - 461.9 Biology - 903.1 Information Sources and Analysis
Numerical data indexing: Age 2.328E-01yr, Percentage 5.83E+00%, Percentage 9.74E+00%
DOI: 10.1155/2022/1414119
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

496. Retraction notice: Intelligent traffic control system based on open IoT and machine learnin(Journal of Intelligent and Fuzzy Systems(2020) 40:4 (7001-7012) DOI: 10.3233/JIFS-189531) (*Open Access*)

Accession number: 20230313385446
Authors: Chen, Jiaona (1); Liu, Hailong (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Shaanxi, Xi'an, China
Source title: Journal of Intelligent and Fuzzy Systems
Abbreviated source title: J. Intelligent Fuzzy Syst.
Volume: 43
Issue: 6
Issue date: 2022

Publication year: 2022
Pages: 8439
Language: English
ISSN: 10641246
E-ISSN: 18758967
Document type: Erratum (ER)
Publisher: IOS Press BV
Abstract: The article "Intelligent traffic control system based on open IoT and machine learning" by Jiaona Chen and Hailong Liu, originally published in Journal of Intelligent & Fuzzy Systems, vol. 40, no. 4, pp. 7001-7012, 2020 (DOI: 10.3233/JIFS-189531) has been retracted on the initiative of the authors. For further enquiries regarding background of the retraction please contact corresponding author Jiaona Chen, e-mail: chenjn@chd.edu.cn. The article was published as version of record on 12 April 2021 and retracted formally on 11 November 2022. The publisher has updated the original online PDF with the word "RETRACTED" watermarked over every page of the article.
DOI: 10.3233/JIFS-219323
ErratuFlg: 2021287221
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

497. Design and Analysis of Big Data Application Scenarios Based on Mathematical Modeling Path

Accession number: 20230413412298
Authors: Gao, Nan (1)
Author affiliation: (1) Xi'an Shiyou University, College of Science, Shaanxi, Xi'an; 710065, China
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Source title: 6th International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud), I-SMAC 2022 - Proceedings
Abbreviated source title: Int. Conf. I-SMAC (IoT Soc., Mob., Anal. Cloud), I-SMAC - Proc.
Part number: 1 of 1
Issue title: 6th International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud), I-SMAC 2022 - Proceedings
Issue date: 2022
Publication year: 2022
Pages: 291-294
Language: English
ISBN-13: 9781665469418
Document type: Conference article (CA)
Conference name: 6th International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud), I-SMAC 2022
Conference date: November 10, 2022 - November 12, 2022
Conference location: Dharan, Nepal
Conference code: 185437
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: This paper is based on the construction and complexity analysis of big data application scenarios based on the path of mathematical modeling. Aiming at the status quo of mathematics modeling for college students, combined with big data mining, this paper finds out the construction algorithm of big data application scenarios and conducts research and improvement. Let them be organically combined to build a new model of big data mathematical modeling in the era of big data. And combined with traditional data mining methods such as modeling and features to extract the value of big data. Analyzed the way to solve the problem layer by layer by using big data analysis method in the expansion process of a wind power station, and drew relevant conclusions.
Number of references: 15
Main heading: Big data
Controlled terms: Data mining - Students - Wind power
Uncontrolled terms: Application scenario - Big data applications - College students - Complexity analysis - Construction analysis - Design and analysis - Mathematical modeling - Mathematics model - Scenario-based - Status quo
Classification code: 615.8 Wind Power (Before 1993, use code 611) - 723.2 Data Processing and Image Processing
DOI: 10.1109/I-SMAC55078.2022.9987383

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

498. Error analysis and compensation method of underground turbine motor voltage sensor (*Open Access*)

Accession number: 20230113343841
Authors: Xiao, Wang (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 2383
Part number: 1 of 1
Issue: 1
Issue date: 2022
Publication year: 2022
Article number: 012064
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2022 8th International Conference on Mechanical Engineering, Materials and Automation Technology, MMEAT 2022
Conference date: May 27, 2022 - May 29, 2022
Conference location: Qingdao, China
Conference code: 185125
Publisher: Institute of Physics
Abstract: the control system of petroleum drilling engineering has been in a bad and high temperature environment for a long time. In the unknown downhole working environment, the signal detection accuracy of turbine motor determines the drilling quality and cost of rotary steering drilling engineering. In order to design a high-temperature voltage sensor that meets the needs of oil drilling engineering, this paper takes 206B voltage sensor as the experimental object, simulates the downhole environment, carries out high-temperature experiments on this type of sensor, and analyzes the influencing factors of its error. The experimental data show that the downhole turbine motor voltage sensor is most affected by temperature, and the 206B sensor can withstand a maximum temperature of 125 °C. In view of its temperature influence, the least square method is used to compensate the error. The compensated voltage sensor error is reduced to $_{1\sim3.048\%,}$ which effectively improves the accuracy of the turbine motor voltage detection device and can accurately receive the downward signal of rotary steering drilling, so as to greatly reduce the drilling cost. © Published under licence by IOP Publishing Ltd.
Number of references: 13
Main heading: Error compensation
Controlled terms: Cost engineering - Least squares approximations - Turbines
Uncontrolled terms: Analysis method - Compensation method - Downholes - Drilling cost - Drilling engineering - High-temperature environment - Motor voltage - Petroleum drilling - Rotary steering - Voltage sensor
Classification code: 911 Cost and Value Engineering; Industrial Economics - 921.6 Numerical Methods
Numerical data indexing: Percentage 3.048E+00%, Temperature 3.98E+02K
DOI: 10.1088/1742-6596/2383/1/012064
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

499. Simulation and Experiment Research on Performance of High Power While-drilling Turbine Generator

Accession number: 20230713578444
Authors: Li, Fei (1); Cheng, Lihao (1); Wu, Hao (1); Zhao, Wenxuan (1)
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Source title: 2022 5th World Conference on Mechanical Engineering and Intelligent Manufacturing, WCMEIM 2022
Abbreviated source title: World Conf. Mech. Eng. Intel. Manuf., WCMEIM
Part number: 1 of 1
Issue title: 2022 5th World Conference on Mechanical Engineering and Intelligent Manufacturing, WCMEIM 2022
Issue date: 2022
Publication year: 2022
Pages: 79-82
Language: English
ISBN-13: 9781665473699
Document type: Conference article (CA)
Conference name: 5th World Conference on Mechanical Engineering and Intelligent Manufacturing, WCMEIM 2022
Conference date: November 18, 2022 - November 20, 2022
Conference location: Virtual, Online, China
Conference code: 186391
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: To resolve the limitations of downhole turbine generators, such as insufficient power generation, low adaptability of output voltage, and complicated testing of directional drilling tools, the performance study of a turbine generator with high-power capacity and magnetic field excitation was conducted. Based on the Simulink model of the turbine generator and excitation control system, the excitation control system and hardware circuit were designed according to the voltage management requirement of the tool. The external characteristics of the generator at different speeds and loads, the excitation control circuit board's real-time excitation current regulation performance, and the overall closed-loop control performance were simulated and tested. The results show that the model effectively verifies the feasibility of the excitation control principle, the model and prototype version have similar characteristics, and the model can accurately match the prototype. The output voltage range meets the regular operation of directional drilling tools, and the output power can reach 4kW within the rated speed of 6000r/min. The designed excitation regulation system model and hardware circuit meet the tool power management requirements, and the excitation voltage regulation rate is about ±20%. This study solves the relationship between mud flow rates and output power and intuitively guides actual drilling operations and workshop maintenance. As a result, this research can reduce the testing cost and complexity of directional drilling tools. © 2022 IEEE.
Number of references: 7
Main heading: Turbogenerators
Controlled terms: Closed loop control systems - Infill drilling - Turbines - Voltage regulators
Uncontrolled terms: Directional drilling tool - Drilling tool - Excitation control system - Excitation controls - Hardware circuits - Output power - Performance - Real-time closed loops - While drilling turbine generator - While drillings
Classification code: 511.1 Oil Field Production Operations - 705.2 Electric Generators - 731.1 Control Systems - 732.1 Control Equipment - 961 Systems Science
Numerical data indexing: Angular velocity 1.002E+02rad/s, Percentage 2.00E+01%, Power 4.00E+03W
DOI: 10.1109/WCMEIM56910.2022.10021438
Funding Details: Number: YCS22215306, Acronym: -, Sponsor: -; Number: U20B2029, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021KW-33,2022KW-25, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department;
Funding text: ACKNOWLEDGMENT We must have to thanks the sponsors and help with this paper. This research was funded by the National Science Foundation of China (Grant No. U20B2029), the Natural Science Research Program of the Department of Science and Technology of Shaanxi Provincial (Grant Nos. 2021KW-33 and 2022KW-25) and Xi'an Shiyou University Postgraduate Training Program for Innovation and Practice Ability (Grant No. YCS22215306).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

500. Improvement of Speech Recognition Technology in Piano Music Scene Based on Deep Learning of Internet of Things (*Open Access*)

Accession number: 20223112455035
Authors: Bai, Jie (1)
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Source title: Computational Intelligence and Neuroscience
Abbreviated source title: Comput. Intell. Neurosci.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 4024511
Language: English
ISSN: 16875265
E-ISSN: 16875273
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: The main goal of speech recognition technology is to use computers to convert human analog speech signals into computer-generated signals, such as behavior patterns or binary codes. Different from speaker identification and speaker confirmation, the latter attempts to identify or confirm the speaker who uttered the speech rather than the lexical content contained in it. The short-term idea is that it should be able to record the musical sound played by the user with a certain musical instrument, then extract the note and duration information from it, and finally generate the corresponding MID file according to the MIDI standard, which can set the type of musical instrument in advance to complete the function of musical sound transformation, such as playing with a harmonica, and playing the MID at the end is the piano sound. With the rapid development of the mobile Internet, fields such as machine learning, electronic communication, and navigation have placed high demands on real-time and standard text recognition technology. This paper merges the sound of visual music into text-based data set training, uses the exported scanner features for model training, uses the model to extract features, then uses the features for prior training, and then uses pretraining. DNN results show that the combined training of target prevention and expansion plans, by replacing long-term and short-term memory networks, end-to-end speech recognition programs, and behavioral tests organized by mobile devices, can provide a larger receptive field combined with expanded convolution instead of long and short periods. The experimental results show that when the input sampling point is 2400, it can be seen that the convergence speed of the model becomes slower with more than 90 iterations and the loss of the model on the verification set increases with the increase in the number of iterations. This shows that the model in this paper can fully meet the needs of speech recognition in piano music scenes. © 2022 Jie Bai.
Number of references: 30
Main heading: Speech recognition
Controlled terms: Character recognition - Deep learning - Internet of things - Learning systems - Music - Musical instruments
Uncontrolled terms: Behaviour patterns - Computer generated - Lexical content - Musical sounds - Piano music - Scene-based - Sound transformations - Speaker identification - Speech recognition technology - Speech signals
Classification code: 461.4 Ergonomics and Human Factors Engineering - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 751.5 Speech - 752.4 Acoustic Generators - 971 Social Sciences
DOI: 10.1155/2022/4024511
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

1. Deep-Learning Pipeline for Statistical Quantification of Amorphous Two-Dimensional Materials

Accession number: 20225013255764
Authors: Leist, Christopher (1); He, Meng (2); Liu, Xue (3); Kaiser, Ute (1); Qi, Haoyuan (4)
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Source title: ACS Nano
Abbreviated source title: ACS Nano
Volume: 16
Issue: 12
Issue date: December 27, 2022
Publication year: 2022
Pages: 20488-20496
Language: English
ISSN: 19360851
E-ISSN: 1936086X
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Aberration-corrected transmission electron microscopy enables imaging of two-dimensional (2D) materials with atomic resolution. However, dissecting the short-range-ordered structures in radiation-sensitive and amorphous 2D materials remains a significant challenge due to low atomic contrast and laborious manual evaluation. Here, we imaged carbon-based 2D materials with strong contrast, which is enabled by chromatic and spherical aberration correction at a low acceleration voltage. By constructing a deep-learning pipeline, atomic registry in amorphous 2D materials can be precisely determined, providing access to a full spectrum of quantitative data sets, including bond length/angle distribution, pair distribution function, and real-space polygon mapping. Accurate segmentation of micropores and surface contamination, together with robustness against background inhomogeneity, guaranteed the quantification validity in complex experimental images. The automated image analysis provides quantitative metrics with high efficiency and throughput, which may shed light on the structural understanding of short-range-ordered structures. In addition, the convolutional neural network can be readily generalized to crystalline materials, allowing for automatic defect identification and strain mapping. © 2022 American Chemical Society.
Number of references: 32
Main heading: High resolution transmission electron microscopy
Controlled terms: Aberrations - Atoms - Bond length - Convolutional neural networks - Deep learning - Distribution functions - Image segmentation - Mapping - Molecular dynamics
Uncontrolled terms: Aberration-corrected - Atomic-resolution - Automated image evaluation - Deep learning - Image evaluation - Neural-networks - Ordered structures - Short-range ordered - Two-dimensional - Two-dimensional materials
Classification code: 405.3 Surveying - 461.4 Ergonomics and Human Factors Engineering - 741.3 Optical Devices and Systems - 801.4 Physical Chemistry - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics
DOI: 10.1021/acsnano.2c06807
Funding Details: Number: 424798828,492191310, Acronym: DFG, Sponsor: Deutsche Forschungsgemeinschaft;
Funding text: This research was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) (424798828; 492191310). We thank Dr. Tibor Lehnert for providing the TEM images of CVD graphene with defects and dopant atoms.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

2. Time-dependent borehole stability in hard-brittle shale (*Open Access*)

Accession number: 20231113721478
Authors: Yan, Chuan-Liang (1, 2); Dong, Lei-Feng (2); Zhao, Kai (3); Cheng, Yuan-Fang (1, 2); Li, Xiao-Rong (4); Deng, Jin-Gen (4); Li, Zhen-Qi (2); Chen, Yong (2)

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Corresponding author: Zhao, Kai(zkaiup@126.com)
Source title: Petroleum Science
Abbreviated source title: Petrol. Sci.
Volume: 19
Issue: 2
Issue date: April 2022
Publication year: 2022
Pages: 663-677
Language: English
ISSN: 16725107
E-ISSN: 19958226
Document type: Journal article (JA)
Publisher: China University of Petroleum Beijing
Abstract: Rock damage appears in brittle shale even prior to peak stress (i.e., before failure) due to the occurrence of microcracks in these rocks. In this work, a coupled hydromechanical model was built by incorporating the mechanical and fluid seepage induced stresses around a wellbore during drilling. The borehole instability mechanism of hard-brittle shale was studied. The results show that even if a well is simply drilled into a hard-brittle shale formation, the formation around the borehole can be subjected to rock damage. The maximum failure ratio of the formation around the borehole increases with drilling time. A lower drilling fluid density corresponds to a faster increase in the failure ratio of the borehole with time and a shorter period of borehole collapse. When the initial drilling fluid density is too low, serious rock damage occurs in the formation around the borehole. Even though a high-density drilling fluid is used after drilling, long-term borehole stability is difficult to maintain. While drilling in hard-brittle shale, drilling fluid with a proper density should be used rather than increasing the density of the drilling fluid only after borehole collapse occurs, which is more favorable for maintaining long-term borehole stability. © 2021 The Authors
Number of references: 55
DOI: 10.1016/j.petsci.2021.12.019
Funding Details: Number: 2019GGX103025, Acronym: -, Sponsor: Key Technology Research and Development Program of Shandong; Number: 52074224,U1762216, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is financially supported by the National Natural Science Foundation Project of China (52074224 , U1762216) and the Key Research and Development Program of Shandong Province (2019GGX103025).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

3. A re-assessment and calibration of redox thresholds in the Permian Lucaogou Formation of the Malang Sag, Santanghu Basin, Northwest China

Accession number: 20214511118005
Authors: Pan, Yongshuai (1, 2); Huang, Zhilong (1, 2); Guo, Xiaobo (3); Wang, Rui (1, 2); Lash, Gary G. (4); Fan, Tanguang (5); Liu, Wenhui (5)
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Corresponding authors: Huang, Zhilong(huangzhilong1962@163.com); Guo, Xiaobo(gxb9876@163.com)
Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 135
Issue date: January 2022
Publication year: 2022

Article number: 105406
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Analysis of redox conditions of lake water is of great significance to the reconstruction of sedimentary environments. However, previously established threshold values of redox-sensitive element proxies may not be directly applicable to various study areas even with some degree of calibration. The present study of the Permian Lucaogou Formation (P2l), Santanghu Basin, re-evaluates and calibrates commonly used redox proxies, including bimetal ratios, the C–S–Fe–P system, and proxies based on U abundances. Specifically, we rely on the compound covariation theory of proxies proposed by previous researchers within the redox framework according to three key redox thresholds (T1: suboxidized/subreduced boundary, T2: middle of subreduced zone, and T3: suboxic/euxinic boundary) and organic/inorganic geochemical data. The results show that the fixed thresholds of widely used redox proxies, including bimetal ratios, are not fully applicable to the studied succession. Reassessment of the use of bimetal ratios based on covariation theory suggests that the V/Cr, V/(V + Ni), TOC/P, and Fe/Al ratios are especially useful to redox analysis of the P2l succession whereas the Ni/Co, Ni/V, (Cu + Mo)/Zn, U/Th, and Uauth proxies yield spurious results. It is important to point out, however, that the threshold values of those proxies that have yielded useful results cannot be used without calibration. Therefore, those redox proxies used in our investigation of the P2l succession have been re-calibrated based on the proxy covariation theory. For example, V/(V + Ni) values of T1, T2, and T3 thresholds of approximately 0.78 differ from the fixed threshold values established by previous investigations, suggesting that avoiding erroneous redox interpretations will require calibration of the thresholds. Other redox proxies display a similar need for calibration. Deposits of the P2l, by virtue of small variations among the three thresholds, record a complex history of rapid transitions from suboxic to euxinic conditions. © 2021 Elsevier Ltd
Number of references: 31
Main heading: Calibration
Uncontrolled terms: Bimetal ratio - Co-variations - Compound covariation - Fixed threshold - Permian - Redox framework - Redox proxy - Santanghu Basin - Threshold-value - V/V
Classification code: 531 Metallurgy and Metallography
DOI: 10.1016/j.marpetgeo.2021.105406
Funding Details: Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CUP, Sponsor: China University of Petroleum, Beijing;
Funding text: The authors thank the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing), and Beijing Institute of Nuclear Industry Geology for providing advanced experimental equipment, accurate experimental analysis results, and constructive guidance. Thanks for the guidance and help of relevant experts from the Exploration and Development Research Institute of PetroChina Tuha Oilfield Company, as well as the constructive suggestions of the chief editor and anonymous reviewers, which greatly improved the quality of this paper. This study was supported by the National Natural Science Foundation of China (No. 41702127).The authors thank the State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing), and Beijing Institute of Nuclear Industry Geology for providing advanced experimental equipment, accurate experimental analysis results, and constructive guidance. Thanks for the guidance and help of relevant experts from the Exploration and Development Research Institute of PetroChina Tuha Oilfield Company, as well as the constructive suggestions of the chief editor and anonymous reviewers, which greatly improved the quality of this paper. This study was supported by the National Natural Science Foundation of China (No. 41702127).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

4. Simulated Estimation of Nitrite Content in Water Based on Transmission Spectrum

Accession number: 20223212537067
Title of translation:
Authors: Wang, Cai-Ling (1); Wang, Bo (2); Ji, Tong (3); Xu, Jun (4); Ju, Feng (5); Wang, Hong-Wei (6)
Author affiliation: (1) College of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) Grassland Experiment Station of Yanchi, Yanchi, 751506, China; (3) College of Grass Industry, Gansu Agricultural University, Lanzhou; 730070, China; (4) Xi'an Aeronautical University, Xi'an; 710077, China; (5) Yinchuan Customs District P. R. China, Yinchuan; 750000, China; (6) School of Artificial Intelligence, Optics and Electronics, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Wang, Hong-Wei(whwdyx@163.com)
Source title: Guang Pu Xue Yu Guang Pu Fen Xi/Spectroscopy and Spectral Analysis
Abbreviated source title: Guang Pu Xue Yu Guang Pu Fen Xi

Volume: 42
Issue: 7
Issue date: July 1, 2022
Publication year: 2022
Pages: 2181-2186
Language: Chinese
ISSN: 10000593
CODEN: GYGFED
Document type: Journal article (JA)
Publisher: Science Press
Abstract: NO2-N is an important parameter in water bodies and can quickly detect organic pollution parameters. It is of great significance to the assessment of water quality. However, traditional methods are complicated in operation, subject to many interference factors, long measurement time, cannot reflect water quality changes in time, and cannot provide timely and effective early warning. For sudden water pollution incidents, because of the shortcomings of traditional methods, it is of great significance to explore accurate, real-time, and environmentally friendly detection methods for the NO2-N content in environmental water bodies and drinking water. This experiment is to study the use of superior grade pure reagents to prepare 10 concentrations of NO2-N nitrogen standard solutions (0.02, 0.04, 0.06, 0.08, 0.1, 0.12, 0.14, 0.16, 0.18 and 0.2 mg·L-1), using the OCEAN-HDX-XR micro-fiber spectrometer to scan 10 times the transmission spectrum of the NO2-N solution of each concentration in the range of 181.1~1 023.1 nm. Take the average value as the original transmission spectrum of the NO2-N solution of each concentration, and then take the NO2-N content of the solution as the dependent variable and the original transmission spectrum as the independent variable. Use the method of variable feature importance in random forest regression to screen the feature variables. Based on the cross-validation method, the number of the most stable model variables is selected, and the NO2-N optimization random forest inversion model is established. The results of the study are as follows: (1) The variable explained rate (Var Explained) of the random forest model established by the whole band (Var Explained)=76.49%, and the mean squared residuals (Mean of squared residuals)=0.000 688; In the sensitive band of salt inversion, 195.1 nm has the highest importance value, and the leave-one-out crossover method is used to find that the random forest model has the lowest root mean square error when 19 spectral characteristic variables are used to screen the optimized random forest established by spectral characteristic variables Variable Explained rate (Var Explained)=83.45%, Mean of squared residuals (Mean of squared residuals)=0.000 552. Variable screening effectively reduces the amount of spectral data and provides a basis for the establishment of the optimization model; (3) Model verification of the established model, including the full-band random forest model test set R2=0.820 3, RMSE=0.03, test set R2=0.979 3, RMSE=0.01, optimized random forest model test set R2=0.873 4, RMSE=0.022, test set R2=0.979 8, RMSE=0.008, after comparing the full-band random forest model with the optimized random forest model, it is found that the optimized random forest model test set and test The interpretation and accuracy of the set model are higher than the full-band random forest model, indicating that the optimization method can not only effectively reduce the spectral dimension, but also has positive significance for finding the sensitive band of NO2-N spectrum and establishing a high-precision NO2-N inversion model. Based on the above test results, an inversion method for optimizing the hyperspectral water quality NO2-N parameters of the random forest model is proposed, which provides a new method for the dynamic detection of water quality NO2-N parameters.
Number of references: 12
Main heading: Decision trees
Controlled terms: Mean square error - Nitrogen oxides - Potable water - Value engineering - Water pollution - Water quality
Uncontrolled terms: Full band - HyperSpectral - Inversion models - Model tests - N content - Random forest modeling - Random forests - Test sets - Transmission spectrums - Waterbodies
Classification code: 444 Water Resources - 445.2 Water Analysis - 453 Water Pollution - 804.2 Inorganic Compounds - 911.5 Value Engineering - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
Numerical data indexing: Mass density 1.80E-04kg/m3, Mass density 2.00E-04kg/m3, Percentage 7.649E+01%, Percentage 8.345E+01%, Size 1.951E-07m, Size 2.31E-08m
DOI: 10.3964/j.issn.1000-0593(2022)07-2181-06
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

5. Evolutionary Multiobjective Site Selection of Xi'an Medical Emergency Material Warehouse Based on Multiple Memetic Directions (*Open Access*)

Accession number: 20225313319512
Authors: Wang, Hexu (1, 2); Xie, Fei (3); Shen, Hai (4); Qu, Le (5); Li, Jing (1)
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Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 1065144
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: Due to the lack of medical materials in some emergency public events, for example, the outbreak of COVID-19, it is urgent to establish a medical emergency material warehouse. Taking Xi'an, China, as an example, this study aims to select suitable sites of Xi'an medical emergency material warehouse. In this study, the problem of site selection models as a multiobjective optimization problem. The coverage function and comprehensive efficiency function are designed as two conflicting objectives. Then, a multiobjective evolutionary algorithm based on multiple memetic direction is proposed to optimize the two objectives concurrently. The crossover and mutation operators are designed for evolutionary multiobjective site selection. The proposed crossover operator is able to balance the global and local search abilities, and the proposed mutation operator fuses the distribution information of hospital location, service population, and the overall coverage. Experiments on real dataset verify the superiority of the proposed evolutionary multiobjective site selection method. © 2022 Hexu Wang et al.
Number of references: 54
Main heading: Site selection
Controlled terms: Evolutionary algorithms - Multiobjective optimization - Warehouses
Uncontrolled terms: Comprehensive efficiencies - Crossover operator - Emergency material - Evolutionary Multi-objectives - Medical emergency - Medical materials - Memetic - Multiobjective optimization problems - Mutation operators - Selection model
Classification code: 694.4 Storage - 921.5 Optimization Techniques
DOI: 10.1155/2022/1065144
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

6. Recent Advances in Porous Materials for Photocatalytic CO2Reduction

Accession number: 20220611598226
Authors: Xiong, Hailong (1); Dong, Yueyue (1); Liu, Dong (1, 2); Long, Ran (1); Kong, Tingting (3); Xiong, Yujie (1)
Author affiliation: (1) School of Chemistry and Materials Science, Frontiers Science Center for Planetary Exploration and Emerging Technologies, National Synchrotron Radiation Laboratory, University of Science and Technology of China, Anhui, Hefei; 230026, China; (2) Suzhou Institute for Advanced Research, University of Science and Technology of China, Suzhou; 215123, China; (3) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China
Corresponding authors: Xiong, Yujie(yjxiong@ustc.edu.cn); Liu, Dong(dongliu@ustc.edu.cn); Long, Ran(longran@ustc.edu.cn)
Source title: Journal of Physical Chemistry Letters
Abbreviated source title: J. Phys. Chem. Lett.
Volume: 13
Issue: 5
Issue date: February 10, 2022
Publication year: 2022
Pages: 1272-1282

Language: English
E-ISSN: 19487185
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Photocatalytic CO2 reduction into solar fuels is a promising technology for addressing energy and CO2 emission issues. Because of the superior properties in CO2 adsorption and activation, molecular diffusion, light absorption, and charge separation and transfer, porous materials have been developed into a multifunctional platform for photocatalytic CO2 reduction. In this Perspective, we first discuss the emerging trends of CO2 reduction in major inorganic porous materials-based photocatalysts, such as mesoporous materials, macroporous materials, hollow materials, hierarchically porous materials, and zeolites. Prospects and challenges in the development of porous materials-based photocatalysts are then outlined. Finally, we envision feasible solutions for the deployment of porous materials to enhance photocatalytic CO2 reduction performance. ©
Number of references: 52
Main heading: Light absorption
Controlled terms: Mesoporous materials - Fuels - Zeolites - Solar fuels - Carbon dioxide
Uncontrolled terms: Charge-separation - CO 2 emission - CO 2 reduction - Energy - Material-based - Molecular diffusion - Multifunctional platforms - Photo-catalytic - Property - Solar fuels
Classification code: 657.1 Solar Energy and Phenomena - 741.1 Light/Optics - 804.2 Inorganic Compounds
DOI: 10.1021/acs.jpclett.1c03204
Funding Details: Number: 21725102,21803002,22105192,51902253,91961106,U1832156, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: DNL201922, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: 2021M693062,2021M693065,2021TQ0322, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2008085J05, Acronym: -, Sponsor: Natural Science Foundation of Anhui Province; Number: 2019444, Acronym: YIPA CAS, Sponsor: Youth Innovation Promotion Association of the Chinese Academy of Sciences; Number: 2020JQ-778, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2020YFA0406103, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: This work was financially supported in part by National Key R&D Program of China (2020YFA0406103), NSFC (21725102, U1832156, 91961106, 21803002, 51902253, and 22105192), Anhui Provincial Natural Science Foundation (2008085J05), Youth Innovation Promotion Association of CAS (2019444), Shaanxi Provincial Natural Science Foundation (2020JQ-778), DNL Cooperation Fund, CAS (DNL201922), and China Postdoctoral Science Foundation (2021M693062, 2021M693065, and 2021TQ0322).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

7. Microwave-assisted synthesis of hybrid supercapacitors consisting of Ni, Co-layered double hydroxide shell assembled around wood-derived activated carbon fiber core

Accession number: 20221011746008
Authors: Luo, Lu (1); Wang, Shirui (2); Zhou, Yalan (1); Yan, Wen (1); Gao, Haili (1); Luo, Lingcong (1); Deng, Jianping (1); Du, Guanben (3); Fan, Mizi (1, 4); Zhao, Weigang (1)
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Source title: Electrochimica Acta
Abbreviated source title: Electrochim Acta
Volume: 412
Issue date: April 20, 2022
Publication year: 2022
Article number: 140148
Language: English
ISSN: 00134686
CODEN: ELCAAV
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: Activated carbon fibers (ACFs) are prepared from the discarded fir wood using two-step melt-spinning and CO2 activation post-treatment. Then, composites composed of these ACFs and Ni, Co-layered double hydroxides (NiCo-LDH@ACF) are synthesized by a microwave-assistant hydrothermal strategy. NiCo-LDHs agglomerated around ACFs, forming core-shell structures with sheet- or microsphere-like morphologies, which provide large surface area, hierarchical porosity, and numerous active sites for efficient charge and mass transfer. The NiCo-LDH@ACFs are used as an active material to construct the supercapacitors, the highest of capacitance and the corresponding rate performance of which are equal to 1453.3 F/g at 1 A/g and 78% at 10 A/g by microwave-assistant hydrothermal at 120 °C, respectively. We also use this material to assemble an asymmetric supercapacitor using activated carbon derived from fir bark as a negative electrode. The resulting device demonstrates excellent capacitance (equal to 146.9 F/g at 1.6 V), very high energy density (equal to 52.2 Wh/kg at 800 W/kg), and cycle life (judging by the 79.8% capacitance retention after 10000 cycles). © 2022
Number of references: 59
Main heading: Capacitance
Controlled terms: Activated carbon - Melt spinning - Cobalt compounds - Cobalt deposits - Microwaves - Wood - Supercapacitor - Carbon fibers - Mass transfer - Hydrothermal synthesis - Spinning (fibers)
Uncontrolled terms: Activated carbon fibres - Asymmetric supercapacitor - Fiber cores - Fir wood - Hybrid supercapacitors - Layered-double hydroxides - Microwave assisted synthesis - Microwave-assisted hydrothermal synthesis - Nico-LDH - Post treatment
Classification code: 504.3 Heavy Metal Mines - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 641.3 Mass Transfer - 701.1 Electricity: Basic Concepts and Phenomena - 704.1 Electric Components - 711 Electromagnetic Waves - 802.2 Chemical Reactions - 804 Chemical Products Generally - 811.2 Wood and Wood Products - 819.3 Fiber Chemistry and Processing
Numerical data indexing: Capacitance 1.4533E+03F, Capacitance 1.469E+02F, Electric current 1.00E+01A, Electric current 1.00E00A, Percentage 7.80E+01%, Percentage 7.98E+01%, Power 8.00E+02W, Temperature 3.93E+02K, Voltage 1.60E+00V
DOI: 10.1016/j.electacta.2022.140148
Funding Details: Number: 2019J01386, Acronym: -, Sponsor: -; Number: 31971593, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors are grateful for the financial support from the National Natural Science Foundation of China (31971593), the Natural Science Foundation of Fujian Province Department of Science and Technology (2019J01386).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

8. Nitrogen/oxygen dual-doped hierarchical porous carbons with inverse opal-like structure for high performance supercapacitors

Accession number: 20220211432971
Authors: Zhang, Qian (1); Xin, Yanfei (2); Qin, Hengjie (3); Xu, Zhanglian (1); Chen, Yuanzhen (2); Wang, Sheng (1)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Nuclear Energy and Technology, and Shaanxi Engineering Research Center of Advanced Nuclear Energy, Xi'an Jiaotong University, Xi'an; 710049, China; (2) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (3) College of Materials Science and Engineering, Xi'an Shiyou University, No.18, 2nd East Dianzi Road, Xi'an; Shaanxi; 710065, China
Corresponding author: Xu, Zhanglian(xuzhanglian@xjtu.edu.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 900
Issue date: April 15, 2022
Publication year: 2022
Article number: 163537
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Heteroatom-doped activated carbons are ideal materials for energy storage devices. In this work, a series of nitrogen/oxygen codoped activated carbons with an inverse opal-like structure derived from cellulose diacetate are

successfully synthesized through hydrothermal reaction and subsequent chemical activation during which the fluxing effect of KOH is discovered for the first time. The introduction of nitrogen and intrinsic oxygen (especially carbonyl and quinone groups) contributes to additional pseudocapacitance. The experimental results show that the obtained product delivers 400.3 F·g-1 at a current density of 1 A·g-1 in a three-electrode system and achieves extraordinary capacity retention of 90% after 10,000 charge-discharge cycles at 5 A·g-1. The energy density reaches as high as 8.8 Wh·kg -1 at a power density of 0.25 kW·kg-1 as symmetric supercapacitors, indicating a promising electrode material for high performance supercapacitors. The simple and cost-effective method requires no extra oxidation and excessive urea and thus provides new approaches for the future design of electrode materials. © 2021 Elsevier B.V.
Number of references: 66
Main heading: Supercapacitor
Controlled terms: Cost effectiveness - Electric discharges - Activated carbon - Nitrogen - Potassium hydroxide - Urea - Cellulose - Chemical activation - Inverse problems - Electrodes - Porous materials
Uncontrolled terms: Cellulose diacetates - Co-doping - Dual doped - Electrode material - Heteroatoms - Hierarchical porous carbons - Inverse opal - Inverse opal-like structure - Nitrogen/oxygen codoping - Performance
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 704.1 Electric Components - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 811.3 Cellulose, Lignin and Derivatives - 815.1.1 Organic Polymers - 911.2 Industrial Economics - 951 Materials Science
Numerical data indexing: Capacitance 4.003E+02F, Electric current 1.00E00A, Electric current 5.00E+00A, Percentage 9.00E+01%, Size 2.54E-02m, null 2.50E-01null
DOI: 10.1016/j.jallcom.2021.163537
Funding Details: Number: 2016YFE0128900, Acronym: -, Sponsor: -; Number: 11775166,21906128,51602246, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 7121181102, Acronym: XJTU, Sponsor: Xi’an Jiaotong University; Number: XJH012019018, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2021JLM-23, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 21906128 , No. 11775166 , No. 51602246), the Young Talent Support Plan of Xi’an Jiaotong University (No. 7121181102), the program of Fundamental Research Funds for the Central Universities (No. XJH012019018), the Joint Funds of the Natural Science Basic Research Project of Shaanxi Province (No. 2021JLM-23) and the key project of Intergovernmental International Scientific and Technological Innovation Cooperation in China under Grant No. 2016YFE0128900 .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

9. A Storage Optimization Model for Cloud Servers in Integrated Communication, Sensing, and Computation System (*Open Access*)

Accession number: 20224312991040
Authors: Wang, Zhoukai (1, 2); Wang, Huaijun (1, 2); He, Liu (1, 2); Lv, Yang (3); Wei, Zhaoying (4); Li, Xuan (5)
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Corresponding author: Wang, Zhoukai(zkwang@xaut.edu.cn)
Source title: Wireless Communications and Mobile Computing
Abbreviated source title: Wireless Commun. Mobile Comput.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3222979
Language: English
ISSN: 15308669
E-ISSN: 15308677
Document type: Journal article (JA)
Publisher: Hindawi Limited

Abstract: The massive amount of sensing and communication data that needs to be processed during the production process of complex heavy equipment generates heavy storage pressure on the cloud server-side, thus limiting the convergence of sensing, communication, and computing in intelligent factories. To solve the problem, based on machine learning techniques, a storage optimization model is proposed in this paper for reducing the storage pressure on the cloud server and enhancing the coupling between communication and sensing data. At first, based on the operation rules of the distributed file system on the cloud server, the proposed model screens and organizes the system logs. With the filtered logs, the model sets feature labels, constructs feature vectors, and builds sample sets. Then, based on the ID3 decision tree, a file elimination model is trained to analyze the files stored in the cloud server and predict their reusability. In practice, the proposed model is applied in the Hadoop Distributed File System and helps the system delete underutilized and low-value files and save storage space. Experiments show that the proposed model can effectively reduce the storage load on the cloud server and improve the integration efficiency of multisource heterogeneous data during complex heavy equipment production. © 2022 Zhoukai Wang et al.
Number of references: 25
Main heading: Decision trees
Controlled terms: Cloud computing - Digital storage - File organization - Learning systems - Optimization - Reusability
Uncontrolled terms: Cloud servers - Communications data - Communications systems - Distributed file systems - Heavy equipment - Optimization models - Sensing data - Sensing systems - Storage optimization - Storage pressures
Classification code: 722.1 Data Storage, Equipment and Techniques - 722.4 Digital Computers and Systems - 903.3 Information Retrieval and Use - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques - 961 Systems Science
DOI: 10.1155/2022/3222979
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

10. Influence of coupling ratio on seismic behavior of hybrid coupled partially encased composite wall system

Accession number: 20221311846961
Authors: Zhou, Qiaoling (1, 2); Su, Mingzhou (1, 3); Shi, Yun (4); Jiang, Lu (5); Zhang, Lili (5); Guan, Lingyu (6); Yang, Yukun (5)
Author affiliation: (1) School of Civil Engineering, Xi'an University of Architecture & Technology, Xi'an, China; (2) Sichuan Provincial Architectural Design and Research Institute Co., Ltd., Chengdu, China; (3) Key Lab of Structural Engineering and Earthquake Resistance, Ministry of Education (XAUAT), Xi'an, China; (4) Department of Civil Engineering, Xi'an Shiyou University, Xi'an, China; (5) Zhejiang Green Building Integration Technologies Co., Ltd., Shanghai, China; (6) Design Management Institute, China Construction Eighth Engineering Division Co., Ltd., Shanghai, China
Corresponding author: Su, Mingzhou(sumingzhou@xauat.edu.cn)
Source title: Structural Design of Tall and Special Buildings
Abbreviated source title: Struct. Des. Tall Spec. Build.
Volume: 31
Issue: 10
Issue date: July 2022
Publication year: 2022
Article number: e1934
Language: English
ISSN: 15417794
E-ISSN: 15417808
Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: Partially encased composite (PEC) members are novel composite members that efficiently exploit the advantages of mechanical properties of concrete and steel. However, the application of PEC members is limited to low- and mid-rise buildings. To overcome this limitation, a study was conducted to assess the seismic performance of a newly proposed steel–concrete hybrid coupled wall consisting of PEC wall piers coupled by means of steel beams. Parametric analysis was conducted to investigate the elastic coupling ratio (CRelastic) and the way of changing CRelastic on the seismic behavior of the hybrid coupled PEC wall. The results showed that the CRelastic was the main

parameter that affected the seismic performance of the wall. The way of changing CRelastic had little influence on the trend of the energy dissipation capacity and strength reservation of the wall. The failure mode and the development of plastic hinges of the wall were also not affected by the way of changing CRelastic. Both too large and too small CRelastic were detrimental to the seismic performance of the wall. To form an ideal plastic hinge development mode and experience good seismic performance, it is suggested that the reasonable range of CRelastic for the wall was 60%–70%. © 2022 John Wiley & Sons, Ltd.
Number of references: 43
Main heading: Energy dissipation
Controlled terms: Concretes - Seismic response - Walls (structural partitions) - Seismic waves
Uncontrolled terms: Composite members - Coupling ratios - Elastic coupling - Elastic coupling ratio - Hybrid coupled walls - Numerical simulation - Partially encased composite member - Partially encased composites - Seismic behaviour - Steel concrete - Steel–concrete hybrid coupled wall
Classification code: 408.2 Structural Members and Shapes - 412 Concrete - 484 Seismology - 484.2 Secondary Earthquake Effects - 525.4 Energy Losses (industrial and residential)
Numerical data indexing: Percentage 6.00E+01% to 7.00E+01%
DOI: 10.1002/tal.1934
Funding Details: Number: 20200426, Acronym: -, Sponsor: -; Number: 51908461, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant 51908461) and the Youth Talent Lift Program of Shaanxi University Association for Science and Technology (Grant 20200426).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

11. Selective synthesis of benzimidazoles and benzodiazepines catalyzed by Brønsted Acid/base-cooperative Titanocene dichloride

Accession number: 20221111786857
Authors: Zhuang, Mengyuan (1); Tu, Li (1); Wu, Ya (2); Jian, Yajun (1); Wang, Yanyan (1); Zhang, Weiqiang (1); Sun, Huaming (1); Gao, Ziwei (1, 3)
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Corresponding author: Wu, Ya(wuya@xsyu.edu.cn)
Source title: Molecular Catalysis
Abbreviated source title: Mol. Cat.
Volume: 524
Issue date: May 2022
Publication year: 2022
Article number: 112181
Language: English
ISSN: 24688231
CODEN: MCOADH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Benzimidazoles and benzodiazepines were selectively synthesized from o-phenylenediamine and carbonyl compounds by Brønsted acid/base assisted titanocene dichloride. Mechanism research including NMR and ESI-MS analyses and control experiments elucidated the new catalytic species formed by Cp2TiCl2 and the combination of titanocene Lewis acid with Brønsted acid/base was responsible for selective transformations of aldehyde and ketone with o-phenylenediamine into benzimidazole and benzodiazepine. © 2022 Elsevier B.V.
Number of references: 32
Main heading: Ketones
Controlled terms: Chlorine compounds - Aromatic compounds
Uncontrolled terms: Acid base - Benzimidazoles - Benzodiazepines - Catalytic species - Control experiments - Mechanism research - O-Phenylenediamine - Selective synthesis - Synthesised - Titanocene dichloride
Classification code: 804.1 Organic Compounds
DOI: 10.1016/j.mcat.2022.112181

Funding Details: Number: 21771122, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: B14041, Acronym: -, Sponsor: Higher Education Discipline Innovation Project; Number: 2021GY-308, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project; Number: IRT_14R33, Acronym: -, Sponsor: Program for Changjiang Scholars and Innovative Research Team in University;
Funding text: This work was supported by grants from the National Natural Science Foundation of China (21771122), the 111 Project (B14041), Key Research and Development Program in Shaanxi Province (2021GY-308), and the Program for Changjiang Scholars and Innovative Research Team in University (IRT_14R33).This work was supported by grants from the National Natural Science Foundation of China (21771122), the 111 Project (B14041), Key Research and Development Program in Shaanxi Province (2021GY-308), and the Program for Changjiang Scholars and Innovative Research Team in University (IRT_14R33).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

12. Catalytic conversion of gaseous tar using coal char catalyst in the two-stage downer reactor

Accession number: 20215211399703
Authors: Jiang, Yuan (1, 4); Zong, Peijie (1, 4); Bao, Yuan (1); Zhang, Xin (1); Wei, Haixin (1); Tian, Bin (2); Tian, Yuanyu (1, 3, 4); Qiao, Yingyun (1, 4); Zhang, Juntao (5)
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Source title: Energy
Abbreviated source title: Energy
Volume: 242
Issue date: March 1, 2022
Publication year: 2022
Article number: 123013
Language: English
ISSN: 03605442
CODEN: ENEYDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The effect of catalyst height (0–50 mm) and catalyst temperature (600–900 °C) on the catalytic cracking of gaseous tar is investigated using a two-stage down reactor. Results show that the utilization of catalyst promotes the removal of coal tar. The yield of coal tar at the pyrolysis temperature of 900 °C is 7.14% and tar is composed of aromatics and high-carbon-number aliphatics. The coal char prepared by fast coke-making method at 900 °C is directly used as a catalyst in the catalytic cracking of coal tar. When the catalyst temperature and the catalyst height are 900 °C and 50 mm, the tar produced by coal pyrolysis is connected with high-temperature coal char for a short time, reducing the tar yield from 7.14% to 4.26%. Among them, aliphatic hydrocarbons with carbon number of C10 and C11 and aromatics are the main components of coal tar. Similarly, compared with the pyrolysis, the content of CH4 and H2 obtained with the addition of the catalyst increase from 0.56 to 0.97 to 1.64%g/g coal and 1.02%g/g coal, respectively. Moreover, GC/MS results show that the increment of catalyst height and catalyst temperature increases aromatics content and facilitates the conversion of high-carbon-number component to low-carbon-number ones. © 2021 Elsevier Ltd
Number of references: 45
Main heading: Catalysts
Controlled terms: Carbon - Coal - Hydrocarbons - Aromatization - Coal tar - Molecular weight - Catalytic cracking
Uncontrolled terms: Carbon number - Catalyst temperature - Catalytic conversion - Coal chars - Downer reactor - Effect of catalyst - Gaseous tars - High carbons - Pyrolysis temperature -]+ catalyst
Classification code: 411.2 Coal Tar - 524 Solid Fuels - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 931.3 Atomic and Molecular Physics

Numerical data indexing: Temperature 8.73E+02K to 1.173E+03K, Percentage 1.02E+00%, Percentage 7.14E+00% to 4.26E+00%, Percentage 7.14E+00%, Percentage 9.70E-01% to 1.64E+00%, Size 0.00E00m to 5.00E-02m, Size 5.00E-02m, Temperature 1.173E+03K
DOI: 10.1016/j.energy.2021.123013
Funding Details: Number: tsqn201812028, Acronym: -, Sponsor: -; Number: 21576293,2180815,21878335, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18CX05022A, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2020ZDLSF06-10, Acronym: -, Sponsor: Primary Research and Development Plan of Zhejiang Province;
Funding text: I would like to express my gratitude to all those who helped me during the writing of this thesis. This work was also supported by the National Natural Science Foundation of China [grant numbers 21576293 , 21878335 , and 2180815]; Taishan Scholar Youth Expert Project [grant numbers tsqn201812028]; The Fundamental Research Funds for the Central Universities [grant numbers 18CX05022A]; Primary Research and Development Plan of Shanxi Province [grant numbers 2020ZDLSF06-10].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

13. Root cause analysis of liner collapse and crack of bi-metal composite pipe used for gas transmission

Accession number: 20214911259415
Authors: Zhang, Shuxin (1, 2); Ma, Qianzhi (3); Xu, Changfeng (4); Li, Lifeng (1); Wang, Mingfeng (4); Zhang, Zhe (4); Wang, Shuai (1); Li, Lei (1)
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Source title: Engineering Failure Analysis
Abbreviated source title: Eng. Fail. Anal.
Volume: 132
Issue date: February 2022
Publication year: 2022
Article number: 105942
Language: English
ISSN: 13506307
CODEN: EFANEM
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: An underground gas storage company adopted bimetallic composite pipes for gas transmission. The pipelines were inspected with industrial camera, it was found that a large number of pipelines had liner collapsed, and some of collapsed liner had suspected cracks. In order to analyze the reasons for the collapse and cracking of the liner, visual inspection, non-destructive testing, material examination, crack analysis, bend fatigue test and pressure test were conducted. The results showed that the material properties of the bimetal composite pipe meet standard requirements. The external pressure test was imposed on $\Phi 168$ composite pipe, the liner collapse under the pressure of 1.76 MPa which is lower than the calculated value. The cause of collapse was analyzed from manufacturing process and service condition. There are micro-cracks around the main crack of the liner, the fracture showed fatigue striations and thickness thinning characteristic. The root cause of the liner collapse is that the water enters the interlayer during the manufacturing of bimetallic composite pipe, and the thermal expansion coefficient of base pipe and lining pipe is different. When external anti-corrosion coating was manufactured and temperature changed during operation, collapse tendency of the liner increased. The root cause of the crack of the liner is bending fatigue, and the load originates from pressure fluctuations during operation. In order to avoid such incidents, the online inspection should be performed for the effusion part of the pipeline to check whether the remaining wall thickness of the base pipe meets the requirements for safe operation. The carbon steel pipe with regular pigging was recommended for this application situation. © 2021 Elsevier Ltd
Number of references: 15
Main heading: Cracks

Controlled terms: Corrosion resistant coatings - Fatigue testing - Pipeline corrosion - Thermal expansion - Transmissions - Nondestructive examination - Inspection - Pipelines
Uncontrolled terms: Bend fatigue - Bimetal composite pipe - Bimetal composites - Bimetallic composites - Composite pipe - Gas transmission - Liner collapse - Liner crack - Pressure tests - Root cause
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 602.2 Mechanical Transmissions - 619.1 Pipe, Piping and Pipelines - 641.1 Thermodynamics - 951 Materials Science
Numerical data indexing: Pressure 1.76E+06Pa
DOI: 10.1016/j.engfailanal.2021.105942
Funding Details: Number: KT2020-16-06, Acronym: КННК, Sponsor: China National Petroleum Corporation; Number: 2017YFC0805804, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: The authors are grateful to the fund support of National Key R&D Program of China (2017YFC0805804), Scientific research and technology development project of CNPC: Research on safety assessment technology of injection production conversion process in gas storage (KT2020-16-06), and all members in Tubular Goods Research Institute who assisted in carrying out this failure analysis study. Sincere thanks to Ms. Yan Xi and Zhang Jiahe for their tremendous support for me.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

14. Research on preparation and characterization of Ti-Ti5Si3 gradient composite porous material via in-situ reactive process

Accession number: 20220311475300
Authors: Liu, Zhongjun (1); Gao, Boyang (1); Liu, Yuan (1); Ji, Shuai (1, 2, 3); Ao, Qingbo (4)
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Corresponding author: Liu, Zhongjun(zjliu@xsyu.edu.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 899
Issue date: April 5, 2022
Publication year: 2022
Article number: 163405
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Gradient composite porous material can reach a high filtering accuracy with larger filtration flux, and the filter elements applied in separation equipment can enhance the filtration efficiency and reduce the energy consumption. Ti-Ti5Si3 gradient composite porous material was successfully prepared by in-situ reaction process with the raw materials of Ti powder and high purity quartz tablets. Microstructures and filtration properties prepared under different synthesized conditions have been studied, including the parameters of pressure sintering (additional loads and temperatures) and powder particle sizes. The synthesized granules on the membrane are well distributed with the size of $_{\sim 1.0}$ μm, and the thickness of the membrane is $_{3.0\sim 6.3}$ μm. The relative air permeability coefficient of porous membrane reduces raptly compared to the sample matrix due to the decrease of pore size. The all synthesized membranes show the presence of Ti and Ti5Si3 phases. There are two distinct layers observed in the membrane layers prepared by fine powder due to in-situ over-reaction. © 2021 Elsevier B.V.
Number of references: 56
Main heading: Membranes
Controlled terms: Indium compounds - Energy utilization - Porous materials - Pore size - Sintering - Titanium compounds - Silicon - Silicon compounds - Energy efficiency
Uncontrolled terms: Composite porous materials - Filtering accuracies - Filtration flux - Gradient composites - In-situ reactions - Maximum aperture - Permeability - Reactive process - Synthesised - Ti5si3 membrane

Classification code: 525.2 Energy Conservation - 525.3 Energy Utilization - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.jallcom.2021.163405
Funding Details: Number: 51704239, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2021JM-410, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province; Number: 201014-K, Acronym: GUET, Sponsor: Guilin University of Electronic Technology; Number: 20JC028, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2019NKYCXTD12, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This research was financially supported by the National Natural Science Foundation of China (Grant No. 51704239), the Innovation Team Foundation by Xi'an Shiyou University (Grant No. 2019NKYCXTD12), Scientific Research Plan of Shaanxi Provincial Education Department (Grant No. 20JC028), the Natural Science Foundation of Shannxi Province , (Grant No. 2021JM-410)and also was jointly sponsored by Guangxi Key Laboratory of Information Materials (Guilin University of Electronic Technology), P.R. China (Grant No. 201014-K).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

15. The role of mineralogical stratifications in controlling brine flow behavior in shale at a pore-scale perspective based on integrated imaging and compositional methods

Accession number: 20221411925142
Authors: Liu, Dengke (1, 2); Tian, Tao (2); Zhao, Chenyang (3); Sun, Liang (4); Ren, Dazhong (5)
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Corresponding author: Liu, Dengke(liudengke@xjtu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 214
Issue date: July 2022
Publication year: 2022
Article number: 110409
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Pore-scale multiphase flow has always been a research hotspot petroleum engineering. However, the complexity of pore structure and the variability of the flow process have plagued researchers. More specifically, the controlling mechanisms behind mineral characteristics on brine flow behavior in shale at a pore-scale perspective are not well understood. So far, a limited number of scholars have tried to provide evidence of the underlying mechanisms based on integrated imaging and compositional methods, and the shale classification methods were mainly based on the content variation. This paper provided a new aspect concerning the mineralogical stratifications to investigate the controlling factors of movable fluid properties. Imaging and compositional techniques were used, and the samples with different mineralogical stratifications (inapparent grading sequence shale, apparent grading sequence shale, and microscopic block-shaped shale) were tested. Integrated methods showed that, compared to minerals compositions, the mineralogical stratifications would be more vital for storage capacity and fluid flow behavior in shales. Thick organic minerals bands or chunks would occlude the seepage paths, and pores below 100 nm might be the predominant storage spaces for shales. By combining the results of these methodologies, the pore size spectrum of shales can be determined more accurately. High movable fluid properties were observed for inapparent grading sequence shale. The mechanisms are discussed in terms of mineralogical stratifications and pore networks evolution Low porosity would decrease the movable fluid saturation due to the short storage spaces, and serious mineralogical stratification variations would restrict the flow path, leading to weak mobility of brine. © 2022 Elsevier B.V.
Number of references: 47
Main heading: Pore size
Controlled terms: Grading - Pore structure - Flow of fluids - Shale - Integrated control - Minerals

Uncontrolled terms: A new classification way based on mineralogical stratification - Brine flow - Brine flow behavior at a pore-scale perspective - Flow behaviours - Integrated imaging - Integrated method - Movable fluid - Pore scale - Pore size splicing method - Splicing methods
Classification code: 482.2 Minerals - 631.1 Fluid Flow, General - 731.1 Control Systems - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Size 1.00E-07m
DOI: 10.1016/j.petrol.2022.110409
Funding Details: Number: PAG-201901, Acronym: -, Sponsor: -; Number: 11872295,41702146, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KF2019-1,KF2020-2, Acronym: CRECU, MLR, Sponsor: Key Laboratory of Coal Resources Exploration and Comprehensive Utilization, Ministry of Land and Resources; Number: 2016ZX05047-003-005, Acronym: -, Sponsor: National Major Science and Technology Projects of China; Number: 2021JQ-029, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported by the Natural Science Basic Research Program of Shaanxi Province (No. 2021JQ-029), the Open Fund of Key Laboratory of Coal Resources Exploration and Comprehensive Utilization (No. KF2020-2 , No. KF2019-1), the Open Fund of Shaanxi Key Laboratory of Petroleum Accumulation Geology (No. PAG-201901), National Science and Technology Major Project (No. 2016ZX05047-003-005), and National Natural Science Foundation of China (No. 11872295 and 41702146).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

16. Study on Array Electrode System for Visualization Measurement in Air-Solid Two-Phase Flow

Accession number: 20223812766885
Authors: Li, Lipin (1); Hu, Yuexin (1); Zhu, Jianbo (2); Shi, Ruixue (2); Wang, Hongli (3); Song, Jincheng (3); Shi, Zhipeng (4)
Author affiliation: (1) Xi'an Shiyou University, Shanxi Key Laboratory of Measurement and Control Technology for Oiland Gas Wells, Xi'an, China; (2) The Fourth Gas Production Plant of Changqing Oilfield Company, Thousand Gas Well Evaluation and Potential Engineering Project Team of Changqing Oilfield Company, Xi'an, China; (3) The First Gas Production Plant of Changqing Oilfield Company, Jingbian, China; (4) The Third Oil Transportation Division of Changqing Oilfield Company, Yinchuan, China
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Source title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Abbreviated source title: Int. Conf. Intell. Control, Meas. Signal Process., ICMSP
Part number: 1 of 1
Issue title: 2022 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Issue date: 2022
Publication year: 2022
Pages: 573-576
Language: English
ISBN-13: 9781665486583
Document type: Conference article (CA)
Conference name: 4th International Conference on Intelligent Control, Measurement and Signal Processing, ICMSP 2022
Conference date: July 8, 2022 - July 10, 2022
Conference location: Hangzhou, China
Conference code: 182290
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In power, chemical, pharmaceutical, metallurgical, and other industrial production, the visual information of gas-solid two-phase flow in closed pipelines is of great significance to the safety, economy, and efficiency of the production process. According to the basic principle of electrical capacitance tomography (ECT), we analyzed and designed a 12-electrode capacitance sensor, realized the data acquisition circuit with capacitance digital conversion (CDC) chip as the core and ARM chip as the control platform, and developed the upper computer software based on QT. We have tested the visualization system, and the results show that the system has significant stability, and the measurement results are clear and accurate. © 2022 IEEE.

Number of references: 9
Main heading: Two phase flow
Controlled terms: Accident prevention - Capacitance - Computer control systems - Data acquisition - Electric impedance tomography - Electrodes - Visualization
Uncontrolled terms: Air-solid two-phase flow - Array electrode system - Array-electrode - Electrical Capacitance Tomography - Electrode systems - Industrial production - Power - QT - Two phases flow - Visualization measurements
Classification code: 631.1 Fluid Flow, General - 701.1 Electricity: Basic Concepts and Phenomena - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 731.1 Control Systems - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICMSP55950.2022.9858967
Funding Details: Number: 20JS124, Acronym: -, Sponsor: -; Number: 2020GY-169, Acronym: -, Sponsor: -; Number: 41874158,51974250, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ACKNOWLEDGMENT This work was supported by the National Natural Science Foundation of China (No. 51974250 and No. 41874158), Key Research Projects in Shaanxi Province of China (No. 2020GY-169), and Key Laboratory Project of Shaanxi Provincial Department of Education of China (No. 20JS124).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

17. Synthesis and evaluation of a multi-block polycarboxylic acid for improving low-rank coal to make the slurry

Accession number: 20221611987096
Authors: Zhu, Junfeng (1); Li, Jinling (1); Liu, Ruiqing (1); Wang, Junqi (2); Tang, Yiwen (1); Zhang, Wanbin (3); Zhang, Guanghua (1)
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Corresponding author: Zhu, Junfeng(zjfeng123123@163.com)
Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
Volume: 646
Issue date: August 5, 2022
Publication year: 2022
Article number: 128966
Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: To increase the solid concentration and optimize the rheological properties and of low-rank coal water slurry (CWS), a series of multi-block polycarboxylic acid (PCRaf) dispersants wearing hybrid-length side chains by the reversible addition-fragmentation chain transfer (RAFT) polymerization in aqueous solution. Meantime, the random polycarboxylic acid (PCRan) dispersants with same monomers were prepared by random polymerization. The PCRaf dispersant used in making low-rank CWS shows better viscosity reduction and stabilizing effect on CWS than that of the PCRan dispersants with the same mole ratio of monomers. The rational reason supported by the results of the zeta potential and adsorption test is that the multi-block conformation of PCRaf is beneficial to molecule expansion which is more effective in the dispersion of coal particles. The multi-block PCRaf with hybrid-length side chains is well worth being popularized as a new high-effective dispersant for low-rank coal to make a slurry. © 2022 Elsevier B.V.
Number of references: 37
Main heading: Monomers
Controlled terms: Dispersions - Free radical polymerization - Coal
Uncontrolled terms: Coal-water slurry - Dispersants - Dispersion mechanisms - Low rank coals - Multi-block polycarboxylic acid - Multiblocks - Polycarboxylic acids - Side-chains - Solids concentrations - Steric hindrances

Classification code: 524 Solid Fuels - 804 Chemical Products Generally - 815.2 Polymerization - 951 Materials Science
DOI: 10.1016/j.colsurfa.2022.128966
Funding Details: Number: 18JS014, Acronym: -, Sponsor: -; Number: WSFRM20200303001, Acronym: -, Sponsor: -; Number: 22172095, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was financially supported by the National Natural Science Foundation of China (Grant number: 22172095), the Key Laboratory Scientific Research Project of Shaanxi Provincial Education Department (Grant number: 18JS014), the Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University (Grant number: WSFRM20200303001).This work was financially supported by the National Natural Science Foundation of China (Grant number: 22172095), the Key Laboratory Scientific Research Project of Shaanxi Provincial Education Department (Grant number: 18JS014), the Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University (Grant number: WSFRM20200303001).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

18. Synthesized Magnetic Field Focusing for the Non-Destructive Testing of Oil and Gas Well Casing Pipes Using Pulsed Eddy-Current Array

Accession number: 20222812348811
Authors: Liu, Changzan (1); Dang, Bo (2); Wang, Haiyan (3); Yang, Ling (2); Dang, Jingxin (4); Shen, Xiaohong (1); Dang, Ruirong (2)
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Source title: IEEE Transactions on Magnetics
Abbreviated source title: IEEE Trans Magn
Volume: 58
Issue: 9
Issue date: September 1, 2022
Publication year: 2022
Article number: 6201710
Language: English
ISSN: 00189464
E-ISSN: 19410069
CODEN: IEMGAQ
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this article, we address the problem of synthesized magnetic field focusing (SMF) of the pulsed eddy-current (PEC) technology for the non-destructive testing (NDT) of oil and gas well casing pipes. The electromagnetic response excited by multiple transmitters was derived using the signal model of downhole PEC system. The magnetic field was shown to be adjustable by modifying the currents of the multiple transmitting array. Based on this property, magnetic fields were synthesized with the mean squared error (MMSE) criterion to be focused on the center of the transmitting array, and a weighted MMSE (WMMSE)-based SMF was also proposed to achieve an optimal synthetic magnetic field. Furthermore, the primal-dual interior-point method was used to solve the WMMSE optimization problem with the total and single transmit power constraints for the practical application. Simulations and experimental results showed that the SMF with the PEC array effectively focuses the eddy-current field on the center of the transmitting array. © 1965-2012 IEEE.
Number of references: 33
Main heading: Magnetic fields
Controlled terms: Focusing - Mean square error - Nondestructive examination - Transmitters
Uncontrolled terms: Downholes - Field focusing - Magnetic-field - Minimum mean squared error - Non destructive testing - Non-destructive testing - Oil - Pulsed eddy current - Pulsed eddy-current - Spatial resolution - Synthesised - Synthesized magnetic field focusing
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 922.2 Mathematical Statistics

DOI: 10.1109/TMAG.2022.3186548
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

19. The structure and mechanical properties of Cr-based Cr-Ti alloy films (*Open Access*)

Accession number: 20220411514696
Authors: Liu, Gang (1); Wang, Miao (2); Xu, Jianjun (3); Huang, Min (1); Wang, Chen (4); Fu, Yabo (1); Lin, Changhong (1); Wu, Jianbo (1); Levchenko, Vladimir A. (1, 5)
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Corresponding authors: Liu, Gang(liugang2186@163.com); Levchenko, Vladimir A.(vladlev@yahoo.com)
Source title: Materials Research Express
Abbreviated source title: Mater. Res. Express
Volume: 9
Issue: 1
Issue date: January 2022
Publication year: 2022
Article number: 016509
Language: English
E-ISSN: 20531591
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: Previous studies have dealt with Cr and its alloy films that exhibit promising characteristics as surface modification layers for antiwear, anticorrosive, and decorative applications. However, the effect of Ti alloying on the structure and mechanical properties of Cr films has not been studied. This work aimed to the structure and mechanical properties of Cr-Ti alloy films in the Cr-rich side. To this end, pure Cr, Cr-6 at.% Ti, Cr-11 at.% Ti, Cr-16 at.% Ti, and Cr-21 at.% Ti alloy films were prepared by magnetron sputtering, and the structure and mechanical properties of the films were evaluated. The results indicated that all the films exhibited a Cr-based growth with body-centered cubic structure, and increasing the Ti content decreased the (110) orientation growth of Cr basis. Ti alloying increased the hardness of the films, while leaded to a monotonic decrease in the modulus of the films. The first-principles method was employed to demonstrate that the reduced modulus was determined by the Ti alloying degree, rather than the orientation evolution of the films. The analysis of H/E value suggested that the wear resistance of the films was improved by Ti alloying. The mechanical properties of present Cr-Ti alloy films, and other Cr-based alloy films or metallic glasses in publications were compared and discussed. We proposed that Ti alloying is a considerable way to explore advanced mechanical properties of Cr-based alloy films. © 2022 The Author(s). Published by IOP Publishing Ltd.
Number of references: 66
Main heading: Hardness
Controlled terms: Alloying - Metallic films - Titanium alloys - Crystal structure - Structural properties - Chromium alloys - Binary alloys - Magnetron sputtering - Wear resistance
Uncontrolled terms: Alloy film - Anti-corrosive - Anti-wear - Cr-based - Cr-ti alloy film - Magnetron-sputtering - Modification layers - Modulus - Surface-modification - Ti alloys
Classification code: 408 Structural Design - 531.1 Metallurgy - 542.3 Titanium and Alloys - 543.1 Chromium and Alloys - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.1 Crystal Lattice - 951 Materials Science
DOI: 10.1088/2053-1591/ac4883
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

20. Anion extractants constructed by macrocycle-based anion recognition

Accession number: 20222912363499

Authors: Zhang, Qunzheng (1); Zhou, Yuhao (1); Ahmed, Mehroz (2); Khashab, Niveen M. (3); Han, Weiwei (1); Wang, Hu (2); Page, Zachariah A. (2); Sessler, Jonathan L. (2)
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Source title: Journal of Materials Chemistry A
Abbreviated source title: J. Mater. Chem. A
Volume: 10
Issue: 29
Issue date: June 27, 2022
Publication year: 2022
Pages: 15297-15308
Language: English
ISSN: 20507488
E-ISSN: 20507496
CODEN: JMCAET
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Water pollution is a global challenge. One general class of pollutants is anions, which collectively can have adverse effects on both human health and the environment. These impacts necessitate the development of new water purification technologies capable of addressing anionic pollutants. This review summarizes macrocycle-based approaches to anion extraction with a focus on systems reported by our group in recent years. These extractants remove targeted anions from aqueous source phases via three complementary modes: (1) liquid-liquid extraction involving two phase organic solvent/water systems, wherein the anions are ideally extracted from the aqueous phase into the organic phase; (2) solvent swollen polymer networks (gels) that adsorb anions from water; (3) solids that adsorb anions directly. The present treatment is organized according to the nature of the receptors used as the putative extractants, specifically calix[4]pyrrole-based systems, Schiff-base macrocycles, and approaches that rely on so-called "Texas-sized" molecular boxes. © 2022 The Royal Society of Chemistry.
Number of references: 126
Main heading: Negative ions
Controlled terms: Extraction - Purification - Water pollution
Uncontrolled terms: Adverse effect - Anion recognition - Anionic pollutants - Extractants - General class - Global challenges - Human health - Liquid-liquid extraction - Macrocycles - Water purification technologies
Classification code: 453 Water Pollution - 802.3 Chemical Operations
DOI: 10.1039/d2ta03791b
Funding Details: Number: YCS21211027, Acronym: -, Sponsor: -; Number: F-0018,F-2007, Acronym: -, Sponsor: Welch Foundation; Number: 22005242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: OSR-2019-CRG8-4032, Acronym: KAUST, Sponsor: King Abdullah University of Science and Technology; Number: 2020ZDLSF03-07, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: The National Natural Science Foundation of China (22005242), the Shaanxi Key Research and Development Project (No. 2020ZDLSF03-07) and the Graduate Innovation and Practice Skills Foundation of Xi'an Shiyou University (YCS21211027), and the King Abdullah University of Science and Technology (KAUST; grant OSR-2019-CRG8-4032) are all gratefully acknowledged. The work in Austin was further supported by the Robert A. Welch Foundation (F-0018 and F-2007 to J. L. S. and Z. A. P., respectively).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

21. Flexible Recyclable Cellulose Paper Templated Cu-Doped Polydopamine Membranes with Dual Enzyme-Like Activity

Accession number: 20223112469680
Authors: Li, Hong (1); Xiong, Zhuzhu (1); Jia, Yi (2); Gao, Fan (1); Wang, Chenlei (2); Li, Qi (3); Li, Junbai (2, 4)
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Source title: Small
Abbreviated source title: Small
Volume: 18
Issue: 34
Issue date: August 25, 2022
Publication year: 2022
Article number: 2202405
Language: English
ISSN: 16136810
E-ISSN: 16136829
CODEN: SMALBC
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: The development of high-efficiency enzyme mimics is of great significance in the field of biocatalysis. However, it remains challenging to design novel enzyme mimics with multiple enzyme-like activities, excellent stability, and good reusability. Herein, a facile molecular assembly strategy to construct dialdehyde cellulose (DAC) templated Cu-doped polydopamine (DAC@PDA/Cu) membrane with dual enzyme-like activities is presented. The Schiff base bonds formed between polydopamine (PDA) and DAC can not only accelerate the adhesion of PDA thin layer but also contribute to Cu-loading and high stability of DAC@PDA/Cu membrane. Importantly, the assembled DAC@PDA/Cu membrane exhibits a remarkable catalytic activity that is superior to the natural laccase along with high stability and excellent reusability. Moreover, the DAC@PDA/Cu membrane also demonstrates peroxidase-like activity, and it is successfully applied in the sensitive detection of ascorbic acid (AA). This work will provide a new paradigm methodology for rational design and practical applications of enzyme mimics based on bioinspired molecular assemblies. © 2022 Wiley-VCH GmbH.
Number of references: 35
Main heading: Membranes
Controlled terms: Ascorbic acid - Catalyst activity - Cellulose - Enzyme activity - Reusability
Uncontrolled terms: Cellulose papers - Cu - Cu-doped - Dialdehyde cellulose - Dual-enzymes - Enzyme mimics - Molecular assembly - Polydopamine - Recyclables - Templated
Classification code: 461.9 Biology - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 811.3 Cellulose, Lignin and Derivatives - 815.1.1 Organic Polymers - 951 Materials Science
DOI: 10.1002/smll.202202405
Funding Details: Number: 2021KJXX#39, Acronym: -, Sponsor: -; Number: 21872151,21961142022,22172174, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020036, Acronym: YIPA CAS, Sponsor: Youth Innovation Promotion Association of the Chinese Academy of Sciences;
Funding text: The authors acknowledge the financial support from the National Natural Science Foundation of China (Project Nos. 21872151, 22172174, and 21961142022), the Youth Innovation Promotion Association of CAS (No. 2020036), and the Scientific Research Plan of Shaanxi Province of China (No. 2021KJXX39).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

22. Cycloaddition of allylic chlorides, aryl alkynes, and carbon dioxide using nanoclusters of polyoxomolybdate buckyball supported by ionic liquid on dendritic fibrous nanosilica

Accession number: 20222112154494
Authors: Chen, Shijun (1); Li, Jianshan (2); Haddad, Reza (3); Sadeghzadeh, Seyed Mohsen (4)
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Source title: Journal of CO2 Utilization
Abbreviated source title: J. CO2 Util.
Volume: 61
Issue date: July 2022
Publication year: 2022
Article number: 102035
Language: English
ISSN: 22129820
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Due to the uncontrolled emissions of CO2 created by industrial procedures that lead to acidification of the oceans and universal warming, various methods have been utilized for direct absorption of CO2 from waste water sources. The generation of green nano catalyst with chemical adjustments to be converted to value-added products can be considered alluring. Therefore, we synthesized Polyoxomolybdate [Mo132] nanoball with different alkyl groups loaded on dendritic fibrous nanosilica by ionic liquid (DFNS/IL/Mo132) using an easy synthetic route. Owing to the DFNS/IL/Mo132 morphology, a suitable external level for CO2 uptake was generated at all Mo132 sites. Results revealed that DFNS/IL/Mo132 positively influenced the preparation efficiency of 3a,4-dihydronaphtho[2,3-c]furan-1(3H)-one through a three-element binding reaction of alkynes, allylic chlorides, and carbon dioxide. This approach is beneficial in terms of profitable efficacy and forbearance of functional groups. © 2022 Elsevier Ltd.
Number of references: 56
Main heading: Sustainable chemistry
Controlled terms: Industrial emissions - Chlorine compounds - Ionic liquids - Nanocatalysts - Carbon dioxide - Hydrocarbons - Water absorption
Uncontrolled terms: Allylic chloride - Aryl alkynes - Cycloadditions - Dendritics - Fibrous nanosilica - Green-chemistry - Keplerate polyoxomolybdate - Nano-catalyst - Polyoxomolybdates - Uncontrolled emissions
Classification code: 451.1 Air Pollution Sources - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Inductance 3.00E+00H
DOI: 10.1016/j.jcou.2022.102035
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

23. Diagenesis of continental tight sandstone and its control on reservoir quality: A case study of the Quan 3 member of the cretaceous Quantou Formation, Fuxin uplift, Songliao Basin

Accession number: 20223512666422
Authors: Zhang, Qin (1, 2); Wu, Xin-Song (1, 2); Radwan, Ahmed E. (3); Wang, Bo-Han (4); Wang, Kai (1); Tian, Han-Yun (1); Yin, Shuai (5)
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Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 145
Issue date: November 2022
Publication year: 2022
Article number: 105883
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Research on the diagenesis of continental sandstone reservoirs can provide scientific guidance for the prediction of reservoir sweet spots. The low permeable-interbedded thin and thick sandstone reservoirs of the

Cretaceous Quantou Formation's Quan 3 Member in the Fuxin Uplift, Songliao Basin, were used as an example in this work to investigate the diagenesis of continental tight sandstone and its influence on reservoir quality. A large number of thin section, scanning electron microscopy, granularity, X-ray diffraction, and petrophysical property measurements were used to study the petrological characteristics and diagenesis. The reservoir space evolution mode of continental sandstones in this area was constructed by combining diagenesis sequences and the evolution of petrophysical properties of the Quan 3 Member. The results show that the compositional maturity of the sandstone reservoirs of the Quan 3 Member is relatively low and their lithologies are mainly lithic feldspar sandstone and feldspar lithic sandstone, followed by lithic arkose sandstone, feldspathic litharenite and a small amount of lithic sandstone. The average particle size of the target sandstones is 0.11 mm, and the fine sandstone to coarse siltstone are favorable reservoirs. The studied sandstone reservoirs have undergone intense diagenetic transformations, including compaction (pressure solution), cementation, dissolution, and metasomatism. Moreover, the complex diagenetic environment changes in the Quan 3 Member include early alkaline-acidic#mid-alkaline#late acidic. The shallow sandstones are in the meso-diagenetic A1 stage; when the burial depth exceeds 800 m, they enter the meso-diagenetic A2 stage; and when the burial depth exceeds 1600 m, they enter the meso-diagenetic B stage. It was found that diagenesis has significant control over the quality of continental sandstone reservoirs. Compaction is the primary factor controlling the quality of the target reservoir. It controls the differences in the petrophysical properties of the reservoirs in the eastern and western regions; that is, the physical properties of the Quan 3 Member in the east are higher than those in the west. Cementation and dissolution are secondary controlling factors of reservoir quality that control the differences in reservoir petrophysical properties in the northern and southern regions; that is, the physical properties of the Quan 3 Member in the north are better than those in the south. The most favorable reservoirs of the Quan 3 Member are developed in the Fuyu Oilfield, which is distributed in the southeast region and develops fine sandstones of branch channels and meandering river point sand bars of delta plains that suffer the least compaction and the strongest dissolution. This study may provide crucial clues for predicting the sweet spot reservoirs of the Quan 3 Member in the study area. Furthermore, the study provides a reference for the different diagenesis controls on the pore space evolution of continental tight sandstone reservoirs. © 2022 Elsevier Ltd
Number of references: 78
Main heading: Sandstone
Controlled terms: Compaction - Feldspar - Particle size - Petrophysics - Quality control - Scanning electron microscopy - Sedimentology
Uncontrolled terms: Continental tight sandstone reservoir - Cretaceous - Diagenesis - Fuxin uplift - Petrophysical properties - Pore evolution - Reservoir quality - Sandstones reservoirs - Songliao basin - Tight sandstone reservoirs
Classification code: 481.1 Geology - 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 913.3 Quality Assurance and Control
Numerical data indexing: Size 1.10E-04m, Size 1.60E+03m, Size 8.00E+02m
DOI: 10.1016/j.marpetgeo.2022.105883
Funding Details: Number: 41302081,41872134, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: HX20180033, Acronym: PetroChina, Sponsor: PetroChina Company Limited; Number: -, Acronym: UJ, Sponsor: Uniwersytet Jagielloński w Krakowie;
Funding text: This manuscript was supported by the National Natural Science Foundation of China (Grant No. 41872134 and No. 41302081) and Jilin Oilfield Branch Company Ltd. PetroChina (Grant No. HX20180033). Dr. Ahmed E. Radwan is thankful for the support provided by the Priority Research Area Anthropocene under the program "Excellence Initiative—Research University" at the Jagiellonian University in KrakówThis manuscript was supported by the National Natural Science Foundation of China (Grant No. 41872134 and No. 41302081) and Jilin Oilfield Branch Company Ltd., PetroChina (Grant No. HX20180033). Dr. Ahmed E. Radwan is thankful for the support provided by the Priority Research Area Anthropocene under the program "Excellence Initiative—Research University" at the Jagiellonian University in Kraków
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

24. A potential linkage between excess silicate-bound nitrogen and N2-rich natural gas in sedimentary reservoirs (*Open Access*)

Accession number: 20221611976725
Authors: Liu, Yang (1, 2); Stüeken, Eva E. (3); Wang, Dongsheng (1, 2); Tang, Xuan (1, 2); Nie, Haikuan (4); Dang, Wei (5); Zhang, Jinchuan (1, 2)
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Geosciences (Beijing), Beijing; 100083, China; (3) School of Earth and Environmental Sciences, University of St. Andrews, St. Andrews; KY16 9AL, United Kingdom; (4) Petroleum Exploration and Production Research Institute, SINOPEC, Beijing; 100083, China; (5) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Yang(yangliu@cugb.edu.cn)
Source title: Chemical Geology
Abbreviated source title: Chem. Geol.
Volume: 600
Issue date: June 30, 2022
Publication year: 2022
Article number: 120864
Language: English
ISSN: 00092541
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Molecular nitrogen (N2) released from sedimentary rocks during metamorphism is an important component of the biogeochemical nitrogen cycles. However, the importance and variability of this metamorphic N2 flux from rock nitrogen to Earth's surface environment remains largely unexplored. Here we present a comprehensive bulk rock C-N and N2 concentration dataset from the lower Cambrian shale across the Yangtze Block. The results reveal a spatial trend of excess silicate-bound nitrogen in the lower Cambrian shale throughout the Yangtze Block, which is interpreted as partial assimilation of ammonium (NH4+) with high concentrations of NH4+ accumulating in the euxinic water column and in sediment pore waters at shelf and slope environments during sedimentation. The remarkable spatial coupling between silicate-bound nitrogen in bulk rock shale and N2 concentration in modern shale reservoirs indicates that the high proportion of silicate-bound nitrogen may act as an important control on the formation of N2-rich gas in shale reservoirs during metamorphism. These N2-rich reservoir rocks may have affected the surface environment through tectonic movement over Earth's history. Our results therefore identify a novel linkage in the nitrogen cycle and provide evidence for the importance of metamorphism on the return of rock nitrogen back to the surface environment. We further reveal that the metamorphic N2 gas flux from the geosphere to the atmosphere is dependent on environmental conditions during sediment deposition. © 2022 Elsevier B.V.
Number of references: 74
Main heading: Natural gas
Controlled terms: Sedimentology - Shale - Metamorphic rocks - Silicates
Uncontrolled terms: Bulk rocks - Early cambrians - Lower cambrians - N2-rich natural gas - Nitrogen cycles - Nitrogen-cycling - Sedimentary reservoirs - Silicate-bound nitrogen - Surface environments - Yangtze block
Classification code: 481.1 Geology - 522 Gas Fuels
DOI: 10.1016/j.chemgeo.2022.120864
Funding Details: Number: NE/V010824/1, Acronym: NERC, Sponsor: Natural Environment Research Council; Number: 41927801,41972132,42102171, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 202006405019, Acronym: CSC, Sponsor: China Scholarship Council; Number: 2652019098, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported by the National Natural Science Foundation of China (42102171 , 41927801 , 41972132), the Fundamental Research Funds for the Central Universities (2652019098), and the China Scholarship Council (202006405019). EES acknowledges funding from a NERC grant (NE/V010824/1).
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

25. Origin and isotopic fractionation of shale gas from the Shanxi Formation in the southeastern margin of Ordos Basin

Accession number: 20213110714845
Authors: Xu, Longfei (1, 2); Cheng, Yishan (1); Zhang, Jinchuan (1, 2); Dang, Wei (3, 4); Liu, Yang (1, 2); Tang, Xuan (1, 2, 5); Niu, Jialiang (1, 2); Tong, Zhongzheng (1, 2)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 208
Issue date: January 2022
Publication year: 2022
Article number: 109189
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: The Ordos Basin is abundant in natural gas resources, and the Shanxi Formation with the transitional facies is considered as a potential stratum for shale gas reservoir. However, the origin and geochemical characteristics of the Shanxi Formation shale gas remains unclear. In this study, 22 shale gas samples were collected from the SX-1 well in the southeastern margin of Ordos Basin, and tested for gas components and compositions of stable carbon isotope. Moreover, five rock samples were measured for total organic carbon (TOC), the vitrinite reflectance (Ro), kerogen type, porosity, permeability, and methane adsorption capacity. The shale gas in the Shanxi Formation has a high proportion of methane which is consistent with the high maturity of source rocks. The contradictory relationship between the carbon isotopes of ethane (#13C2) from the Shanxi Formation shale gas and kerogen types of rock samples may be caused by the complex sedimentary environment, multiple provenance systems, and high maturity. The carbon isotopes of methane (#13C1), #13C2 and alkane gas components indicate that the shale gas near coal seams is coal-derived gas, the gas at the bottom of the Shanxi Formation is oil-type gas and the gas in mudstones among the sandstone layer at the top of the Shanxi Formation may be mixed with natural gas migrating from other layers or mixed with gas generated in the later period. Meanwhile, the carbon isotopes of carbon dioxide (#13CCO2) suggest that the CO2 generated with hydrocarbons in the coal-measures is mainly of organic origin. The carbon isotopic fractionation of methane is commonly observed in shale gas samples. This fractionation is mainly controlled by the diffusion effect which can be promoted by high porosity and permeability. Furthermore, the positive correlation between the TOC values and the degree of fractionations may be attributed to the high TOC values in the samples, which can improve the development of organic pores and increase the content of adsorbed gas. © 2021
Number of references: 98
Main heading: Gases
Controlled terms: Metamorphic rocks - Porosity - Carbon dioxide - Isotopes - Methane - Coal deposits - Shale gas - Coal - Natural gas - Organic carbon - Kerogen
Uncontrolled terms: $+13$/C - Carbon isotopes - Carbon isotopic fractionation - Gas component - Gas samples - Isotopic fractionations - Ordos Basin - Origin - Total Organic Carbon - Transitional facies
Classification code: 503 Mines and Mining, Coal - 512.2 Natural Gas Deposits - 522 Gas Fuels - 524 Solid Fuels - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.petrol.2021.109189
Funding Details: Number: 2016ZX05034002-001, Acronym: -, Sponsor: -; Number: 41927801, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research was jointly funded by the National Natural Science Foundation of China (Grant No. 41927801) and the National Research Council of Science and Technology Major Project (Grant No. 2016ZX05034002-001).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

26. Highly active Mg–Al hydrotalcite for efficient O-methylation of phenol with DMC based on soft colloidal templates

Accession number: 20213810926237
Authors: Tang, Ying (1); Slaný, Michal (2, 3); Yang, Ying (1); Li, Shaoying (1); Qin, Fanglin (1); Zhao, Yifei (1); Zhang, Zhifang (4); Zhang, Li (1, 4, 5)
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Corresponding authors: Tang, Ying(tangying78@xsyu.dedu.cn); Slaný, Michal(michal.slany@savba.sk)
Source title: Journal of Chemical Technology and Biotechnology
Abbreviated source title: J. Chem. Technol. Biotechnol.
Volume: 97
Issue: 1
Issue date: January 2022
Publication year: 2022
Pages: 79-86
Language: English
ISSN: 02682575
E-ISSN: 10974660
CODEN: JCTBDC
Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: BACKGROUND: Anisole (AN) is an important compound that has been studied in research into antioxidants, plastic stabilizers, pesticides and dyes. One of the technological alternatives to synthesizing them is using a modified solid catalyst with a soft colloidal template. Synthesis of AN has been demonstrated using dimethyl carbonate (DMC) and phenol over a mixed oxide catalyst derived from Mg–Al hydrotalcite, employing cetyl trimethylammonium bromide (CTAB) as a soft colloidal template. RESULTS: When the reaction was performed at atmospheric pressure in the presence of catalyst (in an amount of 4.5 wt% with respect to the reactants, DMC and phenol) at 200 °C, and a DMC:phenol molar ratio of 2:1 for 8 h, good results were seen for both phenol conversion and selectivity of AN (87.66% and 99.38%, respectively). The yield of AN was 87.11%. CONCLUSION: The characterization of the catalyst demonstrated that the calcination temperature has a significant effect on the structure of the obtained Mg–Al hydrotalcite. Its surface properties and pore diameter distribution resulted in an increased concentration of hierarchical basic sites within the material. Weak and moderate basic sites contributed to the high conversion of phenol and good selectivity of AN. In addition, the thermal stability analysis of the as-prepared Mg–Al mixed oxide showed that the hierarchical structures can be preserved up to 500 °C and eventually be transformed into highly dispersed MgO particles. © 2021 Society of Chemical Industry (SCI). © 2021 Society of Chemical Industry (SCI).
Number of references: 31
Main heading: Phenols
Controlled terms: Magnesia - Molar ratio - Alkylation - Aluminum oxide - Atmospheric pressure - Catalyst selectivity - Chemical industry - Amines
Uncontrolled terms: Calcination temperature - Cetyltrimethylammonium bromide - Colloidal templates - Hierarchical structures - Mixed oxide catalysts - Plastic stabilizers - Pore diameter distribution - Technological alternatives
Classification code: 443.1 Atmospheric Properties - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 805 Chemical Engineering, General
Numerical data indexing: Percentage 8.71e+01%, Percentage 8.77e+01%, Percentage 9.94e+01%, Temperature 4.73e+02K, Temperature 7.73e+02K, Time 2.88e+04s
DOI: 10.1002/jctb.6912
Funding Details: Number: 2/0166/21, Acronym: -, Sponsor: -; Number: 21306149, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: APVV#18#0075,APVV#19#0490, Acronym: APVV, Sponsor: Agentúra na Podporu Výskumu a Vývoja; Number: YCS20211014, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was financially supported by grants from the National Natural Science Foundation of China (21306149), the Youth Innovation Team of Shaanxi University and the Postgraduate Innovation Fund Project of Xi'an Shiyou University (YCS20211014). One of the authors (Michal Slaný) acknowledges financial support of this research by the Slovak Grant Agency VEGA (Grant 2/0166/21) and the Slovak Research and Development Agency (APVV180075 and APVV190490). We thank Mathew Sebastian and James Asher for English proofreading.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

27. Rechargeable aluminum-ion battery based on interface energy storage in two-dimensional layered graphene/TiO2 electrode

Accession number: 20223512647858
Authors: Xue, S. (1, 2, 3); Li, K. (3); Lin, Z. (1, 2); Zhang, K. (1, 2); Zheng, J. (1, 2); Zhang, M. (1, 2); Shen, Z. (1, 2)
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Corresponding authors: Shen, Z.(z-shen@fjirsm.ac.cn); Zhang, M.(mingzhang@fjirsm.ac.cn); Li, K.(likai3611897@126.com)
Source title: Materials Today Sustainability
Abbreviated source title: Mater. Today Sustainability
Volume: 20
Issue date: December 2022
Publication year: 2022
Article number: 100213
Language: English
E-ISSN: 25892347
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Rechargeable aluminum-ion batteries (AIBs) are expected to be one of the most concerned energy storage devices due to their high theoretical specific capacity, low cost, and high safety. At present, to explore the positive material with a high aluminum ion storage capability is an important factor in the development of high-performance AIBs. This paper proposes an AIB using two-dimensional layered graphene/TiO2 nanosheets composite as the highly reversible positive electrode and chloroaluminate ionic liquid as the electrolyte. AlCl4- and Al2Cl7- are proven to be the main anionic carriers in the charge storage. The AIBs exhibit excellent electrochemical performances in the voltage range of 0.1–0.9 V. A discharge specific capacity of 313.2 mAh/g at 0.1 A/g is achieved. Moreover, a high specific capacity of 40.0 mAh/g is still maintained at 1.0 A/g after 100 cycles. The superior electrochemical properties for the AIBs are attributed to the interfacial energy storage mechanism in the layered graphene/TiO2 nanosheets composite, providing the unique two-dimensional interface charge storage layer for the insertion/de-insertion of the AlxCly-. These meaningful results have important guiding significance for the development of high-performance AIBs. © 2022 Elsevier Ltd
Number of references: 43
Main heading: Energy storage
Controlled terms: Aluminum - Electric discharges - Electrodes - Electrolytes - Graphene - Interfacial energy - Ionic liquids - Ions - Nanosheets - Secondary batteries - Storage (materials)
Uncontrolled terms: Aluminum ions - Aluminum-ion storage - Charge storage - Interface energy - Interfacial energy storage - Ion batteries - Ion storage - Layered material - Performance - Two-dimensional
Classification code: 525.7 Energy Storage - 541.1 Aluminum - 694.4 Storage - 701.1 Electricity: Basic Concepts and Phenomena - 702 Electric Batteries and Fuel Cells - 702.1.2 Secondary Batteries - 761 Nanotechnology - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 933 Solid State Physics
Numerical data indexing: Electric current 1.00E-01A, Electric current 1.00E00A, Voltage 1.00E-01V to 9.00E-01V, Volume 2.00E-05m3
DOI: 10.1016/j.mtsust.2022.100213
Funding Details: Number: 21905282, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KFZD202003, Acronym: -, Sponsor: State Key Laboratory of New Ceramics and Fine Processing;
Funding text: This work was financial supported by the State Key Laboratory of New Ceramic and Fine Processing Tsinghua University (No. KFZD202003) and the National Natural Science Foundation of China (No. 21905282).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

28. A novel (B4Cp+Gd)/Al6061 neutron absorber material with desirable mechanical properties

Accession number: 20224813184823
Authors: Chen, Mi (1); Liu, Zhiwei (1); Yang, Cuicui (1); Xiao, Peng (1); Yang, Weitao (2); Hu, Zhiliang (3); Sun, Liang (4); Jia, Yudong (5)
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Source title: Materials Science and Engineering: A
Abbreviated source title: Mater. Sci. Eng. A
Volume: 861
Issue date: December 19, 2022
Publication year: 2022
Article number: 144376
Language: English
ISSN: 09215093
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: A novel (10 wt%B4Cp+3.6 wt%Gd)/Al6061 neutron absorber material having great potential commercial applications was designed by calculating equivalent B content (BEq) and its neutron absorber ability was evaluated based on an equivalent B areal density (EBAD) calculation as well as a Monte Carlo simulation. The designed material was successfully fabricated by ultrasound assisted casting method. The added B4C particles were distributed uniformly in the matrix and the newly formed large-sized Al3Gd particles existed along the grain boundaries (GBs) in the as-cast composite. It was found that a small amount of Si was solubilized in Al3Gd lattice and the solution behavior of Si was revealed using first-principles calculation. After hot extrusion (HE) and heat treatment (HT), the large-sized Al3Gd particles were broken into small ones and nano-sized β phase was precipitated in the matrix. The mechanical properties of the modified composite were enhanced remarkably and the reason of which was mainly attributed to the following two aspects. On the one hand, HE induced the grain refinement and the fragmentation of large-sized Al3Gd particles as well as their more homogeneous distribution within grains from GBs were beneficial for the improvements in both strength and ductility of composite. On the other hand, HT induced the precipitation of β phase could work as strengthening phase in the modified composite. The size and distribution of Al3Gd particles played an important role in improving the mechanical properties since cracking easily occurred on the large-sized Al3Gd particles which existed along GBs, leading to the severe degradation of mechanical properties of the as-cast composite. Furthermore, the related mechanism of cracking behavior of large-sized Al3Gd particles was discussed. This research provides a low-cost method to prepare easy-deform Al based neutron absorber material with desirable mechanical properties. © 2022 Elsevier B.V.
Number of references: 28
Main heading: Ultrasonics
Controlled terms: Aluminum alloys - Binary alloys - Boron carbide - Calculations - Cracks - Extrusion - Grain boundaries - Grain refinement - Intelligent systems - Microstructure - Monte Carlo methods - Neutrons - Silicon
Uncontrolled terms: (B4Cp+gd)/al6061 neutron absorber material - As-cast - Cast composites - Commercial applications - Grain-boundaries - Hot extrusion - Large-sized - matrix - Modified composites - Neutron absorber material
Classification code: 541.2 Aluminum Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 723.4 Artificial Intelligence - 753.1 Ultrasonic Waves - 804.2 Inorganic Compounds - 812.1 Ceramics - 921 Mathematics - 922.2 Mathematical Statistics - 951 Materials Science
DOI: 10.1016/j.msea.2022.144376
Funding Details: Number: 51974224,52174372, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020JM-047, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: We would like to thank the National Natural Science Foundation of China (Grant Nos. 52174372 and 51974224) and the Natural Science Foundation of Shaanxi Province (Grant No. 2020JM-047) for their support. We thank the Yanan Chen at Xi'an Jiaotong University Instrument Analysis Center for experimental assistance. We also thank the Qiaoling Zheng at School of Materials Science and Engineering for experimental assistance.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

29. Improvement in the superelasticity of Ti-19Zr-11Nb-4Ta shape memory alloy caused by aging treatments (*Open Access*)

Accession number: 20230413420912

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Source title: Journal of Materials Research and Technology
Abbreviated source title: J. Mater. Res. Technol.
Volume: 19
Issue date: July 2022
Publication year: 2022
Pages: 1293-1297
Language: English
ISSN: 22387854
Document type: Journal article (JA)
Publisher: Elsevier Editora Ltda
Abstract: The superelasticity behaviors of Ti-19Zr-11Nb-4Ta shape memory alloy subjected to aging treatments were investigated in this study. As the aging temperature increased, the precipitation of isothermal $_{\omega}$ phase was found to suppress the formations of stress-induced $_{\alpha}$_martensite. The superelastic recovery of the sample first increased and then deteriorated with the increasing of aging temperature from 423 K to 523 K. A maximum superelastic recovery strain of 3.9% was obtained for Ti-19Zr-11Nb-4Ta alloy aged at 473 K. © 2022 The Author(s).
Number of references: 14
Main heading: Shape-memory alloy
Controlled terms: Elasticity - Niobium alloys - Tantalum alloys - Titanium alloys - Zircaloy
Uncontrolled terms: Ageing treatments - Aging temperatures - Recovery strain - Shape-memory materials - Stress-induced - Superelastic - Superelasticity - Ti-zr-nb-ta
Classification code: 531 Metallurgy and Metallography - 542.3 Titanium and Alloys - 543.4 Tantalum and Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals
Numerical data indexing: Percentage 3.90E+00%, Temperature 4.23E+02K to 5.23E+02K, Temperature 4.73E+02K
DOI: 10.1016/j.jmrt.2022.05.134
Funding Details: Number: 52071261, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: HBPU, Sponsor: Hubei Polytechnic University;
Funding text: This work is supported by the National Natural Science Foundation of China (52071261) and Hubei Polytechnic University Talent Introduction Project (20xjz14R).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

30. Research on in-situ combustion oxidation model based on different diameter particle accumulation

Accession number: 20222812352350
Authors: Yuan, Shibao (1, 2); Zhang, Yupeng (3); Jiao, Pingge (1, 2); Song, Haiqiang (4); Chen, Weiqing (5); Li, Lehong (6); Jiang, Haiyan (1, 2); Ren, Zongxiao (1, 2); Gong, Diguang (1, 2); Qu, Guanzheng (1, 2)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 216

Issue date: September 2022
Publication year: 2022
Article number: 110804
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: In-situ combustion has the advantages of high oil displacement efficiency and obvious improvement of residual oil quality, which has been widely used in heavy oil thermal recovery. The effect of in-situ combustion in the porous media of the reservoir is not only affected by the nature of oxidation reaction, but also by the porous media. At present, there is little research on the in-situ combustion oxidation model involving porous media, and mainly based on the equal diameter model, which makes the in-situ combustion field and the expected effect have a large gap. Firstly, particle size composition and accumulation mode is analyzed and screened in this paper. And then, combining with the morphological changes of different diameter fuel oxidation geometric model and the reaction of crude oil oxidation stages, a geometric model of different diameter fuel oxidation is constructed, which conforms the actual in-situ combustion formation. Furthermore, according to Arrhenius equation and fuel surface reaction rate formula, the in-situ combustion oxidation mathematical model based on the porous media accumulation is established combined with geometric parameter derivation. Finally, the oxygen consumption and oxidation characteristics of each oxidation stage are analyzed, which can provide a reference for the in-situ combustion development theoretical research. © 2022 Elsevier B.V.
Number of references: 35
Main heading: Porous materials
Controlled terms: Crude oil - Geometry - Heavy oil production - In situ combustion - Oxidation - Oxygen - Particle size - Surface reactions
Uncontrolled terms: Fuel deposition - Fuel oxidation - In-situ combustions - Model-based OPC - Oxidation model - Oxygen consumption rate - Particle accumulation - Porous medium - Reaction model of in-situ combustion - Reaction modelling
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 521.1 Fuel Combustion - 802.2 Chemical Reactions - 804 Chemical Products Generally - 921 Mathematics - 951 Materials Science
DOI: 10.1016/j.petrol.2022.110804
Funding Details: Number: 51674198, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022JZ-28, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: The authors would like to thank the project supported by National Natural Science Foundation of China (NO. 51674198) and Natural Science Foundation of Shaanxi Province (NO. 2022JZ-28).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

31. Numerical Evaluation of Long-Term Depressurization Production of a Multilayer Gas Hydrate Reservoir and Its Hydraulic Fracturing Applications (*Open Access*)

Accession number: 20221111784839
Authors: Lv, Tao (1, 2); Cai, Jing (2, 3, 4); Ding, Yalong (5); Pan, Jie (1); Chen, Zhaoyang (2, 3); Li, Xiaosen (2, 3)
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Corresponding author: Lv, Tao(lvtao@xsyu.edu.cn)
Source title: Energy and Fuels
Abbreviated source title: Energy Fuels
Volume: 36
Issue: 6
Issue date: March 17, 2022
Publication year: 2022
Pages: 3154-3168
Language: English
ISSN: 08870624

E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: In this study, a multilayer gas hydrate reservoir model was implemented based on the geological conditions of the Shenhu area in the South China Sea (SHCS) to predict the production performance of the reservoir during long-term depressurization. Hydraulic fracturing technology was introduced to boost production, and its positive/negative impact on the production behavior of the hydrate reservoir was evaluated. Results show that hydrate dissociation is severely constrained by pressure propagation and fluid flow in the low reservoir. During production, almost half of the wellhead gas production is from the dissolved gas in seawater and the free gas contained in sediments. Massive secondary hydrate forms and gathers in the hydrate layer I and near the interface of hydrate layers. Underlying free gas is conducive to reservoir production, in which the cumulative wellhead gas production can be increased by ~59% compared to the reservoir lacking underlying free gas. On one hand, hydraulic fracturing can significantly promote hydrate dissociation and increase the capacity of production, especially for long-distance fracture implemented in the middle part of the hydrate layer. On the other hand, high permeability in the fractured zone also provides a convenient channel for water in the sedimentary layer. After hydraulic fracturing, the production efficiency of the reservoir is still low due to the involvement of more pore water. In future, the combination of hydraulic fracturing and other auxiliary means can be considered to develop hydrate reservoirs. © 2022 American Chemical Society. All rights reserved.
Number of references: 53
Main heading: Gases
Controlled terms: Gas hydrates - Hydration - Phase interfaces - Hydraulic fracturing - Fracture - Multilayers - Dissociation - Flow of fluids
Uncontrolled terms: Depressurizations - Free gas - Gas hydrate reservoir - Gas productions - Geological conditions - Hydrate dissociation - Production performance - Reservoir models - South China sea - Wellhead gas
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 631.1 Fluid Flow, General - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 951 Materials Science
Numerical data indexing: Percentage 5.90E+01%
DOI: 10.1021/acs.energyfuels.1c04017
Funding Details: Number: 2020B0301030003, Acronym: -, Sponsor: -; Number: 51576202,51736009, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: E129kf1501, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: -, Acronym: GIEC, Sponsor: GuangZhou Institute of Energy Conversion, Chinese Academy of Sciences;
Funding text: This work is supported by the Key Laboratory of Gas Hydrate, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences (No. E129kf1501), the National Natural Science Foundation of China (51576202 and 51736009), and the Guangdong Major project of Basic and Applied Basic Research (No.2020B0301030003).
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

32. Size effect on interfacial pseudocapacitive contributions to lithium-ion storage in microscale carbon/TiO2 nanosheet composite

Accession number: 20221111773860
Authors: Li, K. (1); Xue, S. (1, 2, 3); Hu, Y. (2, 3); Zheng, J. (2, 3); Zhang, M. (2, 3); Shen, Z. (2, 3)
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Source title: Materials Today Sustainability
Abbreviated source title: Mater. Today Sustainability
Volume: 18
Issue date: June 2022
Publication year: 2022
Article number: 100112
Language: English

E-ISSN: 25892347
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The research on pseudocapacitive characteristics is mostly focused on the nano- or submicron-scale metal-oxide electrode materials. However, the studies on related properties are still rare in the microscale materials. Electrode materials with a microscale particle size can exhibit higher tap density and lower specific surface areas, which are more conducive to commercial applications. Therefore, here we present a study about the effects of particle size on interfacial pseudocapacitive contributions to lithium-ion storage and the internal dynamics associated with the interfacial ion diffusions in two-dimensional microscale carbon/TiO2 nanosheet superlattice composites. The results reveal the initial particle size of the layered material exhibits significant effects on the kinetics of the pseudocapacitive redox reactions that lead to different rate behaviors. The higher reversible capacity will be achieved with the smaller particle size for the microscale-layered carbon/TiO2 nanosheets. A specific capacity of 512.5 mAh/g and a high pseudocapacitive reaction at a current of 0.1 A/g are achieved for carbon/TiO2 with a particle size of 4.3 μm. The excellent electrochemical properties of the microscale-layered carbon/TiO2 are attributed to the increase in the interfacial pseudocapacitive contribution, and the decrease in the ion diffusion path resulted from the decrease in the particle sizes. © 2022 Elsevier Ltd
Number of references: 44
Main heading: Particle size
Controlled terms: Lithium - Carbon - Diffusion - Storage (materials) - Ions - Redox reactions - Nanosheets
Uncontrolled terms: 2d nanosheet composite - Electrode material - Interfacial lithium storage - Ions diffusion - Layered material - Lithium ion storages - Lithium storages - Particles sizes - Pseudocapacitive - Sizes effect
Classification code: 542.4 Lithium and Alloys - 549.1 Alkali Metals - 694.4 Storage - 761 Nanotechnology - 802.2 Chemical Reactions - 804 Chemical Products Generally - 933 Solid State Physics
Numerical data indexing: Electric current 1.00E-01A, Size 4.30E-06m
DOI: 10.1016/j.mtsust.2022.100112
Funding Details: Number: 21905282, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: KFZD202003, Acronym: -, Sponsor: State Key Laboratory of New Ceramics and Fine Processing;
Funding text: This work was financial supported by the State Key Laboratory of New Ceramic and Fine Processing Tsinghua University (No. KFZD202003) and the National Natural Science Foundation of China (No. 21905282).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

33. Metal-nitride dual-anode AlGaN/GaN heterostructure Schottky barrier diodes with tunable turn-on voltage and reverse leakage current

Accession number: 20221211810874
Authors: Wang, Ting-Ting (1); Wang, Xiao (1); Cui, Zhen-Hai (1); Hong, Wen (1); Li, Yang (1); Li, Liu-An (3); He, Yue (1); Jia, Mao (1); Guo, Chen (1); Bai, Li-Hua (1); Geng, Ying-Zhao (5); Hao, Yue (1); Ao, Jin-Ping (1, 2, 4)
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Source title: Semiconductor Science and Technology
Abbreviated source title: Semicond Sci Technol
Volume: 37
Issue: 4
Issue date: April 2022
Publication year: 2022
Article number: 045013
Language: English
ISSN: 02681242
E-ISSN: 13616641
CODEN: SSTEET
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd

Abstract: AlGaN/GaN heterostructure lateral Schottky barrier diodes (SBDs) with TiN and NiN dual anode (DA) on sapphire substrates are investigated in this letter. The NiN anode with its high work-function leads to low leakage current and high breakdown voltage, while TiN anode with its low work-function determines the low turn-on voltage of the DA SBDs. Tunable turn-on voltage and leakage current are obtained in the DA SBDs by varying the radius of the TiN anode. As the radius of the TiN anode decreases from 80 to 8 μm, the turn-on voltage increases from 0.64 to 0.94 V, while the reverse leakage current decreases from 1 × 10-2 to 1 × 10-4 mA mm-1 at a reverse bias of -10 V and cathode-anode distance of 20 μm. The differential specific on-resistance at 100 mA mm-1 is 4.5 m# cm2 and barely changes with various radius of the TiN anode. A high breakdown voltage of 1.49 kV is achieved in the AlGaN/GaN DA SBDs with the radius of 80 μm of the TiN anode, obtaining a power Baliga's figure of merit of 0.48 GW cm-2 at the cathode-anode distance of 20 μm. Besides, dynamic on-resistance increases less than 15% under pulse voltage bias at -60 V which may account on the good interface between metal nitrides and AlGaN, which is beneficial to the high frequency and high power application. © 2022 IOP Publishing Ltd.
Number of references: 19
Main heading: Anodes
Controlled terms: Aluminum gallium nitride - Titanium nitride - Work function - Bias voltage - Electric breakdown - Schottky barrier diodes - Semiconductor alloys - III-V semiconductors - Diodes - Gallium nitride - Leakage currents - Sapphire - Cathodes
Uncontrolled terms: AlGaN/GaN heterostructures - AlGaN/GaN schottky barrier diode - Dual anode - High breakdown voltage - Low turn-on voltages - Metal nitrides - On-resistance - Reverse leakage current - Tunables - Turn-on voltages
Classification code: 482.2.1 Gems - 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 713 Electronic Circuits - 714.1 Electron Tubes - 714.2 Semiconductor Devices and Integrated Circuits - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: Electrical resistance 4.50E-03Ohm, Magnetic field strength 1.00E+02A/m, Magnetic field strength 1.00E-04A/m, Percentage 1.50E+01%, Size 2.00E-05m, Size 8.00E-05m, Size 8.00E-05m to 8.00E-06m, Surface power density 4.80E+12W/m2, Voltage -1.00E+01V, Voltage -6.00E+01V, Voltage 1.49E+03V, Voltage 6.40E-01V to 9.40E-01V
DOI: 10.1088/1361-6641/ac5676
Funding Details: Number: 61804119,61991442,62104183, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M643576, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2017YFB0403000, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: This work is supported by the National Key Research and Development Program of China (No. 2017YFB0403000), the National Natural Science Foundation of China (No. 61991442), the National Natural Science Foundation for Young Scholars of China (Grant Nos. 61804119 and 62104183), and the Postdoctoral Science Foundation of China (Grant No. 2018M643576). The authors would like to thank Gang Chen, Lu Tang, Ning Liang, Juan Dou, and Xiu-Fen Huang for the technical support.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

34. Organic geochemical characteristics of coal biogasification

Accession number: 20223412607927
Authors: Jian, Kuo (1, 2); Fu, Xuehai (3); Chen, Zhaoying (4); Li, Mi (1); Xu, Xiangqian (2); Guo, Yuanyuan (5); Liu, Jian (4); Liu, Mingjie (4)
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Source title: Fuel
Abbreviated source title: Fuel
Volume: 330
Issue date: December 15, 2022
Publication year: 2022
Article number: 125637
Language: English
ISSN: 00162361

CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: To investigate the gas production mechanism and geochemical characteristics of biogenic coalbed methane, two pieces of lignite were selected as the degradation substrate of coal biogasification, and the coal seam native bacteria were used as the bacteria source to carry out the anaerobic gas production simulation experiment for 90 days. The results show that the gas generation mode is mostly acetic acid fermentation under anaerobic closed circumstances, and the gas production efficiency is low. The major components of biogas are CH4 and CO2, and the gas composition is dry. The entire gas production process can be divided into three stages: rapid growth, fluctuating growth, and decline. After entering the steady stage of gas production, the contents of CH4 and CO2 exhibit a clear synchronous change law. In this process, two significant inherited isotope fractionation effects caused the changes in the carbon isotopic composition of CH4 and CO2, which eventually led to the fractionation of light carbon isotopes of methyl into CH4 and heavy carbon isotopes of carboxyl into CO2, The lighter the #13CCH4, The heavier the #13CCO2, and the biochemical methane tends to enrich light carbon isotopes. In addition, as the biodegradation time increased, the Pr/nC17 and Ph/nC18 ratios of the two coal samples generally increased, while the OEP value and #nC21-/#nC22+ ratios generally decreased, indicating that the native bacteria of coal seam are better at degrading odd carbon of short-chain n-alkanes in soluble organic matter. At the same time, these microorganisms can also make use of aromatic compounds in coal, so it can be seen that the way of coal seam origin bacteria using coal is diversified. © 2022 Elsevier Ltd
Number of references: 35
Main heading: Coal
Controlled terms: Aromatic compounds - Bacteria - Biodegradation - Carbon - Carbon dioxide - Coal deposits - Gases - Isotopes - Methane - Substrates
Uncontrolled terms: Biogasification - CH 4 - Coal biogasification - Coal seams - Fractionation effects - Gas production law - Gas productions - Inherited isotope fractionation effect - Isotope fractionation - N-alkane
Classification code: 461.8 Biotechnology - 503 Mines and Mining, Coal - 524 Solid Fuels - 801.2 Biochemistry - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Age 2.466E-01yr
DOI: 10.1016/j.fuel.2022.125637
Funding Details: Number: U54OD020355, Acronym: OD, Sponsor: NIH Office of the Director; Number: K08CA241400, Acronym: NCI, Sponsor: National Cancer Institute;
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

35. Experimental Investigation of the CO2Flooding Characteristics of Tight Sandstone Reservoirs Using a High-Temperature and -Pressure Visualization Apparatus

Accession number: 20224212980052
Authors: Gao, Hui (1, 2, 3); Luo, Kaiqing (1, 2, 3); Xie, Yonggang (4, 5); Qi, Yin (4, 5); Li, Teng (1, 2, 3); Cheng, Zhilin (1, 2, 3); Wang, Chen (1, 2, 3)
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Source title: Energy and Fuels
Abbreviated source title: Energy Fuels
Volume: 36
Issue: 20
Issue date: October 20, 2022
Publication year: 2022
Pages: 12544-12554
Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)

Publisher: American Chemical Society
Abstract: The microscopic pore structure of tight sandstone reservoirs significantly impacts CO2flooding characteristics. In this work, two types of realistic sandstone visualization models were selected based on petrophysical properties and the pore structure feature. CO2flooding experiments under different injection pressures and volumes were carried out using the in-house high-temperature and -pressure visualization flooding system. Then, the characteristics of oil movement and residual oil distribution were quantitatively described and analyzed for two rock types. The results show that the type I model has better physical properties and a more favorable pore structure, thus a higher oil recovery than the type II model. The immiscible CO2flooding efficiency of the type I model is up to 64.5%. On the other hand, the oil recovery of the type II model increases when the miscible pressure is reached, and the maximum oil recovery is 49.5%. In the high-pressure miscible flooding stage, two types of models have similar oil recovery increments, which are 10.7 and 10.6%, respectively. Additionally, the residual oil distribution varies with the pore structure. The type I model has a small residual oil region and thus a high oil recovery efficiency. In contrast, the residual oil saturation of the type II model is larger, and the final oil recovery decreases. Furthermore, as the injection pressure and volume increase, the residual oil saturation becomes smaller, and oil recovery of both models increases. The occurrence characteristics of residual oil are oil droplet, cluster-shaped residual oil, flake oil, and dead corner oil, and the main influencing factors are capillary force, injection pressure, and pore connectivity. © 2022 American Chemical Society. All rights reserved.
Number of references: 48
Main heading: Pore structure
Controlled terms: Carbon dioxide - Efficiency - Floods - Petroleum reservoir evaluation - Petroleum reservoirs - Petrophysics - Reservoirs (water) - Sandstone - Visualization
Uncontrolled terms: Floodings - High temperature and pressure - Injection pressures - Injection volume - Oil recoveries - Pores structure - Residual oil - Residual oil distribution - Tight sandstone reservoirs - Type II
Classification code: 441.2 Reservoirs - 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.2 Inorganic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.06E+01%, Percentage 1.07E+01%, Percentage 4.95E+01%, Percentage 6.45E+01%
DOI: 10.1021/acs.energyfuels.2c02517
Funding Details: Number: 21JP095, Acronym: -, Sponsor: -; Number: 2020D-5007-0205, Acronym: -, Sponsor: -; Number: YCS21212091, Acronym: -, Sponsor: -; Number: 52174030,52204044, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2022GY-137,2022JQ-528, Acronym: -, Sponsor: Shanxi Provincial Key Research and Development Project;
Funding text: The authors would like to acknowledge the support of the National Natural Science Foundation of China (grant nos. 52174030 and 52204044), the Postgraduate Innovation and Practice Ability Development Fund of Xi'an Shiyou University (no. YCS21212091), Key Research and Development Program of Shaanxi Province (grant nos. 2022GY-137 and 2022JQ-528), Key Scientific Research Project of Education Department of Shaanxi Province (grant no. 21JP095), Petro-China Innovation Foundation (no. 2020D-5007-0205), and the Youth Innovation Team of Shaanxi Universities.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

36. Influence of natural fractures on propagation of hydraulic fractures in tight reservoirs during hydraulic fracturing

Accession number: 20221111783166
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Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 138

Issue date: April 2022
Publication year: 2022
Article number: 105505
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Natural fractures in tight reservoirs play an important role in affecting propagation of hydraulic fractures during hydraulic fracturing. In this study, simulated hydraulic fracturing is implemented on nine artificial samples. Within these artificial samples, the pre-existing fractures either showing different dip angles or exhibiting different distances from the simulated wellbore are created to investigate the influence of different types of natural fractures on fracture propagation in tight reservoirs during hydraulic fracturing. Based on the experimental results, propagation of hydraulic fractures varies with the presence of pre-existing fractures having different dip angles during the hydraulic fracturing. Specifically, hydraulic fractures easily go through the pre-existing fractures with high dip angles, while they are hindered by pre-existing fractures with small dip angles. In addition, propagation of hydraulic fractures changes with the distance of pre-existing fractures from simulated wellbore. With a small distance from simulated wellbore, hydraulic fractures are redirected by showing bifurcation from the pre-existing fractures. As the distance increases, hydraulic fractures are less affected by pre-existing fractures. On the contrary, effective stress is the main factor influencing propagation of hydraulic fractures. To validate the laboratory result, microseismic monitoring technology was used detect the influence of natural fractures on propagation of hydraulic fractures in tight reservoirs during a hydraulic fracturing process on Longmaxi Formation in the Fuling area of Sichuan Basin of China. This study is expected to inspire new understanding of the influence of natural fractures on propagation of hydraulic fractures during hydraulic fracturing in tight reservoirs. © 2022 Elsevier Ltd
Number of references: 41
Main heading: Fracture
Controlled terms: Hydraulic fracturing - Microseismic monitoring - Oil field equipment - Boreholes - Oil wells
Uncontrolled terms: Artificial samples - Dip angle - Effective stress - Fracture propagation - Microseismic monitoring technology - Natural fracture - Propagation of hydraulic fracture - Tight reservoir - Wellbore - Wellbore hydraulic
Classification code: 484.1 Earthquake Measurements and Analysis - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 951 Materials Science
DOI: 10.1016/j.marpetgeo.2021.105505
Funding Details: Number: 2018004, Acronym: -, Sponsor: -; Number: 52004320, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2462021QNXZ012, Acronym: -, Sponsor: Science Foundation of China University of Petroleum, Beijing; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: We acknowledge the financial support by the Open Fund (SXCU-201906) of Shaanxi cooperative innovation center of unconventional oil and gas exploration and development (Xi'an Shiyou University), the National Natural Science Foundation of China (No.52004320), and the Science Foundation of China university of Petroleum, Beijing (No.2462021QNXZ012). This work was performed at State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation of Chengdu University of Technology, Chengdu. The authors also acknowledge the financial support from the research by the Sichuan Science and Technology Innovation Seedling Project (2018004).We acknowledge the financial support by the Open Fund (SXCU-201906) of Shaanxi cooperative innovation center of unconventional oil and gas exploration and development (Xi'an Shiyou University) , the National Natural Science Foundation of China (No. 52004320), and the Science Foundation of China university of Petroleum, Beijing (No. 2462021QNXZ012). This work was performed at State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation of Chengdu University of Technology, Chengdu. The authors also acknowledge the financial support from the research by the Sichuan Science and Technology Innovation Seedling Project (2018004)..
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

37. Structural Reconstruction of Cu2O Superparticles toward Electrocatalytic CO2 Reduction with High C2+ Products Selectivity (*Open Access*)

Accession number: 20221411881767
Authors: Jiang, Yawen (1); Wang, Xinyu (1); Duan, Delong (1); He, Chaohua (1); Ma, Jun (1); Zhang, Wenqing (1); Liu, Hengjie (1); Long, Ran (1); Li, Zibiao (2); Kong, Tingting (3); Loh, Xian Jun (2); Song, Li (1); Ye, Enyi (2); Xiong, Yujie (1)

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Source title: Advanced Science
Abbreviated source title: Adv. Sci.
Volume: 9
Issue: 16
Issue date: June 3, 2022
Publication year: 2022
Article number: 2105292
Language: English
E-ISSN: 21983844
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Structural reconstruction is a process commonly observed for Cu-based catalysts in electrochemical CO2 reduction. The Cu-based precatalysts with structural complexity often undergo sophisticated structural reconstruction processes, which may offer opportunities for enhancing the electrosynthesis of multicarbon products (C2+ products) but remain largely uncertain due to various new structural features possibly arising during the processes. In this work, the Cu2O superparticles with an assembly structure are demonstrated to undergo complicated structure evolution under electrochemical reduction condition, enabling highly selective CO2-to-C2+ products conversion in electrocatalysis. As revealed by electron microscopic characterization together with in situ X-ray absorption spectroscopy and Raman spectroscopy, the building blocks inside the superparticle fuse to generate numerous grain boundaries while those in the outer shell detach to form nanogap structures that can efficiently confine OH- to induce high local pH. Such a combination of unique structural features with local reaction environment offers two important factors for facilitating C-C coupling. Consequently, the Cu2O superparticle-derived catalyst achieves high faradaic efficiencies of 53.2% for C2H4 and 74.2% for C2+ products, surpassing the performance of geometrically simpler Cu2O cube-derived catalyst and most reported Cu electrocatalysts under comparable conditions. This work provides insights for rationally designing highly selective CO2 reduction electrocatalysts by controlling structural reconstruction.

Number of references: 40
Main heading: Carbon dioxide
Controlled terms: Copper oxides - Electrocatalysts - Electrolytic reduction - X ray absorption spectroscopy - Electrocatalysis - Grain boundaries
Uncontrolled terms: CO 2 reduction - CO2 electroreduction - Cu2O superparticle - Electro reduction - Electrocatalytic - In-situ spectroscopy - Multicarbon product - Structural feature - Structural reconstruction -]+ catalyst
Classification code: 533.1 Ore Treatment - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics
Numerical data indexing: Inductance 2.00E+00H, Percentage 5.32E+01%, Percentage 7.42E+01%
DOI: 10.1002/advs.202105292
Funding Details: Number: 21725102,21803002,51902253,91961106,U1832156, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: DNL201922, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: 2008085J05, Acronym: -, Sponsor: Natural Science Foundation of Anhui Province; Number: 2019444, Acronym: YIPA CAS, Sponsor: Youth Innovation Promotion Association of the Chinese Academy of Sciences; Number: 2020JQ#778, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: USTC, Sponsor: University of Science and Technology of China; Number: 2017YFA0207301, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: Y.J., X.W., and D.D. contributed equally to this work. This work was financially supported in part by National Key R&D Program of China (2017YFA0207301), NSFC (21725102, U1832156, 91961106, 21803002, and 51902253), Anhui Provincial Natural Science Foundation (2008085J05), Youth Innovation Promotion Association of CAS (2019444), Shaanxi Provincial Natural Science Foundation (2020JQ778), and DNL Cooperation Fund, CAS (DNL201922). XAFS measurements were performed at the beamline 1W1B in Beijing Synchrotron Radiation Facility (BSRF), China. The authors thank the support of Dr. Linjun Wang from USTC Center for Micro and Nanoscale Research and Fabrication.Y.J., X.W., and D.D. contributed equally to this work. This work was financially supported in part by National Key R&D Program of China (2017YFA0207301), NSFC (21725102, U1832156, 91961106, 21803002,

and 51902253), Anhui Provincial Natural Science Foundation (2008085J05), Youth Innovation Promotion Association of CAS (2019444), Shaanxi Provincial Natural Science Foundation (2020JQ-778), and DNL Cooperation Fund, CAS (DNL201922). XAFS measurements were performed at the beamline 1W1B in Beijing Synchrotron Radiation Facility (BSRF), China. The authors thank the support of Dr. Linjun Wang from USTC Center for Micro- and Nanoscale Research and Fabrication.
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

38. Effect of Nanoparticles and Nanosheets on Improving the Oil/Water Interface Performance of Surfactants in Enhancing Oil Recovery: A Comparative Study by Molecular Simulation

Accession number: 20220297229
Authors: Fu, Lipei (1, 2); Gu, Feng (1); Liao, Kaili (1, 3); Ma, Qianli (1); Shao, Minglu (1); Cheng, Yuan (1); Huang, Weiqiu (1); Li, Bing (2, 4); Si, Wenzhe (2)
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Source title: SSRN
Issue date: July 23, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: In recent years, nanoparticles have become the most potential enhanced oil recovery technology due to their unique small size effect and specific surface area effect. With the research and application of graphene and its derived materials, nanosheets are the research hotspot of nanomaterials for enhanced surfactant flooding, but there is no report on the molecular simulation comparison of nanoparticles and nanosheets to enhance surfactant performance. Therefore, in this paper, we first constructed nano-SiO2 particles grafted with hydroxyl and pentyl alkane activator, graphene nanosheets grafted with carboxylic acid chain and pentyl alkane activator. On this basis, the interfacial tension, interfacial density, interfacial generation energy and radial distribution function were analyzed by molecular dynamics simulation. The results showed that both nanoparticles and nanosheets could produce synergistic effect with amphoteric surfactant dodecyl dimethylaminoethyllactone (BS-12), and the synergistic effect of nanosheets with BS-12 was stronger after carboxylic acid chain and pentyl alkane activator were grafted on the surface of nanosheets. The interfacial tension of n-dodecane/water can be reduced to 13.58 mN/m by the combination of modified nanoparticles and BS-12, while the interfacial tension of n-dodecane/water can be reduced to 4.15 mN/m by the combination of modified nanosheets and BS-12, which means that the ability of reducing oil-water interfacial tension is significantly improved. Second, the calculation of n-dodecane/water interface thickness and interface formation energy showed that compared with the modified nanoparticles and BS-12 compound system, the interface thickness of the modified nanoparticles and BS-12 compound system increased by 9.24%, and the interface formation energy increased by 17.85%. In addition, the results of radial distribution function analysis also showed that the modified nanosheets had strong hydration with water molecules after compounding with BS-12. The results of this work can provide new ideas for further research on the synergistic effect of surfactants and nanomaterials, as well as the development of oil displacement technology based on surfactants/nanomaterials. © 2022, The Authors. All rights reserved.
Number of references: 35
Main heading: Distribution functions
Controlled terms: Carboxylic acids - Enhanced recovery - Grafting (chemical) - Graphene - Molecular dynamics - Molecules - Nanosheets - Paraffins - Silica nanoparticles - SiO2 nanoparticles
Uncontrolled terms: Acid chains - Formation energies - Graphene nanosheets - Interface formation - Interface thickness - Molecular simulations - N -dodecane - Radial distribution functions - SiO2 nanoparticle - Synergistic effect

Classification code: 511.1 Oil Field Production Operations - 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 933 Solid State Physics
Numerical data indexing: Percentage 1.785E+01%, Percentage 9.24E+00%, Surface tension 1.358E-02N/m, Surface tension 4.15E-03N/m
Compendex references: YES
Preprint ID: 4170650
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

39. Localized surface plasmon and transferred electron enhanced UV emission of ZnO by periodical aluminum nanoparticle arrays

Accession number: 20220311487153
Authors: Ye, Qiong (1, 5); Cao, Ruo-Yu (2); Wang, Xiao (1); Zhai, Xiao-Qi (1); Wang, Ting-Ting (1); Xu, Yang (1); He, Yue (1); Jia, Mao (1); Su, Xi (3); Bai, Li-Hua (4); Peng, Tao-Wei (1); Wu, Hao (3); Liu, Chang (3); Bu, Yu-Yu (1); Ma, Xiao-Hua (1); Hao, Yue (1); Ao, Jin-Ping (1)
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Source title: Journal of Luminescence
Abbreviated source title: J Lumin
Volume: 244
Issue date: April 2022
Publication year: 2022
Article number: 118740
Language: English
ISSN: 00222313
CODEN: JLUMA8
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Periodical Al nanoparticle (NP) arrays were applied to enhance the ultraviolet (UV) light emission of ZnO by localized surface plasmon resonance (LSPR) effect and electron transfer mechanism. By applying corresponding anodic aluminum oxide (AAO) templates, periodical Al NP arrays with different diameters (D) and spaces (S) were manufactured by magnetron sputtering. Theoretical simulation by FDTD-solution indicates that local electric field around Al NPs is significantly enhanced, and the surface plasmon resonance wavelength is determined by D and S. Al NP arrays with D of 70 nm and S of 125 nm enhanced near band-edge emission of ZnO by 2.4 times. By adding Al NP arrays, the photonic lifetime of ZnO decreased by 0.09 ns according to time-resolved photoluminescence spectra, indicating that the enhancement in UV luminescence intensity of ZnO is ascribed to the coupling between surface plasmons of Al NPs and ZnO excitons. Deep-level emission spectra analysis indicates that there lies another mechanism of electron transfer from the Al NPs to surface plasmon resonance (SPR) level and then further to ZnO conduction band. © 2022 Elsevier B.V.
Number of references: 35
Main heading: Zinc oxide
Controlled terms: Aluminum oxide - Surface plasmon resonance - Alumina - Electron transitions - Emission spectroscopy - Anodic oxidation - Electric fields - Photoluminescence - II-VI semiconductors - Nanoparticles
Uncontrolled terms: Al-nanoparticles - Aluminum nanoparticle array - Aluminum nanoparticles - Anodic aluminum oxide template - Electron transfer mechanisms - Localized surface plasmon - Localized surface plasmon resonance - Nanoparticle array - Surface-plasmon resonance - Ultraviolet emission
Classification code: 539.2.1 Protection Methods - 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 741.1 Light/Optics - 761 Nanotechnology - 804.2 Inorganic Compounds - 933 Solid State Physics
Numerical data indexing: Electrical conductance 7.00E+01S, Size 1.25E-07m, Time 9.00E-11s

DOI: 10.1016/j.jlumin.2022.118740
Funding Details: Number: 61804119,61991442,62104183, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M643576, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2017YFB0403000, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: JB181110, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work is supported by the National Key Research and Development Program of China (No. 2017YFB0403000), the National Natural Science Foundation of China (No. 61991442), the National Natural Science Foundation for Young Scholars of China (No. 61804119 , 62104183), the Postdoctoral Science Foundation of China (No. 2018M643576), and the Fundamental Research Funds for the Central Universities (No. JB181110). The authors would like to thank Gang Chen, Lu Tang, Jia-Wei Zhang, Ning Liang, Juan Dou, and Xiu-Fen Huang for the technical support.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

40. Application of backward elimination procedure in evaluation of microscopic reservoir heterogeneity in Chang 6 MemberOrdos Basin

Accession number: 20224112865538
Title of translation:
Authors: Nan, Fanchi (1, 2); Lin, Liangbiao (1, 2); Yu, Yu (1, 2); Chen, Zhaobing (3, 4); Mu, Shangchao (5); Wang, Hongbo (6); Ji, Guanhua (6); Ma, Junmin (6)
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Corresponding author: Lin, Liangbiao(linliangbiao08@cdut.cn)
Source title: Oil and Gas Geology
Abbreviated source title: Oil Gas Geol.
Volume: 43
Issue: 5
Issue date: September 2, 2022
Publication year: 2022
Pages: 1155-1166
Language: Chinese
ISSN: 02539985
Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: The sixth and eighth members of Yanchang FormationChang 6 Member in Huaqing area and Chang 8 Member in Heshui areaOrdos Basinfeature complex pore-throat structure and strong micro-heterogeneity under strong diagenetic transformation. The study re-defines evaluation parameters of the microscopic reservoir heterogeneity proposed by predecessors to better quantitatively characterize the microscopic heterogeneity of the reservoir. The backward elimination procedure is adopted to establish a regression equation for the Chang 6 reservoir in Huaqing area using relevant parameters proposed by the predecessorswith Na parameter for comprehensive evaluationproposed. Meanwhileanother regression equation is set for the Chang 8 reservoir in Heshui area using the parameters related to high-pressure mercury intrusionwith parameters Gk and Gs proposedto make quantitative and comprehensive evaluation of the microscopic reservoir heterogeneity while verifying the feasibility of backward elimination in solving geological problems. The results show that parameter N is in good correlation with permeabilityand the reservoir can be divided into three sections according to microscopic heterogeneitystrongmedium and weak sectionswith correlation coefficients of 0. 98120. 9496 and 0. 7724respectively. Besidesparameter Gk and porosityas well as parameter Gs and permeability are also in good correlation. The correlation of the three comprehensive evaluation parameters is significantly higher than that of a single evaluation factorindicating that backward elimination has achieved relatively ideal results in the quantitative evaluation of microscopic reservoir heterogeneityand the mathematical method can provide new ideas for solving geological problems related. © 2022 Editorial Department of Oil and Gas Geology. All rights reserved.
Number of references: 45
Main heading: Metamorphic rocks

Controlled terms: Geology - Parameter estimation - Petroleum reservoir engineering
Uncontrolled terms: Backward elimination - Heshui area - Huaqing area - Microscopic heterogeneity - Ordos Basin - Quantitative characterization - Quantitative evaluation - Reservoir heterogeneity - Reservoir quantitative evaluation,yanchang formation - Yanchang Formation
Classification code: 481.1 Geology - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.11743/ogg20220512
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

41. Effects of surfactants on dispersibility of graphene oxide dispersion and their potential application for enhanced oil recovery

Accession number: 20221311851766
Authors: Liao, Kaili (1, 2); Ren, Zhangkun (1); Fu, Lipei (1, 3); Peng, Fei (4); Jiang, Lujun (1); Gu, Wanyi (1); Zhang, Xiang (1); Bai, Jinmei (1); He, Yanfeng (1)
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Corresponding author: Fu, Lipei(fulipei@cczu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 213
Issue date: June 2022
Publication year: 2022
Article number: 110372
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: As a new type of oil displacement agent, nanofluid has shown great application potential in the field of enhanced oil recovery. Good dispersion and high stability of nanofluids are the prerequisites for engineering application. In this paper, the water-based graphene oxide (GO) nanofluid was taken as the research object, and the influencing factors of dispersion stability were systematically studied. The water-based nanofluid based on GO was formulated, and its oil displacement potential was studied. The effects of ultrasonic dispersion time, GO dosage and surfactant on the dispersion stability of GO in aqueous solution were investigated by turbidity experiment and conductivity experiment. The results showed that amphoteric surfactant disodium cocoamphodiacetate (CAD) had good dispersion stability for GO. CAD/GO dispersion not only decreased the oil/water interfacial tension to 10-2 mN/m, but also had good emulsifying effect and kept the emulsion stable. In the micromodel flooding test and core flooding test, CAD/GO dispersion effectively displace the residual oil in porous media and improve crude oil recovery. In the core flooding test, the oil recovery of CAD/GO dispersion (11.8%) was higher than CAD aqueous solution (6.7%), which was attributed to its better interfacial property and emulsifying property. These results indicated that the CAD/GO dispersion was promising for application in enhanced oil recovery (EOR). © 2022 Elsevier B.V.
Number of references: 48
Main heading: Emulsification
Controlled terms: Enhanced recovery - Floods - Stability - Porous materials - Computer aided design - Graphene - Nanofluidics - Oil well flooding
Uncontrolled terms: Core flooding test - Dispersion stability - Enhanced-oil recoveries - Floodings - Imidazoline surfactant - Imidazolines - Micromodel flooding - Micromodels - Nanofluids - Water based
Classification code: 511.1 Oil Field Production Operations - 632.5.2 Nanofluidics - 723.5 Computer Applications - 761 Nanotechnology - 802.3 Chemical Operations - 804 Chemical Products Generally - 951 Materials Science
Numerical data indexing: Percentage 1.18E+01%, Percentage 6.70E+00%, Surface tension 2.00E-03N/m
DOI: 10.1016/j.petrol.2022.110372
Funding Details: Number: CDYQCY202001, Acronym: -, Sponsor: -; Number: 202110292025Z,202110292043Y,202110292066Y, Acronym: -, Sponsor: -; Number: CJ20200066, Acronym: -,

Sponsor: -; Number: WSFRM20210603001, Acronym: -, Sponsor: -; Number: 51804045, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors are grateful for funding from National Natural Science Foundation of China (No. 51804045), the Science & Technology Program of Changzhou (No. CJ20200066), Jiangsu Key Laboratory of Oil-gas Storage and Transportation Technology (No. CDYQCY202001), the project of the key laboratory of well stability and fluid & rock mechanics in Oil and gas reservoir of Shaanxi Province (WSFRM20210603001) and Jiangsu Students' innovation and entrepreneurship training program (No. 202110292025Z , No. 202110292043Y , No. 202110292066Y). Special thanks to the Analysis and Testing center, NERC Biomass of Changzhou University, for the assistance in sample characterization and analysis.The authors are grateful for funding from National Natural Science Foundation of China (No. 51804045), the Science & Technology Program of Changzhou (No. CJ20200066), Jiangsu Key Laboratory of Oil-gas Storage and Transportation Technology (No. CDYQCY202001), the project of the key laboratory of well stability and fluid & rock mechanics in Oil and gas reservoir of Shaanxi Province (WSFRM20210603001) and Jiangsu Students' innovation and entrepreneurship training program (No. 202110292025Z, No. 202110292043Y, No. 202110292066Y). Special thanks to the Analysis and Testing center, NERC Biomass of Changzhou University, for the assistance in sample characterization and analysis.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

42. 3D micro-structural changes of an artificial flow channel in wellbore cement under geologic CO2 storage conditions: Combined effect of effective stress and flow

Accession number: 20220711630135
Authors: Gan, Manguang (1, 2); Zhang, Liwei (1, 2); Wang, Yan (1); Mei, Kaiyuan (1, 2); Fu, Xiaojuan (1); Cheng, Xiaowei (3, 4); Bai, Mingxing (5, 6); Liu, Hejuan (1, 2); Li, Xiaochun (1, 2)
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Source title: Construction and Building Materials
Abbreviated source title: Constr Build Mater
Volume: 325
Issue date: March 28, 2022
Publication year: 2022
Article number: 126761
Language: English
ISSN: 09500618
CODEN: CBUMEZ
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Understanding CO2-induced micro-structural changes at the imperfections in wellbore cement is vital for assessing the risk of CO2 leakage through wellbore cement under geologic CO2 storage (GCS) conditions. To investigate the evolution of a flow channel width in cement under GCS conditions and the influence of effective stress and flow on the micro-structural changes of the flow channel in cement, we carried out a set of experiments in which the flow condition (flow-through v.s. static) and the effective stress (3 MPa effective stress v.s. no effective stress) were varied. Micro-structural changes of an artificial flow channel were investigated by X-ray micro-computed tomography (CT). CT images revealed a clear micro-structural change of the flow channel and distributions of Ca(OH)2/C-S-H dissolution and calcite precipitation zones near the channel after reacting with CO2-saturated brine. CT results showed that a flow rate of 0.01 mL/min through the channel turned channel self-sealing (as observed in the static scenario) into channel opening. Effective stress accelerated the dominant chemical reaction, i.e., enhancement of Ca(OH)2/C-S-H dissolution around the channel in a flow-through scenario and enhancement of calcite precipitation around the channel in a static scenario. It seems that effective stress and flow have a combined contribution to micro-structural change of the flow channel in hydrated Portland cement, which may increase the risk of CO2 leakage through wellbore cement when exposed to high concentration CO2. © 2022 Elsevier Ltd
Number of references: 74
Main heading: Carbon dioxide

Controlled terms: Calcite - Precipitation (chemical) - Risk assessment - Timing circuits - Boreholes - Hydrated lime - Dissolution - Channel flow - Computerized tomography
Uncontrolled terms: Cement integrity - CO2 leakage - Computed tomography imaging - Effective stress - Flow channels - Geologic CO2 storage - Microstructural changes - Storage condition - Tomography imaging - Wellbore
Classification code: 482.2 Minerals - 631.1 Fluid Flow, General - 713.4 Pulse Circuits - 723.5 Computer Applications - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention
Numerical data indexing: Pressure 3.00E+06Pa, Volume 1.00E-08m3
DOI: 10.1016/j.conbuildmat.2022.126761
Funding Details: Number: 258560, Acronym: -, Sponsor: -; Number: 2021YFSY0056, Acronym: -, Sponsor: Sichuan Province Science and Technology Support Program; Number: 41902258,U1967208, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019YFE0100100, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: The authors would like to acknowledge funding support from the National Science Foundation of China (Grant No. 41902258 and U1967208), National Key R&D Program of China (2019YFE0100100), Innovative Postdoctoral Research Funding in Hubei Province (NO. 258560), and Science and Technology Plan Project of Sichuan Province (2021YFSY0056).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

43. Study on the long time aging behavior of MAPbI3: from experiment to first-principles simulation (*Open Access*)

Accession number: 20224913207829
Authors: Li, Yan (1, 5); Dong, Yu-Jing (2, 3); He, Hong (1); Chen, Xue-Lian (1); Jiang, Hao (1); Jia, Yu (2, 4)
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Source title: RSC Advances
Abbreviated source title: RSC Adv.
Volume: 12
Issue: 51
Issue date: November 16, 2022
Publication year: 2022
Pages: 32979-32985
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: As the core functional layer of perovskite solar cells, the serious issues of the CH3NH3PbI3 film related to the long-term stability and its rapid degradation when exposed to the environment should be investigated deeply. In this study, the variation of phase construction, light absorption ability and fluorescence quenching ability during the long time aging process have been monitored. The results show that the degradation process is composed of the original serious fluorescence quenching and the lag behind phase decomposition. Then, the intrinsic physical mechanism has been obtained by the first-principles simulation of defect properties, which shows that the original serious fluorescence emission quenching is attributed to the deep level defects with low formation energies (such as VPb and IPb); meanwhile, the lag behind phase decomposition is caused by the easy ionic diffusion; for example, the diffusion activation energy of the iodine ion is 0.286 eV. The results illustrate that both the defect passivation and prevention of the ion diffusion are necessary for achieving a stable perovskite film. © 2022 The Royal Society of Chemistry.
Number of references: 34
Main heading: Perovskite

Controlled terms: Activation energy - Defects - Diffusion - Fluorescence quenching - Light absorption - Perovskite solar cells
Uncontrolled terms: Absorption abilities - Ageing behavior - Exposed to - First-principles simulations - Fluorescence quenching - Functional layer - Long term stability - Long-time aging - Phase decompositions - Rapid degradation
Classification code: 482.2 Minerals - 537.1 Heat Treatment Processes - 702.3 Solar Cells - 741.1 Light/Optics - 951 Materials Science
Numerical data indexing: Electron volt 2.86E-01eV
DOI: 10.1039/d2ra05378k
Funding Details: Number: 62104191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: State Key Laboratory for Mechanical Behavior of Materials;
Funding text: All the authors acknowledge financial support from State Key Laboratory for Mechanical Behavior of Materials and National Natural Science Foundation of China (Grant No. 62104191).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

44. Absolute adsorption of light hydrocarbons on organic-rich shale: An efficient determination method

Accession number: 20213910942903
Authors: Huang, Xing (1, 2, 3); Gu, Lijun (1); Li, Shuaishuai (4); Du, Yifan (5); Liu, Yueliang (6)
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Source title: Fuel
Abbreviated source title: Fuel
Volume: 308
Issue date: January 15, 2022
Publication year: 2022
Article number: 121998
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Absolute adsorption has been found being more accurate than directly measured excess adsorption value for estimating the in-situ shale gas-in-place storage. To obtain accurate absolute adsorption, traditional methods determined the adsorbed gas density using complicated molecular simulation methods, which is employed to correct the measured excess value. In this work, excess adsorption, which is deemed to be inaccurate in previous work, of CH4 and C3H8 is first measured on three typical shale rocks. The adsorbed-layer density is then reasonably calculated using the simplified local density theory (SLD) to obtain corresponding absolute adsorption of CH4 and C3H8. It is found that the adsorbed layer density calculated from SLD theory is comparable to that obtained from molecular simulation methods, while it is more efficient for the density computation. Compared to CH4, C3H8 presents stronger adsorption capacity on shale rocks, suggesting that C3H8 is more affinity to organic shale. The CH4#s absolute adsorption is stronger than its excess value and their deviation enlarges as pressure increases, while absolute adsorption for C3H8 is found to be more or less the same with the measured excess value. The importance of this work lies in that we propose a new method for efficiently obtaining the adsorbed-layer density, which is crucial for accurately determining gas and oil storage in shale reservoirs. © 2021 Elsevier Ltd
Number of references: 32
Main heading: Adsorption
Controlled terms: Petroleum reservoir engineering - Density functional theory - Density of gases - Molecular structure - Computation theory

Uncontrolled terms: Absolute adsorption - Adsorbed layers - Adsorbed-layer density - CH 4 - Excess adsorption - Light hydrocarbon - Local density theory - Molecular simulations - Shale rocks - Simplified local density theory
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 801.4 Physical Chemistry - 802.3 Chemical Operations - 922.1 Probability Theory - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1016/j.fuel.2021.121998
Funding Details: Number: 52004221,52004320, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2019D-5007-0204, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: -, Acronym: CDUT, Sponsor: Chengdu University of Technology; Number: 21JY034, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation;
Funding text: The authors greatly acknowledge a Discovery Grant from the Open Fund (PLC2020050) of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), the National Science Foundation of China (Grant No. 52004221), PetroChina Innovation Foundation (2019D-5007-0204), Scientific Research Program Funded by Shaanxi Provincial Education Department (Grant No.21JY034) to Dr. X. Huang. We also acknowledge the financial support by the National Natural Science Foundation of China (Grant No.52004320) and the China Postdoctoral Science Foundation (Grant No.ZX20190438) to Dr. Y. Liu.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

45. Influence of Ti3AlC2 content and load on the tribological behaviors of Ti3AlC2p/Al composites

Accession number: 20214111012141
Authors: Zhai, Wenyan (1, 2); Pu, Bowei (2); Sun, Liang (2); Xu, Liujie (1); Wang, Yiran (3); He, Lin (4); Dong, Hui (2); Gao, Yimin (3); Han, Manman (2); Xue, Yisong (2)
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Source title: Ceramics International
Abbreviated source title: Ceram Int
Volume: 48
Issue: 2
Issue date: January 15, 2022
Publication year: 2022
Pages: 1745-1756
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this study, Ti3AlC2 particles doped aluminum matrix composites were prepared by ultrasonic agitation casting method. Microstructure, mechanical properties, and tribological properties of pure aluminum and Ti3AlC2p/Al composites were characterized. Influence of different loads (10, 20, 30, and 40 N) and Ti3AlC2 contents (1.0, 2.0, 3.0, and 4.0 wt%) on the tribological behaviors of the composites were studied. Scanning electron microscopy (SEM), X-ray diffraction (XRD), Energy dispersion spectroscopy (EDS), and 3D laser confocal were used to assist the analysis. The results indicated that fine and uniformly microstructure and the optimum comprehensive mechanical properties were exhibited on 2.0 wt%-Ti3AlC2p/Al composites. The abrasive grooves were widened and deepened with an increase in the load. The abrasion performance of composites improved distinctly with the addition of the Ti3AlC2 particles, which changed the wear mechanism from adhesive wear to abrasive wear. The 30 N load and the composites of 2.0 wt% Ti3AlC2 revealed the optimum tribological properties. The improvement of the tribological behavior of composites was attributed to the refinement of microstructure, the improvement mechanical properties and the three dimensional layered Ti3AlC2 phases with self-lubricating properties. © 2021 Elsevier Ltd and Techna Group S.r.l.

Number of references: 42
Main heading: Scanning electron microscopy
Controlled terms: Adhesives - Nitrogen compounds - Titanium compounds - Abrasion - Aluminum compounds - Microstructure - Tribology
Uncontrolled terms: Al composites - Aluminium matrix composites - Casting method - Microstructure mechanical properties - Ti3AlC2 particle - Ti3AlC2p/al composite - Tribological behaviour - Tribological properties - Ultrasonic agitation - Wear mechanisms
Classification code: 931 Classical Physics; Quantum Theory; Relativity - 951 Materials Science
Numerical data indexing: Force 3.00E+01N, Force 4.00E+01N
DOI: 10.1016/j.ceramint.2021.09.254
Funding Details: Number: YCS20211045, Acronym: -, Sponsor: -; Number: HKDNM201811,HKDNM2019018, Acronym: -, Sponsor: -; Number: 2019JQ-821,2020JQ-777, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20JK0837, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 20192110,20202212, Acronym: -, Sponsor: State Key Laboratory for Mechanical Behavior of Materials;
Funding text: This work was supported by the Open Fund of State Key Laboratory for Mechanical Behavior of Materials (20192110 and 20202212), Natural Science Basic Research Plan in Shaanxi Province of China (2019JQ-821 and 2020JQ-777), the Open Fund of National Joint Engineering Research Center for Abrasion Control and Molding of Metal Materials (HKDNM201811and HKDNM2019018), Scientific Research Program Funded by Shaanxi Provincial Education Department (20JK0837) and the Graduate Student Innovation and Practical Ability Training Program of Xi'an Shiyou University (YCS20211045).This work was supported by the Open Fund of State Key Laboratory for Mechanical Behavior of Materials (20192110 and 20202212), Natural Science Basic Research Plan in Shaanxi Province of China (2019JQ-821 and 2020JQ-777), the Open Fund of National Joint Engineering Research Center for Abrasion Control and Molding of Metal Materials (HKDNM201811 and HKDNM2019018), Scientific Research Program Funded by Shaanxi Provincial Education Department (20JK0837) and the Graduate Student Innovation and Practical Ability Training Program of Xi’an Shiyou University (YCS20211045).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

46. A novel permeability prediction model for coal based on dynamic transformation of pores in multiple scales

Accession number: 20222912359692
Authors: Wang, Ziwei (1, 2, 3); Qin, Yong (2, 3); Shen, Jian (2, 3); Li, Teng (4); Zhang, Xiaoyang (5); Cai, Ying (6)
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Source title: Energy
Abbreviated source title: Energy
Volume: 257
Issue date: October 15, 2022
Publication year: 2022
Article number: 124710
Language: English
ISSN: 03605442
CODEN: ENEYDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Schlumberger-Doll research (SDR) model is popular in predicting rock permeability, however the intrinsic defects constrain its applicability in coal. Pore structure in coal is complicated while SDR model assumes it is homogeneous. To solve this problem, we conducted water flushing experiments to simulate coalbed methane (CBM) drainage process using nuclear magnetic resonance (NMR) on durain (DHB-9-3), clarain (HP-5-3) and semi clarain (MD-6-6). Through comparative analyses on stress sensitivity, adsorption pores in DHB-9-3, non-adsorbed pores in HP-5-3 and seepage pores in MD-6-6 show a greater sensitivity. The non-adsorbed pores, which are responsible for

reservoir permeability, become more complicated under increasing effective stress. The fractal dimension of non-adsorbed pores in DHB-9-3 and HP-5-3 increases from 2.93 to 2.97, and from 2.92 to 2.93 in MD-6-6 when the inlet water pressure reduces from 8 MPa to 3 MPa, indicating a more complicated pore geometry and a longer water flow pathway. As a result, the permeability shows a downward trend. A novel coal permeability prediction model is constructed with a factor of fractal dimension embedded in. Compared with SDR model, the new model is verified to have 0.79 times, 0.16 times and 0.08 times less error rates in DHB-9-3, HP-5-3 and MD-6-6, respectively. © 2022 Elsevier Ltd
Number of references: 65
Main heading: Coal
Controlled terms: Coal deposits - Flow of water - Forecasting - Fractal dimension - Methane - Nuclear magnetic resonance - Petroleum reservoir engineering - Pore structure - Reservoirs (water)
Uncontrolled terms: Coalbed methane development - Fractal theory - Nuclear magnetic resonance T2 spectrum - Permeability prediction - Pore geometry - Prediction modelling - Research models - Schlumberge-doll research model - Schlumberger - Spectra's
Classification code: 441.2 Reservoirs - 503 Mines and Mining, Coal - 512.1.2 Petroleum Deposits : Development Operations - 524 Solid Fuels - 631.1.1 Liquid Dynamics - 804.1 Organic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Pressure 8.00E+06Pa to 3.00E+06Pa, Size 7.4168E-02m to 7.4422E-02m
DOI: 10.1016/j.energy.2022.124710
Funding Details: Number: HNKJ20-H87, Acronym: -, Sponsor: -; Number: 20201101003, Acronym: -, Sponsor: -; Number: 42130802, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: CSC201906420044, Acronym: CSC, Sponsor: China Scholarship Council;
Funding text: This research was supported by Key Program of Natural Science Foundation of China [Grant Numbers 42130802], Scientific and Technological Project from China Huaneng Group Co. LTD. (HNKJ20-H87), and Shanxi Province Science and Technology Plan Unveiling and Bidding Project [Grant Numbers 20201101003]. The first author gratefully acknowledges financial support from China Scholarship Council [Grant Numbers CSC201906420044].This research was supported by Key Program of Natural Science Foundation of China [Grant Numbers 42130802], Scientific and Technological Project from China Huaneng Group Co., LTD . (HNKJ20-H87), and Shanxi Province Science and Technology Plan Unveiling and Bidding Project [Grant Numbers 20201101003]. The first author gratefully acknowledges financial support from China Scholarship Council [Grant Numbers CSC201906420044].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

47. Erratum: ‘Corrigendum to "Superelasticity over a wide temperature range in metastable β–Ti shape memory alloys" [J. Alloy. Compd. 853 (2021) 157090](S092583882033454X) (10.1016/j.jallcom.2020.157090)

Accession number: 20221411912224
Authors: Xiong, Chengyang (1, 2); Li, Yan (1, 3); Zhang, Jian (4); Wang, Yu (5); Qu, Wentao (6); Ji, Yuancao (7); Cui, Lishan (8); Ren, Xiaobing (7)
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Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 907
Issue date: June 25, 2022
Publication year: 2022
Article number: 164674
Language: English
ISSN: 09258388
CODEN: JALCEU

Document type: Erratum (ER)
Publisher: Elsevier Ltd
Abstract: The authors regret that the original version of the above article contains an error for the author's affiliations. The correct affiliations are shown below. Chengyang Xionga,b, Yan Lia,c,*, Jian Zhangd,**, Yu Wange, Wentao Quf, Yuancao Jig, Lishan Cuih, Xiaobing Reng,i,***. aSchool of Materials Science and Engineering, Beihang University, Beijing 100191, China. bSchool of Mechanical and Electrical Engineering, Hubei Polytechnic University, Huangshi 435003, China. cBeijing Advanced Innovation Centre for Biomedical Engineering, Beihang University, Beijing 100191, China. dState Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an 710049, China. eDepartment of Physics, Xi'an Jiaotong University, Xi'an 710049, China. fSchool of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China. gMultidisciplinary Materials Research Center, Xi'an Jiaotong University, Xi'an 710049, China. hDepartment of Materials Science and Engineering, China University of Petroleum, Beijing 102249, China. iCenter for Functional Materials, National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan. The authors would like to apologize for any inconvenience caused. © 2020 Elsevier B.V.
DOI: 10.1016/j.jallcom.2022.164674
ErratuFlg: 2007871169
Database: Compendex
Data Provider: Engineering Village

48. Microscopic occurrence characteristics of shale oil and their main controlling factors: a case study of the 3rd submember continental shale of Member 7 of Yanchang Formation in Yan'an area, Ordos Basin

Accession number: 20221912081933
Title of translation: -73
Authors: Dang, Wei (1, 2); Zhang, Jinchuan (3); Nie, Haikuan (4); Wang, Fengqin (1, 2); Tang, Xuan (3); Jiang, Shu (5); Wei, Xiaoliang (6); Liu, Qiubo (7); Li, Pei (4); Li, Fei (1); Sun, Jiangtao (1)
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Corresponding author: Nie, Haikuan(niehk.syky@sinopec.com)
Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 43
Issue: 4
Issue date: April 2022
Publication year: 2022
Pages: 507-523
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: This study selects the sample from the 3rd submember continental shale of Member 7 of Yanchang Formation in Yan'an area, Ordos Basin. Comprehensively using the experimental methods such as light hydrocarbon (C6H14 and C7H16)adsorption, N2 and CO2 adsorption, rock pyrolysis, organic geochemistry, X-ray diffraction (XRD), as well as Dent adsorption thermodynamic model and Horvarth-Kawazoe (HK)and Barrett-Joyner-Halenda (BJH)pore interpretation model, this paper investigates the microscopic occurrence characteristics of shale oil and their main controlling factors, and establishes the mathematical model for predicting the adsorption capacity and the evolution model of occurrence state of shale oil. The results show that the microscopic occurrence characteristics of shale oil in pores with a certain range of pore size less than 125 nm are revealed by the isothermal adsorption experiment of liquid hydrocarbon vapor and the pore interpretation model. Adsorbed oil is a multilayer oil film with a certain thickness, and its average thickness increases as a Langmuir adsorption curve with pore size. Shale oil mainly occurs in mesopores with a pore size less than 25 nm. When the pore size is less than 3 nm, adsorbed oil mainly occurs in the pores. When the pore size is greater than 3 nm, free oil is the dominant type. The amount of free oil in shale is positively correlated with pore space and oil saturation. The amount of adsorbed oil is not correlated with brittle mineral content and

macropore structure parameters, but is positively correlated with the total organic carbon (TOC)content, clay mineral content, specific surface area and pore volume of micropore and mesopore, light hydrocarbon type and pressure. The amount of adsorbed oil increases first and then decreases with buried depth and maturity. Organic matter is the main controlling factor for adsorbed oil in shale. The vitrinite reflectance of 0.75% indicates the maturity limit at which the occurrence and mobility of shale oil change, while vitrinite reflectance from 0.85% to 0.90% indicates the lower limit of the optimal maturity window for shale with high oil-bearing ability and good mobility. In Yan'an area, the depth from 1 000 m to 1 200 m is a favorable interval for the exploration and development of continental shale oil in 3rd submember of Member 7 of Yanchang Formation.
Number of references: 50
Main heading: Pore size
Controlled terms: Clay minerals - Oil bearing formations - Reflection - Organic carbon - Adsorption - Hydrocarbons - Oil shale
Uncontrolled terms: Free oil - Hydrocarbon adsorption - Interpretation model - Light hydrocarbon - Light hydrocarbon adsorption - Main controlling factors - Mesopore - Occurrence characteristic - Ordos Basin - Yanchang Formation
Classification code: 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 802.3 Chemical Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Inductance 6.00E+00H, Inductance 7.00E+00H, Percentage 7.50E-01%, Percentage 8.50E-01% to 9.00E-01%, Size 0.00E00m to 1.00E00m, Size 1.25E-07m, Size 2.00E+02m, Size 2.50E-08m, Size 3.00E-09m
DOI: 10.7623/syxb202204005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

49. Analysis of Instability Mechanism and Induced Cause of Urban Pavement in Xining City, China (*Open Access*)

Accession number: 20220911720505
Authors: Qi, Gan (1); Wang, Zhenyu (1, 2); Chen, Yu (3); Zhu, Chun (4, 5); Ren, Dazhong (5); Tian, Tao (6); Yang, Fu (6)
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Source title: Advances in Materials Science and Engineering
Abbreviated source title: Adv. Mater. Sci. Eng.
Volume: 2022
Issue date: 2022
Publication year: 2022
Article number: 3365402
Language: English
ISSN: 16878434
E-ISSN: 16878442
Document type: Journal article (JA)
Publisher: Hindawi Limited
Abstract: As a large human gathering place, the city directly causes huge property losses and casualties due to the ground collapse accident every year. In order to explore the causes and damage characteristics of urban ground collapse, taking Xining City, Qinghai Province, as an example, this paper analyzes the accidental factors causing ground collapse through on-site geological exploration and then expounds the deformation characteristics of urban ground collapse by using the numerical simulation method of Fluent and PFC. Using the collapsible balance method, it is obtained that the insufficient thickness of the top plate of the Loess Soil Subgrade in the collapse pit area is the inevitable factor causing the final collapse. The results show the following: (1) The failure of water supply pipe is an accidental factor leading to the formation of underground cavity, and the ground collapse accident is hidden, sudden, and of high risk, and its deformation and failure development process is slow. (2) The critical thickness of the roof

above the air raid shelter is about 22 m, and the actual thickness is about 11.6 m, which is prone to deformation and uneven settlement, which is also an inevitable factor causing ground collapse. (3) The numerical simulation study shows that the final formation deformation range is about 16 m. At this time, the height of the formed cavity is about 9 m. The plastic zone tends to develop around, and the maximum settlement position appears above the air raid shelter. (4) The collapse process includes four stages: water supply pipeline leakage, underground cavity formation, collapse critical state, and ground collapse. This research and analysis provides theoretical guidance and scientific basis for the investigation, measurement, detection, and monitoring of various underground pipe networks of urban roads. © 2022 Gan Qi et al.
Number of references: 32
Main heading: Water supply
Controlled terms: Deformation - Critical current density (superconductivity) - Numerical methods - Numerical models - Accidents - Urban growth
Uncontrolled terms: Accidental factors - Air raid shelters - Geological exploration - Ground collapse - Instability mechanisms - Paper analysis - Property loss - Qinghai Province - Underground cavities - Urban pavement
Classification code: 403.1 Urban Planning and Development - 446.1 Water Supply Systems - 701.1 Electricity: Basic Concepts and Phenomena - 914.1 Accidents and Accident Prevention - 921 Mathematics - 921.6 Numerical Methods
Numerical data indexing: Size 1.16E+01m, Size 1.60E+01m, Size 2.20E+01m, Size 9.00E+00m
DOI: 10.1155/2022/3365402
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

50. Regulating Electronic Structure in Bi2O3 Architectures by Ti Mediation: A Strategy for Dual Active Sites Synergistically Promoting Photocatalytic Nitrogen Hydrogenation

Accession number: 20221812058053
Authors: Wu, Panfeng (1); Wang, Tianyu (2); Xue, Qi (3); Wang, Mengkai (1); Zhong, Ruihua (1); Hu, Jun (4); Chen, Zhong (5); Wang, Danjun (6); Xue, Ganglin (2)
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Source title: ChemSusChem
Abbreviated source title: ChemSusChem
Volume: 15
Issue: 11
Issue date: June 8, 2022
Publication year: 2022
Article number: e202200297
Language: English
ISSN: 18645631
E-ISSN: 1864564X
CODEN: CHEMIZ
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Under mild conditions, nitrogen undergoes the associative pathways to be reduced with solar energy as the driving force for fixation, avoiding the high energy consumption when undergoing dissociation. Nevertheless, this process is hindered by the high hydrogenation energy barrier. Herein, Ti was introduced as hard acid into the δ_Bi2O3 (Ti-Bi2O3) lattice to tune its local electronic structure and optimize its photo-electrochemistry performance (reduced bandgap, increased conduction band maximum, and extended carrier lifetime). Heterokaryotic Ti-Bi dual-active sites in Ti-Bi2O3 created a novel adsorption geometry of O-N2 interaction proved by density functional theory calculation and N2 temperature-programmed desorption. The synergistic effect of dual-active sites reduced the energy barrier of hydrogenation from 2.65 (Bi2O3) to 2.13 eV (Ti-Bi2O3), thanks to the highly overlapping orbitals with N2. Results showed that 10 % Ti-doped Bi2O3 exhibited an excellent ammonia production rate of 508.6 μmol gcat-1 h-1 in water

and without sacrificial agent, which is 4.4 times higher than that of Bi2O3. In this work, bridging oxygen activation and synergistic hydrogenation for nitrogen with Ti-Bi dual active sites may unveil a corner of the hidden nitrogen reduction reaction mechanism and serves as a distinctive strategy for the design of nitrogen fixation photocatalysts. © 2022 Wiley-VCH GmbH.
Number of references: 72
Main heading: Titanium
Controlled terms: Density functional theory - Electronic structure - Grain (agricultural product) - Temperature programmed desorption - Bismuth compounds - Solar energy - Nitrogen fixation - Energy barriers - Ammonia - Electrochemistry - Energy utilization - Free energy - Hydrogenation
Uncontrolled terms: Active site - Condition - Driving forces - Electronic.structure - High energy consumption - Nitrogen reduction - Photo-catalytic - Photo-electrochemistry - Synergistic effect - Titania
Classification code: 525.3 Energy Utilization - 542.3 Titanium and Alloys - 641.1 Thermodynamics - 657.1 Solar Energy and Phenomena - 801.4 Physical Chemistry - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 821.4 Agricultural Products - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: Amount of substance 5.086E-04mol, Electron volt 2.13E+00eV, Percentage 1.00E+01%, Size 2.54E-02m, Time 3.60E+03s
DOI: 10.1002/cssc.202200297
Funding Details: Number: 2019JM#294,2022JQ#102, Acronym: -, Sponsor: -; Number: 21673176,21676216,22168040, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JC034, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 21673176, 21676216, 22168040), Special project of Shaanxi Provincial Education Department (20JC034) and National Science Foundation of Shaanxi (2019JM294, 2022JQ102). The theoretical calculation section was carried out at Shanxi Supercomputing Center of China and performed on TianHe2.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

51. Experimental Study of Produced Fluid Emulsification during Water/Steam Flooding for Heavy Oil Recovery

Accession number: 20225013232962
Authors: Liu, Jianbin (1, 8, 9); Liu, Shun (1, 8, 9); He, Yanxiang (2); Zhong, Liguo (3); Hao, Tongchun (3); Liu, Yigang (4); Wang, Pan (5); Gao, Pengchao (6); Guo, Qihua (7)
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Source title: Energy and Fuels
Abbreviated source title: Energy Fuels
Volume: 36
Issue: 24
Issue date: December 15, 2022
Publication year: 2022
Pages: 14838-14851
Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Active substances such as asphaltene and resin in heavy oil tend to absorb on the oil-water interface. Thus, heavy oil and water would easily emulsify into water-in-oil (W/O) emulsion under the shared action of formation porous media. Emulsification of produced fluid during heavy oil recovery is important for accurately calculating the

oil recovery. Studies on the properties of produced fluid can effectively forecast the reservoir production dynamics. Therefore, water/steam flooding experiments at different permeabilities, heavy oil viscosity, and varying temperature were performed using long sand-packed tubes. Accordingly, the flooding dynamics, emulsification states, viscosity, droplet size distribution, and oil recovery deviation rate (ORDR) were analyzed. The results show that produced oil is W/O emulsion during water/steam flooding heavy oil. The water content of the produced oil is mainly affected by temperature and can be as high as 30% in the middle and late stages when the temperature is higher than 150 °C. Because the layered stacking structure of asphaltene and resin weakens as temperature increases, they absorb more easily on the oil-water interface. The water content of produced oil the in middle stages is as high as 40% when the temperature is 250 °C, and the ORDR is as high as 50.28%. Furthermore, the water droplet size increases with increase in permeability and temperature, but it is not obviously affected by heavy oil viscosity. The evaporation of light components is significant when the temperature is higher than 150 °C. In particular, the percentages of asphaltene and resin would increase with the evaporation of light components. Thus, W/O emulsion would form more easily during water/steam flooding, and hence, the efficient development of heavy oil would become difficult in the middle and late stages.
Number of references: 57
Main heading: Crude oil
Controlled terms: Asphaltenes - Drops - Emulsification - Emulsions - Evaporation - Floods - Heavy oil production - Oil well flooding - Phase interfaces - Porous materials - Resins - Viscosity
Uncontrolled terms: Deviation rates - Heavy oil recovery - Late stage - Oil recoveries - Oil viscosity - Oil-water Interface - Produced fluids - Steamflooding - Water steam - Water-in-oil emulsions
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 513 Petroleum Refining - 631.1 Fluid Flow, General - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 3.00E+01%, Percentage 4.00E+01%, Percentage 5.028E+01%, Temperature 4.23E+02K, Temperature 5.23E+02K
DOI: 10.1021/acs.energyfuels.2c03211
Funding Details: Number: 51474227,52174032, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016ZX05058-003-007, Acronym: -, Sponsor: National Major Science and Technology Projects of China; Number: 2021GY-112, Acronym: -, Sponsor: Key Research and Development Projects of Shaanxi Province;
Funding text: Financial support for this work from the National Major Science and Technology Projects of China (2016ZX05058-003-007), the National Natural Science Foundation of China (nos. 52174032 and 51474227), and the Key Research and Development Program of Shaanxi (2021GY-112) are gratefully acknowledged.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

52. Makeup transfer: A review

Accession number: 20224212978230
Authors: He, Feng (1, 2, 3, 4); Bai, Kai (1, 2, 3); Zong, Yixin (4); Zhou, Yuan (5); Jing, Yimai (6); Wu, Guoqiang (7, 8); Wang, Chen (9)
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Corresponding author: Wu, Guoqiang(18601239845@126.com)
Source title: IET Computer Vision
Abbreviated source title: IET Comput. Vision
Issue date: 2022
Publication year: 2022
Language: English
ISSN: 17519632
E-ISSN: 17519640
Document type: Article in Press
Publisher: John Wiley and Sons Inc

Abstract: Makeup transfer (MT) aims to transfer the makeup style from a given reference makeup face image to a source image while preserving face identity and background information. In recent years, MT has attracted the attention of many scholars, and it has a wide range of application prospects and research value. Since then, many methods have been proposed to accomplish MT, most of which are based on Generative Adversarial Network methods. A taxonomy of existing algorithms in the field of MT is first proposed. Then, evaluation methods are proposed, existing methods are analysed, and existing datasets are introduced. This paper finally discusses the current problems in the field of MT and the trend of future research. © 2022 The Authors. IET Computer Vision published by John Wiley & Sons Ltd on behalf of The Institution of Engineering and Technology.
Number of references: 78
Main heading: Generative adversarial networks
Controlled terms: Computer vision
Uncontrolled terms: Application prospect - Application research - Background information - Current problems - Evaluation methods - Face images - Identity information - Network methods - Source images
Classification code: 723.4 Artificial Intelligence - 723.5 Computer Applications - 741.2 Vision
DOI: 10.1049/cvi2.12142
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

53. Facet-Induced Strong Metal Chloride-Support Interaction over CuCl2/γ–Al2O3Catalyst to Enhance Ethylene Oxychlorination Performance (*Open Access*)

Accession number: 20223112459083
Authors: Ma, Hongfei (1); Wang, Yalan (1); Zhang, Hao (2, 5); Ma, Guoyan (3); Zhang, Wei (1); Qi, Yanying (1); Fuglerud, Terje (4); Jiang, Zheng (5); Ding, Weiping (6); Chen, De (1)
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Source title: ACS Catalysis
Abbreviated source title: ACS Catal.
Volume: 12
Issue: 13
Issue date: July 1, 2022
Publication year: 2022
Pages: 8027-8037
Language: English
E-ISSN: 21555435
CODEN: ACCACS
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: The supported transition metal oxides, chlorides, carbides, and so forth (MXn), represent an important type of catalyst for redox processes. The MXn-support interaction, analogous to metal-support interaction, plays a critical role in redox reactions. Herein, we illustrated the nature of the monolayer CuCl2-γ–Al2O3 interaction, and its catalytic consequence induced by support facets in ethylene oxychlorination. Kinetic and theoretical studies, combined with operando spectroscopy demonstrated the effects of the interaction between CuCl2 with the various exposed facets of γ–Al2O3 (110) and (100). The catalyst with Al2O3(110) shows better performance with high activity, selectivity, and stability. The catalyst with the (111) facet deactivated rapidly, and the ethylene dichloride (EDC) selectivity decreased to 30%; while the activity on the catalyst with the (110) facet was much higher, with the EDC selectivity can be well kept at >99% in the long-term stability test. The multi-scale and in-depth characterizations revealed the concept of metal chloride-support interaction in determining the catalytic performance. We believe this method of tuning the reactivity of active species by manipulating their coordination with the support surfaces as a ligand shall spark inspiration for other catalytic applications. © 2022 The Authors. Published by American Chemical Society.
Number of references: 58

Main heading: Ethylene
Controlled terms: Alumina - Aluminum oxide - Carbides - Catalyst activity - Catalyst selectivity - Chlorine compounds - Copper compounds - Redox reactions - Transition metal oxides - Transition metals
Uncontrolled terms: Coordination - Ethylene oxychlorination - Metal chlorides - Operando - Operando study - Oxychlorination - Support interaction - Supports effects -]+ catalyst - Γ_al2O3
Classification code: 531 Metallurgy and Metallography - 714 Electronic Components and Tubes - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 812.1 Ceramics
Numerical data indexing: Percentage 3.00E+01%, Percentage 9.90E+01%
DOI: 10.1021/acscatal.2c02019
Funding Details: Number: 237922, Acronym: -, Sponsor: Norges Forskningsråd; Number: 2020JQ-765, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by the industrial Catalysis Science and Innovation (iCSI), a center for Research-based Innovation funded by the Research Council of Norway under grant no. 237922. G.M. acknowledges funding from Natural Science Basic Research Plan in Shaanxi Province of China (2020JQ-765). The authors also gratefully acknowledge the BL14W1 beamline at the Shanghai Synchrotron Radiation Facility (SSRF) for XAS tests.
Compendex references: YES
Open Access type(s): All Open Access, Hybrid Gold
Database: Compendex
Data Provider: Engineering Village

54. DNA-Based Dissipative Assembly toward Nanoarchitectonics

Accession number: 20221912087899
Authors: Liu, Qing (1, 2); Li, Hong (3, 4); Yu, Binhong (1, 2); Meng, Zhuojun (1, 2); Zhang, Xiaoming (5); Li, Junbai (3, 6); Zheng, Lifei (1, 2)
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Source title: Advanced Functional Materials
Abbreviated source title: Adv. Funct. Mater.
Volume: 32
Issue: 37
Issue date: September 12, 2022
Publication year: 2022
Article number: 2201196
Language: English
ISSN: 1616301X
E-ISSN: 16163028
CODEN: AFMDC6
Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc
Abstract: Deoxyribonucleic acid (DNA) represents an important class of molecular building blocks for the assembly of supramolecular functional systems primarily due to its molecular recognition capability and sequence programmability. Eventually, DNA-based nanostructures are assembled in a way that their states remain at the thermodynamic minimum of the energy. However, active life-like functions and their interactive adaption require the integration of energy away from thermodynamic equilibrium. The construction of DNA-based artificial systems was often inspired by the naturally occurring dissipative assembly processes, which leads to the consumption of energy to maintain the thermodynamically non-equilibrium state. In this review, the recent progress of the fabrications and properties of DNA-based dissipative assembly systems toward nanoarchitectonics is summarized. It focuses on the principle of dissipative assembly and shows some pioneering examples of DNA-based dissipative assembly systems. The latest corresponding perspectives are also proposed. © 2022 Wiley-VCH GmbH.

Number of references: 124
Main heading: Assembly
Controlled terms: DNA
Uncontrolled terms: Artificial systems - Assembly systems - Dissipative assembly - Energy - Functional systems - Molecular building blocks - Nanoarchitectonic - Non equilibrium - Programmability - Thermodynamic equilibria
Classification code: 461.2 Biological Materials and Tissue Engineering
DOI: 10.1002/adfm.202201196
Funding Details: Number: 12174462,21961142022,22193032, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: WIUCASQD2020015,WIUCASQD2022006, Acronym: UCAS, Sponsor: University of Chinese Academy of Sciences;
Funding text: J.L. and X.Z. wish to acknowledge the financial support by the National Natural Science Foundation of China (No. 22193032, 12174462, 21961142022); L.Z. and Q.L. acknowledge the financial support from Wenzhou Institute, University of Chinese Academy of Sciences (No. WIUCASQD2020015 and No. WIUCASQD2022006).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

55. Culture-dependent and culture-independent methods reveal microbe-clay mineral interactions by dissimilatory iron-reducing bacteria in an integral oilfield

Accession number: 20222512254433
Authors: Dong, Hao (1); Zhang, Fan (2); Xu, Ting (3); Liu, Yulong (4); Du, Ying (1); Wang, Chen (3); Liu, Tiansheng (3); Gao, Ji (1); He, Yanlong (5); Wang, Xiaotong (6, 7); Sun, Shanshan (4); She, Yuehui (4)
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Source title: Science of the Total Environment
Abbreviated source title: Sci. Total Environ.
Volume: 840
Issue date: September 20, 2022
Publication year: 2022
Article number: 156577
Language: English
ISSN: 00489697
E-ISSN: 18791026
CODEN: STEVA8
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Fe(III) may be reasonably considered as one of the most important electron acceptors in petroleum reservoir ecosystems. The microbial mineralization of clay minerals, especially montmorillonite, is also of great significance to the exploration of petroleum and gas reservoirs. The bioreduction mechanisms of iron-poor minerals in petroleum reservoirs have been poorly investigated. This study investigated the bioreduction of montmorillonite by dissimilatory iron-reducing bacteria (DIRB) in petroleum reservoirs based on culture-independent and culture-dependent methods. Microbial diversity analysis revealed that Halolactibacillus, Bacillus, Alkaliphilus, Shewanella, Clostridium, and Pseudomonas were the key genera involved in the bioreduction of Fe(III). Through the traditional culture-dependent method, most of the key genera were isolated from the samples collected from petroleum reservoirs. Traditional culture-dependent methods can be used to reveal the metabolic characteristics of microorganisms (such as iron-reduction efficiency) to further elucidate the roles of different species (B. subtilis and B. alkalitelluris) in the environment. Moreover, many species with high iron-reduction efficiencies and relatively low abundances in the samples, such as Tessaracoccus and Flaviflexus, were isolated from petroleum reservoirs for the first time. The combination of culture-dependent and culture-independent methods can be used to further the understanding of the microbial communities and the metabolic characteristics of DIRB in petroleum reservoirs. Structural alterations that

occurred during the interactions of microorganisms and montmorillonite were revealed through scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), and X-ray powder diffraction (XRD). The physical and chemical analysis results demonstrated that microorganisms from petroleum reservoirs can dissolve iron-poor montmorillonite and promote the release of interlayer water. The secondary minerals illite and clinoptilolite were observed in bioreduced smectite. The formation of secondary minerals was closely related to the dissolution degrees of minerals based on iron reduction. © 2022 Elsevier B.V.
Number of references: 52
Main heading: Clay minerals
Controlled terms: Bacteria - Bacteriology - Chemical analysis - Efficiency - Fourier transform infrared spectroscopy - Gasoline - Iron compounds - Metabolism - Petroleum prospecting - Petroleum reservoir engineering - Petroleum reservoirs - Scanning electron microscopy - X ray powder diffraction - Zeolites
Uncontrolled terms: Bioreductions - Culture-dependent - Culture-independent - Flaviflexi - Iron reducing bacteria - Iron reduction - MEOR - Metabolic characteristics - Tessaracoccus - Traditional cultures
Classification code: 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 801 Chemistry - 804.2 Inorganic Compounds - 913.1 Production Engineering
DOI: 10.1016/j.scitotenv.2022.156577
Funding Details: Number: 20JS119, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 51804041,51634008, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This investigation was financially supported by the National Natural Science Foundation of China (51804041 , 51634008), Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 20JS119).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

56. Optimization and characterization of biosurfactant produced by indigenous: Brevibacillus borstelensis isolated from a low permeability reservoir for application in MEOR (*Open Access*)

Accession number: 20220511573670
Authors: Dong, Hao (1); Zheng, Anying (2); He, Yanlong (3); Wang, Xiaotong (4, 5); Li, Yang (2); Yu, Gaoming (2); Gu, Yongan (2); Banat, I.M. (6); Sun, Shanshan (2); She, Yuehui (2); Zhang, Fan (7)
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Source title: RSC Advances
Abbreviated source title: RSC Adv.
Volume: 12
Issue: 4
Issue date: January 12, 2022
Publication year: 2022
Pages: 2036-2047
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Biosurfactants are expected to be a key factor for microbial enhanced oil recovery (MEOR). In this study, we described the novel biosurfactant-producing strain Brevibacillus borstelensis YZ-2 isolated from a low permeability oil reservoir. We purified and characterized the biosurfactants produced by this YZ-2 strain via thin-layer chromatography and MALDI-TOF-MS, revealing them to be fengycins. We additionally used a Box-Behnken design approach to optimize fermentation conditions in order to maximize the biosurfactants production. Core flooding experiments showed that biosurfactants produced by YZ-2 can significantly enhance crude oil recovery. Micro-model tests showed

that emulsification and IFT reduction was the main EOR mechanism of the YZ biosurfactant in the oil wet model. In summary, these findings highlight the potential of Brevibacillus borstelensis YZ-2 and its metabolites for MEOR. This journal is © The Royal Society of Chemistry.
Number of references: 65
Main heading: Enhanced recovery
Controlled terms: Surface active agents - Emulsification - Crude oil - Petroleum reservoir engineering - Biomolecules - Low permeability reservoirs - Metabolites - Oil well flooding - Thin layer chromatography
Uncontrolled terms: Bio-surfactants - Box-Behnken design - Enhanced-oil recoveries - Fengycins - Key factors - Low permeability oil - Low-permeability reservoirs - MALDI TOF MS - Oil reservoirs - Optimisations
Classification code: 461.9 Biology - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 801 Chemistry - 801.2 Biochemistry - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals
DOI: 10.1039/d1ra07663a
Funding Details: Number: 51634008,51804041, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20JS119, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This investigation was nancially supported by the National Natural Science Foundation of China (51634008, 51804041), Scientic Research Program Funded by Shaanxi Provincial Education Department (Program No. 20JS119).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

57. The influent COD/N ratio controlled the linear alkylbenzene sulfonate biodegradation and extracellular polymeric substances accumulation in an oxygen-based membrane biofilm reactor

Accession number: 20213410793139
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Source title: Journal of Hazardous Materials
Abbreviated source title: J. Hazard. Mater.
Volume: 422
Issue date: January 15, 2022
Publication year: 2022
Article number: 126862
Language: English
ISSN: 03043894
E-ISSN: 18733336
CODEN: JHMAD9
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: This work evaluated the fates of linear alkylbenzene sulfonate (LAS), chemical oxygen demand (COD), ammonia nitrogen (NH4+-N), and total nitrogen (TN) when treating greywater (GW) in an oxygen-based membrane biofilm reactor (O2-MBfR). An influent ratio of chemical oxygen demand to total nitrogen (COD/TN) of 20 g COD/ g N gave the best removals of LAS, COD, NH4+-N and TN, and it also had the greatest EPS accumulation in the biofilm. Higher EPS and improved performance were linked to increases in the relative abundances of bacteria able to biodegrade LAS (Zoogloea, Pseudomonas, Parvibaculum, Magnetospirillum and Mycobacterium) and to nitrify (Nitrosomonas and Nitrospira), as well as to ammonia oxidation related enzyme (ammonia monooxygenase). The EPS was dominated by protein, which played a key role in adsorbing LAS, achieving short-time protection from LAS toxicity and allowed LAS biodegradation. Continuous high-efficiency removal of LAS alleviated LAS toxicity to microbial

physiological functions, including nitrification, nitrate respiration, the tricarboxylic acid (TCA) cycle, and adenosine triphosphate (ATP) production, achieving the stable high-efficient simultaneous removal of organics and nitrogen in the O2-MBfR. © 2021 Elsevier B.V.
Number of references: 56
Main heading: Oxygen
Controlled terms: Bacteria - Biodegradation - Nitrogen - Nitrogen removal - Biodegradable polymers - Chemical oxygen demand - Adenosinetriphosphate - Carbon - Bioreactors - Ammonia - Biofilms - Toxicity
Uncontrolled terms: Carbon-nitrogen ratio - Chemical-oxygen demands - Extracellular - Extracellular polymeric substance - Greywater - Linear alkyl benzene sulphonate - Membrane biofilm reactor - Oxygen-based membrane biofilm reactor - Polymeric substance - Total nitrogen
Classification code: 461.7 Health Care - 461.8 Biotechnology - 462.5 Biomaterials (including synthetics) - 801.2 Biochemistry - 802.1 Chemical Plants and Equipment - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1 Polymeric Materials
Numerical data indexing: Mass 2.00E-02kg
DOI: 10.1016/j.jhazmat.2021.126862
Funding Details: Number: -, Acronym: -, Sponsor: Canada Research Chairs;
Funding text: This research was financially supported by the Startup Fund for Distinguished Professors of Huazhong Agricultural University to Yun Zhou (103-11042010013), and the Canada Research Chair (CRC) in Future Water Services (Liu, Y.).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

58. Dynamic Variations of Oil Components and Microbial Communities During Indigenous Microbial Stimulation Pilot Study in Low-Permeability Reservoirs

Accession number: 20220476917
Authors: He, Yanlong (1, 2); Hu, Yujie (3, 4, 5); Huang, Hai (1, 2); Zeng, Hao (3, 4, 5); Jun, Ni (6); Dong, Hao (7); Zhang, Fan (8, 9); She, Yuehui (3, 4, 5)
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Corresponding author: He, Yanlong
Source title: SSRN
Issue date: December 27, 2022
Publication year: 2022
Language: English
ISSN: 15565068
Document type: Preprint (PP)
Publisher: SSRN
Abstract: Indigenous microbial stimulation is considered as a highly promising technology for enhanced oil recovery (EOR) of low-permeability reservoirs. In this paper, the microbial communities of indigenous microorganisms before and after bio-stimulation in the largest low-permeability oil field of China were discussed. Gas chromatography (GC), gas chromatography-mass spectrometry (GC/MS) and Fourier transform ion cyclotron resonance mass spectrometry (FT-ICR-MS) were used to compare the changes of oil components before and after bio-stimulation of indigenous microorganisms. The results showed that Pseudomonas aeruginosa was dominant in the original sample of 27-46 and 28-46 well, followed by some sulfate-reducing bacteria (SRB) and iron-reducing bacteria (IRB), such as Desulfovibrio oxyclinae, and Methylopila capsulata, Deferribacter abyssi, Desulfovibrio oxyclinae. After bio-stimulation, the species of microorganisms gradually decreased, the content of Pseudomonas aeruginosa reached 2~3 times than that of the original samples. The harmful bacteria, such as SRB and IRB, gradually disappeared. The Pr/Ph of the oil decreased, whereas the Pr/nC17, Ph/nC18, and #nC21-/#nC22+ increased. The average molecular weight of the oil decreased after the microorganisms were stimulated, in which the contents of N1-containing compounds increased, and that of O1-containing compounds decreased. The contents of biphenyls, naphthalene, and its derivatives decreased. Whereas

those of aromatic compounds, such as phenanthrene, quaternary, fluorene, and their derivatives increased, pilot study was applied in LD field block, the average water cut of 27-47 well group decreased from 87.60% to 74.86%, the oil production increased from 12.18 t/d to 29.58 t/d.
Number of references: 54
Main heading: Bacteria
Controlled terms: Enhanced recovery - Gas chromatography - Low permeability reservoirs - Mass spectrometry - Naphthalene - Petroleum reservoir engineering - Sulfur compounds
Uncontrolled terms: Fourier transform ion cyclotron resonance mass spectrometry - Fourier-transform ion cyclotron resonance mass spectrometry - Indigenous microorganism - Low-permeability reservoirs - Microbial communities - Oil components - Original sample - Pilot studies - Pseudomonas aeruginosa - Sulphate reducing bacteria
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 801 Chemistry - 802.3 Chemical Operations - 804.1 Organic Compounds
Numerical data indexing: Percentage 8.76E+01% to 7.486E+01%
Compendex references: YES
Preprint ID: 4312796
Preprint source website: https://papers.ssrn.com/sol3/papers.cfm
Preprint ID type: SSRN
Database: Compendex
Data Provider: Engineering Village

59. Impact of fluorine-bearing hydrothermal fluid on deep burial carbonate reservoirs: A case study from the Tazhong area of Tarim Basin, northwest China

Accession number: 20220711650174
Authors: Jia, Lianqi (1); Cai, Chunfang (2, 3, 4); Li, Kaikai (5, 6); Liu, Lijing (1); Chen, Zhipeng (7); Tan, Xianfeng (8)
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Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 139
Issue date: May 2022
Publication year: 2022
Article number: 105579
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Deep burial carbonate reservoirs (>4000 m) have great potential of reserves for oil and gas exploration, although the matrix reservoirs generally become extremely heterogeneous and tight due to various diagenesis. Hydrothermal dissolution is supposed to be important for formation of high-quality deep burial carbonate reservoirs. However, few studies have focused on influence of minor fluorine-bearing fluid on carbonate reservoir quality. This study integrates petrography, geochemistry and fluid inclusion data to understand impact of fluorine-bearing fluid on deep burial carbonate reservoirs. Mineralogy and mineral distribution suggest that fluorite and concomitant calcite are found in the Ordovician and Cambrian strata of the whole Tazhong area, especially in the vicinity of faults. Calcite associated with fluorite is probably derived from progressive mixture between formation water and fluorine-bearing hydrothermal fluid, which is supported by REY pattern of concomitant calcite, surrounding limestone and fluorite, and fluid inclusion microthermometric data of concomitant calcite and fluorite. Fluorine-bearing hydrothermal fluid was responsible for the concomitant C2 calcite of high Y/Ho ratio. Therefore, the superchondritic Y/Ho ratio of concomitant calcite can be probably used as proxy for identifying distribution of minor fluorine-bearing hydrothermal fluid. For thick fluorite bed, influx of fluorite-rich fluid resulted in surrounding limestone dissolution and altered zones between fluorite and limestone. This process simultaneously improves porosity and permeability of high-energy sedimentary facies

reservoirs. In contrast, the fluorine-rich hydrothermal fluid through the low-energy sedimentary facies mainly enhanced permeability of the tight carbonate reservoirs rather than porosity. For widespread tight reservoir of high-energy and low-energy sedimentary facies, even minor fluorite-bearing fluids still enhance permeability. The fluorine-bearing hydrothermal fluid may influence carbonate reservoirs away from hydrothermal-altered zones. Significance of minor fluorine-bearing hydrothermal fluid for widespread tight carbonates has probably been underestimated for deep burial carbonate reservoir. © 2022 Elsevier Ltd
Number of references: 87
Main heading: Rare earths
Controlled terms: Sedimentology - Exploratory geochemistry - Proven reserves - Calcite - Dissolution - Petroleum reservoir engineering - Fluid inclusion - Lime - Petroleum reservoirs - Carbonation - Fluorspar - Limestone - Porosity
Uncontrolled terms: Carbonate reservoir - Deep burials - Energy - Fluid inclusion - Hydrothermal fluids - Lower energies - Rare earth element and yttrium - Sedimentary facies - Tarim Basin - Tazhong area
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631 Fluid Flow - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Size 4.00E+03m
DOI: 10.1016/j.marpetgeo.2022.105579
Funding Details: Number: 2017ZX05008003-040, Acronym: -, Sponsor: -; Number: 41502004,41502148,41672143,41730424,41972143,42072127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was financially supported by the National Natural Science Foundation of China (Grant No. 41972143 , 41502148 , 41672143 , 41730424 , 42072127 and 41502004), the National Science and Technology Major Project of China on Petroleum Study (Grant No. 2017ZX05008003-040).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

60. Experimental and Numerical Simulation Study on the Influence of Fracture Distribution on Gas Channeling in Ultralow-Permeability Reservoirs

Accession number: 20214411103951
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Source title: Journal of Energy Engineering
Abbreviated source title: J Energy Eng
Volume: 148
Issue: 1
Issue date: February 1, 2022
Publication year: 2022
Article number: 05021002
Language: English
ISSN: 07339402
E-ISSN: 19437897
CODEN: JLEED9
Document type: Journal article (JA)
Publisher: American Society of Civil Engineers (ASCE)
Abstract: Fracture development in ultralow-permeability reservoirs results in gas channeling and lower oil recovery during CO2 flooding. In this study, the physical properties of a light oil-CO2 system were experimented, the physical

properties subsequently simulated, and the effects of fracture distribution on gas channeling analyzed using the fracture mechanism model. Then, a geological reservoir model with added hydraulic fractures was used to predict CO2 injection. It is shown that gas channeling time was affected by the fracture angle and the distance between the production well fracture and injection well fracture. First, set Y (north) direction as 0°, keep the angle of the production well fracture unchanged, and only change the angle of the injection well fracture. In this case, a smaller angle of the gas injection well fracture resulted in more gas sweep area and gas channeling more delayed. Second, keep the injection well fracture angle constant and only change the angle of the production well fracture; in this regard, two cases are considered. The one is when the injection well fracture angle is smaller than 45°; in this case, the effect of distance between the production and injection fractures is more than production pressure difference, the distance between the production and injection fractures is greater, the gas sweep area is larger, and the gas channeling is later. The other is when the injection well fracture angle is greater than 45°, which results in a closer distance between the production well and injection well fractures and affects the gas channeling less than the production pressure difference. Third, the angle between the gas flooding direction (along X) and the production well fracture is greater, the production pressure difference is more homogeneous, and the gas channeling is later. In the geological model without connected fractures, CO2 flooding achieved gas channeling all over the study area after 7.5 years under the effect of distance between the production and injection fractures and the production pressure difference. The cumulative oil increase is 2.32 millon standard barrel (MSTB) after 20 years. © 2021 American Society of Civil Engineers.
Number of references: 48
Main heading: Carbon dioxide
Controlled terms: Fracture - Oil well flooding - Pressure effects - Low permeability reservoirs - Gas permeability - Gases - Geology - Reservoirs (water) - Injection (oil wells) - Physical properties - Floods - Petroleum reservoir engineering
Uncontrolled terms: CO 2 flooding - Floodings - Fracture angle - Fracture distributions - Fracture pattern - Gas channeling - Production pressure differences - Production wells - Ultra-low permeability reservoirs - Ultralow permeability
Classification code: 441.2 Reservoirs - 481.1 Geology - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 804.2 Inorganic Compounds - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Age 2.00E+01yr, Age 7.50E+00yr
DOI: 10.1061/(ASCE)EY.1943-7897.0000811
Funding Details: Number: SZDKFJJ20201203, Acronym: -, Sponsor: -; Number: 21JK0839, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The authors are supported by the Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 21JK0839), and Research Funds for the Key Laboratory of Petroleum Resources Research, Gansu Province (SZDKFJJ20201203), and the editor is highly appreciated.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

61. Depositional process and dispersal pattern of a faulted margin hyperpycnal system: The Eocene Dongying Depression, Bohai Bay Basin, China

Accession number: 20214511117712
Authors: Liu, Jianping (1, 2, 3, 4, 5, 6); Xian, Benzhong (3, 4); Tan, Xianfeng (1, 2); Zhang, Li (5); Su, Ming (6); Wu, Qianran (3, 4); Wang, Zhen (7); Chen, Peng (3, 4); He, Yanxin (8); Zhang, Shaohua (9); Li, Jin (3, 4); Gao, Yuan (5); Yu, Qiuhua (5)
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Source title: Marine and Petroleum Geology

Abbreviated source title: Mar. Pet. Geol.
Volume: 135
Issue date: January 2022
Publication year: 2022
Article number: 105405
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: There has been an increased attention on hyperpycnal flows due to its importance in delivering large volumes of sediments into deep-water. The process and products of hyperpycnal flow in tectonically-active margins are still poorly understood, and potentially constitute one of the most important deep-water mechanisms in rift basins. This study integrates core data, well-logging and 3D seismic data to investigate the hyperpycnal flow process and dispersal pattern on the Eocene Dongying rift margin. 17 facies, including 5 conglomerate facies, 9 sand facies and 3 mud facies are identified, interpreted as the product of debris flows, traction currents, turbidity currents, transitional flows and lofting plumes, and suggesting the complex blend in flood-triggered hyperpycnal flow on rift margin. Two different hyperpycnal flow types are identified and a related process model is proposed based on facies sequence, distribution, transport mechanism and flood discharge analysis, including seasonal-flood triggered hyperpycnal flow (SHF) and outburst-flood triggered hyperpycnal flow (OHF). The evolution of the hyperpycnal system suggests two dispersal styles, including proximal sublacustrine fan dominated by OHF and distal sublacustrine fan dominated by SHF, respectively. Climate and tectonic movements are suggested to be the main factors controlling hyperpycnal flow generation and deposition on rift margins. The relatively arid climate enhanced seasonal-flood activity and associated sustained and stable SHF, which further prompt distal sublacustrine fan development during a weak rifting period. On the other hand, the generation of outburst-floods can be attributed to the enhanced fault activity, which corresponds to the periodical tectonic movements in the basin. As a result, proximal sublacustrine fans tend to develop in near-shore topographic lows down-dip of syn-depositional faults due to increased tectonic activities, accommodation and enhanced OHF. A deep-water depositional model is proposed for hyperpycnal systems on rift margins by emphasizing the variety in sedimentary process and dispersal patterns controlled by climate and tectonics forces, which may provide new insights into hyperpycnal flow theories and deep-water exploration in world rift basins. © 2021 Elsevier Ltd
Number of references: 113
Main heading: Well logging
Controlled terms: Sediment transport - Ocean currents - Climate models - Floods - Process control - Deposition - Faulting - Seismology
Uncontrolled terms: Bohai Bay Basin - Climate - Deepwater - Hyperpycnal - Hyperpycnal flows - Outburst floods - Rift basin - River floods - Sublacustrine fan - Tectonic movements
Classification code: 443 Meteorology - 471.4 Seawater, Tides and Waves - 484.1 Earthquake Measurements and Analysis - 802.3 Chemical Operations - 921 Mathematics
DOI: 10.1016/j.marpetgeo.2021.105405
Funding Details: Number: ZLZX2020-02, Acronym: -, Sponsor: -; Number: 41702104,41872113,42072140,42172109, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2020M682659, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: DD20190213, Acronym: CGS, Sponsor: China Geological Survey; Number: 202102020610, Acronym: -, Sponsor: Guangzhou Municipal Science and Technology Project; Number: 2016ZX05026-007,2017ZX05009-002, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: We would like to express our sincere thanks to Dr. Gabriel Giacomone, and the anonymous reviewer, and associate editor Dr. Roberto Tinterri for their detailed review, constructive comments and assistance which have significantly improved the manuscript. We are grateful to the Shengli Oil Company, Sinopec Group, for their valuable data and technical input in this work. This work is financially supported by the National Natural Science Foundation of China (No. 42172109, 42072140, 41872113, 41702104), the National Science and Technology Major Project (2017ZX05009-002, 2016ZX05026-007), China Postdoctoral Science Foundation (2020M682659), China National Petroleum Corporation-China University of Petroleum (Beijing) Strategic Cooperation Science and Technology Project (ZLZX2020-02), Project of China Geological Survey (DD20190213) and Guangzhou Science and Technology Plan Project (202102020610).We would like to express our sincere thanks to Dr. Gabriel Giacomone, and the anonymous reviewer, and associate editor Dr. Roberto Tinterri for their detailed review, constructive comments and assistance which have significantly improved the manuscript. We are grateful to the Shengli Oil Company, Sinopec Group, for their valuable data and technical input in this work. This work is financially supported by the National Natural Science Foundation of China (No. 42172109 , 42072140 , 41872113 , 41702104), the National Science and Technology Major Project (2017ZX05009-002 , 2016ZX05026-007), China Postdoctoral Science Foundation (2020M682659), China National Petroleum Corporation-China University of Petroleum (Beijing) Strategic Cooperation Science and

Technology Project (ZLZX2020-02), Project of China Geological Survey (DD20190213) and Guangzhou Science and Technology Plan Project (202102020610).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village