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1. Crystallography and interfacial structure in a directionally solidified Al2O3/Y3Al5O12/ZrO2 eutectic crystal

Authors: Wang, Xu (1); Zhong, Yujie (2); Sun, Qian (3); Li, Yiran (4); Zhang, Wen (1); Qi, Dongqing (4); Wang, Dong (5); Jiang, Bailing (1)
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Abstract: The single crystal of Al2O3/Y3Al5O12/ZrO2 ternary eutectic was prepared by an optical floating zone furnace. The crystallography and interfacial structure of the directionally solidified ternary eutectic were investigated by means of electron backscattered diffraction and transmission electron microscopy. We found that the preferred crystallographic orientation of the Al2O3/Y3Al5O12/ZrO2 eutectic crystal was {112‾0}#11‾00#Al2O3 ||{001} #001#Y3Al5O12 ||{001}#001#ZrO2. Most of the tiny ZrO2 locates dispersively between Al2O3 and Y3Al5O12. It can be concluded that interfacial energy between Al2O3-Y3Al5O12-ZrO2 played an important role in deciding the preferred crystallographic orientations of the Al2O3/Y3Al5O12/ZrO2 eutectic and the precipitation behavior of the ZrO2 phase. © 2017 Acta Materialia Inc.

Number of references: 29
Main heading: High resolution transmission electron microscopy
Controlled terms: Solidification - Crystal orientation - Eutectics - Alumina - Crystallography - Aluminum oxide - Single crystals - Zirconia
Uncontrolled terms: Crystallographic orientations - Directionally solidified - EBSD - Electron back-scattered diffraction - HRTEM - Interface structures - Precipitation behavior - Ternary eutectics
Classification code: 531.2 Metallography - 741.3 Optical Devices and Systems - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.1016/j.scriptamat.2017.10.008

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

2. A nanocrystalline oxygen-deficient bismuth oxide as an efficient adsorbent for effective visible-light-driven photocatalytic performance toward organic pollutant degradation

Authors: Lv, Ying (1); Xu, Zhanglian (2); Nakane, Koji (3); Kobayashi, Hisayoshi (4)
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Abstract: In this work, a simple binary oxygen-deficient Bi2O4-x oxide was prepared, and its crystal structure, optical property, band structure and electronic structure were systematically investigated. Plane-wave-based density functional theory (DFT) calculations were also carried out to determine that Bi2O4-x is a typical indirect-gap semiconductor with the bandgap of 1.1 eV. Bi2O4-x adsorbed ca. 99% of rhodamine B and methyl orange, ca. 95% of methylene blue and ca. 80% of phenol in the dark within initial 30 min. The interaction of the oxygen-deficient structure-induced hydroxyls with pollutant molecules is responsible for the excellent adsorption capacity. Due to its excellent adsorption capacity, Bi2O4-x showed much higher photocatalytic degradation activity toward these pollutants (except for methylene blue) under visible light irradiation than the well-studied Bi2O4, Bi2O3 and P25, which had poor or negligible adsorption capacity toward the pollutants. Methylene blue was degraded by Bi2O4-x with further Pd loading. The photocatalytic mechanism of the oxygen-deficient Bi2O4-x were explored. The scavenging test results showed that direct h+ oxidation contributes to the high photocatalytic activity of the oxygen-deficient Bi2O4-x. This study highlights the potential of developing Bi2O4-x-based materials as a new class with both excellent adsorption capacity and highly efficient photocatalytic activity toward versatile pollutants. © 2018

Number of references: 45
Main heading: Organic pollutants
Controlled terms: Density functional theory - Adsorption - Design for testability - Electronic structure - Light - Bismuth compounds - Optical properties - Palladium - Aromatic compounds - Azo dyes - Photocatalytic activity - Photodegradation - Crystal structure - Nanocrystals
Uncontrolled terms: Adsorption capacities - Bismuth oxides - Oxygen deficient - Palladium loading - Visible-light-driven
Classification code: 547.1 Precious Metals - 741.1 Light/Optics - 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
Numerical data indexing: Electron_Volt 1.10e+00eV, Percentage 8.00e+01%, Percentage 9.50e+01%, Percentage 9.90e+01%, Time 1.80e+03s
DOI: 10.1016/j.jcis.2018.07.093
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Compendex references: YES
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3. Research status and development trends of clay hydration inhibitor at home and abroad

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Title of translation:
Authors: Du, Weichao (1, 2); Sun, Jinsheng (3, 4); Pu, Xiaolin (5); Zhang, Jie (1); Chen, Gang (1)
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Issue date: October 5, 2018
Publication year: 2018
Pages: 4013-4021
Language: Chinese
ISSN: 10006613
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Publisher: Materials China

Abstract: The addition of clay hydration inhibitor into drilling fluid can effectively reduce the occurrence of drilling accident, however, the unconspicuous effect and poor temperature resistance are existence obvious. The research status and development trends of clay swelling inhibitor are briefly introduced and analyzed. From the research process, we can conclude that clay hydration inhibitors have evolved from inorganic ions to organic ammonium (amine), and gradually matured in the polymer type process. From the latest researches, we know that polyamine inhibitor was the research topic, and the resulting high performance water-based drilling fluid was widely utilized at home and abroad. Hyperbranched polymer inhibitor shows nice growth prospects due to the outstanding temperature and salt resistance performance of the special structure. Traditional co-polymer inhibitor is difficult to be applied in high temperature and high density drilling fluid due to the large molecular weight, and there are still rooms for its improvement. We pointed out the future development focus was to make full use of biomass resources, and develop green, environment friendly and efficient clay hydration inhibitor. What's more, the temperature resistance, universality and multi effect oligomer inhibitor is worth studied. In order to promote the development of drilling fluid and related technology, we should explore the hyperbranched inhibitor, besides, get rid the concept constraints of traditional drilling fluid additives chemical force, and actively combine the complementary points of nanotechnology and drilling fluids. © 2018, Chemical Industry Press. All right reserved.

Number of references: 55
Main heading: Hydration
Controlled terms: Infill drilling - Additives - Temperature control - Dendrimers - Drilling fluids
Uncontrolled terms: Biomass resources - Development trends - Drilling fluid additives - Environment friendly - Hyperbranched polymers - Polyamines - Temperature resistances - Water based drilling fluids
Classification code: 511.1 Oil Field Production Operations - 731.3 Specific Variables Control - 803 Chemical Agents and Basic Industrial Chemicals
DOI: 10.16085/j.issn.1000-6613.2017-2162
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

4. The ROP mechanism study in hard formation drilling using local impact method

Accession number: 20184305971626
Authors: Liu, Weiji (1, 2); Zhu, Xiaohua (1); Zhou, Yunlai (3); Mei, Liu (4); Meng, Xiannan (3); Jiang, Cheng (5)
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Publisher: Techno-Press

Abstract: The low rate of penetration and short lifetime of drilling bit served as the most common problems encountered in hard formation drilling, thus leading to severe restriction of drilling efficiency in oil and gas reservoir. This study developed a new local impact drilling method to enhance hard formation drilling efficiency. The limitation length formulas of radial/lateral cracks under static indentation and dynamic impact are derived based on the experimental research of Marshall D.B considering the mud column pressure and confining pressure. The local impact rock breaking simulation model is conducted to investigate its ROP raising effect. The results demonstrate that the length of radial/lateral cracks will increase as the decrease of mud pressure and confining pressure, and the local impact can result in a damage zone round the impact crater which helps the rock cutting, thus leading to the ROP increase. The numerical results also demonstrate the advantages of local impact method for raising ROP and the vibration reduction of bit in hard formation drilling. This study has shown that the local impact method can help raising the ROP and vibration reduction of bit, and it may be applied in drilling engineering. Copyright © 2018 Techno-Press, Ltd.

Number of references: 22
Main heading: Rock pressure
Controlled terms: Efficiency - Numerical methods - Petroleum reservoirs - Infill drilling - Petroleum reservoir engineering
Uncontrolled terms: Acceleration mechanisms - Drilling engineering - Experimental research - Hard formation - Local impacts - Oil and gas reservoir - Rock breaking mechanism - Vibration reductions
Classification code: 502.1 Mine and Quarry Operations - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 913.1 Production Engineering - 921.6 Numerical Methods
DOI: 10.12989/sem.2018.68.1.095

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

5. High-performing and stable electricity generation by ceramic fuel cells operating in dry methane over 1000 hours

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Authors: Ding, Hanping (1); Fang, Shumin (2); Yang, Yingchao (3); Yang, Yating (4); Wu, Wei (5); Tao, Zetian (6)
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Publication year: 2018
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Language: English
ISSN: 03787753
CODEN: JPSODZ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: Developing a reliable and high-performing direct hydrocarbon symmetric solid oxide fuel cells (S–SOFCs) is promising to achieve the simple and durable operation in natural gas. Here we demonstrate a durable S–SOFC

with a ceramic oxide material simultaneously used as symmetric electrode that performs outstandingly in dry methane at anode side and ambient air at cathode side. This cell shows high performance with strong resistances against both coking and sulfur poisoning in dry fuel without any steam as reforming agent. At 800 °C, the cell exhibits a low polarization resistance of 0.027 Ω cm2 in air and 0.074 Ω cm2 in 5% H2. When the cell is further optimized by implementing a nanostructured electrode, the high peak power densities of 1.05 W cm-2 in H2 and 0.4 W cm-2 in CH4 are achieved at 800 °C. To our best knowledge, this is the highest performance among S–SOFCs using ceramic oxide as symmetric electrode in dry methane. The cell exhibits a very stable performance under a constant current load of 1.0 A cm-2 for 1060 h with even slight performance increase. In addition, the electrode is structurally stable in various fuels, suggesting that the cell can be operated in flexible gas conditions. © 2018 Elsevier B.V.

Number of references: 38
Main heading: Methane
Controlled terms: Perovskite - Ceramic materials - Steam reforming - Solid oxide fuel cells (SOFC) - Electrodes
Uncontrolled terms: Ceramic fuel cells - Constant current load - Electricity generation - Layered perovskite - Nano-structured electrodes - Polarization resistances - Redox-stable - Stable performance
Classification code: 482.2 Minerals - 702.2 Fuel Cells - 802.2 Chemical Reactions - 804.1 Organic Compounds - 812.1 Ceramics
Numerical data indexing: Temperature 1.07e+03K, Time 3.60e+06s, Time 3.82e+06s
DOI: 10.1016/j.jpowsour.2018.08.084
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6. An improved rate-transient analysis model of multi-fractured horizontal wells with non-uniform hydraulic fracture properties   (*Open Access*)

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Authors: He, Youwei (1); Cheng, Shiqing (1); Rui, Zhenhua (2); Qin, Jiazheng (1); Fu, Liang (3); Shi, Jianguo (3); Wang, Yang (1); Li, Dingyi (1); Patil, Shirish (4); Yu, Haiyang (1); Lu, Jun (5, 6)
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Corresponding author: Cheng, Shiqing(chengsq@cup.edu.cn)
Source title: Energies
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Issue date: February 2018
Publication year: 2018
Article number: 393
Language: English
E-ISSN: 19961073
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: Although technical advances in hydraulically fracturing and drilling enable commercial production from tight reservoirs, oil/gas recovery remains at a low level. Due to the technical and economic limitations of well-testing operations in tight reservoirs, rate-transient analysis (RTA) has become a more attractive option. However, current RTA models hardly consider the effect of the non-uniform production on rate decline behaviors. In fact, PLT results demonstrate that production profile is non-uniform. To fill this gap, this paper presents an improved RTA model of multi-fractured horizontal wells (MFHWs) to investigate the effects of non-uniform properties of hydraulic fractures (production of fractures, fracture half-length, number of fractures, fracture conductivity, and vertical permeability) on rate transient behaviors through the diagnostic type curves. Results indicate obvious differences on the rate decline

curves among the type curves of uniform properties of fractures (UPF) and non-uniform properties of fractures (NPF). The use of dimensionless production integral derivative curve magnifies the differences so that we can diagnose the phenomenon of non-uniform production. Therefore, it's significant to incorporate the effects of NPF into the RDA models of MFHWs, and the model proposed in this paper enables us to better evaluate well performance based on long-term production data. © 2018 by the authors.

7. Investigation into the classification of tight sandstone reservoirs via imbibition characteristics (*Open Access*)

Authors: Li, Ming (1); Yang, Hai'En (2, 3); Lu, Hongjun (2, 3); Wu, Tianjiang (2, 3); Zhou, Desheng (4, 5); Liu, Yafei (4, 5)
Author affiliation: (1) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu, Sichuan; 610500, China; (2) Oil and Gas Technology Research Institute of Changqing Oilfield Company, PetroChina, Xi'an, Shaanxi; 710018, China; (3) National Engineering Laboratory of Low Permeability Oil and Gas Field Exploratory and Development, Xi'an, Shaanxi; 710018, China; (4) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (5) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an, Shaanxi; 710065, China
Corresponding author: Zhou, Desheng(desheng@xsyu.edu.cn)
Abstract: Tight sandstone reservoirs are often produced by shutting in the well and inducing imbibition. However, by adopting current reservoir classifications, the heterogeneity of reservoirs cannot be properly treated. Based upon the analysis of the imbibition curves and mercury intrusion porosimetry tests, Chang-7 tight sandstone reservoirs were classified into three categories according to the newly proposed standards. Imbibition tests demonstrated that for the first category, imbibition and drainage occurred continuously and never reached the plateau within the experiment duration. It was suggested that a longer shut-in time favors the production of oil. For the second category, a steady state for imbibition was reached and a shut-in time as short as three days resulted in a high imbibition rate. For the

third category, a plateau was reached for the first time and imbibition restarted until a steady state was reached. The average shut-in time for the third category was eight days. Compatibility between reservoir characteristics and a soaking development regime based upon the proposed classification methods effectively enhances the oil recovery efficiency of formations with distinct petrophysical properties. This provides insight into the classification methods of tight sandstone reservoirs. © 2018 Energies. All rights reserved.

Number of references: 42
Main heading: Sandstone
Controlled terms: Petroleum reservoirs - Tight gas - Petrophysics - Petroleum reservoir evaluation
Uncontrolled terms: Mercury intrusion porosimetry tests - Oil recovery efficiency - Petrophysical properties - Reservoir characteristic - Shut-in time - Spontaneous imbibition - Tight sandstone reservoirs - Tight sandstones
Classification code: 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels
DOI: 10.3390/en11102619
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

8. A Topographic Kirchhoff Dynamic Focused Beam Migration Method Based on Compressed Sensing   (*Open Access*)

Accession number: 20184105933262
Authors: Sun, Hui (1, 2, 3); Yang, Feilong (4); Meng, Fanchang (5); Zhang, Zhihou (1, 2); Gao, Cheng (6); Liu, Mingchen (7)
Author affiliation: (1) Faculty of Geosciences and Environmental Engineering, Southwest Jiaotong University, Chengdu; 611756, China; (2) MOE Key Laboratory of High-speed Railway Engineering, Southwest Jiaotong University, Chengdu; 610031, China; (3) School of Resources and Environment, University of Electronic Science and Technology of China, Chengdu; 611731, China; (4) School of Earth Sciences and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (5) Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing; 100029, China; (6) School of Mines, Inner Mongolia University of Technology, Hohhot; 010051, China; (7) College for Geoexploration Science Technology, Jilin University, Changchun; 130026, China
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Publication year: 2018
Pages: 56666-56674
Article number: 8478656
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Kirchhoff beam migration (KBM) is a ray-based seismic imaging method, which can handle multi-arrivals caused by model complexity. Apart from its high imaging precision, it also retains the merits of Kirchhoff migration, such as efficiency, stability, and flexibility. However, two issues should be taken into consideration when this method is expanded to the complicated surface conditions: first, the computational accuracy deficiency of the original local plane-wave decomposition method cannot suit for low signal-to-noise ratio seismic data; second, as the rays traveling, the beam width increases rapidly, which cannot guarantee the computational accuracy of the corresponding grid points' attribute information. In addition, the insufficient coverage of the beam in the shallow part of the model might affect the imaging quality of this region. Kirchhoff dynamic focused beam migration based on compressed sensing is proposed to resolve these two problems. For the first problem, the local plane-wave decomposition method based on compressed sensing is introduced into KBM to enhance its computational accuracy. To solve the second problem, this paper adopts

the dynamic focused beam to replace the original simplified Gaussian beam in the migration method, control the divergence of beam, and increase the coverage of beam in the shallow part of the model. Both Marmousi model and Canadian Foothills model are employed in this paper to test the new migration imaging method. © 2013 IEEE.

Number of references: 57

Main heading: Compressed sensing

Controlled terms: Gaussian beams - Elastic waves - Signal to noise ratio - Wave propagation - Seismology

Uncontrolled terms: Attribute information - Compressive sensing - Computational accuracy - Focused beams - Kirchhoff - Low signal-to-noise ratio - Plane wave decomposition method - Seismic imaging

Classification code: 484.1 Earthquake Measurements and Analysis - 711 Electromagnetic Waves - 716.1 Information Theory and Signal Processing - 931.1 Mechanics

DOI: 10.1109/ACCESS.2018.2873174

Compendex references: YES

Open Access type(s): All Open Access, Gold

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Data Provider: Engineering Village

9. On the fundamental difference of adsorption-pores systems between vitrinite- and inertinite-rich anthracite derived from the southern Sichuan basin, China

Accession number: 20181004854673

Authors: Shan, Changan (1, 2, 3); Zhang, Tingshan (4); Liang, Xing (5); Zhang, Zhao (5); Wang, Meng (6); Zhang, Kun (7); Zhu, Haihua (4)

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Corresponding author: Shan, Changan(shanca@xsyu.edu.cn)

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Abstract: To further understand the fundamental difference of adsorption-pores systems between vitrinite- and inertinite-rich anthracite, six coal core samples with >85% vitrinite and three samples with >80% inertinite were collected from coalbed methane wells in the southern Sichuan basin, China, by macerals analysis method. The differences of pore genetic types, pores shapes, pore surfaces roughness, pore-size distribution, specific surface area, total pore volume, physical properties, and CH_4 adsorption capacity between vitrinite- and inertinite-rich samples, were studied via ESEM observation, low-temperature N_2 adsorption experiments, NMR tests, and CH_4 isothermal adsorption experiments. Results show that plant tissue holes are easier to observe in inertinite than vitrinite, and

blowholes, breccia pores and broken pores are all common in vitrinite and rare in inertinite of the study coals. Both vitrinite- and inertinite-rich coal samples exhibit complex nano-pore structures, and pore shapes in inertinite-rich coals are more special than those in vitrinite-rich samples. Fractal dimensions analysis from the N2 adsorption isotherms indicates that inertinite-rich coals have the higher surfaces roughness of irregular pores than vitrinite-rich coals in the P/Po intervals of 0.5–1. In addition, it can be predicted that pores of D2 and D3 type hysteresis loops with diameters of L, and there are positive relationships of VL with vitrinite and inertinite, indicating the CH4 adsorption capacity of organic macerals is much stronger than that of inorganic minerals in anthracite. © 2018

Number of references: 65
Main heading: Adsorption
Controlled terms: Methane - Coal deposits - Fractal dimension - Pore size - Bottles - Temperature - Surface roughness - Pore structure - Adsorption isotherms - Anthracite
Uncontrolled terms: Adsorption capacities - Coal bed methane wells - Difference - Inertinite - Irreducible water saturation - Isothermal adsorption - Positive correlations - Vitrinites
Classification code: 503 Mines and Mining, Coal - 524 Solid Fuels - 641.1 Thermodynamics - 694.2 Packaging Materials - 802.3 Chemical Operations - 804.1 Organic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Size 2.76e-09m
DOI: 10.1016/j.jngse.2018.02.025
Funding Details: Number: TPR-2016-04, Acronym: -, Sponsor: -; Number: 41772150, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: DMSM2017031, Acronym: SDUST, Sponsor: Shandong University of Science and Technology; Number: 2017ZX05039001-002, Acronym: -, Sponsor: Science and Technology Major Project of Guangxi;
Funding text: This research was funded by the Open Foundation of Key Laboratory of Tectonics and Petroleum Resources (China University of Geosciences) (Grant No. TPR-2016-04), the Open Foundation of Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Mineral, (Shandong University of Science and Technology) (Grant No. DMSM2017031), the National science and technology major project (2017ZX05039001-002), the National Natural Science Foundation of China (Grant No. 41772150).
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10. Influence of chemical properties on CH4 adsorption capacity of anthracite derived from southern Sichuan Basin, China

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Authors: Shan, Changan (1, 2, 3); Zhang, Tingshan (4); Liang, Xing (5); Zhang, Zhao (5); Zhu, Haihua (4); Yang, Wei (6); Zhang, Kun (7)
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Corresponding author: Shan, Changan(shanca@xsyu.edu.cn)

Abstract: This study aimed to determine the effects of high-rank coal chemical properties on CH4 adsorption capacity. A total of 24 core samples of anthracite from 11 coalbed methane wells in southern Sichuan Basin (China) were examined systemically using maceral analysis, proximate and ultimate analyses, total sulfur content test, and CH4

isotherm adsorption experiment. Results show that vitrinite group macerals are the most abundant maceral group, followed by inertinite and inorganic mineral matter of these coals. Vitrinite- and inertinite-rich coals have the similar average Langmuir volume under dry ash-free basis (VLdaf), and no positive or negative correlation was found between VLdaf and vitrinite and inertinite content. In addition, there is a weakly negative relationship between inorganic mineral matter and CH_4 adsorption capacity. Effects of coal elements by ultimate analysis, such as C element and the atomic ratios of H/C, O/C and N/C, on CH_4 adsorption capacity were studied. CH_4 adsorption capacity has positive correlation with C element content, H/C atomic ratio and N/C atomic ratio, respectively, but negative with O/C atomic ratio. Effects of four proximate analysis parameters (moisture, ash, fixed carbon and volatile matter content) on CH_4 adsorption capacity were also studied. Moisture, ash and volatile matter content negatively affect CH_4 adsorption, respectively, and fixed carbon content has exactly the opposite effect. Principle component regression analyses for the set of elements and proximate analysis parameters show that C, O, ash and fixed carbon content are the important influence factors on CH_4 adsorption capacity. © 2017

Number of references: 77
Main heading: Regression analysis
Controlled terms: Carbon - Methane - Moisture - Principal component analysis - Adsorption - Atoms - Chemical properties - Coal deposits - Chemical analysis - Anthracite
Uncontrolled terms: Adsorption capacities - Coal bed methane wells - Isotherm adsorption - Maceral composition - Negative correlation - Positive correlations - Principle component regression - Proximate analysis
Classification code: 503 Mines and Mining, Coal - 524 Solid Fuels - 801 Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.1 Organic Compounds - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics
DOI: 10.1016/j.marpetgeo.2017.10.008
Funding Details: Number: TPR-2016-04, Acronym: -, Sponsor: -; Number: DMSM2017031, Acronym: SDUST, Sponsor: Shandong University of Science and Technology; Number: 41772150, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research was funded by the Open Foundation of Key Laboratory of Tectonics and Petroleum Resources (China University of Geosciences) (Grant No. TPR-2016-04), the Open Foundation of Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Mineral, (Shandong University of Science and Technology) (Grant No. DMSM2017031), the National Natural Science Foundation of China (Grant No. 41772150).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

11. A Study on a Copolymer Gelant with High Temperature Resistance for Conformance Control

Accession number: 20174404360786
Authors: Zhang, Lei (1); Jing, Cheng (2); Liu, Jing (3); Nasir, Khan (4)
Author affiliation: (1) Department of Petroleum Engineering, China University of Geosciences (Wuhan), No. 388, Lumo Road, Wuhan; 430074, China; (2) Institute of Petroleum Engineering, Xi'an Petroleum University, No. 18, East of the Second Dianzi Road, Xi'an; 710065, China; (3) Institute of Petroleum Engineering, China University of Petroleum (East China), No. 66, Changjiang West Road Huangdao District, Qingdao; 266580, China; (4) Institute of Petroleum Engineering, China University of Petroleum (East China), No. 66, Changjiang West Road, Huangdao District, Qingdao; 266580, China
Corresponding author: Zhang, Lei(zhangshishishi.188@163.com)
Source title: Journal of Energy Resources Technology, Transactions of the ASME
Abbreviated source title: J Energy Resour Technol Trans ASME
Volume: 140
Issue: 3
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Publication year: 2018
Article number: 032907
Language: English
ISSN: 01950738
E-ISSN: 15288994
CODEN: JERTD2
Document type: Journal article (JA)
Publisher: American Society of Mechanical Engineers (ASME), United States

Abstract: Due to the limited temperature resistance, the deep conformance control technology of using the conventional hydrolyzed polyacrylamide (HPAM) gel failed to enhance oil recovery in high-temperature heterogeneous oil reservoirs. Therefore, it is necessary to develop a gelant with high temperature resistance to meet the demands of increasing oil production and decreasing water cut in high-temperature heterogeneous oil reservoirs. In this paper, a copolymer is first synthesized by the method of inverse emulsion polymerization using 2-acrylamide-2-tetradecyl ethyl sulfonic acid (AMC16S), acrylamide (AM), and acrylic acid (AA). The developed copolymer has a highly branching skeleton and can resist temperature up to 100 C. And then, a gelant with high temperature resistance and good shear resistance can be formed by mixing a certain proportion of the developed copolymer and polyethyleneimine (PEI). After the controllable gelation, a copolymer gel is formed and the formed gel can maintain the stable performance for a long time in the high-temperature environment. Experimental results show that the developed gelant can be applied in the conformance control of high-temperature heterogeneous oil reservoir.

Number of references: 47
Main heading: Temperature control
Controlled terms: Acrylic monomers - Crosslinking - Emulsification - Emulsion polymerization - Gelation - Petroleum reservoirs - Grafting (chemical) - Petroleum reservoir engineering - Hydrogels - Oil well flooding
Uncontrolled terms: Conformance control - gelant - Graft co polymerizations - High temperature resistance - Water cuts
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 731.3 Specific Variables Control - 801.3 Colloid Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.1 Organic Compounds - 815.2 Polymerization
DOI: 10.1115/1.4038196
Funding Details: Number: 51274229, Acronym: -, Sponsor: -;
Funding text: • National Natural Science (Grant No. 51274229).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

12. Effect of the hydrothermal activity in the Lower Yangtze region on marine shale gas enrichment: A case study of Lower Cambrian and Upper Ordovician-Lower Silurian shales in Jiangye-1 well   (*Open Access*)

Accession number: 20184606056525
Authors: Liu, Weiwei (7); Zhang, Kun (1, 2, 3, 4, 5); Jiang, Zhenxue (1, 2); Jiang, Shu (5, 6); Song, Yan (1, 2, 3); Jia, Chengzao (3); Huang, Yizhou (1, 2); Wen, Ming (1, 2); Liu, Tianlin (1, 2); Xie, Xuelian (1, 2, 8); Wang, Pengfei (9); Shan, Chang'An (10); Liu, Xiaoxue (1, 2); Wang, Xin (1, 2)
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Source title: Open Geosciences
Abbreviated source title: Open Geosci.
Volume: 10
Issue: 1
Issue date: 2018
Publication year: 2018
Pages: 582-592
Language: English
E-ISSN: 23915447
Document type: Journal article (JA)
Publisher: De Gruyter Open Ltd
Abstract: Finding favorable sites for the exploration of shale gas, is still one of the important areas of research that needs immediate attention. The content of organic matter in shale plays a crucial role in the hydrocarbon generation potential, reservoir space and gas-bearing capacity of shales. Therefore, studying the sedimentary environment of

organic shale can provide a scientific basis for locating favorable exploration areas for shale gas. The article takes the Lower Cambrian and the Upper Ordovician-Lower Silurian shales in the Yangtze region as the research object and selects representative wells to quantitatively calculate the existence of excess silicon in shale siliceous minerals and the content of excess silicon. Then, the origin of excess silicon can be clarified by the Al, Fe and Mn elemental analysis. Finally, the sedimentary organic matter enrichment mechanism is analyzed from water oxidation-reduction environments and biological productivity. The results of the study show that the excess silicon in the Lower Cambrian and Upper Ordovician-Lower Silurian shales in the Lower Yangtze region is of hydrothermal origin. The hydrothermal activity improves biological fertility on the one hand; whereas on the other hand, it can enhance the reducing capacity of the bottom water conducive for the preservation of organic matter thereby enriching the sedimentary organic matter. The place near the junction of Yangtze plate and Cathaysian plate, where hydrothermal activities were more intense, provided favorable loci for shale gas exploration in the Lower Yangtze region. It was observed that, since the hydrothermal activity was stronger in the Early Cambrian than in the Late Ordovician-Early Silurian times, the total organic carbon (TOC) content of the Lower Cambrian shale was higher than that of the Upper Ordovician-Lower Silurian shales. © 2018 Weiwei Liu et al. published by De Gruyte.

Number of references: 45
Main heading: Silica
Controlled terms: Sedimentology - Shale gas - Geological surveys - Organic carbon - Petroleum prospecting - Hydrocarbons - Biogeochemistry - Gases
Uncontrolled terms: Biological fertility - Lower Yangtze basin - Marine shales - Ordovician - Waterbodies
Classification code: 481.1 Geology - 481.2 Geochemistry - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 801.2 Biochemistry - 804.1 Organic Compounds
DOI: 10.1515/geo-2018-0046
Funding Details: Number: 41472112,41728004, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 12120114046701, Acronym: MLR, Sponsor: Ministry of Land and Resources of the People's Republic of China; Number: 2017ZX05035-002, Acronym: -, Sponsor: Science and Technology Major Project of Guangxi;
Funding text: Acknowledgement: This study was supported by the National Science and Technology Major Project (No. 2017ZX05035-002), the Science Foundation of the Ministry of Land and Resources of China (No. 12120114046701), the National Natural Science Foundation of China (No. 41472112 and No. 41728004) and the open fund from the Sinopec Key Laboratory of Shale Oil/Gas Exploration and Production Technology.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

13. Quartz types in shale and their effect on geomechanical properties: An example from the lower Cambrian Niutitang Formation in the Cen'gong block, South China

Accession number: 20182905563551
Authors: Liu, Jingshou (1, 2, 3, 4); Ding, Wenlong (1, 2, 3, 4); Wang, Ruyue (5); Wu, Zhonghu (6, 7); Gong, Dajian (8, 9); Wang, Xinghua (1); Yin, Shuai (10); Jiao, Baocheng (1)
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Corresponding author: Liu, Jingshou(liujingshou@126.com)
Source title: Applied Clay Science
Abbreviated source title: Appl. Clay Sci.
Volume: 163
Issue date: October 2018
Publication year: 2018
Pages: 100-107
Language: English
ISSN: 01691317

Abstract: We identified the sources of quartz in shales of the Niutitang Formation in the Cen'gong block, northern Guizhou Province, China, based on thin-section studies using a scanning electron microscope (SEM), rock cores and field observations. By analyzing the petrology, total organic carbon (TOC), major elements, and illite "crystallinity" we investigated the formation of silica in the Niutitang shales. Our results show that the quartz in the Niutitang shales consists mainly of detrital quartz, biogenic quartz, and quartz that transformed from clay minerals. The amount of excess SiO_2 in the Niutitang shales was approximately 5–35%, and the Al/(Fe + Al + Mn) and Si/(Si + Al + Fe) ratios ranged from 0.45 to 0.85 and from 0.7 to 0.91, respectively, which indicates that the silica was not solely biogenic. The values of excess SiO_2, Al/(Fe + Al + Mn), Si/(Si + Al + Fe), and TOC increased with increasing quartz content, which implies that increasing quartz concentrations were associated with gradual increases in biogenic quartz and decreases in detrital quartz. Quartz from different sources can result in varying rock geomechanical properties and fracture abundance. Compared with pure biogenic quartz or detrital quartz, an appropriate proportion of mixed biogenic quartz and detrital quartz can make rocks more brittle and therefore lead to more fractures. © 2018

14. Recent advances in self-assembly of spin crossover materials and their applications

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Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Key Laboratory of Applied Surface and Colloid Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710119, China
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Abstract: Spin crossover (SCO) complexes can be switched between low spin and high spin states induced by an external perturbation, which can be distinguished with different magnetic, optical, and structural characteristics. These properties make spin crossover materials promising candidates for applications in spintronics, information storage, sensors, digital display, and so on. In this review, we present a concise overview of research progress in last three

years on self-assembly of spin crossover materials and their applications. The review starts with a detailed description of various methods developed for preparation of spin crossover particles and spin crossover films. Then highlights on their typical applications in the fields of sensing, information storage, and actuators. The review concludes with an outline of current limitations and future potential of spin crossover materials. © 2017 Elsevier Ltd

Number of references: 70
Main heading: Self assembly
Controlled terms: Films - Film preparation
Uncontrolled terms: Current limitation - External perturbations - High spin state - Sensing - Spin crossover materials - Spin crossovers - Structural characteristics - Typical application
Classification code: 951 Materials Science
DOI: 10.1016/j.cocis.2017.12.007

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

15. Rapid classification of archaeological ceramics via laser-induced breakdown spectroscopy coupled with random forest

Accession number: 20183905870375

Authors: Qi, Juan (1); Zhang, Tianlong (1); Tang, Hongsheng (1); Li, Hua (1, 2)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of the Ministry of Education, College of Chemistry & Material Science, Northwest University, Xian; 710069, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xian; 710065, China
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Publisher: Elsevier B.V., Netherlands

Abstract: A laser-induced breakdown spectroscopy (LIBS) technique coupled with random forest (RF) was developed and used to classify ceramics from different dynasties. LIBS spectra of the ceramic surfaces were collected, and the major elements (Fe, Ca, Si, Al and Mg) in the ceramics identified using the NIST database. To obtain a better classification results, the LIBS spectra were subjected to five different pre-processing techniques (normalized by maximum integrated intensity, by extremum integrated intensity, mean centering, first-order derivative and second-order derivative). The input variables for RF modeling were selected and optimized by different variable importance threshold values (from 0 to 0.20) and four assessment criteria of out-of-bag (OOB) error, sensitivity, specificity and accuracy. LIBS spectra pre-processed by mean centering with a variable importance threshold value of 0.02 as the input variable were used to construct a RF classification model for different dynasty ceramics. Finally, the classification performance of the RF model was verified by the train set, OOB data and test set. The sensitivity, specificity and accuracy obtained by the RF model for the ceramics samples of test set were 0.8528, 0.9710 and 0.9433, respectively, which indicated a good classification performance. © 2018 Elsevier B.V.

Number of references: 37
Main heading: Decision trees

Controlled terms: Laser induced breakdown spectroscopy - Classification (of information) - Atomic emission spectroscopy - Ceramic materials
Uncontrolled terms: Archaeological ceramics - Ceramics - Classification performance - First order derivatives - Integrated intensities - Laserinduced breakdown spectroscopy (LIBS) - Second order derivatives - Variable importances
Classification code: 716.1 Information Theory and Signal Processing - 812.1 Ceramics - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931.1 Mechanics - 961 Systems Science
DOI: 10.1016/j.sab.2018.09.006
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

16. SVM-based multisensor data fusion for phase concentration measurement in biomass-coal co-combustion

Accession number: 20182005209051
Authors: Wang, Xiaoxin (1, 2); Hu, Hongli (2); Jia, Huiqin (1); Tang, Kaihao (2)
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Corresponding author: Hu, Hongli(hlhu@mail.xjtu.edu.cn)
Source title: Review of Scientific Instruments
Abbreviated source title: Rev. Sci. Instrum.
Volume: 89
Issue: 5
Issue date: May 1, 2018
Publication year: 2018
Article number: 055106
Language: English
ISSN: 00346748
E-ISSN: 10897623
CODEN: RSINAK
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: In this paper, the electrical method combines the electrostatic sensor and capacitance sensor to measure the phase concentration of pulverized coal/biomass/air three-phase flow through data fusion technology. In order to eliminate the effects of flow regimes and improve the accuracy of the phase concentration measurement, the mel frequency cepstrum coefficient features extracted from electrostatic signals are used to train the Continuous Gaussian Mixture Hidden Markov Model (CGHMM) for flow regime identification. Support Vector Machine (SVM) is introduced to establish the concentration information fusion model under identified flow regimes. The CGHMM models and SVM models are transplanted on digital signal processing (DSP) to realize on-line accurate measurement. The DSP flow regime identification time is 1.4 ms, and the concentration predict time is 164 μs, which can fully meet the real-time requirement. The average absolute value of the relative error of the pulverized coal is about 1.5% and that of the biomass is about 2.2%. © 2018 Author(s).
Number of references: 27
Main heading: Support vector machines
Controlled terms: Electrostatics - Probability density function - Pulverized fuel - Hidden Markov models - Coal - Coal combustion - Digital signal processing - Trellis codes
Uncontrolled terms: Digital signal processing (DSP) - Electrostatic sensor - Electrostatic signals - Flow regime identification - Information fusion models - Mel frequency cepstrum coefficients - Multisensor data fusion - Real time requirement

17. Formation patterns of Chang 9 oil reservoir in Triassic Yanchang Formation, Ordos Basin, NW China

Accession number: 20183805826995
Title of translation: 9

Authors: Yao, Jingli (1); Zhao, Yande (1, 2); Liu, Guanglin (1); Qi, Yalin (1); Li, Yuanhao (3); Luo, Anxiang (1); Zhang, Xiaolei (1)
Author affiliation: (1) Research Institute of Exploration and Development, Changqing Oilfield Company, CNPC, Xi'an; 710018, China; (2) BaiLie School of Petroleum Engineering, Lanzhou City University, Lanzhou; 730070, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China

Abstract: Based on analysis of main controlling factors of Chang 9, the source rock, driving force of migration, migration and accumulation modes, reservoir forming stages and model and enrichment law of Chang 9 reservoir were examined. The study showed that the oil of Chang 9 reservoir in the Jiyuan and Longdong areas came primarily from the source rock of Chang 7 Member, but the oil of Chang 9 reservoir in the Zhidan area came primarily from the source rock of Chang 9 Member. There developed lithologic-structural oil reservoirs in Gufengzhuang- Mahuangshan area in northwest Jiyuan, structural-lithologic oil reservoirs in east Jiyuan, and lithologic reservoirs in Huachi-Qingyang area and Zhidan area. The overpressure of Chang 7 Member was the driving force of oil migration. The burial history showed that Chang 9 Member experienced two stages of reservoir forming, the reservoir formed in the Late Jurassic was smaller in charging scope and scale, and the Early Cretaceous was the period when the source rock generated oil and gas massively and the Chang 9 reservoir came into being. Along with the tectonic movements, Chang 7 bottom structure turned from high in the west and lower in the East in the sedimentary stage to high in the east and lower in the west in the hydrocarbon accumulation stage and at last to gentle western-leaning monoclinal structure at present. In Early Cretaceous, the Chang 7 bottom structure was the lowest in the west of Huanxian-Huachi-Wuqi-Dingbian areas, so the oil migrated laterally towards the higher positions around after entering the reservoir. In the main reservoir forming period, Chang 7 bottom had an ancient anticline in Mahuangshan-Hongjingzi area of west Jiyuan, controlling the oil reservoir distribution in west Jiyuan. © 2018, The Editorial Board of Petroleum Exploration and Development. All right reserved.

Number of references: 35
Main heading: Petroleum reservoir engineering
Controlled terms: Petroleum reservoirs - Rocks
Uncontrolled terms: Accumulation modes - Chang 9 member - Driving forces - Enrichment law - Migration and accumulation - Ordos Basin - Source rocks - Yanchang Formation

18. Establishment of hot processing map and work hardening mechanism of 0Cr11Ni2MoVNb stainless steel during hot compression process   (*Open Access*)

Authors: Fu, Jia (1, 2); Li, Fuguo (2); Li, Yongtang (3)
Author affiliation: (1) School of Material Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an; 710072, China; (3) Material Science and Engineering, Taiyuan University of Science and Technology, Taiyuan; 030024, China

Abstract: True stress versus true strain curves of 0Cr11Ni2MoVNb stainless steel were obtained from isothermal compression tests on Gleeble-1500 tester over a wide temperature range from 1223K to 1433K and a strain rate range from 0.01s-1 to 10s-1. Combined with the stress-strain data during hot deformation process, work hardening mechanism of of 0Cr11Ni2MoVNb steel was investigated. Besides, the developed MATLAB code was provided to generate hot processing map to analysis the influencing rule of various deformation parameters on instability region and energy dissipation under the strain degree of 0.3, 0.5 and 0.7. The main result shows that: (1) Based on dynamic materials modeling(DMM), the processing map was established, where the flow instability maybe occur when the strain rate is higher than 0.1 s-1. (2) the temperature and strain rate range for dynamic recovery and recrystallization become lager when strain increases, besides, the globularization intensities increasing obviously with decreasing of temperature and increasing of strain rate. (3) maximum values of the deformation activation energy under various strain degree are concentrated in the deformation region with the temperature over 1373K and the strain rate nearby 0.1s-1, and then the optimum temperature and strain rate ranges for hot ring rolling at different strain of the steel are determined according to the hot processing maps. © Published under licence by IOP Publishing Ltd.

Number of references: 19
Main heading: Strain rate
Controlled terms: Niobium alloys - Dynamic recrystallization - Strain hardening - Titanium alloys - Energy dissipation - Chromium steel - Activation energy - Deformation - Molybdenum alloys - Molybdenum steel - Compression testing - Dynamics - MATLAB - Chromium alloys - Hot rolling - Stainless steel
Uncontrolled terms: Compression process - Deformation activation energy - Deformation parameter - Dynamic recovery and recrystallization - Hot deformation process - Isothermal compression tests - Optimum temperature - Wide temperature ranges
Classification code: 525.4 Energy Losses (industrial and residential) - 531.1 Metallurgy - 535.1.2 Rolling Mill Practice - 537.1 Heat Treatment Processes - 542.3 Titanium and Alloys - 543.1 Chromium and Alloys - 543.3 Molybdenum and

Alloys - 545.3 Steel - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 723.5 Computer Applications - 921 Mathematics
Numerical data indexing: Temperature 1.22e+03K to 1.43e+03K, Temperature 1.37e+03K
DOI: 10.1088/1757-899X/382/2/022029

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

19. Characterization and the improved Arrhenius model of 0Cr11Ni2MoVNb steel during hot deformation process   (*Open Access*)

Accession number: 20183105622633
Authors: Fu, Jia (1, 2); Li, Fuguo (2); Li, Yongtang (3)
Author affiliation: (1) School of Material Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an; 710072, China; (3) Material Science and Engineering, Taiyuan University of Science and Technology, Taiyuan; 030024, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 382
Part number: 2 of 5
Issue: 2
Issue title: 2018 International Conference on Advanced Materials, Intelligent Manufacturing and Automation - 1. Composite Materials, Materials Forming, Nanomaterials and Nanomanufacturing
Issue date: July 13, 2018
Publication year: 2018
Article number: 022027
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Advanced Materials, Intelligent Manufacturing and Automation, AMIMA 2018
Conference date: May 23, 2018 - May 26, 2018
Conference location: China
Conference code: 138024
Sponsor: Nanjing University of Information Science and Technology; University of Information Technology
Publisher: IOP Publishing Ltd
Abstract: True stress versus true strain curves of 0Cr11Ni2MoVNb alloy steel were obtained from isothermal compression tests on Gleeble-1500 tester over a wide temperature range from 1223K to 1433K and a strain rate range from 0.01s-1 to 10s-1. Considering the compensation of strain, the improved Arrhenius model based on Zener-Holloman parameter was evaluated by regression analysis and modified by optimizing parameters of strain hardening exponent as well as the deformation activation energy with a method of five-order polynomial fitting. Then constitutive equation of the flow stress was verified by comparing both the correlation coefficient R and the average absolute relative error (AARE). The main result shows that: (1) the deformation activation energy is insensitive to strain rate under a lower temperature range from 1223K to 1373K; (2) maximum values of the deformation activation energy under various strain degree are concentrated with the temperature over 1373K and the strain rate nearby 0.1s-1. (3) the improved Arrhenius model has a low value level of its parameters R(© Published under licence by IOP Publishing Ltd.
Number of references: 22
Main heading: Strain rate
Controlled terms: Chromium alloys - Activation energy - Alloy steel - Activation analysis - Niobium alloys - Strain hardening - Compression testing - Molybdenum alloys - Regression analysis - Plastic flow - Molybdenum steel - Vanadium alloys

Uncontrolled terms: Correlation coefficient - Deformation activation energy - Hot deformation process - Isothermal compression tests - Optimizing parameters - Strain-hardening exponent - Wide temperature ranges - Zener-Holloman parameters

Classification code: 531.1 Metallurgy - 537.1 Heat Treatment Processes - 543.1 Chromium and Alloys - 543.3 Molybdenum and Alloys - 543.6 Vanadium and Alloys - 545.3 Steel - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 922.2 Mathematical Statistics

Numerical data indexing: Temperature 1.22e+03K to 1.43e+03K, Temperature 1.37e+03K

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Compendex references: YES

Open Access type(s): All Open Access, Gold

Database: Compendex

Data Provider: Engineering Village

20. Statistical analysis of mechanical properties for main cement phases by nanoindentation technique   (*Open Access*)

Accession number: 20184906202742

Authors: Fu, Jia (1, 2); Bernard, Fabrice (1); Kamali-Bernard, Siham (1); Cornen, Marilyne (3)

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Abstract: This work focuses on mechanical properties of some phases of cement-based materials, portlandite (CH), calcite and clinker. Nano-indentation experiment is done on CSM instrument to verify the values of these cement pastes, Young moduli obtained by the averaged experimental load-depth curve is close to other references. The results show that: 1) the Young's modulus of CH averaged by nano-indentation experiment is 39.88GPa, which is in relative good agreement with the 40.30GPa by Constantinides, 36.00GPa by Acker and 45.95GPa by Laugesen. 2) By nano-indentation experiment, elastic moduli of CH, LD C-S-H, HD C-S-H, limestone filler and clinker are separately within the region of 38.8-50.6 GPa, 17.1-27.6GPa, 30.54-36.50 GPa, 79.8-90.6GPa and 94.26-114.18GPa. The elastic moduli are determined by experiment and the SEM image of these phases are verified, which is used to describe the microstructure and mechanical properties of this typical phases in cement paste. © Published under licence by IOP Publishing Ltd.

Number of references: 20

Main heading: Elastic moduli

Controlled terms: Calcite - Cements - Hydrated lime - Nanoindentation - Lime

Uncontrolled terms: Cement based material - Cement paste - Cement phasis - Limestone filler - Load-depth curves - Microstructure and mechanical properties - Nanoindentation techniques - Young modulus
Classification code: 412.1 Cement - 482.2 Minerals - 761 Nanotechnology - 804.2 Inorganic Compounds - 943.2 Mechanical Variables Measurements - 951 Materials Science
Numerical data indexing: Pressure 1.71e+10Pa to 2.76e+10Pa, Pressure 3.05e+10Pa to 3.65e+10Pa, Pressure 3.60e+10Pa, Pressure 3.88e+10Pa to 5.06e+10Pa, Pressure 3.99e+10Pa, Pressure 4.03e+10Pa, Pressure 4.60e+10Pa, Pressure 7.98e+10Pa to 9.06e+10Pa, Pressure 9.43e+10Pa to 1.14e+11Pa
DOI: 10.1088/1757-899X/439/4/042018
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

21. Optical measurements of dynamic wetting and dynamic contact angle

Authors: Hou, Liping (1); Yang, Xiaodong (2); Qi, Jianxia (1, 3); Miao, Runcai (1)
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Corresponding author: Miao, Runcai(rcmiao@snnu.edu.cn)
Abstract: We present a method of optical measurement of the dynamic wetting, the dynamic contact angles, and the changes of the dynamic curved liquid surface corresponding to dynamic wetting, which uses the critical light reflection from dynamic curved liquid surfaces due to the dynamic wetting. When an expanded and collimated laser beam impinges on the dynamic curved liquid surfaces at glancing incidence, the special reflection patterns, which correspond to the different states of the dynamic wetting, are observed. Based on an analytic relation between the bright/dark region width and the height of down-/up-curved liquid surfaces, we proposed a method of optical measurement. In the experiment, a rod such as iron, copper, or aluminum is immersed at constant speed (u = 0.2 mm/s) into a liquid bath and withdrawn out gradually. We measured the changing curve of the dynamic contact angle of the iron rod and the characterization of the dynamic curved liquid surface of the iron rod. © 2018 Optical Society of America.
Number of references: 22
Main heading: Iron
Controlled terms: Light reflection - Liquids - Wetting - Laser beams - Optical data processing - Contact angle
Uncontrolled terms: Collimated laser beams - Constant speed - Curved liquid surface - Dynamic contact angle - Dynamic wetting - Glancing incidence - Optical measurement - Reflection patterns
Classification code: 545.1 Iron - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 744.8 Laser Beam Interactions - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Velocity 2.00e-04m/s
DOI: 10.1364/AO.57.002597
Compendex references: YES
Database: Compendex

22. Effect of CO2 partial pressure on the corrosion behavior of J55 carbon steel in 30% crude oil/brine mixture   (*Open Access*)

Accession number: 20183905857156
Authors: Bai, Haitao (1); Wang, Yongqing (1); Ma, Yun (2); Zhang, Qingbo (2); Zhang, Ningsheng (2)
Author affiliation: (1) Institute of Petroleum and Gas Engineering, Southwest Petroleum University, Chengdu; 610500, China; (2) College of Petroleum Engineering, Key Laboratory of Environment Pollution Control Technology of Oil Gas and Reservoir Protection in Shaanxi Protection, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Yongqing(wangyongqing_swpi@126.com)
Source title: Materials
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Volume: 11
Issue: 9
Issue date: September 18, 2018
Publication year: 2018
Article number: 1765
Language: English
E-ISSN: 19961944
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: The influence of CO_2 partial pressure on the corrosion properties, including corrosion rate, morphology, chemical composition, and corrosion depth, of J55 carbon steel in 30% crude oil/brine at 65 °C was investigated. A corrosion mechanism was then proposed based on the understanding of the formation of localized corrosion. Results showed that localized corrosion occurred in 30% crude oil/brine with CO_2. The corrosion rate sharply increased as the CO_2 partial pressure (P_{co2}) was increased from 0 to 1.5 MPa, decreased from P_{co2} = 1.5 MPa to P_{co2} = 5.0 MPa, increased again at P_{co2} = 5.0 MPa, and then reached a constant value after P_{co2} = 9.0 MPa. The system pH initially decreased, rapidly increased, and then stabilized as CO_2 partial pressure was increased. In the initial period, the surface of J55 carbon steel in the CO_2/30% crude oil/brine mixtures showed intense corrosion. In conclusion, CO_2 partial pressure affects the protection performance of $FeCO_3$ by changing the formation of corrosion scale and further affecting the corrosion rate. © 2018 by the authors.
Number of references: 36
Main heading: Carbon dioxide
Controlled terms: Morphology - Steel corrosion - Corrosion rate - Crude oil - Corrosion protection - Corrosive effects - Iron compounds - Localized corrosion - Mixtures
Uncontrolled terms: Chemical compositions - Constant values - Corrosion behavior - Corrosion depth - Corrosion mechanisms - Corrosion property - Corrosion scale - Protection performance
Classification code: 512.1 Petroleum Deposits - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 545.3 Steel - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 3.00e+01%, Pressure 0.00e+00Pa to 1.50e+06Pa, Pressure 5.00e+06Pa, Pressure 9.00e+06Pa, Temperature 3.38e+02K
DOI: 10.3390/ma11091765
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
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23. A comprehensive investigation on performance of oil and gas development in Nigeria: Technical and non-technical analyses

Accession number: 20182705406183

Authors: Rui, Zhenhua (1); Cui, Kehang (1); Wang, Xiaoqing (2); Chun, Jung-Hoon (1); Li, Yuwei (3); Zhang, Zhien (4); Lu, Jun (5); Chen, Gang (2); Zhou, Xiyu (2); Patil, Shirish (6)
Author affiliation: (1) Massachusetts Institute of Technology, United States; (2) University of Alaska Fairbanks, United States; (3) Northeast Petroleum University, China; (4) Chongqing University of Technology, China; (5) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (6) King Fahd University of Petroleum and Minerals, Saudi Arabia
Corresponding author: Rui, Zhenhua(zhenhuarui@gmail.com)

Abstract: Nigeria is a critical player in the energy industry. However, the industry has concerns over the underperformance of Nigerian oil and gas projects. This study involved comprehensive and quantitative analysis of Nigerian oil and gas project performance from technical and non-technical perspectives with data from 65 projects. Nigerian projects have a high average cost overrun of 38% with an SD of 39%, time overrun of 37% with an SD of 41%, fatality rate of 0.027, and oil spillage ratio of 18.51. The overall performance of Nigerian projects is much worse than that for their global peers. The results demonstrate that Nigerian oil and gas projects are of low subsurface complexity and present low technology challenges, which are advantages for field development; therefore, subsurface complexity and technology challenges are not the major causes of the poor performance. However, non-technical factors (local content, community, security, and partnership) play a significant role. In the study, the degree of the factor's effect is quantified and categorized into groups for guidance. Further, a set of recommended practices was developed based on the risk level to assist project planners, international companies, investors, and policymakers to mitigate risks of developing oil and gas projects. © 2018 Elsevier Ltd

Number of references: 91
Main heading: Gases
Controlled terms: Cost benefit analysis
Uncontrolled terms: Cost and schedule - Oil and gas - Project performance - Subsurface characteristics - Technical analysis
Classification code: 911 Cost and Value Engineering; Industrial Economics - 912.2 Management
Numerical data indexing: Percentage 3.70e+01%, Percentage 3.80e+01%, Percentage 3.90e+01%, Percentage 4.10e+01%
DOI: 10.1016/j.energy.2018.06.027
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

24. Revealing the novel fracture mechanism of the interfaces of TiB2/Fe composite from a first principles investigation

Accession number: 20182705406856
Authors: Li, Y.F. (1); Xiao, B. (2); Wang, G.L. (1); Sun, L. (3); Zheng, Q.L. (1); Liu, Z.W. (1); Gao, Y.M. (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; 710049, China; (2) State Key Laboratory of Electric Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an; 710049, China; (3) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
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Abstract: We investigate the atomic structures, chemical bonding, stability and fracture mechanism of B- and Ti-terminated incoherent TiB_2 (0001)/Fe (111) and semi-coherent TiB_2 (0001)/Fe (100) interfaces using first-principles calculations. It is found that all Ti-terminated interfaces (Ti-HCP, Ti-MT and Ti-OT) as well as B-HCP type TiB_2 (0001)/Fe (100) interface are non-diffusive type. Meanwhile, B-HCP, B-MT and B-OT configurations of TiB_2 (0001)/Fe (111) interface are diffusive type due to the formation of additional Fe_xB intermetallic compound at the original Fe/TiB_2 interface. The calculated works of adhesion and interfacial energies indicate that Ti-HCP and B-HCP are the most stable structures for both incoherent and semi-coherent interfaces. We find that the magnitude of interfacial elastic energy is comparable to that of the chemical energy for the semi-coherent TiB_2 (0001)/Fe (100) interface. The electronic structures of TiB_2/Fe interfaces reveal the formation of Fe-B, Ti-B and Fe-Ti bonds at or next to the interface. Using Griffith's theory, it is predicted that the mechanical failure of TiB_2/Fe composite would initiate at the interface between TiB_2 and Fe. The first principles tensile experiment performed on all Ti-HCP interfaces agrees with the prediction. In the case of B-HCP interfaces, due to the formation of either Fe_xB diffusive layer or strong covalent Fe-B bonds, the mechanical failure eventually occurs in the Fe slab rather than that predicted by Griffith's theory. We also find the formation of diffusive Fe_xB layer could significantly suppress the local magnetic moment of Fe atom at TiB_2/Fe interface due the formation of strong covalent Fe-B bond. © 2018 Acta Materialia Inc.

25. Acceleration of globularization during interrupted compression of a two-phase titanium alloy

Authors: Fan, X.G. (1, 2); Zheng, H.J. (1, 2); Zhang, Y. (1, 2); Zhang, Z.Q. (1, 2); Gao, P.F. (1, 2); Zhan, M. (1, 2); Liu, J. (1, 3)
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Publisher: Elsevier Ltd

Abstract: To characterize the plastic deformation behavior and globularization in multistage primary hot working, isothermally interrupted compression was carried out for a TA15 titanium alloy with initial colony structure at temperature of 900 °C and strain rate of 0.1 s-1. Through-process microstructural developments were examined by Electron Backscattered Diffraction (EBSD) and Scanning Electron Microscope (SEM). The globularization efficiency was analyzed via the evolution of intra-α boundaries, α/β interfaces and α grain size. The analyses show that the globularization efficiency is greatly enhanced by short time holding after a true strain of 0.73. The acceleration in globularization is associated with the formation of transverse intra-α boundaries across the α lamellae, the loss of α/β interfacial coherency, the change in deformation mode and the improvement of deformation homogeneity. Thus, the globularization efficiency increases with interrupted strain, holding time and loading pass. The results can be used to optimize the primary hot working of titanium alloys. © 2018 Elsevier B.V.

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

26. Dynamic characteristics of synergistic effect between profile control technology throughout flooding and ASP flooding

Accession number: 20183805826831
Title of translation:
Authors: Li, Yongtai (1); Kong, Bailing (2); Li, Chen (3)
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Abstract: As compared with polymer flooding, ASP flooding can achieve rather higher enhanced oil recovery, exhibiting its obvious technical strength while applied to old fields in eastern China with high water cut and high recovery. However, during the onsite application of ASP flooding technology, the obvious phenomenon of low-

interfacial-tension breakthrough flow occurs, resulting in the dynamic characteristics of ASP system such as low percolating resistance coefficient, low injecting pressure and high polymer concentration of produced fluid. With the linked polymer system as profile control agent, the profile control technology throughout chemical flooding is characterized by high percolating resistance and strong spread ability, which can overcome and compensate the phenomenon of low-interfacial-tension breakthrough flow as well as solve the problems during ASP flooding such as breakthrough in ASP flooding and subsequent water injection for rapid fingering. The onsite application shows that good synergistic effect is produced by the combined application of ASP flooding technology and profile control throughout flooding, which has considerably improved oil flooding efficiency based on expanding the sweeping volume and thus achieved excellent oil-increase and water-reduction effect, and finally enhanced oil recovery. © 2018, Editorial Office of ACTA PETROLEI SINICA. All right reserved.

Number of references: 22
Main heading: Enhanced recovery
Controlled terms: Floods - Oil well flooding
Uncontrolled terms: ASP flooding - Dynamic characteristics - Enhanced oil recovery - Low interfacial tension breakthrough flow - Profile control - Resistance coefficients
Classification code: 511.1 Oil Field Production Operations
DOI: 10.7623/syxb201806008
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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27. Comparison of mechanical properties of C-S-H and portlandite between nano-indentation experiments and a modeling approach using various simulation techniques (*Open Access*)

Accession number: 20182505321680
Authors: Fu, Jia (1, 2); Kamali-Bernard, Siham (1); Bernard, Fabrice (1); Cornen, Marilyne (3)
Author affiliation: (1) Laboratory of Civil Engineering and Mechanical Engineering, National Institute of Applied Sciences, INSA-Rennes, Rennes Cedex 7; 35708, France; (2) Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China; (3) UMR CNRS 6226 Institut Sciences Chimique de Rennes/Chimie-métallurgie, INSA Rennes, Rennes Cedex 7; 35708, France
Corresponding author: Bernard, Fabrice(Fabrice.Bernard@insa-rennes.fr)
Source title: Composites Part B: Engineering
Abbreviated source title: Compos Part B: Eng
Volume: 151
Issue date: 15 October 2018
Publication year: 2018
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Language: English
ISSN: 13598368
CODEN: CPBEFF
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: This work focuses on elastic modulus of two main constituents of cement based materials: portlandite (CH) and Calcium Silicates Hydrates (C-S-H). At nano-scale, the single CH crystal using Density Functional Theory (DFT) is investigated and the homogenized elastic modulus is obtained to be assessed as the RVE unit, which is used in nano-indentation simulation. Then the monolithic C-S-H structure with the chemical formula: $(CaO)_{1.67}(SiO_2)(H_2O)_{1.75}$ is simulated during the stretch process at strain rate 10^{-3} ps^{-1} by Molecular Dynamics (MD) method using ClayFF field, and its averaged elastic modulus is used to assess Young's moduli of LD and HD C-S-H phases considering the porosity factor. Then at micro scale, FEM is used to simulate the nano-indentation test on ABAQUS software and Young moduli of CH and C-S-H phases are determined by the load-depth curve. Young modulus by the load-depth curve simulated is calculated to compare with the experimental one. The results show that: 1) the Young's modulus calculated by DFT and Reuss-Voigt-Hill (RVH) calculation is 45.46 GPa, which is in quite good agreement with experimental averaged value (39.88 GPa) and with the literature values (45.94 GPa by Laugesen, 52.4 GPa by Speziale et al., 44.69 GPa by Kerisit et al., 46.58 GPa by Holuj et al.). 2) Based on the elastic modulus of the monolithic C-S-H structure by MD simulations, the assessment results on LD C-S-H and HD C-S-H after homogenization are very close to nanoindentation experiments data. 3) By FEM method, the simulated P-h curve is adopted to compare the extent of deviation from the experimental values, which is within an acceptable relative error. The homogenized elastic properties of polycrystals can be obtained by elastic constants of single crystal (using DFT

and RVH estimation), thus can be used to explain the relationship between structure and mechanical properties of CH from nano-scale to micro-scale. Results enable to provide useful parameters for composite cements systems modeling and a method to calculate elastic modulus of other similar structures. © 2018 Elsevier Ltd

Number of references: 62
Main heading: Molecular dynamics
Controlled terms: Compression testing - Density functional theory - Finite element method - Nanoindentation - Silica - Single crystals - ABAQUS - Crystal structure - Calcium silicate - Homogenization method - C (programming language) - Hydration - Software testing - Tensile testing - Elastic moduli - Strain rate
Uncontrolled terms: Cement based material - Elastic properties of polycrystals - Experimental values - Molecular dynamics methods - Nanoindentation experiments - Nanoindentation tests - Portlandite - Simulation technique
Classification code: 723.1.1 Computer Programming Languages - 723.5 Computer Applications - 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally - 921 Mathematics - 921.6 Numerical Methods - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice - 943.2 Mechanical Variables Measurements - 951 Materials Science
Numerical data indexing: Pressure 3.99e+10Pa, Pressure 4.47e+10Pa, Pressure 4.55e+10Pa, Pressure 4.59e+10Pa, Pressure 4.66e+10Pa, Pressure 5.24e+10Pa
DOI: 10.1016/j.compositesb.2018.05.043
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Funding text: The authors acknowledge the financial support provided by China Scholarship Council No. 51174140 , 21671096 , 51275414 . The authors are grateful for the assistance in SEM observations and EDS analysis of the staff of the CMEBA facility (ScanMAT, UMS 2001 CNRS University of Rennes 1) which received a financial support from the Région Bretagne and European Union (CPER-FEDER 2007–2014)
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

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28. Photonic generation of RF and microwave signal with relative frequency instability of 10-15 (*Open Access*)

Accession number: 20181504990728
Authors: Yan, Lu-Lu (1, 2); Zhao, Wen-Yu (1); Zhang, Yan-Yan (1, 2); Tai, Zhao-Yang (1, 2); Zhang, Pan (1); Rao, Bing-Jie (1); Ning, Kai (1, 2); Zhang, Xiao-Fei (1, 2); Guo, Wen-Ge (1, 3); Zhang, Shou-Gang (1, 2); Jiang, Hai-Feng (1, 2)
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Corresponding author: Jiang, Hai-Feng(haifeng.jiang@ntsc.ac.cn)
Source title: Chinese Physics B
Abbreviated source title: Chin. Phys.
Volume: 27
Issue: 3
Issue date: March 2018
Publication year: 2018
Article number: 030601
Language: English
ISSN: 16741056
E-ISSN: 20583834
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: We demonstrate the ultra-stable frequency sources aiming to improve the short-time instability of primary frequency standards. These sources are realized by using photonic generation approach, and composed of ultra-stable lasers, opticalfrequency- combs, optical signal detecting parts, and synthesizers. Preliminary evaluation shows that the sources produce fixed-frequency at 9.54(/9.63) GHz, 10 MHz, and tunable-frequency around 9.192 GHz with relative frequency instability of 10-15 for short terms. © 2018 Chinese Physical Society and IOP Publishing Ltd.
Number of references: 22

29. Effect of Pipe Surface Wettability on Flow Slip Property

Authors: Qi, Hongyuan (1, 2); Liang, Aiguo (3); Jiang, Huayi (1, 2); Chong, Xinmin (3); Wang, Yulong (1, 2)
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Corresponding author: Qi, Hongyuan(hyqi@xsyu.edu.cn)

Abstract: The effect of surface wettability on the slip property continues to be a controversial subject. In this regard, the contact angles and sliding angles of ethylene glycol, tap water, and #26 white oil deposited on plexiglass pipe, 304 stainless-steel pipe, polytetrafluoroethylene pipe, and polypropylene pipe surfaces were determined using a contact angle meter. The slip velocity, slip length, shear stress, and flow increment of the three liquids flowing in the four pipes were calculated using the slip boundary condition, which refers to the laminar flow resistance of a liquid in a fully developed section of a no-slip pipe under a constant pressure drop. The results show that the main characteristic of slip flow at a solid-liquid interface is that at a constant average velocity of the liquid, the wall shear stress decreases with an increase of the contact angle and a decrease of the sliding angle. This in turn, increases the slip velocity and the slip length and results in lower flow resistance of the liquid. The negative slip phenomenon exists at low-speed flow for part of the liquid, which is different from the linear slip length model. The slip length does not tend to be constant until the average velocity increases to a certain value. © 2018 American Chemical Society.

30. Off-axis ultraviolet-written thin-core fiber Bragg grating for directional bending measurements

Accession number: 20174304310867

Authors: Zhang, Lisong (1); Qiao, Xueguang (2); Liu, Qinpeng (1); Shao, Min (1); Jiang, Youhua (1); Huang, Dong (1)
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Publication year: 2018
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ISSN: 00304018
CODEN: OPCOB8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: A directional bending sensor based on thin-core fiber Bragg grating is proposed and demonstrated experimentally. It is inscribed by off-center technique and exposed by 193 nm ArF excimer laser through a phase mask. A series of cladding modes are excited and their intensities are enhanced to about 10 dB. The formation mechanism of those cladding modes is discussed and analyzed. The intensities of these cladding mode resonances is detected for bending and direction with maximum sensitivity 1.93 dB/m1 at 0° to -1.95 dB/m1 at 180°under the curvature varied from 0 m-1to 2.5 m-1. The sensitivity of surrounding temperature is 11.3pm/°C ranging from 25 °C to 60 °C. This all-fiber structure has a great advantage for fiber orientation identification sensor with more convenient manufacture and needless de-localize FBGs. © 2017 Elsevier B.V.

Number of references: 17
Main heading: Fiber Bragg gratings
Controlled terms: Cladding (coating) - Excimer lasers - Fluorine compounds
Uncontrolled terms: Bending sensors - Cladding mode resonances - Formation mechanism - Maximum sensitivity - Off-axis - Off-axis fibers - Surrounding temperature - Thin-core fibers
Classification code: 741.3 Optical Devices and Systems
Numerical data indexing: Decibel 1.00e+01dB, Size 1.93e-07m, Temperature 2.98e+02K to 3.33e+02K
DOI: 10.1016/j.optcom.2017.09.061

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

31. Research Progress in MnO2–Carbon Based Supercapacitor Electrode Materials

Accession number: 20181805125715

Authors: Zhang, Qun-Zheng (1); Zhang, Dian (1); Miao, Zong-Cheng (2); Zhang, Xun-Li (1); Chou, Shu-Lei (3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Science, Xijing University, Xi'an; 710123, China; (3) Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong, North Wollongong; NSW; 2500, Australia
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Language: English
ISSN: 16136810
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CODEN: SMALBC
Document type: Journal article (JA)
Publisher: Wiley-VCH Verlag

Abstract: With the serious impact of fossil fuels on the environment and the rapid development of the global economy, the development of clean and usable energy storage devices has become one of the most important themes of sustainable development in the world today. Supercapacitors are a new type of green energy storage device, with high power density, long cycle life, wide temperature range, and both economic and environmental advantages. In many industries, they have enormous application prospects. Electrode materials are an important factor affecting the performance of supercapacitors. MnO_2-based materials are widely investigated for supercapacitors because of their high theoretical capacitance, good chemical stability, low cost, and environmental friendliness. To achieve high specific capacitance and high rate capability, the current best solution is to use MnO_2 and carbon composite materials. Herein, MnO_2–carbon composite as supercapacitor electrode materials is reviewed including the synthesis method and research status in recent years. Finally, the challenges and future development directions of an MnO_2–carbon based supercapacitor are summarized. © 2018 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim

Number of references: 160
Main heading: Energy storage
Controlled terms: Chemical stability - Sustainable development - Capacitance - Fuel storage - Carbon carbon composites - Fossil fuels - Electrodes - Supercapacitor - Glass ceramics - Manganese oxide
Uncontrolled terms: Carbon composite materials - Carbon material - Development directions - Environmental friendliness - High specific capacitances - Manganese dioxide - Supercapacitor electrodes - Wide temperature ranges
Classification code: 415.4 Structural Materials Other Than Metal, Plastics or Wood - 525.7 Energy Storage - 694.4 Storage - 701.1 Electricity: Basic Concepts and Phenomena - 704.1 Electric Components - 801 Chemistry - 804 Chemical Products Generally
DOI: 10.1002/smll.201702883
Funding Details: Number: 51673157, Acronym: -, Sponsor: National Natural Science Foundation of China;
Funding text: This research was financially supported by the National Natural Science Foundation of China (No. 51673157).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

32. Cracking mechanism of shale cracks during fracturing   (*Open Access*)

Accession number: 20182805522405
Authors: Zhao, X.J. (1, 2); Zhan, Q. (1, 2); Fan, H. (2); Zhao, H.B. (3); An, F.J. (4)
Author affiliation: (1) School of Aeronautics, Northwestern Polytechnical University, Xi'an, Shanxi; 710072, China; (2) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, Shanxi; 710065, China; (3) Xi'An Center of Geological Survey, Shanxi, Xi'an; 710054, China; (4) Dongying Shengfeng Safety Service Corporation, Shandong, Dongying; 257000, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 372
Part number: 1 of 1
Issue: 1
Issue title: 2018 International Conference on Material Strength and Applied Mechanics, MSAM 2018
Issue date: June 12, 2018
Publication year: 2018
Article number: 012046
Language: English

Abstract: In this paper, we set up a model for calculating the shale fracture pressure on the basis of Huang's model by the theory of elastic-plastic mechanics, rock mechanics and the application of the maximum tensile stress criterion, which takes into account such factors as the crustal stress field, chemical field, temperature field, tectonic stress field, the porosity of shale and seepage of drilling fluid and so on. Combined with the experimental data of field fracturing and the experimental results of three axis compression of shale core with different water contents, the results show that the error between the present study and the measured value is 3.85%, so the present study can provide technical support for drilling engineering. © Published under licence by IOP Publishing Ltd.

Number of references: 14
Main heading: Shale
Controlled terms: Stresses - Elastoplasticity - Cracks - Drilling fluids - Rock mechanics
Uncontrolled terms: Cracking mechanisms - Different water contents - Drilling engineering - Elastic-Plastic - Fracture pressures - Stress criterion - Technical support - Tectonic stress fields
Classification code: 483.1 Soils and Soil Mechanics
Numerical data indexing: Percentage 3.85e+00%
DOI: 10.1088/1757-899X/372/1/012046

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

33. Simplified Desirability Level Metrics for Estimation Performance Evaluation

Authors: Mao, Yanhui (1, 2); Gao, Yongxin (3); Gao, Yi (1); Cheng, Weibin (1); Wang, Yuelong (1)
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Abstract: Different estimators have different optimization criteria according to the concrete application considered. Most existing metrics on estimation performance are some averages of estimation error terms, which usually give 'big'

or 'small' results to show the 'bad' or 'good' performance of the evaluated estimators. These kinds of metrics are only insufficient statistics of discrete set of estimation errors in some sense and reflect certain narrow aspects of estimation performance. However, an error distribution function is important information which is usually overlooked. To handle this problem, a metric, called desirability level, is provided in [1] to measure how the probability density function (pdf) of estimation error is relative to a desired pdf. This study firstly proposes extended desirability level metric which has a simpler form compared to an original one. Then a new metric based on principal component analysis is introduced. Illustration examples are given to demonstrate the effectiveness of our proposed measures. © 2018 ISIF

Number of references: 24
Main heading: Probability density function
Controlled terms: Errors - Information fusion - Principal component analysis - Function evaluation - Distribution functions
Uncontrolled terms: Bhattacharyya coefficient - desirability level - desired error pdf - Performance evaluation - Principle component analysis
Classification code: 903.1 Information Sources and Analysis - 921.6 Numerical Methods - 922.1 Probability Theory - 922.2 Mathematical Statistics
DOI: 10.23919/ICIF.2018.8455836
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

34. The Dating of Formation Age of Clastic Rock Based on the Thermal Evolution History of Apatite Fission Track

Accession number: 20191206672440
Title of translation:
Authors: Song, Lijun (1, 2, 3); Liu, Chiyang (3, 4); Yuan, Bingqiang (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Key Laboratory of Tectonics and Petroleum Resources, Ministry of Education, Wuhan; 430074, China; (3) Department of Geology, Northwest University, Xi'an; 710069, China; (4) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an; 710069, China
Corresponding author: Liu, Chiyang(lcy@nwu.edu.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: 43
Issue date: December 2018
Publication year: 2018
Pages: 214-225
Language: Chinese
ISSN: 10002383
CODEN: DIKEEL
Document type: Journal article (JA)
Publisher: China University of Geosciences
Abstract: The dating of formation age of clastic rock is the premise of the division and correlation of sedimentary strata, reasonable reconstruction of prototype basin, better understanding of the regional tectonic evolutions and scientific evaluation of regional resources. According to the principle of "the temperature of sediments or sedimentary rocks increases with increasing burial depth", the formation age of clastic rock can be determined by the initial burial warming time of thermal history which can be reconstructed by means of apatite fission track (AFT) thermal history simulation. Previous applications of AFT thermal history simulation and the example of sandstone sample of Liupanshan indicate that it is feasible to date the formation age of clastic rock by the simulated thermal evolution history, using clastic samples that experienced burial temperatures of less than the closure temperature in the thermal history simulation of fission track. © 2018, Editorial Department of Earth Science. All right reserved.
Number of references: 50
Main heading: Sedimentary rocks
Controlled terms: Apatite - Petroleum geology - Sedimentology - Fission reactions

Uncontrolled terms: Apatite fission tracks - Burial warming time - Clastic rock - Formation time - Thermal history simulation
Classification code: 481.1 Geology - 482.2 Minerals - 512.1 Petroleum Deposits - 932.2.1 Fission and Fusion Reactions
DOI: 10.3799/dqkx.2018.241
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

35. The Analysis of Change Factor of the Simulation of the Bistatic Quantum Radar Cross Section for the Typical Ship Structure

Accession number: 20190106338347
Authors: Fang, Chonghua (1); Chen, Yanjun (2); Xu, Yang (3); Hua, Liang (4)
Author affiliation: (1) Science and Technology on Electromagnetic Compatibility Laboratory, China Ship Development and Design Centre, Wuhan, China; (2) College of Electronic Engineering, Xi'an Shiyou University, Xian, China; (3) Hubei Medical Devices Quality Supervision and Test Institute, Wuhan, China; (4) Institute of Technology Zhejiang Business College, Hangzhou, China
Source title: Proceedings of the 2018 IEEE 7th Asia-Pacific Conference on Antennas and Propagation, APCAP 2018
Abbreviated source title: Proc. IEEE Asia-Pac. Conf. Antennas Propag., APCAP
Part number: 1 of 1
Issue title: Proceedings of the 2018 IEEE 7th Asia-Pacific Conference on Antennas and Propagation, APCAP 2018
Issue date: November 15, 2018
Publication year: 2018
Pages: 190-193
Article number: 8538124
Language: English
ISBN-13: 9781538656488
Document type: Conference article (CA)
Conference name: 7th IEEE Asia-Pacific Conference on Antennas and Propagation, APCAP 2018
Conference date: August 5, 2018 - August 8, 2018
Conference location: Auckland, New zealand
Conference code: 142730
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: The quantum radar cross section (QRCS) measures how 'large' a target looks to a quantum radar which muminates the object with several photons in a pulse. However, the previous studies were mainly with the aim of monostatic cases. In this paper, in response to the critical question about convergence in bistatic quantum radar cross section (BIQRCS), a better alternative of change factor has been suggested and verified by the analytical solution for the typical ship structure, a rectangular plate. Our results wm be particularly instructive in the field of calculation of BIQRCS. © 2018 IEEE.
Number of references: 28
Main heading: Ships
Controlled terms: Radar cross section - Rectangular plate
Uncontrolled terms: Bistatic - change factor - Critical questions - Monostatic - Rectangular plates - Ship structure
Classification code: 716.2 Radar Systems and Equipment
DOI: 10.1109/APCAP.2018.8538124
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

36. Synthesis of a gemini betaine surfactant and its properties as foam drainage agent

Accession number: 20181304965038
Authors: Qi, Hui (1); Bai, Zhonggang (1); Zhang, Qunzheng (2); Lai, Xiaojuan (3)
Author affiliation: (1) Wuqi Oil Production Factory, Yanchang Oilfield Co. Ltd, Yan'an, Shaanxi; 717600, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) College of Chemistry and Chemical Engineering, Shaanxi University of Science and Technology, Xi'an, Shaanxi; 710021, China
Corresponding author: Lai, Xiaojuan(3578466@163.com)

Abstract: A novel betaine Gemini surfactant (B18-4-18) was synthesized by two-step reaction with N,N-dimethyl oleoaminde-propyl- amine, sodium 2-hydroxy-3-chloro propanesulfate and 1,4-di- bromobutane as main raw materials. The structure of the synthesized betaine Gemini surfactant was characterized by Fourier transform infrared spectroscopy (FTIR) and 1H nuclear magnetic resonance spectrum (1HNMR), the surface tension curve and related parameters were obtained by surface tension measurements. The surface tension of oleamide hydroxypropyl betaine (B18) and the Gemini surfactant (B18-4-18) at different concentrations was measured. The experimental results showed that the structure of the synthesized compounds was in confor- mity with the expected structure of the surfactants. The critical micelle concentration of B18 was $6.1 \cdot 10^{-6}$ mol/L, the corre- sponding surface tension was 34.27 mN/m. The critical micelle concentration of B18-4-18 was $5.0 \cdot 10^{-6}$ mol/L, the correspond- ing surface tension was 31.67 mN/m at 258C. The liquid carrying rate of B18 and B18-4-18 can reach 87% and 92% in water re- spectively. The liquid carrying rate of B18 and B18-4-18 can reach 82% and 84% in 150000 mg/L mineralized water. The liquid carrying rate of B18 and B18-4-18 can reach 64% and 67% respectively at 10% condensate oil. © Carl Hanser Publisher, Munich.

Number of references: 11
Main heading: Betaines
Controlled terms: Surface tension - Liquids - Fourier transform infrared spectroscopy - Nuclear magnetic resonance spectroscopy - Micelles - Critical micelle concentration
Uncontrolled terms: Bromobutane - Condensate oil - Foam drainage - Gemini surfactant - Magnetic resonance spectra - Mineralized water - Surface tension measurements - Two-step reactions
Classification code: 801 Chemistry - 801.3 Colloid Chemistry - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Mass_Density 1.50e+02kg/m3, Percentage 1.00e+01%, Percentage 6.40e+01%, Percentage 6.70e+01%, Percentage 8.20e+01%, Percentage 8.40e+01%, Percentage 8.70e+01%, Percentage 9.20e+01%, Surface_Tension 3.17e-02N*m, Surface_Tension 3.43e-02N*m
DOI: 10.3139/113.110551

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

37. Wireless Mesh network routing and channel allocation union optimization algorithm based on game theory

Accession number: 20182605366146

Authors: Zhang, Wei-Wei (1, 2); He, Jia-Feng (3); Gao, Guo-Wang (4); Ren, Li-Li (5); Shen, Xuan-Jing (1)
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Corresponding author: Shen, Xuan-Jing(xjshen@jlu.edu.cn)

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Abbreviated source title: Jilin Daxue Xuebao (Gongxueban)
Volume: 48

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Publication year: 2018
Pages: 887-892
Language: Chinese
ISSN: 16715497
CODEN: JDXGAH
Document type: Journal article (JA)
Publisher: Editorial Board of Jilin University
Abstract: Game theory is a network performance optimization method. For inter-cluster energy efficiency optimization based on cooperative game model with non-transferable earnings, this paper analyzes wireless channel allocation algorithms with constraint to balance the routing protocol. The impacts of game algorithm and greedy algorithm on the throughput are compared using Minimax Nash equilibrium channel allocation strategy. According to request of internet network access protocol in Mesh networks, fair routing protocol between two clusters reasonably distributes channel resource management to cluster header nodes. So each node enjoys its corresponding bandwidth weight, and gets inter-cluster fair routing and channel assignment model based on non-transferable earnings and cooperative game. The simulation results of NS3 show that this method is superior to other algorithms on throughput and effectively improves the network performance. © 2018, Editorial Board of Jilin University. All right reserved.
Number of references: 12
Main heading: Game theory
Controlled terms: MESH networking - Wireless mesh networks (WMN) - Clustering algorithms - Routing protocols - Mesh generation - Internet protocols - Optimization - Energy efficiency - Power management (telecommunication) - Network performance
Uncontrolled terms: Channel allocation - Channel Assignment - Channel resource management - Greedy algorithms - Network access protocol - Optimization algorithms - Performance optimizations - Wireless channel allocations
Classification code: 525.2 Energy Conservation - 525.3 Energy Utilization - 716 Telecommunication; Radar, Radio and Television - 722 Computer Systems and Equipment - 722.3 Data Communication, Equipment and Techniques - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques - 922.1 Probability Theory
DOI: 10.13229/j.cnki.jdxbgxb20170390
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

38. Field experimental investigation of bit stick-out for different soil strengths during deepwater conductor injection

Accession number: 20182805534369
Authors: Kan, Changbin (1, 2); Yang, Jin (2); Yu, Xiaocong (1); Xie, Renjun (3); Wu, Yi (3); Li, Yanjun (4); Chen, Haodong (4); Guan, Shen (4); Liu, Hexing (4); Gu, Chunwei (4); Lin, Siyuan (4); Wang, Huanhuan (2); Abimbola, Fatai (2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an Shanxi; 710065, China; (2) Institute for Ocean Engineering, China University of Petroleum (Beijing), Beijing; 102249, China; (3) D&P Technology Research Institute, CNOOC Research Institute, Beijing; 100027, China; (4) Zhanjiang Limited Branch, CNOOC, Zhanjiang; 524057, China
Corresponding author: Kan, Changbin(kanchangbin@gmail.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 169
Issue date: October 2018
Publication year: 2018
Pages: 825-836
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: The jetting method of deepwater conductor installation is the most widely applied method of underwater well construction. The degree of bit stick-out from the running conductor assembly directly affects the efficiency of the injection process and the bearing safety of the conductor after installation, a key factor in deepwater drilling design. In order to improve the efficiency and safety of conductor installation, it is necessary to determine a reasonable range of bit stick-out for soil formations with different shear strengths. In this paper, a modified model for selecting the bit stick-out is developed based on the theory of water jet ground breaking and the conservation of momentum. The key factors influencing the optimal bit stick-out, such as hydraulic parameters, formation strength, and the ratio of bit-to-conductor dimensions, are also considered. Orthogonal experiments of conductor jetting were conducted in in-situ soil strata with different soil strengths. The influence law of parameter change on bit stick-out is studied, including hydraulic parameters change, bit stick-out variation and running assembly structural change. The results indicate that the bit stick-out is a key factor affecting the efficient jetting of the conductor as well as the bearing capacity of the conductor after injection. For different soil shear strengths, the effects of bit stick-out on the jetting efficiency and bearing capacity are different. In soil strata with low shear strength, the bit stick-out from the running assembly has little influence on the jetting efficiency, but a significant influence on the bearing capacity of the conductor, and hydraulic factors dominate the jetting efficiency and conductor stability. In soil strata with relatively high shear strength, the bit stick-out has a significant influence on the installation efficiency and a relatively small influence on conductor bearing capacity. An optimal drill bit stick-out is then determined that provides the highest jetting efficiency under a given drilling fluid discharge rate. From the field experiments, the optimal bit stick-out is determined to be 147.4 mm, and the range of reasonable bit stick-out is 96.6–198.2 mm. In total, these research results provide a design basis and theoretical guidance for optimizing the bit stick-out of deepwater conductor running assemblies. © 2018 Elsevier B.V.

39. Separation and Characterization of Organic Chlorides in a Chinese Crude Oil

Accession number: 20181204915179
Authors: Li, Xiaohui (1); Ma, Rui (2); Ding, Liang (1); Yuan, Huiying (1); Wu, Bencheng (3); Zhu, Jianhua (3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Shaanxi; 710065, China; (2) SINOPEC Fushun (Dalian) Research Institute of Petroleum & Petrochemicals, Fushun; 113001, China; (3) State Key Laboratory of Heavy Oil Processing, College of Chemical Engineering, China University of Petroleum, Beijing; 102249, China
Corresponding author: Li, Xiaohui(lixiaohui@xsyu.edu.cn)

Publisher: Wiley Blackwell

Abstract: A crude oil from Shengli oilfield of China was extracted with N,N-dimethylformamide (DMF) for separation and enrichment of organic chlorides. The resulting extract with relatively higher chlorine concentration was analyzed with gas chromatography–mass spectrometry (GC/MS). Among the identified heteroatom compounds in the extract sample, nitrogen-containing compounds were most abundant in the extract sample, followed by chlorine-, sulfur-, and oxygen-containing compounds, respectively. Four organochlorines with an aromatic core structure, i.e., 5-chloro-2-methylaniline, 2-chloro-6-methylaniline, 4-chloro-2-nitrotoluene, and 1-(5-chloro-2-hydroxyphenyl)ethanone, were identified from crude oil extract. The dominant abundant organic chloride is 5-chloro-2-methylaniline with relative content of 65.1% in the total of identified organic chlorides, followed by 1-(5-chloro-2-hydroxyphenyl)ethanone of 16.3%, 2-chloro-6-methylaniline of 14.5%, and 4-chloro-2-nitrotoluene of 4.1%, respectively. © 2018 Korean Chemical Society, Seoul & Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim

Number of references: 19

Main heading: Crude oil

Controlled terms: Sulfur compounds - Dimethylformamide - Gas chromatography - Chlorine - Organic solvents - Chlorine compounds - Mass spectrometry

Uncontrolled terms: Chlorine concentration - GC/MS - N ,N-Dimethylformamide - Organic chlorides - Organochlorines - Oxygen-containing compounds - Separation and characterizations - Shengli Oilfield

Classification code: 512.1 Petroleum Deposits - 801 Chemistry - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds

Numerical data indexing: Percentage 1.45e+01%, Percentage 1.63e+01%, Percentage 4.10e+00%, Percentage 6.51e+01%

DOI: 10.1002/bkcs.11422

Compendex references: YES

Database: Compendex

Data Provider: Engineering Village

40. On derivations of commutative multiplicative semilattices

Accession number: 20183305695781

Authors: Wang, Jun Tao (1); Borumand Saeid, Arsham (2, 3); Wang, Mei (4)

Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Mahani Mathematical Research Center, Shahid Bahonar University of Kerman, Kerman, Iran; (3) Department of Pure Mathematics, Faculty of Mathematics and Computer, Shahid Bahonar University of Kerman, Kerman, Iran; (4) Xi'an Traffic Engineering Institute, Xi'an, China

Corresponding author: Wang, Jun Tao(15829065086@163.com)

Source title: Journal of Intelligent and Fuzzy Systems

Abbreviated source title: J. Intelligent Fuzzy Syst.

Volume: 35

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Pages: 957-966

Language: English

ISSN: 10641246

E-ISSN: 18758967

Document type: Journal article (JA)

Publisher: IOS Press BV

Abstract: In this paper, we investigate related properties of some particular derivations and give some characterizations of regular derivations in commutative multiplicative semilattices. Also we give some characterizations of zero derivations in prime commutative multiplicative semilattices. Then we prove that the set of all prefect derivations ideals on commutative multiplicative semilattices with prefect derivations can form a complete Heyting algebra and obtain that there exists a one to one correspondence between the set of all prefect derivations ideals on commutative multiplicative semilattices with prefect derivations and its quotient structure. Finally, we show that the structure of an

idempotent commutative quantale is completely determined by its set of all principal derivations. © 2018 - IOS Press and the authors.

41. A novel quantitative imaging method for oil-based mud: The full-range formation resistivity

Authors: Gao, Jianshen (1); Sun, Jianmeng (2); Jiang, Yanjiao (3); Cui, Likai (2); Zhang, Pengyun (2); Wu, Jie (1)
Author affiliation: (1) Key Laboratory of Education Ministry for Photoelectric Logging and Detection, School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Geosciences, China University of Petroleum, Qingdao; 266580, China; (3) College of Earth Sciences, Northeast Petroleum University, Daqing; 163318, China
Corresponding author: Gao, Jianshen(gjs1109@126.com)
Abstract: Oil-based mud cake with its high resistivity affects severely the quality of borehole microresistivity imaging and has limited the use of microresistivity imaging logging in oil-based mud environment. We have utilized an equivalent model of a resistor and a capacitor to emulate the electrical responses of the high-resistivity mud cake and the formation, respectively, and then developed the electrical coupling relationship between the mud cake and formation, including vertical coupling and parallel coupling. We used the coupling relationship with a formation model to measure both the apparent resistivity and apparent relative permittivity of the formation simultaneously. Furthermore, we have imaged two formation models, one low-resistivity and the other high-resistivity using the vertical and parallel coupling, compared with the standard images obtained in the water-based mud environment corresponding to the same formation models. We have found that the vertical coupling and parallel coupling conquering the bad effect made by oil-based mud cake, can measure quantitatively the resistivity of low-resistivity and high-resistivity formation, respectively, and describe qualitatively the relative permittivity of low-resistivity and high-resistivity formation, respectively. The joint use of the vertical and parallel coupling can deal with the full-range microresistivity imaging of formation. © 2017 Elsevier B.V.

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42. Porous nickel-iron alloys as anode support for intermediate temperature solid oxide fuel cells: II. Cell performance and stability

Accession number: 20184205952174

Authors: Wang, Xin (1); Jia, Lichao (1); Li, Kai (2); Yan, Dong (1); Chi, Bo (1); Pu, Jian (1); Jian, Li (1)
Author affiliation: (1) Center for Fuel Cell Innovation, State Key Laboratory of Material Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science & Technology, Wuhan; 430074, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yan, Dong(Yand@hust.edu.cn)

Abstract: Porous nickel–iron alloy supported solid oxide fuel cells (SOFCs) are fabricated through cost-effective ceramic process including tape casting, screen printing and co-sintering. The cell performance is characterized with humidified hydrogen as the fuel and flowing air as the oxidant. Effects of iron content on the cell performance and stability under redox and thermal cycle are investigated from the point of view of structural stability. Single cells supported by nickel and nickel–iron alloy (50 wt % iron) present relatively high discharge performance, and the maximum power density measured at 800 °C is 1.52 and 1.30 W cm-2 respectively. Nickel supported SOFC shows better thermal stability between 200 and 750 °C due to its dimensional stable substrate under thermal cycles. Posttest analysis shows that a dense iron oxide layer formed on the surface of the nickel-iron alloy during the early stage of oxidation, which prevents the further oxidation of the substrate as well as the functional anode layer, and thus, making nickel-iron supported SOFC exhibits better redox stability at 750 °C. Adding 0.5 wt % magnesium oxide into the nickel-iron alloy (50 wt% iron) can inhibit the metal sintering and reduce the linear shrinkage, making the single cell exhibit promising thermal stability. © 2018 Hydrogen Energy Publications LLC

Number of references: 30
Main heading: Stability
Controlled terms: Anodes - Redox reactions - Solid oxide fuel cells (SOFC) - Iron alloys - Nickel alloys - Screen printing - Iron oxides - Nickel oxide - Magnesia - Thermal cycling - Cost effectiveness - Sintering
Uncontrolled terms: Discharge performance - Intermediate temperature solid oxide fuel cell - Maximum power density - Metal-supported solid oxide fuel cells - Porous nickel - REDOX cycles - Solid oxide fuel cells (SOFCs) - Structural stabilities
Classification code: 545.2 Iron Alloys - 548.2 Nickel Alloys - 702.2 Fuel Cells - 714.1 Electron Tubes - 745.1 Printing - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 911.2 Industrial Economics
Numerical data indexing: Temperature 1.02e+03K, Temperature 1.07e+03K, Temperature 4.73e+02K to 1.02e+03K
DOI: 10.1016/j.ijhydene.2018.09.142

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

43. Experimental study on the corrosion behavior of produced fluid on J55 steel during CO2 flooding

Accession number: 20183605787010

Authors: Zhao, Jin-Sheng (1); Ju, Ying-Jun (2); Tang, Mei-Rong (3); Chen, Rong-Huan (3)

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Corresponding author: Zhao, Jin-Sheng(jinsheng79317@163.com)

Abstract: CO_2 flooding has been widely used in oil field development, but the produced fluid is easy to cause corrosion of tubing and casing. In order to determine the corrosion behavior of produced fluid on J55 steel during CO_2 flooding, we use the simulated oil well produced fluid as corrosive medium and conduct the corrosion simulation experiment at high temperature and high pressure. The experimental results showed that the crystalline grain size of corrosion film surface is different for the different CO_2 partial pressure. When CO_2 partial pressure is greater than the critical pressure, the crystalline grain is not oblique six-party crystal structure, and the grains become small and compact, so the corrosion product film should have a good corrosion inhibition. Both static and dynamic corrosion of samples are serious. The research has a theoretical guiding significance on corrosion protection during CO_2 flooding. © 2018 Trans Tech Publications, Switzerland.

Number of references: 12
Main heading: Carbon dioxide
Controlled terms: Corrosion protection - High temperature corrosion - Steel corrosion - Corrosive effects - Crystal structure - Crystalline materials - Floods - Oil well flooding
Uncontrolled terms: Corrosion behavior - Corrosion inhibition - Corrosion product film - Corrosion simulation - Crystalline grain size - Dynamic corrosions - Guiding significances - High temperature and high pressure
Classification code: 511.1 Oil Field Production Operations - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 545.3 Steel - 804.2 Inorganic Compounds - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.4028/www.scientific.net/KEM.773.179

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

44. Micro pore and throat characteristics and origin of tight sandstone reservoirs: A case study of the Triassic Chang 6 and Chang 8 members in Longdong area, Ordos Basin, NW China

Accession number: 20183805826893
Title of translation: ——6 8

Authors: Liu, Hanlin (1, 2); Yang, Youyun (1, 2); Wang, Fengqin (1, 2); Deng, Xiuqin (3); Liu, Ye (4); Nan, Junxiang (3); Wang, Jin (1); Zhang, Hongjie (1)
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Abstract: The microstructure differences of the Triassic Chang 6 and Chang 8 members tight reservoirs in the Longdong area of Ordos Basin were compared by means of cast thin sections, scanning electron microscope, X-ray diffraction, and constant rate mercury injection. Their pore evolution models were established, and the effects of main diagenesis on densification were examined. The throat is the main factor controlling the physical properties of the Chang 6 and Chang 8 members reservoirs: The lower the permeability, the smaller and the more concentrated the throat radius and the larger the proportion of the throats in the effective storage space. There are several obvious differences between Chang 6 and Chang 8 members: (1) with the increase of permeability, the contribution of the relative large throats to the permeability in the Chang 8 member reservoir is more than that in the Chang 6 member reservoir; (2) the control effect on pore-throat ratio of the nano-throats in the Chang 6 member reservoir is more significant. The sedimentary action determines the primary pore structure of the Chang 6 and Chang 8 members sand bodies, and the diagenesis is the main factor controlling the densification of the reservoirs. Because of the difference in rock fabrics and the chlorite content of Chang 6 and Chang 8, the strong compaction resulted in less porosity reduction (17%) of the Chang 81 reservoir with larger buried depth and larger ground temperature than the Chang 63 reservoir (19%). The siliceous, calcareous and clay minerals cement filling the pores and blocking the pore throat, which is the key factor causing the big differences between the reservoir permeability of Chang 6 and Chang 8 members. © 2018, The Editorial Board of Petroleum Exploration and Development. All right reserved.

Number of references: 34
Main heading: Scanning electron microscopy
Controlled terms: Tight gas - Metamorphic rocks - Petroleum reservoir engineering - Pore structure - Mercury (metal) - Sedimentology
Uncontrolled terms: Mercury intrusion - Micropores - Ordos Basin - Tight sandstone reservoirs - Triassic - Yanchang Formation
Classification code: 481.1 Geology - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.70e+01%, Percentage 1.90e+01%
DOI: 10.11698/PED.2018.02.05
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

45. Routing and channel allocation union optimization in hybrid wireless mesh network

Accession number: 20181304954951
Authors: Zhang, Wei-Wei (1, 2); He, Jia-Feng (3); Gao, Guo-Wang (4); Ren, Li-Li (5); Shen, Xuan-Jing (1)
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Document type: Journal article (JA)
Publisher: Editorial Board of Jilin University

Abstract: In hybrid wireless Mesh network, routing protocols need to distinguish nodes types and consider communication modes.So this paper proposes a method of routing and channel assignment union optimization in hybrid wireless Mesh network, used Greedy Distributed Spanning Tree Routing is a new geographic routing algorithm that is able to find shorter routing path and save energy.For the node continuously changing over time but not being updatable it in real time, we make channel assignment algorithm to replace collecting Bus directly, a model in which a game with incomplete information is used for estimation purposes, and a competitive ranking is estimated by joint cumulative distribution of the competing nodes.The researching result in this paper can increase the effectiveness and reliability, and play an important role to popularize the Mesh network. © 2018, Editorial Board of Jilin University. All right reserved.

Number of references: 15
Main heading: Mesh generation
Controlled terms: Trees (mathematics) - MESH networking - Computer games - Routing algorithms - Wireless mesh networks (WMN) - Game theory
Uncontrolled terms: Channel allocation - Channel Assignment - Cumulative distribution - Distributed spanning tree routing - Game theory models - Geographic routing - Hybrid wireless mesh network - Incomplete information
Classification code: 722 Computer Systems and Equipment - 722.3 Data Communication, Equipment and Techniques - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.1 Probability Theory
DOI: 10.13229/j.cnki.jdxbgxb20170035
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

46. Gravity and magnetic field characteristics and hydrocarbon prospects of the Tobago Basin

Accession number: 20183005615185
Authors: Yuan, Bingqiang (1); Song, Lijun (1); Han, Li (2); An, Shaole (3); Zhang, Chunguan (1)
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Issue: 8
Issue date: October 2018
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Pages: 1586-1601
Language: English
ISSN: 00168025
E-ISSN: 13652478
CODEN: GPPRAR
Document type: Journal article (JA)
Publisher: Blackwell Publishing Ltd

Abstract: The Tobago Basin, which is located offshore northern Venezuela with a southern margin close to Trinidad and Tobago, has an area of approximately 59,600 km2. The Tobago Basin has relatively favourable hydrocarbon prospects, and to date, exploration work has mainly concentrated on small areas of the southwestern portion of the basin. To conduct a comprehensive study of the structural framework of the basin and the characteristics of the basement in order to identify prospective zones for hydrocarbon exploration, shipborne-measured and satellite-

measured gravity data, shipborne-measured magnetic data, and aeromagnetic survey data were analysed. A regularisation filtering method was used to separate and obtain regional and residual gravity and magnetic anomalies. Directional gradients of gravity and magnetic anomalies and the total horizontal gradient and vertical second derivative of gravity anomalies were employed to extract information about fault structures. Regression analysis methods were used to determine the basement depth. The geological significance of the gravity and magnetic fields was examined, the structural framework of the basin was assessed, the basement depth was estimated, and favourable hydrocarbon exploration prospects within the basin were identified. The results show that the Tobago Basin contains complex structures consisting mainly of two groups of faults trending in northeasterly and northwesterly directions and that the major northeasterly trending faults control the main structural configuration and depositional system within the basin. The basement of the Tobago Basin has deep rises and falls. It can be divided into the following four secondary tectonic units: the western sub-basin, the central uplift area, the southern sub-basin, and the northeastern sub-basin. The central uplift area and northeastern sub-basin are most likely to have developed hydrocarbon accumulations and should be targeted for further exploration. © 2017 European Association of Geoscientists & Engineers

Number of references: 27
Main heading: Magnetic fields
Controlled terms: Buildings - Regression analysis - Hydrocarbons - Faulting - Offshore oil well production - Ships
Uncontrolled terms: Gravity and magnetic anomalies - Gravity field - Hydrocarbon prospects - Magnetic field characteristic - Regression analysis methods - Structural characteristics - Structural configurations - Tobago Basin
Classification code: 402 Buildings and Towers - 484.1 Earthquake Measurements and Analysis - 511.1 Oil Field Production Operations - 701.2 Magnetism: Basic Concepts and Phenomena - 804.1 Organic Compounds - 922.2 Mathematical Statistics
Numerical data indexing: Area 5.96e+10m2
DOI: 10.1111/1365-2478.12594
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

47. Prediction of tubular corrosion rate under multiphase dynamics condition based on wavelet neural network

Accession number: 20184606067975
Title of translation:
Authors: Fan, Zheng (1); Fu, Wenyao (2); Zhao, Xiaonan (1); Li, Yazhou (2); Li, Wenhong (3); Mao, Zhenxing (2)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) The 12th Oil Production Plant of Changqing Oilfield Branch Company, China National Petroleum Corporation, Qingyang; Gansu; 745400, China; (3) College of Chemical Engineering, Northwest University, Xi'an; Shaanxi; 710069, China
Corresponding author: Fan, Zheng(fanzheng@xsyu.edu.cn)
Source title: Huagong Jinzhan/Chemical Industry and Engineering Progress
Abbreviated source title: Huagong Jinzhan/Chem. Ind. Eng. Prog.
Volume: 37
Issue: 8
Issue date: August 5, 2018
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Language: Chinese
ISSN: 10006613
Document type: Journal article (JA)
Publisher: Materials China
Abstract: Wavelet neural network model was obtained to predict tubular corrosion rate for oil-gas gathering and transferring under multiphase dynamics condition. The laboratory multiphase dynamics corrosion experiment was adopted firstly in order to gain coupon corrosion rate in conditions of various operating situation for learning and testing of wavelet neural network prediction model. Then, a multi-factors analysis of variance was used to research

the influence on corrosion rate of temperature, pressure, velocity, hydrogen sulfide content, carbon dioxide content, dissolved oxygen content, moisture content, salt content and pH to fulfill factor validity filtration. Finally, the suitable wavelet neural network prediction model was established by the way of learning and testing in the basis of recognition of neuron number of hidden layer. The model reliability was further verified. The result showed that above factors except pressure had great impact on corrosion rate and were considered as effective input signals. 8-17-1 type of wavelet neural network structure exhibited the favorable accuracy and stability when neuron number hidden layer was 17. Levenberg Marquardt optimization algorithm was chosen to train model repeatedly until its root mean square error less than convergence tolerance 0.001. The predicted value was approximately linear with the experimental value. The determination coefficient of learning stage and testing stage was 0.9992 and 0.9967, respectively, and demonstrated the superior correlation. There was also no significant difference between model predicted value and verified one. Therefore, the prediction model of wavelet neural network possessed well capacity of tubular corrosion rate for oil-gas gathering and transferring under multiphase dynamics condition. © 2018, Chemical Industry Press. All right reserved.

Number of references: 21
Main heading: Forecasting
Controlled terms: Corrosion rate - Learning systems - Mean square error - Multilayer neural networks - Dissolved oxygen - Carbon dioxide - Sulfur compounds - Dynamics
Uncontrolled terms: Convergence tolerances - Determination coefficients - Dissolved oxygen contents - Factor validity - Levenberg Marquardt optimizations - Root mean square errors - Wavelet neural network model - Wavelet neural networks
Classification code: 804.2 Inorganic Compounds - 922.2 Mathematical Statistics
DOI: 10.16085/j.issn.1000-6613.2017-1724
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

48. An Experimental Study on Mechanical properties of P110S under Dynamic Loads (*Open Access*)

Accession number: 20183505762253
Authors: Li, Mingfei (1); Cao, Lihu (2); Geng, Hailong (3); Liu, Junyan (3); Dou, Yihua (1)
Author affiliation: (1) School of Aeronautics, Northwestern Polytechnical University, School of Mechanical Engineering, Xi'An Shiyou University, Casing Strength Evaluation and Perforating Column Mechanical Analysis, China; (2) PetroChina Tarim Oilfield Oil and Gas Engineering Research Institute, China; (3) China Petroleum Tarim Oilfield Oil and Gas Engineering Research Institute, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 392
Part number: 6 of 6
Issue: 6
Issue title: International Conference on Manufacturing Technology, Materials and Chemical Engineering, MTMCE - 5. Intelligent Manufacturing and Information Technology
Issue date: August 3, 2018
Publication year: 2018
Article number: 062020
Language: English
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Manufacturing Technology, Materials and Chemical Engineering, MTMCE 2018
Conference date: June 22, 2018 - June 24, 2018
Conference location: Zhuhai, China
Conference code: 138695
Publisher: IOP Publishing Ltd
Abstract: Oil country tubular goods (OCTG) may develop plastic bending, fracture and fatigue failure during the service due to dynamic loads, such as perforation impacts and fluid-induced vibration. This paper was to evaluate strength safety of OCTG under dynamic loading. To gain key parameters of the dynamic constitutive model of materials represented by Johnson-cook. An axial tensile test of the common P110S and an experiment on its mechanical properties under high strain rate were carried out for the first time. The yield limit of P110S under static

loads was 775MPa, which was 2.2% higher than the nominal value (758MPa). The ultimate strength was 835MPa and the yield ratio was 1.08. Since it often requires the yield ratio higher than 1.2 5, the P110S had slightly poor tenacity. Under the strain rates of 500s-1 and 1000s-1, the yield limits of P110S were 15.5% and 41.4% higher than the static measured values. The dynamic loading experiments of P110S under the strain rates of 500s-1 and 1000s-1 were corresponding to the fluid-induced vibration of columns and perforation i mpacts-induced vibration of columns, respectively. Dynamic factor of P110S was determined according to engineering habits. According to conversion and contrast analysis on increment of yield limit under dynamic loading, the final strengths were decreased by 4.5% and 8.6%, respe ctively. Moreover, key parameters of the Johnson-cook dynamic constitutive model of P110S material were determined through experiments for the first time. They could provide key para meters of constitutive model for accurate finite element simulation analysis under dynamic loa ds. © Published under licence by IOP Publishing Ltd.

Number of references: 12
Main heading: Dynamic loads
Controlled terms: Finite element method - Fracture - Vibrations (mechanical) - Constitutive models - Strain rate - Tensile testing
Uncontrolled terms: Dynamic constitutive model - Finite element simulations - Fluid induced vibrations - Fracture and fatigue - High strain rates - Induced vibrations - Oil country tubular goods - Ultimate strength
Classification code: 408.1 Structural Design, General - 921 Mathematics - 921.6 Numerical Methods - 931.1 Mechanics - 951 Materials Science
Numerical data indexing: Pressure 7.58e+08Pa, Pressure 7.75e+08Pa, Pressure 8.35e+08Pa, Percentage 1.55e+01%, Percentage 2.20e+00%, Percentage 4.14e+01%, Percentage 4.50e+00%, Percentage 8.60e+00%
DOI: 10.1088/1757-899X/392/6/062020
Funding Details: Number: 51674199, Acronym: -, Sponsor: -;
Funding text: Fund Project: National Natural Science Fund for Shale Gas Horizontal Well Fracturing and Production Casing Deformation Mechanism and Control Mechanism Research (51674199).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

49. An integrated study on distribution of Cenozoic basins in the South China Sea based on gravity, magnetic and seismic data

Accession number: 20185206284880
Title of translation:
Authors: Feng, Xuliang (1, 3); Zhang, Gongcheng (2); Wang, Wanyin (1); Zhao, Zhigang (2); Qiu, Zhiyun (1); Xie, Xiaojun (2); Ji, Xiaolin (1); Lu, Baoliang (1); Song, Shuang (2)
Author affiliation: (1) Institute of Gravity and Magnetic Technology, College of Geology Engineering and Geomatics, Key Laboratory of Western China's Mineral Resources and Geological Engineering, Xi'an; 710054, China; (2) CNOOC Research Institute, Beijing; 100027, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Gongcheng(zhanggch@cnooc.com.cn)
Source title: Acta Geophysica Sinica
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Publication year: 2018
Pages: 4242-4254
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ISSN: 00015733
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The South China Sea (SCS), as the largest marginal sea in the western Pacific Ocean, hosts more than 30 Cenozoic sedimentary basins that contain abundant oil and gas. Due to the limit of survey data available, some of these basins lack exhaustive studies or have controversial issues, especially in the central and southern regions. For example, different boundaries of basins in the central and southern SCS have been delineated. The relationship between the basins remain unclear and some basins (e.g. Nanweidong basin and Jiuzhang basin) may not attain the level of a true basin, instead merely a depression. In addition, some sags may exist on the periphery of some basins. To address these problems, we have studied the distribution of the Cenozoic basins in the SCS based on

gravity, magnetic seismic data in an integrated way. We collected the latest satellite altimetry gravity and magnetic #T anomalies and analyzed the physical properties of the strata and rocks in the SCS. Then we obtained the Bouguer gravity anomalies by removing the effect caused by seawater and computed the magnetic anomalies reduced to the pole using a varying inclination method. Based on the analysis of the characteristics of the gravity field, we extracted the gravity anomalies of the Cenozoic by using the minimum curvature technique for potential field data separation and inverted the thickness of Cenozoic in the study area under the constraint of seismic profiles. We established the criteria to divide basins and other tectonic units on the basis of the thickness of Cenozoic and the relative relief of the basement assisted with the characteristics of the gravity and magnetic fields and trend lines of the faults combining other geologic data. Then we re-divided the original 36 Cenozoic basins into 24 sedimentary ones and defined their internal tectonic units. The total area of the newly divided basins has increased by about 150 thousand square kilometers. The thickness of the sedimentary layer of Cenozoic basins in the SCS is between 1.5 km and 16 km, which is rather changeable. These basins are divided into six NE or NEE trending sedimentary depression zones, two nearly NS trending sedimentary depression zones and one triangular sedimentary area. The directions of the basin distribution are mainly NE and NEE, followed by NW and nearly NS. Under the control of the major faults, these structures show a 'south three and north three' pattern. © 2018, Science Press. All right reserved.

Number of references: 63
Main heading: Sedimentology
Controlled terms: Tectonics - Settling tanks - Seismic waves - Seismic response - Magnetism - Gravitation
Uncontrolled terms: Bouguer gravity anomalies - Cenozoic - Magnetic anomalies - Potential field datum - Satellite altimetry - Sedimentary basin - Seismic datas - South China sea
Classification code: 481.1 Geology - 484 Seismology - 484.2 Secondary Earthquake Effects - 701.2 Magnetism: Basic Concepts and Phenomena - 931.5 Gravitation, Relativity and String Theory
Numerical data indexing: Size 1.50e+03m to 1.60e+04m
DOI: 10.6038/cjg2018L0567
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

50. Genesis of dolomite reservoir of Middle-Lower Cambrian in Nanpu sag,Bohai Bay Basin

Authors: Wu, Heyuan (1, 2); Wang, Jianguo (3); Wang, Peixi (3); Zhao, Zongju (3); Gong, Faxiong (4)
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Corresponding author: Wu, Heyuan(wuheyuan0702@126.com)
Abstract: The petrologic and geochemical characteristics of Cambrian dolomite in Nanpu Depression, Bohai Bay Basin are studied through outcrop and core observation, thin section analysis, electric log interpretation and geochemical analysis. Meanwhile, the dolomite genesis and dolomitization model are comprehensively analyzed to reveal the evolution characteristics of dolomite reservoir and the development mechanism of favorable reserving horizons. It is considered v†hat the Mid-Lower Cambrian dolomite is the main interior reservoir of Lower Paleozoic in Bohai Bay Basin, developed in the upper and lower part of Fujunshan Formation and the tops of Mantou Formation and Maozhuang Formation. In the unique sedimentary environment from a low-energy open gentle slope to semi-confined-confined hybrid shelf, four sets of favorable dolomite reservoir has been formed adjacent to the sequence boundary at different levels with vertical and stable distribution, where the micritic-silty, silty-fine grained and fine-meso grained dolomite at different horizons have significant geochemical characteristics. It is suggested that three

major kinds of dolomitization environment, i.e., evaporation, burial and high-temperature hydrothermal environment, experiencing four kinds of dolomitization effect, i.e., evaporative pump suction, seepage reflux, burial and hydrothermal fluid, and thus forming the reserving space types dominated by intercrystalline pore, intercrystalline dissolution pore and intergranular dissolution pore. The reservoir is the integration of the dominant syndepositional environment and the auxiliary later-diagenesis to become a replacing area for increasing hydrocarbon reserve and production in Nanpu Oilfield. © 2018, Editorial Office of ACTA PETROLEI SINICA. All right reserved.

Number of references: 41
Main heading: Dolomite
Controlled terms: Dissolution - Sedimentology - Analytical geochemistry - Textures
Uncontrolled terms: Bohai Bay Basin - Buried hill - Cambrians - Dolomite - Nanpu Sag
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 801 Chemistry - 802.3 Chemical Operations
DOI: 10.7623/syxb201804005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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51. Study on distribution features of faults based on gravity data in the South China Sea and its adjacent areas

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Title of translation:
Authors: Luo, Xingang (1); Wang, Wanyin (1); Zhang, Gongcheng (2); Zhao, Zhigang (2); Liu, Jinlan (1); Xie, Xiaojun (2); Qiu, Zhiyun (1); Feng, Xuliang (1, 3); Ji, Xiaolin (1); Wang, Dingding (1)
Author affiliation: (1) Institute of Gravity and Magnetic Technology, College of Geology Engineering and Geomatics, Key Laboratory of Western China's Mineral Resources and Geological Engineering, Xi'an; 710054, China; (2) CNOOC Research Institute, Beijing; 100027, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Wanyin(wwy7902@chd.edu.cn)
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Issue: 10
Issue date: October 1, 2018
Publication year: 2018
Pages: 4255-4268
Language: Chinese
ISSN: 00015733
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Fault structure is a very important interpretation result of gravity anomalies. It is closely related to energy and mineral resources exploration, structural unit division and geotectonic division. Some geological boundaries are bounded by faults, and some energy or mineral resources are associated with faults.In this work we estimated the distribution of the major faults by using the normalized vertical derivative of total horizontal derivative (NVDR-THDR) of the gravity anomalies and inverted the apparent depth of faults by using the gravity anomaly curvature attribute method for the first time in the South China Sea and its adjacent areas. In the study area, 57 faults were inferred, including 14 first-order and 43 second-order ones; strikes of which are dominated by NE and NW directions, followed by NEE, NWW, NNE, and NNW, EW, and nearly NS directions. The length of the most first-order faults is 600~1400 km and the most second-order faults' is 400~900 km. The apparent depth of faults is about 2~10 km, which of first-order faults is 2~10 km and second-order faults 2~8 km. The research results can provide evidence for exploration of oil and gas and mineral resources and basic geological research in the South China Sea and its adjacent areas. © 2018, Science Press. All right reserved.

Number of references: 39
Main heading: Minerals
Controlled terms: Faulting - Mineral exploration - Mineral resources - Petroleum prospecting
Uncontrolled terms: Distribution features - Fault structure - Geological boundaries - Geological research - Gravity anomalies - Research results - South China sea - Vertical derivatives
Classification code: 482.2 Minerals - 484.1 Earthquake Measurements and Analysis - 501.1 Exploration and Prospecting Methods - 512.1.2 Petroleum Deposits : Development Operations

Numerical data indexing: Size 2.00e+03m to 1.00e+04m, Size 2.00e+03m to 8.00e+03m, Size 4.00e+05m to 9.00e+05m, Size 6.00e+05m to 1.40e+06m
DOI: 10.6038/cjg2018L0561
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

52. A feature extraction and visualization method for fault detection of marine diesel engines (*Open Access*)

Authors: Xi, Wenkui (1); Li, Zhixiong (2); Tian, Zhe (3); Duan, Zhihe (4)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Mechatronics Engineering, China University of Mining & Technology, Xuzhou; 221110, China; (3) School of Engineering, Ocean University of China, Qingdao; 266100, China; (4) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710003, China
Corresponding author: Li, Zhixiong(zhixiongli@cumt.edu.cn)
Abstract: The reliability of marine diesel engines is extremely important for a safe navigation. For the condition monitoring of diesels engines, the independent component analysis (ICA) has been proven to be effective in separating useful vibration sources from the engine vibration signals. However, ICA still needs expert knowledge to identify the source of interest. To avoid human factors in ICA, an automatic vibration-source extraction and feature visualization method is proposed in this paper for fault detection of marine diesel engines. In this method, the Stockwell transform was used to construct a time-frequency reference signal to guide the separation process of the kernel ICA. Only the fault-related source was separated by this improved time-frequency supervised kernel ICA (TFSKICA). Then the t-distributed stochastic neighbor embedding (t-SNE) was employed to extract and visualize the fault features. Lastly, the extreme learning machine (ELM) based classifier was built to identify the engine faults in an intelligent manner. Experimental data acquired from a commercial diesel engine was used to evaluate the performance of the proposed method. The analysis results demonstrate that the TFSKICA is able to separate the vibration source of interest for distinct fault feature extraction by the t-SNE in a visualization manner. The fault recognition rate of the proposed method is also better than that of some existing approaches. © 2017 Elsevier Ltd
Number of references: 38
Main heading: Diesel engines
Controlled terms: Marine engines - Feature extraction - Stochastic systems - Vibration analysis - Visualization - Learning systems - Independent component analysis - Condition monitoring - Extraction - Marine pollution - Fault detection
Uncontrolled terms: Extreme learning machine - Fault feature extractions - Independent component analysis(ICA) - Marine Diesel Engines - Separation process - Stochastic neighbor embedding - Stockwell transform - Visualization method
Classification code: 453 Water Pollution - 612.2 Diesel Engines - 671.2 Ship Equipment - 731.1 Control Systems - 802.3 Chemical Operations - 961 Systems Science
DOI: 10.1016/j.measurement.2017.11.035

53. Pound–Drever–Hall laser frequency locking technique based on orthogonal demodulation (*Open Access*)

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Corresponding author: Juan, Su(sjsu@xsyu.edu.cn)

Abstract: A Pound-Drever-Hall laser frequency-locking scheme is developed based on the principle of orthogonal demodulation. In the orthogonal demodulation Pound-Drever-Hall system, three sine signals are generated simultaneously using a direct digital synthesizer. A 0° phase sine signal is used to drive an electro-optic modulator to produce the phase sidebands, and 180° and 270° phase sine signals are used as reference signals for phase demodulation. The phase-modulated laser beam is coupled with a reference Fabry–Pérot cavity, and the reflected beam is sent into a photo-detector whose output is mixed with two orthogonal reference signals to obtain in-phase and orthogonal components of the error signal. An analog switch is used to eliminate the offset of the analog demodulator and channel mismatch. Using an analog-to-digital converter, the two orthogonal components are processed using orthogonal phase sensitive detection to obtain the error signal and PI controlled to acquire the correction signal on a host computer. To increase the resolution and SNR of analog-to-digital conversions, oversampling and averaging is utilized. The Pound-Drever-Hall laser frequency discrimination and tracking system is established and investigated experimentally using the orthogonal demodulation method. A frequency discrimination curve is obtained, and it is observed that the resonant frequency of the Fabry–Pérot cavity can automatically track laser frequency variation. © 2018 Elsevier GmbH

Number of references: 28
Main heading: Demodulation
Controlled terms: Laser beams - Analog to digital conversion - Optical variables measurement - Modulators - Natural frequencies - Locks (fasteners) - Phase modulation - Signal to noise ratio
Uncontrolled terms: Analog to digital converters - Demodulation method - Direct digital synthesizer - Electro-optic modulators - Frequency discrimination - Laser frequency - Orthogonal components - Phase sensitive detection
Classification code: 713.3 Modulators, Demodulators, Limiters, Discriminators, Mixers - 716.1 Information Theory and Signal Processing - 744.8 Laser Beam Interactions - 941.4 Optical Variables Measurements
DOI: 10.1016/j.ijleo.2018.04.098

54. Spiking neural network with synaptic plasticity for recognition

Authors: Li, Jing (1); Liu, I. Bo (2); Gao, Weixin (1); Huang, Xiaoyan (1)

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Key Laboratory of Intelligent Perception and Image Understanding, Ministry of Education, International Research Center for Intelligent Perception and Computation, Xi'an, China
Source title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Technol., Electron. Autom. Control Conf., IAEAC
Part number: 1 of 1
Issue title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Issue date: December 14, 2018
Publication year: 2018
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Abstract: The spiking neural network referred to the third generation of neural network simulates the mechanisms of neurons and networks in brain. It has the distributed computational mechanism and robust information processing way like the nervous system. This paper describes that a spiking neural network with the synaptic plasticity recognizes the input scenes. The Digital spiking silicon neuron (DSSN), a mathematical structure-based qualitative model, is used to reproduce the various behaviors of neurons. We also designed the synapse model in our spiking neural network to precisely describe the dynamics of the transmitter release and the postsynaptic current generation. There are three layers in our network. The spiking neurons in layer 1 and 2 with special receptive fields perform the edge detection and orientation selection, respectively. The synaptic plasticity is realized in synaptic connections between spiking neurons in layer 2 and the output layer. The changing of connection is based on the Hebbian learning rule which supposes that the time difference of two spikes modifies the value of connection. We evaluated our spiking neural network with the task of image recognition. The spiking neurons in the output layer fire with the high frequency in response to their relevant input scenes. The simulation results show that our spiking neural network can successfully recognize the input scenes learned before. The recognition is robust against various distortions. © 2018 IEEE.
Number of references: 22
Main heading: Neural networks
Controlled terms: Network layers - Edge detection - Image recognition - Distributed computer systems - Neurons
Uncontrolled terms: Current generation - High frequency HF - Mathematical structure - Qualitative model - Spiking neural networks - Synaptic connections - Synaptic plasticity - Time-differences
Classification code: 461.9 Biology - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications
DOI: 10.1109/IAEAC.2018.8577629
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

55. The magnetic basement and Curie surface depth in the South China Sea and adjacent areas derived from magnetic data

Accession number: 20185206284882

Title of translation:

Authors: Ma, Jie (1); Wang, Wanyin (1); Luo, Xingang (1); Yao, Pan (1); Zhao, Zhigang (2); Qiu, Zhiyun (1); Ji, Xiaolin (1); Lu, Baoliang (1); Feng, Xuliang (1, 3)
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Abstract: The magnetic basement and the Curie surface are two important interfaces for studying geological structure and thermal evolution of crust and lithosphere. This work focused on the geologic effects of the deep structures and thermal activities reflected by these two interfaces of the South China Sea and adjacent areas. The minimum-curvature method was used to obtain the reduction-to-the pole magnetic anomalies produced by the magnetic basement and the Curie surface. Based on study of inversion in a dual-interface model, the depths of both he magnetic basement and Curie surface were determined. Then we have analyzed the depths of the magnetic basement and Curie surface and their distribution characteristics, and discussed the correlation between the magnetic basement, Curie surface and the depth of the Cenozoic and its geological implications. The results show that the magnetic basement depth of the study area is 5~20 km, dominated by NE and NEE strikes on the south and north sides of the ocean basin, and NW and NNW in the periphery of the Indo-China peninsula, respectively. The depth of the Curie surface is 15~32 km, and is characterized by "shallow in ocean crust and deep in periphery" and shallow in north and deep in south-south in the rim. While in the ocean basin Curie is "shallow in the southwest and deep in the east". In the contact zone between the oceanic and the continental Curie surface shows a a step fashion. Correlation between the depths of magnetic basement and Cenozoic (CDMBC) is mostly distributed in an irregular shape, showing a positive correlation in the sedimentary center of the basin. The depths of Curie surface and Cenozoic (CDCSC) are mostly positively correlated trending in NE and NEE, consistent with the basin's trend. CDMBC is positively correlated and CDCSC is negatively correlated in the Yinggehai, Qiongdongnan, southern Wan'an and Zengmu basins. The correlation feature of Yinggehai is presumed to be that the inside is uplifted with the deformation of the lithosphere, while the magnetic basement is subsided, causing large-scale subsidence. The correlation feature of the Qiongdongnan basin is presumed to be that the Curie surface declines with downward warping deformation of the lithosphere, and the sedimentary center is consistent with the direction of the magnetic basement sinking. The correlation between the Wan'an and Zengmu basins is presumed to be that the deep fluid directly enters the crust along the fault of the western margin of the South China Sea, causing the rise of the Curie surface. © 2018, Science Press. All right reserved.

Number of references: 62
Main heading: Deformation
Controlled terms: Magnetism - Structural geology - Buildings
Uncontrolled terms: Basin - Correlation features - Distribution characteristics - Geological structures - Magnetic basement - Minimum curvature method - Positive correlations - South China sea
Classification code: 402 Buildings and Towers - 481.1 Geology - 701.2 Magnetism: Basic Concepts and Phenomena
Numerical data indexing: Size 1.50e+04m to 3.20e+04m, Size 5.00e+03m to 2.00e+04m
DOI: 10.6038/cjg2018L0574
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

56. Adaptive UPF based interacting multiple model algorithm for integrated navigation

Accession number: 20184606071067

Authors: Gao, Yi (1, 2, 3); Mao, Yanhui (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, Shaanxi province; 710065, China; (2) School of Engineering and Computer Science, University of the Pacific, Stockton; CA; 95211, United States;

(3) School of Electronic Information Engineering, Xi 'an Technological University, Xi' an, Shaanxi province; 710021, China

Abstract: To resolve issues such as the degraded particle performance and difficulty in selecting the importance density function of particle filtering, this paper introduces an adaptive Unscented particle filter (UPF) based interacting multiple model algorithm. The method benefits from both the interacting multiple model filter and Unscented particle filter. It first uses the Unscented kahnan filter to get the latest measurement information at k time for each model. And then, it takes interaction of the corresponding particle as input of each model, after matching the model and updating the probability of model and using residual re-sampling. Finally, it outputs interaction of the corresponding particle for each model. The proposed algorithm has been used in the GPS/DR integrated navigation system. Simulation results and their analysis demonstrate that the position and velocity error calculation of the proposed algorithm is much better than the Unscented particle filter, and the algorithm certainly improves the calculation accuracy of the GPSIDR integrated navigation system. © 2018 IEEE.

57. A calculation model of critical liquid-carrying velocity of gas wells considering the influence of droplet shapes

Authors: Pan, Jie (1, 2); Wang, Wujie (1); Wei, Yaoqi (1); Chen, Junbin (1); Wang, Liangliang (3)
Author affiliation: (1) College of Petroleum Engineering, Post-doctoral Innovation Base, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Post-doctoral Research Station of Oil and Gas Engineering, China University of Petroleum, Beijing; 102249, China; (3) No.4 Gas Production Plant, PetroChina Changqing Oilfield Company, Ordos; Inner Mongolia; 017300, China
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Issue date: January 25, 2018
Publication year: 2018
Pages: 67-73
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency

Abstract: To clarify the existence of liquid loading and optimize the production allocation in gas wells, we constructed a model for calculating the critical liquid-carrying velocity based on the equal relationship between the total surface free energy of droplets and the total turbulent kinetic energy of gas and considering the droplet size, droplet deformation and the influence of droplet deformation on surface free energy. Based on the ellipsoid hypothesis and by analyzing the influence of droplet deformation on the surface area and free energy of droplets, the equation for calculation of the maximum diameter of windward surface of droplets was developed. With consideration to the influence of droplet deformation on drags, the expression for the critical liquid-carrying velocity of ellipsoid droplets was clarified. With consideration to the influence of deformation and internal flow of droplets, the drag coefficient of the ellipsoid droplets was determined to be 20% higher than that of the Brauer Model for spheroid. A functional relationship between the deformation parameter K and the critical Weber number Wec was established based on the energy conservation law. In addition, the calculation results were reduced by 10%. During the course, the impacts of gas-well pressure and temperature on surface tension were taken into account. The proposed model was compared with the models developed by Turner, Li Min, Wang Yizhong, Wang Zhibin and Xiong Yu, and on-site verification was conducted in 44 gas wells. The results show that the proposed model provides the prediction results in best coincidence with the actual performance of gas wells. In conclusion, the proposed model can be used to predict liquid loading in gas wells effectively. © 2018, Natural Gas Industry Journal Agency. All right reserved.

Number of references: 33
Main heading: Liquids
Controlled terms: Kinetics - Gases - Loading - Natural gas wells - Surface tension - Drops - Velocity - Deformation - Drag coefficient - Kinetic energy
Uncontrolled terms: Critical weber numbers - Deformation parameter - Gas well - Liquid droplets - Liquid loading
Classification code: 512.2.1 Natural Gas Fields - 631.1 Fluid Flow, General - 691.2 Materials Handling Methods - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.00e+01%, Percentage 2.00e+01%
DOI: 10.3787/j.issn.1000-0976.2018.01.008
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

58. Semi-active optimization control of space grid model with self-reset piezoelectric friction damper

Accession number: 20190806521936
Authors: Liu, Yang (1, 2); Zhan, Meng (3); Weng, Guangyuan (4); Wang, Sheliang (1)
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Corresponding author: Liu, Yang(yangliu1106@163.com)
Source title: Annales de Chimie: Science des Materiaux
Abbreviated source title: Ann. Chim. Sci. Mater.
Volume: 42
Issue: 4
Issue date: 2018
Publication year: 2018
Pages: 489-501
Language: English
ISSN: 01519107
E-ISSN: 19585934
CODEN: ANCPAC

Document type: Journal article (JA)
Publisher: Lavoisier

Abstract: This paper attempts to reduce the seismic hazards of building structure with an intelligent material called piezoelectric ceramics (PC). Specifically, the author designed a selfreset piezoelectric friction damper (SRPFD) based on laminated PC, and the number and position of dampers were optimized with genetic algorithm (GA) on the Matlab. On this basis, a large 24m×24m square pyramid space truss structure model was created, and the GA was optimized by the Gads toolbox. Then, 60 SRPFDs were selected to analyze the seismic response of the building structure. The results show that the control effect of the SRPFDs was improved by nearly 32.5% after the optimization. This research findings shed new light on semi-active optimization control of space grid models. © 2018 Lavoisier.

Number of references: 18
Main heading: Piezoelectric ceramics
Controlled terms: Friction - Seismic response - Genetic algorithms - Piezoelectricity
Uncontrolled terms: Building structure - Optimal layout - Optimization control - Piezoelectric friction damper - Seismic hazards - Semiactive control - Space truss structure - Square pyramid
Classification code: 484.2 Secondary Earthquake Effects - 701.1 Electricity: Basic Concepts and Phenomena - 708.1 Dielectric Materials - 812.1 Ceramics
Numerical data indexing: Percentage 3.25e+01%
DOI: 10.3166/ACSM.42.489-501

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

59. An improved SMO algorithm for financial credit risk assessment – Evidence from China's banking

Accession number: 20174504367223
Authors: Zhang, Qi (1, 3); Wang, Jue (1, 4); Lu, Aiguo (2); Wang, Shouyang (1); Ma, Jian (3)
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Corresponding author: Wang, Jue(wjue@amss.ac.cn)
Source title: Neurocomputing
Abbreviated source title: Neurocomputing
Volume: 272
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ISSN: 09252312
E-ISSN: 18728286
CODEN: NRCGEO
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: With rapid development of financial services and products, credit risk assessment has recently gained considerable attention in the field of financial risk management. In this paper, an improved credit risk assessment approach is presented. Based on the credit data from China Banking Regulatory Commission (CBRC), a multi-dimensional and multi-level credit risk indicator system is constructed. In particular, we present an improved sequential minimal optimization (SMO) learning algorithm, named four-variable SMO (FV-SMO), for credit risk classification model. At each iteration, it jointly selects four variables into the working set and an theorem is proposed to guarantee the analytical solution of sub-problem. The assessment is made on China credit dataset and two benchmark credit datasets from UCI database and CD-ROM database. Experimental results demonstrate FV-SMO is competitive in saving the computational cost and outperforms other five state-of-the-art classification methods in credit risk assessment accuracy. © 2017

Number of references: 36
Main heading: Iterative methods

Controlled terms: CD-ROM - Risk assessment - Optimization - Computation theory - Finance - Risk management
Uncontrolled terms: Classification methods - Computational costs - Credit risk assessment - Financial credits - Financial risk management - Regulatory commission - Sequential minimal optimization - Working set
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 722.1 Data Storage, Equipment and Techniques - 914.1 Accidents and Accident Prevention - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1016/j.neucom.2017.07.002
Funding Details: Number: KACX1-YW-0906, Acronym: -, Sponsor: -; Number: 71271202, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: YIPA, Sponsor: Youth Innovation Promotion Association;
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Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

60. Predictive Model of Tensile Strength in Flat Clinching   (*Open Access*)

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Title of translation:
Authors: Han, Xiaolan (1); Chen, Chao (2); Liu, Chen (3); Zhao, Shengdun (2); Zhao, Yongqiang (4)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (3) Faculty of Mechanical and Precision Instrument Engineering, Xi'an University of Technology, Xi'an; 710048, China; (4) School of Mechanical Engineering, Shaanxi University of Technology, Hanzhong; 723001, China
Corresponding author: Han, Xiaolan(hanxiaolang007@163.com)
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Abbreviated source title: Jixie Gongcheng Xuebao
Volume: 54
Issue: 24
Issue date: December 20, 2018
Publication year: 2018
Pages: 61-68
Language: Chinese
ISSN: 05776686
CODEN: CHHKA2
Document type: Journal article (JA)
Publisher: Chinese Mechanical Engineering Society
Abstract: Flat clinching has become a research hotspot in the automotive lightweight technology field, but the strength of the clinched joint is obtained by many destructive tests. It has the disadvantage of high cost and long period. Therefore, three failure modes and causes of neck failure, pull-out failure and mixture failure during the tensile strength tests were analysed. The simulation model of flat clinching was established. The geometric parameters of the clinched joint were obtained, and the accuracy of the numerical simulation was verified through section observation tests of the clinched joint. The predictive model of tensile strength model was established based on the principal stress method during pipe drawing process. Further the correctness of the tensile strength predictive model was verified based on numerical simulation through the tensile strength tests. And the effect of bottom thickness on tensile strength was studied. The results show that the maximum error between predicted tensile strength and experimental value of clinched joints is 14.8%. The main errors are derived from the parameters such as work hardening coefficient, friction coefficient and bottom thickness of clinched joints; The tensile strength of clinched joints increases with the decrease of the bottom thickness. When the bottom thickness is 0.50 mm, the tensile strength of Al5052-Al5052 is the largest, and the clinched joints occurs mixed failure. An efficient and low-cost method for evaluating the forming quality of clinched joints is established, it also has important directive significance for the optimization of the geometric parameters of clinched joints in flat clinching. © 2018 Journal of Mechanical Engineering.
Number of references: 22
Main heading: Tensile strength
Controlled terms: Metal drawing - Numerical models - Strain hardening - Friction

Uncontrolled terms: Directive significance - Experimental values - Flat clinching - Friction coefficients - Lightweight sheets - Lightweight technology - Predictive modeling - Work hardening coefficient
Classification code: 535.2 Metal Forming - 537.1 Heat Treatment Processes - 921 Mathematics
Numerical data indexing: Percentage 1.48e+01%, Size 5.00e-04m
DOI: 10.3901/JME.2018.24.061
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

61. Competitive growth of dendrites and eutectic in Al2O3/Y3Al5O12 eutectic ceramics

Accession number: 20183805819904
Authors: Zhong, Yujie (1); Zhang, Ke (1); Wang, Xu (2); Zhang, Wen (2); Sun, Qian (3)
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Corresponding author: Wang, Xu(xwang@alum.imr.ac.cn)
Source title: Ceramics International
Abbreviated source title: Ceram Int
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Publication year: 2018
Pages: 23301-23304
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Great insight so far have been gained into the eutectic structure of the non-faceted/non-faceted and non-faceted/faceted eutectics. However, little studies were devoted to the competitive growth of the dendrites and eutectic in faceted/faceted eutectics. Here, Y3Al5O12 dendrites were discovered in the Al2O3/Y3Al5O12 eutectic ceramics having an exactly eutectic composition. The growth direction of the Y3Al5O12 dendrite is . The tips of the Y3Al5O12 dendrites are pyramid-like because of its high melting entropy and cubic structure. A skewed couple zone was proposed to explain the reason for the Y3Al5O12 dendrites appearing. © 2018 Elsevier Ltd and Techna Group S.r.l.
Number of references: 30
Main heading: Eutectics
Controlled terms: Aluminum oxide - Ceramic materials - Solidification - Yttrium compounds - Alumina
Uncontrolled terms: Competitive growth - Dendritic growth - Eutectic ceramics - Eutectic composition - Eutectic solidification - Eutectic structures - Growth directions - Solidification microstructures
Classification code: 531.2 Metallography - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 812.1 Ceramics
DOI: 10.1016/j.ceramint.2018.09.047
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

62. Lattice boltzmann simulation of fluid flow in mismatched rough fractures based on Gaussian distribution

Accession number: 20183505751538
Title of translation: Gaussian
Authors: Qu, Guanzheng (1); Peng, Jiao (1); Zhao, Kai (1); Gao, Wei (2); Randy, Hazlett (3); Zhou, Desheng (1); Qu, Zhanqing (4); Jiang, Hailong (1)
Author affiliation: (1) College of Petroleum Engineering in Xi'an Shiyou University, Xi'an; 710065, China; (2) Oil & Gas Technology Research Institute, Changqing Oilfield Company, PetroChina, Xi'an; 610065, China; (3) University of Tulsa, Tulsa; 74104, United States; (4) School of Petroleum Engineering in China University of Petroleum(East China), Qingdao; 266580, China
Source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)
Abbreviated source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)
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Issue: 3
Issue date: June 20, 2018
Publication year: 2018
Pages: 88-97
Language: Chinese
ISSN: 16735005
Document type: Journal article (JA)
Publisher: University of Petroleum, China
Abstract: It is of great significance to understand the flow behavior in rough fractures for unconventional resource development, such as shale gas and oil. In this study, a Gaussian function was introduced to describe the fracture surface property based on the fracture surface height distribution in shale rocks. A 3D rough fracture model was built in the consideration of different parameters, including roughness, fractal dimension, mismatch length and anisotropy. A Lattice Boltzmann method combined with the orthogonal experimental results and grey correlation analysis was adopted to study the flow behavior in 3D mismatch rough fractures. The results show that the permeability in rough fractures is approximately 20%-50% of that in parallel plate fractures, and the permeability in mismatched fractures is slightly lower than that in matched fractures and a backflow may occur in the mismatched area. In order to ensure the fracture aperture, it should avoid to engender a mismatch in fractures, and decrease the fracture surface roughness and fractal dimension. The aperture and roughness of fracture are the two most important influencing factors to the fracture permeability, and the fractal dimension, anisotropy and mismatch length are also important factors. The roughness distribution along the fracture surface also has a great influence on the fracture permeability. In the case study of shale rocks, with the anisotropic coefficient increases, the fracture permeability firstly increases and then decreases, with a maximum value appears when the anisotropic coefficient is 0.7. © 2018, Periodical Office of China University of Petroleum. All right reserved.
Number of references: 21
Main heading: Fracture
Controlled terms: Correlation methods - Gaussian distribution - Resource valuation - Surface roughness - Anisotropy - Fractal dimension - 3D modeling
Uncontrolled terms: Anisotropic coefficients - Grey correlation analysis - Lattice Boltzmann method - Lattice Boltzmann simulations - Mismatch length - Rough fractures - Roughness distributions - Unconventional resources
Classification code: 723.2 Data Processing and Image Processing - 921 Mathematics - 922.1 Probability Theory - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 2.00e+01% to 5.00e+01%
DOI: 10.3969/j.issn.1673-5005.2018.03.011
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

63. Numerical and experimental investigations of the two-step clinching process with a bumped die (*Open Access*)

Accession number: 20184406028983
Authors: Chen, Chao (1, 2, 3); Ishida, Tohru (2); Wang, Yongfei (3); Zhao, Shengdun (3); Han, Xiaolan (4)
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770-8506, Japan; (3) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (4) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Journal of Advanced Mechanical Design, Systems and Manufacturing
Abbreviated source title: J. Adv. Mech. Des. Syst. Manuf.
Volume: 12
Issue: 6
Issue date: 2018
Publication year: 2018
Article number: JAMDSM0109
Language: English
E-ISSN: 18813054
Document type: Journal article (JA)
Publisher: Japan Society of Mechanical Engineers

Abstract: In order to increase the shearing strength and reduce the protrusion height of the clinched joint, a two-step clinching process was designed and investigated in the study. A clinching machine produced by Express Company and extensible dies were used to produce the clinched joint, while a flat die and a bumped die were used to produce the two-step clinched joint. A 2D model in the software DEFORM-2D was applied to analyze the material flow and effective stress distribution of the two-step clinched joint. To validate the numerical model, experimental tests were carried out to get the main geometrical parameters of the two-step clinched joint. The two-step clinching method could increase the neck thickness with the decrease of the protrusion height. Shearing tests were carried out to obtain the shearing strengths of the two-step clinched joints. The results showed that the shearing strength and energy absorption of the joint could be increased by the two-step clinching process because of the increased neck thickness. The two-step clinching method was proved to be effective for increasing the shearing strength and energy absorption of the clinched joint. © 2018 The Japan Society of Mechanical Engineers.

Number of references: 33
Main heading: Energy absorption
Controlled terms: Geometry - Dies - Shearing
Uncontrolled terms: Deform - Effective stress distribution - Experimental investigations - Experimental test - Material Flow - Shearing strength - Strength - Two-step clinching
Classification code: 534.1 Foundries - 603.2 Machine Tool Accessories - 604.1 Metal Cutting - 921 Mathematics
DOI: 10.1299/jamdsm.2018jamdsm0109
Funding Details: Number: 51675414,51805416, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The research work is supported by the National Natural Science Foundation of China (Grant No. 51805416) and National Natural Science Foundation of China (Grant No. 51675414).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

64. Pitting corrosion and microstructure of J55 carbon steel exposed to CO2/crude oil/brine solution under 2-15 MPa at 30-80 °C (*Open Access*)

Accession number: 20184806167400
Authors: Bai, Haitao (1); Wang, Yongqing (1); Ma, Yun (2); Ren, Peng (3); Zhang, Ningsheng (2)
Author affiliation: (1) Institute of Petroleum and Gas Engineering, Southwest Petroleum University, Chengdu; 610500, China; (2) College of Petroleum Engineering, Key Lab of Environment Pollution Control Tech. of Oil Gas Reservoir Protection in Shaanxi Protection, Xi'an Shiyou University, Xi'an; 710065, China; (3) Xi'an Taijin Industrial Electrochemical Technology Co. Ltd., Xi'an; 710016, China
Corresponding author: Wang, Yongqing(wangyongqing_swpi@126.com)
Source title: Materials
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Issue date: November 26, 2018
Publication year: 2018
Article number: 2374
Language: English
E-ISSN: 19961944

Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: This study aimed to evaluate the corrosion properties of J55 carbon steel immersed in CO2/crude oil/ brine mixtures present in the wellbores of CO2-flooded production wells. The main corroded position of wellbore was determined and wellbore corrosion law was provided. Corrosion tests were performed in 30% crude oil/brine solution under the simulated temperature (30-80 °C) and pressure (2-15 MPa) conditions of different well depths (0-1500 m). The corrosion behavior of J55 carbon steel was evaluated through weight-loss measurements and surface analytical techniques, including scanning electron microscopy, energy dispersive spectrometer, X-ray diffraction analysis, and optical digital microscopy. Corrosion rate initially increased and then decreased with increasing well depth, which reached the maximum value of 1050 m. At this well depth, pressure and temperature reached 11 MPa and 65 °C, respectively. Under these conditions, FeCO3 and CaCO3 localized on sample surfaces. Microscopy was performed to investigate corrosion depth distribution on the surfaces of the samples. © 2018 by the authors.
Number of references: 28
Main heading: Mixtures
Controlled terms: Oil field equipment - Steel corrosion - Calcium carbonate - Iron compounds - Boreholes - Carbon dioxide - X ray powder diffraction - Calcite - Spectrometers - Corrosion rate   - Corrosive effects - Crude oil - Pitting - Scanning electron microscopy - Oil wells
Uncontrolled terms: CO2 corrosion - Corrosion behavior - Corrosion depth - Corrosion property - Digital microscopy - Energy dispersive spectrometers - Pressure and temperature - Weight loss measurements
Classification code: 482.2 Minerals - 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 539.1 Metals Corrosion - 545.3 Steel - 741.3 Optical Devices and Systems - 804 Chemical Products Generally - 804.2 Inorganic Compounds
Numerical data indexing: Temperature 3.03e+02K to 3.53e+02K, Temperature 3.38e+02K, Percentage 3.00e+01%, Pressure 1.10e+07Pa, Pressure 2.00e+06Pa to 1.50e+07Pa, Size 0.00e+00m to 1.50e+03m, Size 1.05e+03m
DOI: 10.3390/ma11122374
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

65. An optimal degrading agent formulation for detachable packing screens applicable for screenless sand control

Accession number: 20181504989322
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Publisher: Elsevier B.V., Netherlands
Abstract: A new detachable packing screen used for sand control in oilfields has been designed. The key technology is to achieve rapid and effective downhole detachment of PLA-T (a polylactic acid material) tubing. An optimal formulation of the degradation agent was proposed considering the degradation degree and degradation rate of PLA-T materials. The temperature, salt and dilution tolerance of such degradation agent was evaluated under conditions simulating the in-situ reservoir environment. The degradation mechanism of the PLA-T was analyzed through

scanning electron microscope (SEM) on the PLA-T surface during the reaction process. It is shown that the optimal formulation is that acetone: dimethylformamide: ethylenediamine ratio equals to 3: 2: 5. Under reservoir conditions with temperatures from 50 °C to 80 °C, water salinities from 10,000 mg/L to 100,000 mg/L and diluted concentrations from 70% to 90% of the original concentration, the degradation time of the PLA-T tubing ranges from 6 min to 92 min. This system maintains its excellent degradation capability under the complex downhole situation. The SEM tests show that the surface structure of the PLA-T changes gradually from the smooth surface, to cracks, then fractures, irregular fractures and finally the fracture-hole structure, and correspondingly the degradation rate of PLA-T first increases and then drops. The proposed high-efficiency degradation agent can achieve effective detachment of the downhole packing screen by rapidly degrading the PLA-T tubing, which enables screenless sand control of the unconsolidated sandstone reservoirs. © 2017 Elsevier B.V.

Number of references: 25
Main heading: Degradation
Controlled terms: Dimethylformamide - Acetone - Fracture - Sand - Petroleum reservoir engineering - Quartz - Reservoirs (water) - Scanning electron microscopy
Uncontrolled terms: Degradation agents - Degradation degree - Degradation mechanism - Degradation rate - Optimal formulation - Reservoir conditions - Sand control - Unconsolidated sandstone reservoirs
Classification code: 441.2 Reservoirs - 482.2 Minerals - 483.1 Soils and Soil Mechanics - 512.1.2 Petroleum Deposits : Development Operations - 802.2 Chemical Reactions - 804.1 Organic Compounds - 951 Materials Science
Numerical data indexing: Mass_Density 1.00e+01kg/m3 to 1.00e+02kg/m3, Percentage 7.00e+01% to 9.00e+01%, Temperature 3.23e+02K to 3.53e+02K, Time 3.60e+02s to 5.52e+03s
DOI: 10.1016/j.petrol.2017.11.008
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Funding text: This work was financially supported by the National Natural Science Foundation of China for Young Scholars (NSFC, No. 51204199), the Fundamental Research Funds for the Central Universities (14CX05019A), and Sinopec Project (No. 15370502000785). Their sponsorship is gratefully acknowledged. Also, thanks for the help with the water sampling and operation design provided by the Gudao Oil Production Plant of the Sinopec Shengli Oilfield Company.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

66. Establishment of High-Precision 3D Datum in Mining Areas-Taking Mine No. 1 of China Coal Pingshuo Group Co. Ltd for Example

Accession number: 20190306385851
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Corresponding author: Yang, Kun(kmdcynu@163.com)
Source title: International Conference on Geoinformatics
Abbreviated source title: Int. Conf. Geoinformatics
Volume: 2018-June
Part number: 1 of 1
Issue title: Proceedings - 2018 26th International Conference on Geoinformatics, Geoinformatics 2018
Issue date: December 3, 2018
Publication year: 2018
Article number: 8557192
Language: English
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E-ISSN: 21610258
ISBN-13: 9781538676196
Document type: Conference article (CA)
Conference name: 26th International Conference on Geoinformatics, Geoinformatics 2018
Conference date: June 28, 2018 - June 30, 2018
Conference location: Kunming, China

Conference code: 143470
Publisher: IEEE Computer Society

Abstract: In this paper, we take mine No. 1 of ChinaCoal Pingshuo group Co. Ltd for example, to establish the high-precision 3D datum underground and above, utilizing many equipments including GPS, maglev gyro total station, level and total station, etc. There are several theories and methods were employed and introduced about E-grade GPS network, 7' traversing, fourth-grade leveling and gyro-orientation. Then, combining specific observation data, the technical indicators and the main steps of the theories and methods above were described. Experiment results show that the 3D datum established in this paper is effective. This particular result provides strong technical support for fast and high-precision mine survey. © 2018 IEEE.

Number of references: 10
Main heading: Coal mines
Controlled terms: Global positioning system - Gyroscopes - Magnetic levitation - Surveys
Uncontrolled terms: 3D data - ChinaCoal - GPS network - Gyro-orientation - High-precision - Mining areas - Theory and methods - Total station - Traversing - Underground survey
Classification code: 503.1 Coal Mines - 701.2 Magnetism: Basic Concepts and Phenomena
DOI: 10.1109/GEOINFORMATICS.2018.8557192

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

67. The Calculation and Analysis of the Bistatic Quantum Radar Cross Section for the Typical 2-D Plate (*Open Access*)

Accession number: 20181304955841

Authors: Fang, Chonghua (1, 2); Tan, Hui (1); Liu, Qi-Feng (1); Tao, Li (1); Xiao, Long (1); Chen, Yanjun (2, 3); Hua, Liang (2, 4)
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Source title: IEEE Photonics Journal
Abbreviated source title: IEEE Photon. J.
Volume: 10
Issue: 2
Issue date: April 2018
Publication year: 2018
Article number: 7500614
Language: English
E-ISSN: 19430655
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: The quantum radar cross section (QRCS) describes how much return one gets when illuminating an object with a handful of photons. However, the previous studies mainly focused on the monostatic scattering of quantum radar. In this study, in response to the four key questions raised by ourselves in bistatic quantum radar cross section (BIQRCS), we calculate and analyze the BIQRCS for the typical tow-dimensional plate. First, as mentioned by Brandsema, the further derived analytical solution for the rectangular plate is obtained. In addition, the influence of incident frequency and the number of photons on the BIQRCS for the plate were obtained. Besides, we first reveal that the envelope curves of sidelobes in BIQRCS at the given incidence display the invariance in frequency. Finally, we show some comparison results among the BIQRCS, classical radar cross section (CRCS), and monostatic QRCS for the plate and find the advantage of sidelobe of the BIQRCS in given direction. We anticipate that these research results will find use in the detection and discrimination of stealthy platforms. © 2018 IEEE.

Number of references: 27

Main heading: Radar cross section
Controlled terms: Photons
Uncontrolled terms: Bistatic - Comparison result - Detection and discriminations - Envelope curve - Monostatic - Monostatic scattering - Rectangular plates - Research results
Classification code: 716.2 Radar Systems and Equipment - 931.3 Atomic and Molecular Physics
DOI: 10.1109/JPHOT.2018.2818819

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

68. Effect of interfacial energy on microstructure of a directionally solidified Al2O3/YAG eutectic ceramic

Accession number: 20174704423537
Authors: Wang, Xu (1); Zhong, Yujie (2); Wang, Dong (3); Sun, Luchao (4); Jiang, Bailing (1); Wang, Jingyang (4)
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Volume: 101
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Issue date: March 2018
Publication year: 2018
Pages: 1029-1035
Language: English
ISSN: 00027820
E-ISSN: 15512916
CODEN: JACTAW
Document type: Journal article (JA)
Publisher: Blackwell Publishing Inc.
Abstract: An $Al_2O_3/Y_3Al_5O_{12}$ eutectic ceramic was prepared with a c-axis sapphire seed by an optical floating zone furnace. The crystallographic relationships in the initial and the steady growth sections of the as-grown eutectic ceramic were investigated by electron backscattering diffraction and transmission electron microscopy. The corresponding results were: {101}$Y_3Al_5O_{12}$ || {1120}Al_2O_3 and { (Formula presented.) }$Y_3Al_5O_{12}$ || {0001}Al_2O_3, respectively. The steady orientation of the latter one shows smaller planar disregistry. Interfacial strain played the decisive role in affecting the solidification behavior of the $Al_2O_3/Y_3Al_5O_{12}$ eutectic ceramic. The stability of interfaces with minimum interfacial strain and better ionic charge balance in irregular microstructure prevail upon the constraint of the seed. These results might cast light for the interfacial design of the $Al_2O_3/Y_3Al_5O_{12}$ binary eutectic ceramic. © 2017 The American Ceramic Society
Number of references: 22
Main heading: Eutectics
Controlled terms: Backscattering - Ceramic materials - Sapphire - Alumina - High resolution transmission electron microscopy - Microstructure - Yttrium aluminum garnet - Aluminum oxide - Solidification
Uncontrolled terms: Directionally solidified - Electron backscattering diffraction - Eutectic ceramics - Interfacial design - Interfacial strain - Irregular microstructure - Optical floating zones - Solidification behaviors
Classification code: 482.2.1 Gems - 531.2 Metallography - 741.3 Optical Devices and Systems - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 812.1 Ceramics - 951 Materials Science
DOI: 10.1111/jace.15317

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

69. A quantitative approach to reasoning about incomplete knowledge

Accession number: 20181505000524
Authors: She, Yanhong (1, 2); He, Xiaoli (2); Qian, Yuhua (1); Xu, Weihua (3); Li, Jinhai (4)
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Corresponding author: She, Yanhong(yanhongshe@xsyu.edu.cn)
Source title: Information Sciences
Abbreviated source title: Inf Sci
Volume: 451-452
Issue date: July 2018
Publication year: 2018
Pages: 100-111
Language: English
ISSN: 00200255
CODEN: ISIJBC
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: In this paper, we aim to present a quantitative approach to reasoning about incomplete information. The study is conducted in MEL, a minimal epistemic logic relating modal languages to uncertainty theories. The proposed approach leads to two types of epistemic truth degrees of a proposition. Some related properties are derived. By means of a more general probability distribution on the set of epistemic states, two randomized versions of epistemic truth degrees are obtained. The connection between the notion of local probabilistic epistemic truth degree and belief function is also established. Based upon the fundamental notion of the global epistemic truth degree, the notion of epistemic similarity degree is also proposed and a kind of pseudo-metric used for approximate reasoning in MEL is thus derived. The obtained results provide a useful supplement to the existing study in the sense that it offers a quantitative approach instead of the qualitative manner in the literature. © 2018 Elsevier Inc.
Number of references: 26
Main heading: Probability distributions
Controlled terms: Uncertainty analysis - Computer circuits
Uncontrolled terms: Approximate reasoning - Incomplete information - Incomplete knowledge - Quantitative approach - Quantitative logic - Similarity degree - Truth degree - Uncertainty theory
Classification code: 721.3 Computer Circuits - 922.1 Probability Theory
DOI: 10.1016/j.ins.2018.04.017
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

70. Characteristics of deep structure in the South China Sea and geological implications: Insights from gravity and magnetic inversion

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Title of translation: :
Authors: Lu, Baoliang (1); Wang, Wanyin (1); Zhao, Zhigang (2); Feng, Xuliang (1, 3); Zhang, Gongcheng (2); Luo, Xingang (1); Yao, Pan (1); Ji, Xiaolin (1)
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Corresponding author: Wang, Wanyin(wwy7902@chd.edu.cn)
Abstract: The Moho and Curie surfaces are significant geological and geophysical interfaces in understanding the evolution of the deep earth. Constrained by OBS profiles and deep reflecting seismic profiles, Bouguer gravity anomalies which reflect the undulation of the Moho were acquired by correcting the gravity effect of sea water and shallower sediments from satellite altimetry gravity data, and by eliminating the effect of gravity caused by the local density bodies through the application of the minimum-curvature method. Also, based on study of gravity field inversion in a dual interface model, the Moho depth of the South China Sea (SCS) was calculated, and a comparative study with the Curie surface was carried out. The results show that the Moho and Curie surface of the SCS are shallow in the ocean basin and deep in the margins, and both of the two surfaces in the continent-ocean transition zone show the distinct narrow gradient bands,which reflect the lithospheric extension-thinning and NS tectonic extension during the expansion of the SCS. The typical wedge-shaped Moho and Curie surfaces in the ocean basin generally corresponds to the gradual expansion from east to west of the SCS. The Moho of the ocean basin is shallower in the south than that in the north, consistent with the gradual southward migration of the expansion center. While the Curie surface of ocean is deeper in the south and shallower in the north, which is probably related to the simple shear expansion of the ocean basin and occurrence of more active magmatic activity in the north of the ocean basin. The Moho and Curie surfaces exhibit staggered overlapping relationships in the SCS. The south and north continental margins show obvious deep structural differences, indicating that the SCS is an asymmetric expansion. The Curie surface is shallower than Moho in the north, but deeper in the ocean basin and south margin. These differences are closely related with the different continental marginal natures between south and north margins of the SCS, and also with the complicated Meso-Cenozoic tectonic evolution of the southern margin of the SCS. The Curie surface is deeper than Moho in the ocean basin, which is presumably related with magnetic enhancement of lithosphere, caused by the oceanic peridotite serpentinization in the upper mantle. © 2018, Science Press. All right reserved.
Number of references: 79
Main heading: Tectonics
Controlled terms: Gravitation - Structural geology - Sailing vessels - Seawater - Oceanography
Uncontrolled terms: Bouguer gravity anomalies - Continent-ocean transition zones - Deep structure - Lithospheric extension - Minimum curvature method - Ocean basins - South China sea - Structural differences
Classification code: 471.1 Oceanography, General - 471.4 Seawater, Tides and Waves - 481.1 Geology - 674.1 Small Marine Craft - 931.5 Gravitation, Relativity and String Theory
DOI: 10.6038/cjg2018L0564
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

71. Interpretation of NMR Relaxation in Bitumen and Organic Shale Using Polymer-Heptane Mixes

Accession number: 20180804822826
Authors: Singer, Philip M. (1); Chen, Zeliang (1); Alemany, Lawrence B. (2); Hirasaki, George J. (1); Zhu, Kairan (3); Xie, Z. Harry (4); Vo, Tuan D. (4)

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Abstract: One of the much debated mysteries in 1H NMR relaxation measurements of bitumen and heavy crude oils is the departure from expected theoretical trends at high viscosities, where traditional theories of 1H-1H dipole-dipole interactions predict an increase in T1 with increasing viscosity. However, previous experiments on bitumen and heavy crude oils clearly show that T1LM (i.e., log-mean of the T1 distribution) becomes independent of viscosity at high viscosities; in other words, T1LM versus viscosity approaches a plateau. We report 1H NMR data at ambient conditions on a set of pure polymers and polymer-heptane mixes spanning a wide range of viscosities (n = 0.39 cP $\leftrightarrow$ 334000 cP) and NMR frequencies ($\omega_0/2\pi$ = f0 = 2.3 MHz $\leftrightarrow$ 400 MHz) and find that at high viscosities (i.e., in the slow-motion regime) T1LM plateaus to a value T1LM> $_{\omega_0}$ independent of viscosity, similar to bitumen. More specifically, on a frequency-normalized scale, we find that T1LM> × 2.3/f0 3 ms (i.e., normalized relative to 2.3 MHz), in good agreement with bitumen and previously reported polymers. Our findings suggest that in the high-viscosity limit T1LM> and T2LM> for polymers, bitumen, and heavy crude oils can be explained by 1H-1H dipole-dipole interactions without the need to invoke surface paramagnetism. In light of this, we propose a new relaxation model to account for the viscosity and frequency dependences of T1LM and T2LM, solely based on 1H-1H dipole-dipole interactions. We also determine the surface relaxation components T1S and T2S of heptane in the polymer-heptane mixes, where the polymer acts as the "surface" for heptane. We report ratios up to T1S/T2S 4 and dispersion T1S($_{\omega_0}$) for heptane in the mix, similar to previously reported data for hydrocarbons confined in organic matter such as bitumen and kerogen. These findings imply that 1H-1H dipole-dipole interactions enhanced by nanopore confinement dominate T1S and T2S relaxation in saturated organic-rich shales. © 2018 American Chemical Society.

Number of references: 106
Main heading: Dipole moment
Controlled terms: Electric dipole moments - Heptane - Viscosity - Crude oil
Uncontrolled terms: 1H NMR relaxation - Ambient conditions - Dipole dipole interactions - Frequency dependence - High viscosities - Increasing viscosity - Organic-rich shales - Relaxation models
Classification code: 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 701.1 Electricity: Basic Concepts and Phenomena - 801.4 Physical Chemistry - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics
Numerical data indexing: Frequency 2.30e+06Hz, Frequency 4.00e+08Hz
DOI: 10.1021/acs.energyfuels.7b03603
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

72. Preparation of SO42-/TiO2-SnO2 solid acid catalyst and its catalytic activity in synthesis of benzyl acrylate

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Title of translation: SO42-/TiO2-SnO2
Authors: Pan, Liuyi (1, 2); Dan, Yong (1); Wang, Junfeng (3); Niu, Menglong (4); Fan, Zheng (4); Li, Wenhong (1)
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Abbreviated source title: Huagong Jinzhan/Chem. Ind. Eng. Prog.
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Issue: 5
Issue date: May 5, 2018
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Pages: 1823-1830
Language: Chinese
ISSN: 10006613
Document type: Journal article (JA)
Publisher: Materials China

Abstract: SO42-/TiO2-SnO2 solid acid catalysts prepared by co-precipitation method and then were characterized by SEM-EDS, XRD, FTIR, Pyridine-IR and XPS. The result showed that crystal structure of the catalyst, and the quantity and distribution of the acid centers were changed by doping Sn. The catalyst doped with 5% Sn and calcined at 500 showed excellent catalytic activity in the synthesis of benzyl acrylate. Under the optimal conditions of 3% catalyst, reaction temperature of 120, and ratio of acid and olefin of 1.3:1, the conversion of phenylcarbinol was 93.1% and the selectivity of the product was 98.8%. Compared with SO42-/TiO2, the reactivity, stability and the anticaking ability were significantly improved. © 2018, Chemical Industry Press. All right reserved.
Number of references: 19
Main heading: Catalyst activity
Controlled terms: Catalyst selectivity - Doping (additives) - Precipitation (chemical) - Crystal structure
Uncontrolled terms: Acid centers - Anti-caking - Benzyl acrylate - Coprecipitation method - Optimal conditions - Reaction temperature - Sn doping - Solid acid catalysts
Classification code: 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 933.1.1 Crystal Lattice
Numerical data indexing: Percentage 3.00e+00%, Percentage 9.31e+01%, Percentage 9.88e+01%
DOI: 10.16085/j.issn.1000-6613.2017-1444
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

73. Ag nanoparticle surface-plasmon-resonance-enhanced electroluminescence from semipolar n-ZnO/p-GaN heterojunction light-emitting diodes

Accession number: 20184305981708
Authors: Wang, Xiao (1, 2); Bai, Lihua (1, 3); Zhang, Heng (1); Su, Xi (1); Wu, Hao (1); Liu, Chang (1)
Author affiliation: (1) Key Laboratory of Artificial Micro- and Nanostructures of Ministry of Education, School of Physics and Technology, Wuhan University, Wuhan; 430072, China; (2) State Key Discipline Laboratory of Wide Band Gap Semiconductor Technology, School of Microelectronics, Xidian University, Xi'an; 710071, China; (3) School of Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Applied Physics Express
Abbreviated source title: Appl. Phys. Express
Volume: 11
Issue: 10
Issue date: October 2018
Publication year: 2018
Article number: 102101
Language: English
ISSN: 18820778
E-ISSN: 18820786
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd

Abstract: Ag nanoparticles (NPs) were used to demonstrate the surface-plasmon-resonance (SPR)-enhanced electroluminescence (EL) from semipolar n-ZnO/p-GaN heterojunction light-emitting diodes (LEDs). Ag NPs were synthesized with an average diameter of 30 nm, which was well matched to the optimal calculation result obtained by the finite difference time domain (FDTD) method. The photoluminescence intensities from the top excitation of

GaN and ZnO were 70 and 40% enhanced by coupling Ag NPs, respectively. The EL intensity was increased 20% by lighting the semipolar n-ZnO/p-GaN heterojunction LEDs coupled with Ag NPs. © 2018 The Japan Society of Applied Physics.

74. A realistic and integrated model for evaluating oil sands development with Steam Assisted Gravity Drainage technology in Canada

Authors: Rui, Zhenhua (1); Wang, Xiaoqing (2); Zhang, Zhien (3); Lu, Jun (4, 5); Chen, Gang (2); Zhou, Xiyu (2); Patil, Shirish (6)
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Corresponding author: Rui, Zhenhua(zhenhuarui@gmail.com)

Abstract: Oil sands resource is the third largest oil reserve, and 70% of the oil sands are in Canada. The emerging of Steam Assisted Gravity Drainage technology has made the commercial development of oil sands economically feasible. However, with the recent oil price crash, the development of oil sands has faced an uphill battle. A realistic and integrated evaluation model is highly needed to overcome difficulties from the low oil price and provide meaningful and valuable information for operators as well as investors to make the right decision. The existing evaluation models have considerable limitations (i.e., the incapability of evaluating integrated oil sands development with Steam Assisted Gravity Drainage technology, the lack of investigation into the input parameters with historical data, and ignoring the effect of the subsurface reservoir, etc.). This study developed an integrated evaluation model through the analyses of a significant amount of actual historical data. This integrated model includes six subcomponent models, ranging from the subsurface reservoir to infield flowline. Data from 35 Canadian oil sands development with 15 internal and external parameters were collected and investigated. The oil price effect was analyzed and quantified through simulations. The

breakeven Western Canada Select oil price of $39/bbl. (equal to the West Texas Intermediate oil price of $55/bbl.) and other key price points and distributions were identified. Also, the top seven geological and technical parameters that contribute 86% of the net present value variations were identified and investigated. These quantified effects of external and internal parameters are useful findings for decision making. Considering various price scenarios and uncertainties of the input parameters, this study has concluded that developing oil sands resources with the Steam Assisted Gravity Drainage technology is economically feasible and socially beneficial after we take all stakeholder interests into consideration, which is true even with the sustainable and realistic oil price in the foreseeable future. © 2018 Elsevier Ltd

Number of references: 56
Main heading: Oil sands
Controlled terms: Decision making - Intelligent systems - Economic analysis - Steam - Monte Carlo methods - Sand - Proven reserves
Uncontrolled terms: Commercial development - Integrated evaluation - Stakeholder interest - Statistical modeling - Steam-assisted gravity drainages - Subsurface reservoir - Technical analysis - West texas intermediates
Classification code: 483.1 Soils and Soil Mechanics - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 723.4 Artificial Intelligence - 911.2 Industrial Economics - 912.2 Management - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 7.00e+01%, Percentage 8.60e+01%
DOI: 10.1016/j.apenergy.2018.01.015
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

75. Review of high-speed mud pulse telemetry technology

Accession number: 20190306385351
Title of translation:
Authors: Jia, Mengzhi (1); Geng, Yanfeng (1); Yan, Hongliang (1, 2); Yue, Yaobin (1, 3)
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Corresponding author: Geng, Yanfeng(gengyf@upc.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: 39
Issue: 12
Issue date: December 1, 2018
Publication year: 2018
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Document type: Journal article (JA)
Publisher: Science Press
Abstract: High-speed mud pulse telemetry (MPT) technology is one of important research issues in measurement while drilling system. Based on the continuous wave MPT technology which is always adopted nowadays the development process and thread of MPT are introduced. According to the framework of the communication system, the technical bottlenecks of MPT source, channel and sink are analyzed respectively. MPT signal attenuation, reflection and the characteristics of mud pump noise are simulated and analyzed, which are the crucial factors for improving MPT transmission rate. In addition, the differences among the commonly used channel models are compared and theoretically explained. The current techniques used in signal detection, processing and demodulation are studied, and the advantages and disadvantages of the filtering and channel equalization algorithms are discussed. The methods of data transmission performance test are briefly described. Finally, the development trend and the existing problems of MPT technology are summarized, which provides references and suggestions for high-speed MPT technology development. © 2018, Science Press. All right reserved.
Number of references: 69
Main heading: Mud pumps
Controlled terms: Infill drilling - Optical pumping

Uncontrolled terms: Channel equalization - Continuous Wave - Development process - Measurement while drillings - Mud pulse telemetries - Pump noise - Technology development - Transmission rates
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 618.2 Pumps
DOI: 10.19650/j.cnki.cjsi.J1804022
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

76. Influence of pressure and CO2 content on the asphaltene precipitation and oil recovery during CO2 flooding

Accession number: 20180804827444
Authors: Chen, Jiaoni (1, 2, 3); Li, Tiantai (1); Wu, Shenghe (3)
Author affiliation: (1) Department of Petroleum Engineering, College of Petroleum Engineering/Postdoctoral Innovation Base, Xi'an ShiYou University, Xi'an, China; (2) Department of Petroleum Exploration and Development Geology, Center for Post-doctoral Studies, China University of Petroleum, Beijing, China; (3) Department of Petroleum Exploration and Development Geology, College of Geosciences, China University of Petroleum, Beijing, China
Corresponding author: Chen, Jiaoni(meiman2003@126.com)
Source title: Petroleum Science and Technology
Abbreviated source title: Petrol Sci Technol
Volume: 36
Issue: 8
Issue date: April 18, 2018
Publication year: 2018
Pages: 577-582
Language: English
ISSN: 10916466
E-ISSN: 15322459
CODEN: PSTEFV
Document type: Journal article (JA)
Publisher: Bellwether Publishing, Ltd.
Abstract: During CO2 flooding, the crude oil is treated with CO2, and meanwhile it is displaced by CO2. Based on the two processes, the influence of pressure and CO2 content on the asphaltene precipitation and oil recovery efficiency are systematically investigated by indoor simulation experiment. With the increase of the pressure or CO2 content during CO2 treatment, the amount of asphaltene precipitation can be increased to a certain value. Correspondingly, the degrees of the changes of oil-water interface, the compositions of crude oil, and reservoir permeability are positively correlated with the amount of asphaltene precipitation. However, during the process, the oil recovery has an optimal value due to the combined action of asphaltene precipitation and the improvement of flow performance of the crude oil. These conclusions can provide a basis for high efficiency development of low permeability oil reservoirs by CO2 flooding. © 2018 Taylor & Francis Group, LLC.
Number of references: 14
Main heading: Carbon dioxide
Controlled terms: Crude oil - Oil well flooding - Petroleum reservoir engineering - Precipitation (chemical) - Asphaltenes - Low permeability reservoirs - Efficiency - Phase interfaces - Reservoirs (water) - Floods
Uncontrolled terms: Asphaltene precipitation - CO2 content - Indoor simulation - Low permeability oil - Oil recoveries - Oil recovery efficiency - Oil water interfaces - Reservoir permeability
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 513 Petroleum Refining - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 913.1 Production Engineering
DOI: 10.1080/10916466.2018.1430154
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

77. Unidirectional control mechanism of annulus trapped pressure in deepwater shaft

Accession number: 20183805826916
Title of translation:

Authors: Yu, Xiaocong (1, 2); Yang, Jin (3); Kan, Changbin (1, 3); Hu, Changpeng (4); Wu, Xudong (5); Xu, Fabin (5); Zhang, Chao (5); Li, Lei (5); Huang, Liang (5)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Aeronautics, Northwestern Polytechnical University, Xi'an; Shaanxi; 710072, China; (3) Research Institute of Ocean Engineering, China University of Petroleum, Beijing; 102249, China; (4) China Petroleum Technology & Development Corporation, Beijing; 100009, China; (5) Zhanjiang Branch, CNOOC China Limited, Zhanjiang; Guangdong; 524057, China
Corresponding author: Kan, Changbin(kchangbin@163.com)

Abstract: Under the condition of underwater completion technology for deep water oil and gas wells, the annulus trapped pressure of multistage intermediate casing is one of the key factors affecting the integrity of deep water shaft. To effectively control the threat of trapped pressure to shaft safety during hydrocarbon production or testing process, a unidirectional control technology of annulus trapped pressure in deep water shaft was developed. According to the wellbore structure of typical deepwater hydrocarbon wells in the South China Sea as the design basis, a research was performed on the unidirectional release and control technology of trapped space pressure in the production and test process of deepwater shaft. An indoor experiment simulation system of unidirectional control technology was constructed to simulate the influences of shaft thermal fluid on the trapped liquid temperature and pressure. Based on the unidirectional control method of annulus trapped pressure, a set of casing nipples for unidirectional pressure control was developed. Then laboratory simulation experiments were carried out on the principle prototype of casing nipples for unidirectional pressure control. The results show that the unidirectional control method of trap pressure can effectively reduce the casing deformation caused by abnormal increase of trap thermal stress, wellhead sealing failure and other shaft safety accidents. This technology can not only effectively protect the integrity of deep water shaft, but also offer a safety method to control the deepwater trapped pressure. © 2018, Editorial Office of ACTA PETROLEI SINICA. All right reserved.

Number of references: 26
Main heading: Hydrocarbons
Controlled terms: Process control - Safety testing - Pressure control - Offshore oil wells - Well completion - Well testing - Wellheads
Uncontrolled terms: Completion technology - Deep Water - Deepwater hydrocarbon - Experimental research - Hydrocarbon production - Laboratory simulation - Trapped pressure - Unidirectional release
Classification code: 512.1.1 Oil Fields - 731.3 Specific Variables Control - 804.1 Organic Compounds - 914.1 Accidents and Accident Prevention
DOI: 10.7623/syxb201803009
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

78. Pt supported on octahedral Fe3O4 microcrystals as a catalyst for removal of formaldehyde under ambient conditions   (*Open Access*)

Accession number: 20183005599818
Authors: Cui, Weiyi (1, 2); Xue, Dan (3); Tan, Naidi (1); Zheng, Bin (2); Jia, Mingjun (2); Zhang, Wenxiang (2)
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Source title: Chinese Journal of Catalysis

Abstract: Several catalysts comprising Pt supported on octahedral Fe_3O_4 (Pt/Fe_3O_4) were prepared by a facile method involving co-precipitation followed by thermal treatment at different temperatures. A variety of characterization results revealed that this preparation process afforded highly crystalline octahedral Fe_3O_4 with a uniform distribution of Pt nanoparticles on its surface. The thermal-treatment temperature significantly influenced the redox properties of the Pt/Fe_3O_4 catalysts. All the Pt/Fe_3O_4 catalysts were found to be catalytically active and stable for the oxidation of low-concentration formaldehyde (HCHO) with oxygen. The catalyst prepared by thermal treatment at 80 °C (labelled Pt/Fe_3O_4-80) exhibited the highest catalytic activity, efficiently converting HCHO to CO_2 and H_2O under ambient temperature and moisture conditions. The excellent performance of Pt/Fe_3O_4-80 was mainly attributed to beneficial interactions between the Pt and Fe species that result in the formation a higher density of active interface sites (e.g., $Pt-O-FeO_x$ and $Pt-OH-FeO_x$). The introduction of water vapor improves the catalytic activity of the Pt/Fe_3O_4 catalysts as it participates in a water-assisted dissociation process. © 2018 Dalian Institute of Chemical Physics, the Chinese Academy of Sciences

Number of references: 50
Main heading: Catalytic oxidation
Controlled terms: Heat treatment - Dissociation - Magnetite - Metal nanoparticles - Catalyst supports - Catalyst activity - Formaldehyde - Platinum
Uncontrolled terms: Dissociation process - Interfacial interaction - Low-concentration formaldehydes - Octahedral Fe_3O_4 - Preparation process - Pt nanoparticles - Thermal treatment temperature - Uniform distribution
Classification code: 451.2 Air Pollution Control - 537.1 Heat Treatment Processes - 547.1 Precious Metals - 761 Nanotechnology - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds
Numerical data indexing: Temperature 3.53e+02K
DOI: 10.1016/S1872-2067(18)63082-7

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

79. Response analysis and quantitative inversion of electrical imaging logging in oil based drilling fluid environment

Accession number: 20183505751533
Title of translation:

Authors: Gao, Jianshen (1); Sun, Jianmeng (2); Jiang, Yanjiao (3); Yu, Qijiao (4); Liu, Yanping (1)
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Source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)
Abbreviated source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)

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Issue date: June 20, 2018
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Language: Chinese
ISSN: 16735005
Document type: Journal article (JA)
Publisher: University of Petroleum, China

Abstract: Aiming at existing problems of electrical imaging logging technology in oil based drilling fluid environment, the apparent resistivity characteristics of a vertical coupling method and conventional processing methods are studied using numerical simulation. Then, the formation resistivity and the standoff between the instruments pad and formation are inversed quantitatively using support vector machine for regression. The effectiveness of this inversion processing is verified by comparing results with that imaged in a water based drilling fluid environment. Fuzzy images in the conventional processing for low-resistivity formation is resolved, and the reversal problem that may occur in the vertical coupling method for high-resistivity formation is eliminated.The low or high formation resistivity and the standoff variation in relatively low-resistivity formation can be interpreted quantitatively. This study can greatly benefit data processing for electrical imaging logging in oil based drilling fluid environment. © 2018, Periodical Office of China University of Petroleum. All right reserved.

Number of references: 30
Main heading: Support vector machines
Controlled terms: Couplings - Drilling fluids - Numerical methods - Data handling - Processing - Infill drilling
Uncontrolled terms: Apparent resistivity - Conventional processing - Electrical imaging - Formation resistivity - Oil-based drilling fluid - Quantitative inversion - Reversal problems - Water based drilling fluids
Classification code: 511.1 Oil Field Production Operations - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 913.4 Manufacturing - 921.6 Numerical Methods
DOI: 10.3969/j.issn.1673-5005.2018.03.006
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

80. Multi-layer Fracturing Technology and the Application in CK Oilfield to Enhance the Recovery (*Open Access*)

Accession number: 20190206359816
Authors: Deng, Qiang (1); Liu, Man (2); Lu, Xiao (2); Yu, Tao (1); Chen, Shijun (1); Chen, Gang (1, 3)
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Corresponding author: Deng, Qiang
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
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Issue title: 2018 International Conference on Air Pollution and Environmental Engineering, APEE 2018
Issue date: December 20, 2018
Publication year: 2018
Article number: 012116
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Air Pollution and Environmental Engineering, APEE 2018
Conference date: October 26, 2018 - October 28, 2018
Conference location: Hong Kong, China
Conference code: 143584
Publisher: IOP Publishing Ltd

Abstract: In the operation of new well fracturing, multi-layers are opened at one time, and each layer is separately fractured by downhole fracturing tool and hydraulic fracturing method, and the fluid is discharged from each layer for production. Such fracturing technology is called a well multi-layer fracturing technology. The fracturing technology is restricted by the reservoir characteristics. The multi-layer fracturing technology of one well is an effective practical technique in the practice of fracturing and testing for the wells with the same formation and multiple layers. This technology has been applied in CK Oilfield. The daily oil production of a well with multiple fractured wells is higher than that of the combined wells. According to the data of 15 wells in a well in the CK Oilfield, the average daily oil production per well is 3.95t/d. There are 7 combined wells, and the average daily oil production per well is 1.78t/d. The average single well production multi-layer fractured well is 2.17t/d. © Published under licence by IOP Publishing Ltd.

81. Linear pentanuclear nickel(II) and tetranuclear copper(II) complexes with pyrazine-modulated tripyridyldiamine ligand: Synthesis, structure and properties

Authors: Ismayilov, Rayyat Huseyn (1); Valiyev, Fuad Famil (1); Tagiyev, Dilgam Babir (2); Song, You (3); Israfilov, Nizami Vali (1); Wang, Wen-Zhen (4); Lee, Gene-Hsiang (5); Peng, Shie-Ming (5); Suleimanov, Baghir A. (1)
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Corresponding author: Suleimanov, Baghir A.(Baghir.Suleymanov@socar.az)
Abstract: By using tripyridyldiamine ligand, N,N'-di(pyrazin-2-yl)pyridine-2,6-diamine (H2dpzpda), linear pentanuclear nickel(II) [Ni5(μ5-dpzpda)4Cl2] (1) and tetranuclear copper(II) [Cu4(Hdpzpda)2(CH3COO)6] (2) complexes were first synthesized and structurally characterized. This pentanickel linear metal chain is helically wrapped by four syn-syn-syn-syn type dpzpda2- ligands. There are two types of Ni–Ni distances existing in the complex. The terminal Ni–Ni distances bonded to the axial ligand are longer (2.3877(8) Å) affected by the axial ligands. The inner Ni–Ni distances are very short and remain constant (2.3071(6) Å). Two terminal Ni(II) ions bonded to the axial ligands are in a square-pyramidal (NiN4Cl) environment and exhibit long Ni–N bonds (2.097(4) Å), which are consistent with a high-spin

Ni(II) configuration. The inner three Ni(II) ions display short Ni–N (1.8915(8)–1.903(4) Å) bond distances, which are consistent with a square planar (NiN4), the diamagnetic arrangement of a low-spin Ni(II) configuration. Temperature-dependent magnetic research revealed an antiferromagnetic interaction between the two terminal atoms through a superexchange pathway along metal cores with a parameter of about -51.0 cm^{-1}. Observation of the first oxidation peak in the cyclic voltammograms of 1 at +1.206 V revealed that this complex is the most resistant to oxidation among all known pentanuclear nickel strings with unmodulated and modulated oligo-α-pyridylamido ligands. The structure of 2 consists of four copper atoms linearly placed with a copper(II) acetate dimer in the centre. In complex 2 ligand H2dpzpda coordinates to the Cu(II) atoms as a tetradentate ligand in an all anti conformation. Copper complex 2 is built to a 1-D supramolecular chain structure through intermolecular hydrogen bond and strong $\pi-\pi$ interaction (3.19 Å) between the pyridine and pyrazine rings. From the magnetic susceptibility data, 2 shows strong antiferromagnetic coupling, which was satisfactorily fitted using Hamiltonian H = J1(S1S2 + S3S4) + J2S2S3. The best fitting result were obtained with the parameters J1 = 10.64 cm-1, J2 = -175.36 cm-1, g = 2.11. © 2018

Number of references: 62
Main heading: Ligands
Controlled terms: Chelation - Chlorine compounds - Oxidation resistance - Synthesis (chemical) - Magnetism - Nickel compounds - Atoms - Copper compounds
Uncontrolled terms: Antiferro-magnetic interactions - Antiferromagnetic coupling - Intermolecular hydrogen bonds - Ligand design - Metal-metal interactions - Structure and properties - Superexchange pathway - Tetranuclear copper complexes
Classification code: 539.1 Metals Corrosion - 701.2 Magnetism: Basic Concepts and Phenomena - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 931.3 Atomic and Molecular Physics
Numerical data indexing: Size 3.19e-10m
DOI: 10.1016/j.ica.2018.08.045
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Funding text: We thank the National Science Council and the Ministry of Education of the Republic of China for the financial support. We are also grateful to Mr. Zhao-Bo Hu and Mr. Wei-Min Lee for their help with magnetic measurements.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

82. Bankfull discharge as a key control on submarine channel morphology and architecture: Case study from the Rio Muni Basin, West Africa

Accession number: 20181805118965
Authors: Li, Lei (1, 4); Gong, Chenglin (2, 3, 4); Steel, Ronald J. (4)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing, Beijing; 102249, China; (3) College of Geosciences, China University of Petroleum, Beijing, Beijing; 102249, China; (4) Department of Geological Sciences, Jackson School of Geosciences, University of Texas, Austin; TX; 78712, United States
Corresponding author: Gong, Chenglin(chenglingong@cup.edu.cn)

Abstract: Bankfull discharges play a pivotal but underappreciated role in determining submarine channel morphometrics and architecture. This hypothesis is suggested by the power law relationship between channel morphometrics and discharge and the logarithmic relationship between channel architecture and discharge. We apply this relationship to the Rio Muni deep-water channels of Equatorial Guinea in three ways. Firstly, relatively dilute turbidity currents with a relatively low discharge of ca.1.1 × 104 to 6.9 × 104 m3/s tended to enhance channel

confinement and thalweg deposition, but to discourage lateral spreading of the flow. This, in turn, reduced depth and sinuosity (SI) of the channel form as the fill aggraded, as previously reported for younger channels on this slope. These vertically aggraded channel belts [represented by relative angles of channel trajectories (Tc) ranging from 47.2° to 81.0°] are narrower (averaging 634 m), thinner (averaging 23 m), and straighter (mean value of SI = 1.17) than their laterally migrated counterparts. Secondly, turbidity flows with a relatively high discharge of ca.4.1 × 104 to 15.8 × 104 m3/s appear to have reduced channel confinement, but to promote thalweg erosion and lateral spreading of the flow. This, in turn, increased depth and sinuosity of the channel form as it laterally migrated, forming laterally migrated channel belts (represented by a relatively low Tc of 21.8° to 49.0°) that are wider (1.5×), thicker (2×), and more sinuous (1.2×) than their vertically aggraded counterparts. Thirdly, a gradual decrease of discharge through time likely drove an architectural transition from lateral migration to vertical aggradation and associated migrating-to-aggrading channel trajectories. © 2018 Elsevier B.V.

Number of references: 36
Main heading: Turbidity
Controlled terms: Ocean currents - Submarines - Discharge (fluid mechanics) - Morphology - Sediment transport
Uncontrolled terms: Bankfull discharge - Channel architecture - Channel morphology - Deep-water channels - Lateral migration - Logarithmic relationship - Power law relationship - Rio Muni Basin
Classification code: 471.4 Seawater, Tides and Waves - 672.1 Combat Naval Vessels - 741.1 Light/Optics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Size 2.30e+01m, Size 6.34e+02m
DOI: 10.1016/j.margeo.2018.04.010
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

83. Dynamic mechanical behaviors of calcium silicate hydrate under shock compression loading using molecular dynamics simulation

Accession number: 20183805819866
Authors: Lin, Weihui (1); Zhang, Chao (1); Fu, Jia (2); Xin, Hao (3)
Author affiliation: (1) State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Shanxi Key Laboratory of Material Strength & Structural Impact, Institute of Applied Mechanics and Biomedical Engineering, Taiyuan University of Technology, Taiyuan; 030024, China
Corresponding author: Xin, Hao(xinhao@tyut.edu.cn)
Source title: Journal of Non-Crystalline Solids
Abbreviated source title: J Non Cryst Solids
Volume: 500
Issue date: 15 November 2018
Publication year: 2018
Pages: 482-486
Language: English
ISSN: 00223093
CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Dynamic mechanical behaviors of the calcium silicate hydrate (C-S-H) under shock compression loading in layered direction have been investigated by molecular dynamics (MD) simulations. The various piston velocities ranging from 0.2 to 3.0 km/s used to describe the propagation of stress waves have been employed in our MD simulations. The shock Hugoniot curve and the distribution of particle velocity are obtained. It is found that the Hugoniot elastic limit is 7.5 GPa, and the impact may induce elastic response, elastic-plastic response and shock

regime. Our results reveal that only a continuous elastic wave exists when the particle velocity is below 0.5 km/s, while a new wave is generated when the particle velocity is at 0.5 km/s. With further increasing the particle velocity, a two-wave structure is generated. After the particle velocity is larger than 2.0 km/s, the shock wave is dominant. These findings provide important atomic insights for understanding the dynamic mechanical behaviors of C-S-H. © 2018 Elsevier B.V.

Number of references: 42
Main heading: Velocity control
Controlled terms: Cerenkov counters - Dynamics - Molecular dynamics - Silicate minerals - Elastoplasticity - Shock waves - Velocity - Hydrates - Hydration
Uncontrolled terms: Calcium silicate hydrate - Distribution of particles - Dynamic mechanical behavior - Elastic-plastic response - Hugoniot elastic limit - Molecular dynamics simulations - Particle velocities - Propagation of stress-wave
Classification code: 482.2 Minerals - 731.3 Specific Variables Control - 801.4 Physical Chemistry - 931 Classical Physics; Quantum Theory; Relativity - 944.7 Radiation Measuring Instruments
Numerical data indexing: Pressure 7.50e+09Pa, Velocity 2.00e+02m/s to 3.00e+03m/s, Velocity 2.00e+03m/s, Velocity 5.00e+02m/s
DOI: 10.1016/j.jnoncrysol.2018.09.007
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

84. Streamline Tracing Methods Based on Piecewise Polynomial Pressure Approximations   (*Open Access*)

Accession number: 20184005891950
Authors: Zhang, Nan (1, 2); Cao, Jie (1, 2); James, Lesley A. (3); Johansen, Thormod E. (4)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China; (2) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an, China; (3) Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's; NL, Canada; (4) Upstream Petroleum Research and Consulting Inc., St. John's; NL, Canada
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Abstract: In this paper, a unified approach for developing streamline tracing method is proposed based on piecewise polynomial pressure approximation functions. It is designed for the numerical schemes that solve the pressure solution at grid blocks while the interior velocity field remains unknown. The suitable velocity approximation functions are derived through analytical differentiation of pressure functions. They better represent the relationship between velocity field and pressure distribution in reality, satisfy the Laplace equation everywhere in a grid block, and ensure local mass conservation and normal flux continuity. Based on different polynomial pressure functions, the Trilinear/Bilinear and Cubic streamline tracing methods are developed. Additionally, a piecewise parabolic velocity reconstruction method is proposed to extend the application of the Cubic method to first-order numerical schemes. The accuracy and efficiency of the newly proposed methods are evaluated through comparing it with the Pollock and the high-order method in terms of velocity approximations and computational cost in numerical cases. Comparison results indicate that the Cubic method delivers the most accurate results at the same computational cost. ©2018. American Geophysical Union. All Rights Reserved.

85. Polydopamine@Gold Nanowaxberry Enabling Improved SERS Sensing of Pesticides, Pollutants, and Explosives in Complex Samples

Authors: Chen, Dongzhen (1, 2); Zhu, Xiaodong (1); Huang, Jian (2, 3); Wang, Gen (2); Zhao, Yue (2); Chen, Feng (2); Wei, Jing (2); Song, Zhongxiao (1); Zhao, Yongxi (2)
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Corresponding author: Zhao, Yongxi(yxzhao@mail.xjtu.edu.cn)
Abstract: Surface-enhanced Raman scattering (SERS) is a promising analysis technique for detecting various analytes in complex samples due to its unique vibrational fingerprints and high signal enhancement. However, impurity interference and substrate unreliability are direct suppression factors for practical application. Herein, we synthesize polydopamine@gold (PDA@Au) nanowaxberry, where Au nanoparticles are deposited on the surface of PDA sphere with high density and uniformity. Seed-mediated synthesis is used for fabrication of nanowaxberry. Au seeds are deposited on the surface of PDA sphere, then I ion coordinating ligand is employed to form stable AuI_4^- complex with $AuCl_4^-$, which decreases reduction potential of $AuCl_4^-$ and avails formation of shell structure. Such nanowaxberry has high density of voids and gaps in three-dimensional space, which could absorb analytes and benefit practical SERS detection. Using malachite green as a model analyte, nanowaxberry realizes highly sensitive detection with low limit of detection (1 pM) and good reproducibility (relative standard deviation of about 10%). Meanwhile, the nanowaxberry is employed for practical detection of thiram, benzidine, and 2,4-dinitrotoluene in the environmental water, juice, apple peel, and soil. The high performance makes nanowaxberry to be potentially used for pesticides detection, pollutants monitoring, and forbidden explosives sensing in complex samples. Copyright © 2018 American Chemical Society.

Number of references: 51
Main heading: Explosives
Controlled terms: Pollution - Gold nanoparticles - Substrates - Surface scattering - Gold deposits - Pesticides - Synthesis (chemical) - Explosives detection - Raman scattering
Uncontrolled terms: 2 ,4-dinitrotoluene - Coordinating ligands - Highly sensitive detections - Impurity interference - Reduction potential - Relative standard deviations - Surface enhanced Raman Scattering (SERS) - Three dimensional space
Classification code: 504.3 Heavy Metal Mines - 547.1 Precious Metals - 741.1 Light/Optics - 761 Nanotechnology - 801 Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Percentage 1.00e+01%
DOI: 10.1021/acs.analchem.8b01348

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

86. Stabilizers in MTL-algebras   (*Open Access*)

Accession number: 20183305695762

Authors: Wang, Jun Tao (1, 2); He, Peng Fei (3); Borumand Saeid, Arsham (4, 5)
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Publisher: IOS Press BV

Abstract: In the paper, we introduce some stabilizers and investigate related properties of them in MTL-algebras. Then, we also characterize some special classes of MTL-algebras, for example, IMTL-algebras, integral MTL-algebras, Gödel algebras and MV-algebras, in terms of these stabilizers. Moreover, we discuss the relation between stabilizers and several special filters (ideals) in MTL-algebras. Finally, we discuss the relation between these stabilizers and prove that the right implicative stabilizer and right multiplicative stabilizer are order isomorphic. This results also give answers to some open problems, which were proposed by Motamed and Torkzadeh in [Soft Comput, 21 (2017) 686-693]. © 2018 - IOS Press and the authors.

Number of references: 19
Main heading: Algebra
Controlled terms: Linearization
Uncontrolled terms: IMTL-algebras - MTL-algebras - MV-algebras - Special class
Classification code: 921.1 Algebra
DOI: 10.3233/JIFS-171105

Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

87. Cognitive seismic data modelling based successive differential evolution algorithm for effective exploration of oil-gas reservoirs   (*Open Access*)

Accession number: 20183505747680
Authors: Zhao, Jing (1); Ren, Jinchang (2, 3); Zabalza, Jaime (3); Gao, Jinghuai (4); Xu, Xinying (3); Xie, Gang (5)
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Corresponding author: Ren, Jinchang(jinchang.ren@strath.ac.uk)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 171
Issue date: December 2018
Publication year: 2018
Pages: 1159-1170
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: A cognitive modelling based new inversion method, the successive differential evolution (DE-S) algorithm, is proposed to estimate the Q factor and velocity from the zero-offset vertical seismic profile (VSP) record for oil-gas reservoir exploration. The DE algorithm seeks optimal solutions by simulating the natural species evolution processes and makes the individuals become optimal. This algorithm is suitable for the high-dimensional nonseparable model space where the inversion leads to recognition and prediction of hydrocarbon reservoirs. The viscoelastic medium is split into layers whose thicknesses equal to the space between two successive VSP geophones, and the estimated parameters of each layer span the related subspace. All estimated parameters span to a high dimensional nonseparable model space. We develop bottom-up workflow, in which the Q factor and the velocity are estimated using the DE algorithm layer by layer. In order to improve the inversion precision, the crossover strategy is discarded and we derive the weighted mutation strategy. Additionally, two kinds of stopping criteria for effective iteration are proposed to speed up the computation. The new method has fast speed, good convergence and is no longer dependent on the initial values of model parameters. Experimental results on both synthetic and real zero-offset VSP data indicate that this method is noise robust and has great potential to derive reliable seismic attenuation and velocity, which is an important diagnostic tool for reservoir characterization. © 2018 Elsevier B.V.
Number of references: 21
Main heading: Velocity
Controlled terms: Optimization - Clustering algorithms - Petroleum reservoir engineering - Seismology - Iterative methods - Parameter estimation - Seismic prospecting - Petroleum prospecting - Petroleum reservoirs - Q factor measurement - Seismic waves
Uncontrolled terms: Differential Evolution - Differential evolution algorithms - High dimensional data - Hydrocarbon reservoir - Reservoir characterization - Vertical seismic profiles - Visco-elastic mediums - VSP data
Classification code: 481.4 Geophysical Prospecting - 484 Seismology - 484.1 Earthquake Measurements and Analysis - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 903.1 Information Sources and Analysis - 921.5 Optimization Techniques - 921.6 Numerical Methods - 942.2 Electric Variables Measurements
DOI: 10.1016/j.petrol.2018.08.044

88. Seasonal variability of hyporheic water exchange of the Weihe River in Shaanxi Province, China

Authors: Zhang, Junlong (1); Song, Jinxi (1, 2); Long, Yongqing (1); Kong, Feihe (1); Wang, Liping (1); Zhang, Yan (1); Li, Qi (1); Wang, Yuqi (3); Hui, Yanghe (4)
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Abstract: Interactions between surface water and groundwater play a major role in hydrological processes. Understanding the seasonal variations of the water exchange is important to clear drivers of water transferring in a catchment. However, the seasonal variations of water exchange have been limited by the resolution of methods and the experimental problems. In this paper, the Weihe River, in Shaanxi Province, China was chosen, as a case study area to access the seasonal variability of water exchange in the hyporheic zone (HZ). Five testing sites were in the main channel of the river, and seasonal field data were collected from fall 2012 to summer 2014. The temperature profiles and heat convection-diffusion equation were applied to analyze the hyporheic water exchange pattern (the type of movement) and its magnitude, as well as characterizing the seasonal variability of the water exchange features. The results indicate that the patterns and magnitudes of water exchange in the hyporheic zone vary significantly in seasons and test sites. The water exchange general in the fall season (71.5 mm/d) is larger than in other seasons (i.e., spring 54.14 mm/d, summer 56.19 mm/d and winter 23.26 mm/d). This study provides the guidelines for the water resources management in different seasons. © 2017 Elsevier Ltd

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

89. CO2 methanation over ordered mesoporous NiRu-doped CaO-Al2O3 nanocomposites with enhanced catalytic performance

Accession number: 20174804480474
Authors: Liu, Qing (1); Wang, Shengjia (1); Zhao, Guoming (1); Yang, Hongyuan (1); Yuan, Meng (1, 2); An, Xiaoxi (1); Zhou, Haifeng (1); Qiao, Yingyun (3); Tian, Yuanyu (1, 3)
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Source title: International Journal of Hydrogen Energy
Abbreviated source title: Int J Hydrogen Energy
Volume: 43
Issue: 1
Issue date: January 4, 2018
Publication year: 2018
Pages: 239-250
Language: English
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CODEN: IJHEDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The ordered mesoporous NiRu-doped CaO-Al2O3 nanocomposites were synthesized via a facile evaporation-induced self-assembly method for CO2 methanation. Metallic Ni and Ru species retained the single-component heterostructure rather than NiRu alloy over the 600 °C-reduced catalysts. Owing to the synergistic effect of bimetallic Ni–Ru as well as the improved H2 and CO2 chemisorption capacities after the addition of Ru and CaO promoters, the ordered mesoporous 10N1R2C-OMA catalyst exhibited enhanced catalytic activity and selectivity, which achieved the maximum CO2 conversion of 83.8% and CH4 selectivity of 100% at 380 °C, 0.1 MPa, 30000 mL g-1 h-1. In a 550 °C-109 h-lifetime test, the ordered mesoporous 10N1R2C-OMA catalyst showed high stability and superior anti-sintering property due to the confinement effect of the ordered mesostructure. © 2017 Hydrogen Energy Publications LLC
Number of references: 74
Main heading: Carbon dioxide
Controlled terms: Ruthenium - Sintering - Catalyst activity - Mesoporous materials - Binary alloys - Methanation - Nanocomposites - Hydrogenation - Self assembly - Alumina - Catalyst selectivity - Nickel - Aluminum oxide
Uncontrolled terms: Catalytic performance - Confinement effects - Enhanced catalytic activity - Evaporation induced self assemblies - Nickel catalyst - Ordered mesostructure - Ru-doping - Sintering properties
Classification code: 547.1 Precious Metals - 548.1 Nickel - 761 Nanotechnology - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 933 Solid State Physics - 951 Materials Science
Numerical data indexing: Percentage 1.00e+02%, Percentage 8.38e+01%, Pressure 1.00e+05Pa, Temperature 6.53e+02K
DOI: 10.1016/j.ijhydene.2017.11.052

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

90. An Efficient CaO-Based Catalyst for Rapid Production of Biodiesel without Glycerol as a by-Product Using a Tri-Component Reaction

Accession number: 20184105928828
Authors: Tang, Ying (1, 2); Li, Shaoying (1); Dong, Jianlong (1); Meng, Mei (1); Zhang, Jie (1, 3)
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Source title: JAOCS, Journal of the American Oil Chemists' Society
Abbreviated source title: JAOCS J Am Oil Chem Soc
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Issue: 12
Issue date: December 2018
Publication year: 2018
Pages: 1487-1496
Language: English
ISSN: 0003021X
E-ISSN: 15589331
CODEN: JAOCA7
Document type: Journal article (JA)
Publisher: Wiley-Blackwell
Abstract: In this work, commercial CaO was modified using various sodium salts (Na2WO4, Na2CO3, Na2SO4, and NaCl), among which NaCl/CaO showed the best catalytic performance for no-glycerol biodiesel production using three components of rapeseed oil, dimethyl carbonate (DMC), and methanol as reactants. 97.1% biodiesel yield was obtained at 1 h in the presence of NaCl/CaO. Various techniques including N2 physical adsorption, XRD, and CO2-chemical adsorption revealed that the unique catalytic activity of NaCl/CaO was related to its higher degree of crystallinity and relatively weaker surface basicity, and large pore size in the structure compared to other catalysts. Furthermore, it was found that the rapid hydration by impregnation of CaO can be greatly weakened in the presence of NaCl and the pore diameter plays a more important role than the basicity of solid catalysts in this heterogeneous transesterification. © 2018 AOCS
Number of references: 32
Main heading: Transesterification
Controlled terms: Alkalinity - Biodiesel - Catalyst activity - Crystallinity - Glycerol - Pore size - Sodium Carbonate - Sodium chloride - Sodium sulfate
Uncontrolled terms: Biodiesel production - Catalytic performance - Glycerol carbonate - Rapeseed oil - Sodium salt - Solid basis - Three-component - Transesterifications - Tri components -]+ catalyst
Classification code: 523 Liquid Fuels - 801.1 Chemistry, General - 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 - 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Percentage 9.71e+01%, Time 3.60e+03s
DOI: 10.1002/aocs.12143

91. Calculation model of rock fracture pressure with multifields in the process of fracturing (*Open Access*)

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Authors: Xiaojiao, Zhao (1, 2, 3); Zhan, Qu (1, 2, 3); Xiaofeng, Xu (4); Xiaocong, Yu (5); Heng, Fan (2); Xijin, Song (2)
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Corresponding author: Xiaojiao, Zhao(zhaoxsyu@qq.com)
Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2018
Issue date: 2018
Publication year: 2018
Article number: 2098723
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: In this paper, a comprehensive model to calculate the rock fracture pressure by the theory of double effective stress of porous medium is established, which considers such effective factors as the crustal stress field, hydration stress field, temperature field, tectonic stress field, the porosity of rock, and additional stress field generated by seepage of drilling fluid. This new model is applicable to predict the fracture pressure of different types of rocks. Using the experimental parameters of field fracturing and the experimental results of three-axis compression of rock cores with different water contents, we may get the calculated fracture pressure. Compared with the measured fracture pressure in the oilfield, the result calculated in the present study shows good agreement. Besides, the effects of water contents on the tensile strength and fracture pressure are analyzed. Results show that both the tensile strength and fracture pressure decrease with the increase of water contents, which is due to the reduction of the mechanical properties of rocks by hydration. Copyright © 2018 Zhao Xiaojiao et al.
Number of references: 28
Main heading: Rocks
Controlled terms: Drilling fluids - Hydration - Stresses - Fracture - Tensile strength - Porous materials
Uncontrolled terms: Additional stress - Calculation models - Comprehensive model - Different water contents - Effective stress - Experimental parameters - Fracture pressures - Tectonic stress fields
Classification code: 951 Materials Science
DOI: 10.1155/2018/2098723

92. Mechanical properties of directionally solidified Al2O3/Y3Al5O12 eutectic ceramic prepared by optical floating zone technique

Accession number: 20181605015151
Authors: Wang, Xu (1, 4); Tian, Zhilin (2); Zhang, Wen (1); Zhong, Yujie (3); Xian, Quangang (4); Zhang, Jian (4); Wang, Jingyang (4)

Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Technology, 5 South Jinhua Road, Xi'an; 710048, China; (2) Department of Electronic Engineering, The Chinese University of Hong Kong, New Territories, Hong Kong; (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Institute of Metal Research, Chinese Academy of Sciences, 72 Wenhua Road, Shenyang; 110016, China
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Abbreviated source title: J. Eur. Ceram. Soc.
Volume: 38
Issue: 10
Issue date: August 2018
Publication year: 2018
Pages: 3610-3617
Language: English
ISSN: 09552219
E-ISSN: 1873619X
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: Al2O3/Y3Al5O12(YAG) directionally solidified eutectic (DSE) crystal was prepared by optical floating zone technique. Al2O3/YAG DSE consists of continuous entangled Al2O3 and the YAG forming a three-dimensional networks structure. The volume fraction of porosity is ultra-low (0.013%) and the average equivalent diameters of most pores (>84%) are smaller than 4 μm. The Al2O3/YAG DSE shows excellent high-temperature elastic stiffness. The Young's modulus at 1500 °C maintains more than 85% of the value at room temperature. Bending strength exhibits excellent retention up to high temperature as well. High-temperature ball indentation testing shows plastic deformation involving dislocations and twinning, which predominantly occur in Al2O3 phase, while the YAG phase is stable. Evaluation on Hv/E index predicts Al2O3/YAG DSE with moderate capability to accommodate damages. Our results highlight Al2O3/YAG DSE as excellent high-temperature structural materials. © 2018 Elsevier Ltd
Number of references: 38
Main heading: Solidification
Controlled terms: Aluminum oxide - Yttrium aluminum garnet - Elastic moduli - Alumina - Bending strength - Eutectics
Uncontrolled terms: Al2O3/YAG DSE - Directionally solidified - Directionally solidified eutectics - Equivalent diameter - Eutectic microstructure - High temperature structural material - Optical floating zones - Three-dimensional networks
Classification code: 531.2 Metallography - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Percentage 1.30e-02%, Percentage 8.50e+01%, Size 4.00e-06m, Temperature 1.77e+03K
DOI: 10.1016/j.jeurceramsoc.2018.04.017
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

93. New method for assessing microfracture stress sensitivity in tight sandstone reservoirs based on acoustic experiments

Accession number: 20180404673254
Authors: Yin, Shuai (1); Lv, Dawei (2, 3); Ding, Wenlong (4)
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Corresponding author: Yin, Shuai(speedysys@163.com)
Source title: International Journal of Geomechanics
Abbreviated source title: Int. J. Geomech.

Volume: 18
Issue: 4
Issue date: April 1, 2018
Publication year: 2018
Article number: 04018008
Language: English
ISSN: 15323641
E-ISSN: 19435622
Document type: Journal article (JA)
Publisher: American Society of Civil Engineers (ASCE), United States
Abstract: Research on the evaluation of microfractures in tight sandstone reservoirs is a frontier topic worldwide. A marine tight sandstone reservoir is present in the Silurian strata in the northern Tazhong area of the Tarim Basin, Northwest China, at a depth of more than 5,000 m. The study of the regular opening and closing of microfractures can provide guidance for the exploration and development of tight sandstone reservoirs. In this paper, a triaxial acoustic experiment was designed, and a new method for assessing the microfracture stress sensitivity of tight sandstone reservoirs was proposed by combining the Biot-consistent and the differential equivalent medium (DEM) theory models. By using the coupled model, the rock microfracture density E and the pore aspect ratio were calculated. The pore-fracture morphological evolution and regular distribution within the rocks were discussed, and the microfracture stress sensitivity was evaluated. This method could effectively overcome the drawback of using a single method. The results showed that the microfracture density E decreases and the pore aspect ratio increases with an increase in the confining pressure, which is mainly due to the closure of microfractures. According to the decreasing magnitude of microfracture density values under different confining pressures, the proportion of microfractures that stayed open or had closed could be determined. The stress sensitivity of the samples that had greater microfracture density under higher confining pressure was weak. In contrast, the stress sensitivities of the other samples were strong. According to the change rule of the rock pore aspect ratio, a critical pressure was defined. It was found that the rock microfracture density values corresponding to the critical pressures for all samples were relatively close. This E value could be treated as a common feature of tight sandstone reservoir microfractures, and it could also be used as a contrast indicator to quantitatively characterize the degree of development of various tight reservoir microfractures. The correlations between the microfracture density E under a confining pressure of 65 MPa, the defined critical pressure, and the rock porosity indicated that the advantageous types of microfractures weremainly influenced by the rock physical properties. There was a close correlation between the microfracture development degree and the rock physical properties. For the tight sandstone reservoir of this study, the degree of microfracture development with weak stress sensitivity was significantly higher in feldspar than in quartz. This method could be used for the quantitative evaluation of microfracture properties. © 2018 American Society of Civil Engineers.
Number of references: 46
Main heading: Aspect ratio
Controlled terms: Sandstone - Rock pressure - Porosity - Tight gas
Uncontrolled terms: Acoustic tests - Micro-fracture - Stress sensitivity - Tazhong area - Tight sandstone reservoirs
Classification code: 482.2 Minerals - 502.1 Mine and Quarry Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Pressure 6.50e+07Pa, Size 5.00e+03m
DOI: 10.1061/(ASCE)GM.1943-5622.0001100
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

94. Multifractal Study of Three-Dimensional Pore Structure of Sand-Conglomerate Reservoir Based on CT Images

Accession number: 20181705043380

Authors: Zhou, You (1, 2, 3); Wu, Songtao (1); Li, Zhiping (2, 3); Zhu, Rukai (1); Xie, Shuyun (4); Jing, Cheng (5); Lei, Lei (4)

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Abstract: Sand-conglomerate reservoir has been scarcely studied, and there is no effective method available for quantitative characterization of pore structure of such a reservoir. In this paper, a multifractal study was made on the Triassic Karamay Formation sand-conglomerate reservoir in the Mahu rim region, the Junggar Basin, by using a variety of high-resolution analysis methods, such as Micro-CT, QEMSCAN, and MAPS, in order to quantitatively characterize the heterogeneity of pore size distribution, relative differentiation of large and small pores, and mineral composition. The results reveal that the multifractal parameters have more influence on permeability than on porosity. The smaller the $\Delta\alpha$ (the multifractal spectral width) and the larger the #f (the difference in fractal dimension of the maximum and minimum probability subsets), the better the reservoir physical property. To some extent, the relationship between multifractal parameters and mineral composition provides an opportunity to reflect the diagenesis. There is a positive correlation between the clay mineral content and the heterogeneity of the microscopic pore structure of the reservoir. Kaolinite and chlorite cementations are the most significant factors that damage the reservoir pore space. This understanding matches well with the MAPS and QEMSCAN results. With outstanding advantage in quantitatively evaluating the heterogeneity of pore structure of sand-conglomerate reservoir, multifractal theory provides a new idea and method for quantitative characterization of pore structure of other types of heterogeneous oil reservoirs. © 2018 American Chemical Society.

Number of references: 29
Main heading: Pore structure
Controlled terms: Petroleum reservoir engineering - Sand - Computerized tomography - Petroleum reservoirs - Fractal dimension - Pore size - Kaolinite
Uncontrolled terms: High resolution analysis - Microscopic pore structures - Multifractal parameters - Multifractal theory - Positive correlations - Quantitative characterization - Reservoir physical property - Three-dimensional pores
Classification code: 482.2 Minerals - 483.1 Soils and Soil Mechanics - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.5 Computer Applications - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1021/acs.energyfuels.8b00057

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

95. Staggered extension laws of hydraulic fracture and natural fracture

Accession number: 20183805826914
Title of translation:

Authors: Liu, Shun (1); He, Heng (2); Zhao, Qianyun (2); Zhou, Desheng (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University; Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Engineering Research Center of Development and Management for Low to Ultra-low Permeability Oil &Gas Reservoirs in West China of the Ministry of Education, Xi'an; Shaanxi; 710065, China; (2) Oil & Gas Technology Research Institute, PetroChina Changqing Oilfield Company, Xi'an; Shaanxi; 710021, China
Corresponding author: Liu, Shun(liushun631@163.com)
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Abbreviated source title: Shiyou Xuebao
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Issue date: March 1, 2018
Publication year: 2018
Pages: 320-326 and 334
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The fracture-network fracturing or staged fracturing reformation technology for unconventional and tight reservoirs focuses on the scientific problem about the staggered extension of hydraulic fracture and natural fracture. To better control the extension azimuth of hydraulic fracture and achieve the optimal fracture network state, a two-dimensional fracture extension calculation model was built based on displacement discontinuity and element superposition principle, so as to conduct the quantitative simulation research on the staggered extension laws of a hydraulic fracture and a natural fracture under the conditions of different dip angles, intervals and stresses. The research results show that fracture intervals and dip angles can greatly affect the fracture extension amplitude. When the interval between natural fracture and fracturing fissure is greater than 1 m and the dip angle is less than 70°, the fracturing fissure will force the natural fracture to turn and extend until intersection. Principal stress ratio has an effect on the extension amplitude of staggered fracture to some extent. However, the Poisson's ratio and Young's modulus have insignificant influences on the extension amplitude of staggered fractures. © 2018, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 30
Main heading: Fracture
Controlled terms: Hydraulic fracturing - Elastic moduli
Uncontrolled terms: Displacement discontinuity - Displacement discontinuity method - Induced stress - Natural fracture - Principal stress ratios - Quantitative simulation - Superposition principle - Unconventional reservoirs
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 951 Materials Science
Numerical data indexing: Size 1.00e+00m
DOI: 10.7623/syxb201803007
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

96. Paleo-structure features in the 1st member of the Upper Paleozoic Shanxi Formation and its influences on gas accumulation in southwestern Ordos Basin

Accession number: 20182205241773
Authors: Zhang, Yuhang (1, 2, 3); Zhao, Jingzhou (3); Wang, Yongwei (4); Liu, Tao (4); Wang, Wenqiang (3); Tang, Wen (3)
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Abbreviated source title: Oil Gas Geol.
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Issue date: February 28, 2018

Publication year: 2018
Pages: 54-65
Language: Chinese
ISSN: 02539985
Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology

Abstract: Based on the latest seismic data, geological understanding and exploration results in the Southwestern Ordos Basin, paleo-deformation characteristics of the 1st member of the Upper Paleozoic were studied using tectonic evolution analysis and paleo-structure restoration, and controlling effects of paleo-structure on hydrocarbon distribution were analyzed. According to the strata correlation, the sedimentary, deformation, and subsidence characteristics of the 1st member of the Permian Shanxi Formation are identified. The tectonic evolution and hydrocarbon accumulation stages revealed that the key periods of the Upper Paleozoic tectono-hydrocarbon accumulation are the Late Jurassic and the end of the Early Cretaceous in the Southweste. Through the restoration of Shan 1 paleo-structure in different tectonic evolution stages, the ancient structure of the Upper Paleozoic Shan 1 in Late Triassic, Late Jurassic and end of Early Cretaceous share similarities but also demonstrate gradual evolution through time. The paleo-uplift and paleo-slope are widely developed in the late Jurassic, while the western slope gradually narrowed and the Tianhuan Depression is formed at the end of the Early Cretaceous. Based on the analysis of tectonic deformation and hydrocarbon accumulation stages, it is believed that the Late Jurassic Shan 1 paleo-structure is the key factor controlling the distribution of the Upper Paleozoic gas reservoirs in the Southwest Ordos basin. Due to the lack of long-distance migration of the gas in the Upper Paleozoic reservoirs in the study area, the Early Cretaceous hydrocarbon charge is focused around the Late Jurassic ancient structure highs of Shan 1 member. Thus the hydrocarbon accumulation model is characterized by near-source or intra-source accumulation. © 2018, OIL & GAS GEOLOGY Editorial Board. All right reserved.
Number of references: 28
Main heading: Restoration
Controlled terms: Deformation - Petroleum reservoir engineering - Petroleum prospecting - Petroleum reservoirs - Hydrocarbons - Metamorphic rocks - Tectonics - Seismology
Uncontrolled terms: Ordos Basin - Paleo structures - Reservoir distribution - Tectonic evolution - Upper Paleozoic
Classification code: 481.1 Geology - 484.1 Earthquake Measurements and Analysis - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
DOI: 10.11743/ogg20180106
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

97. Organic-inorganic hybrid based on co-assembly of polyoxometalate and dopamine for synthesis of nanostructured Ag

Accession number: 20174704433773
Authors: Li, Hong (1); Yan, Yongli (1); Gu, Xuefan (1); Jiao, Long (1); Peng, Haonan (2); Cui, Wei (3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Key Laboratory of Applied Surface and Colloid Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710119, China; (3) 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
Corresponding author: Li, Hong(lihong@iccas.ac.cn)
Source title: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Abbreviated source title: Colloids Surf. A Physicochem. Eng. Asp.
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Language: English
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CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: Organic-inorganic hybrid material with hierarchical nanostructures has been considered as one of ideal templates for the generation of inorganic nanomaterials. Herein, we demonstrate that 3D hierarchical nanostructures formed from Keggin-type polyoxometalate phosphotungstic acid and biomolecule dopamine can be used as an excellent template for in situ synthesis of nanostructured silver. Hierarchical nanostructures are prepared by simple and versatile co-assembly of phosphotungstic acid and dopamine. The size and morphology of these nanostructures could simply be controlled by varying the ratios of two components, the type of the buffer solution, and the pH of the solution. Moreover, these 3D hierarchical nanostructures could be used as the template for in situ synthesis of nanostructured silver with the catechol in dopamine acting as the reducing agent. © 2017 Elsevier B.V.

Number of references: 27
Main heading: Amines
Controlled terms: Nanostructures - Neurophysiology - organic-inorganic materials - Oxides - Silver
Uncontrolled terms: Dopamine - Hierarchical Nanostructures - In-situ synthesis - Inorganic nanomaterials - Nano-structured silvers - Organic-inorganic hybrid - Organic-inorganic hybrid materials - Phosphotungstic acid
Classification code: 461.6 Medicine and Pharmacology - 547.1 Precious Metals - 761 Nanotechnology - 804 Chemical Products Generally - 804.1 Organic Compounds - 933 Solid State Physics
DOI: 10.1016/j.colsurfa.2017.11.054

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

98. Recent developments in dopamine-based materials for cancer diagnosis and therapy

Accession number: 20180504696803

Authors: Li, Hong (1); Jia, Yi (2); Peng, Haonan (3); Li, Junbai (2)
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Corresponding author: Peng, Haonan(phn@snnu.edu.cn)

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Language: English
ISSN: 00018686
CODEN: ACISB9
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: Dopamine-based materials are emerging as novel biomaterials and have attracted considerable interests in the fields of biosensing, bioimaging and cancer therapy due to their unique physicochemical properties, such as versatile adhesion property, high chemical reactivity, excellent biocompatibility and biodegradability, strong photothermal conversion capacity, etc. In this review, we present an overview of recent research progress on dopamine-based materials for diagnosis and therapy of cancer. The review starts with a summary of the physicochemical properties of dopamine-based materials in general. Then detailed description is followed on their applications in the fields of diagnosis and treatment of cancers. The review concludes with an outline of some remaining challenges for dopamine-based materials to be used for clinical applications. © 2018 Elsevier B.V.

Number of references: 174

99. Multiple geochemical proxies controlling the organic matter accumulation of the marine-continental transitional shale: A case study of the Upper Permian Longtan Formation, western Guizhou, China

Authors: Liu, Shunxi (1, 2); Wu, Caifang (1); Li, Teng (3); Wang, Haichao (4)
Author affiliation: (1) Key Laboratory of Coalbed Methane Resources and Reservoir Formation Process, Ministry of Education, China University of Mining and Technology, Xuzhou; Jiangsu Province; 221008, China; (2) School of Resources and Environment, Henan Polytechnic University, Jiaozuo; Henan Province; 454000, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China; (4) Institute of Geology and Mining Engineering, Xinjiang University, Urumqi; Xinjiang; 830047, China
Corresponding author: Wu, Caifang(nulipinbo_2014@163.com)
Abstract: The organic-rich shale of the Longtan Formation of the Upper Permian in western Guizhou formed during the marine-continental transitional facies depositional environment. With a high total organic carbon (TOC) content and a large cumulative thickness, it is thought to be the superior source rock for shale gas development. The depositional environment of marine-continental transitional shale is significantly different from marine shale, which leads to the various accumulation characteristics of the organic matter. In this paper, shale samples were collected from the Longtan Formation of the Upper Permian, which is typical marine-continental transitional shale. The TOC, major elements and trace elements were measured, and the formation and preservation conditions were investigated using multiple geochemical proxies, including paleoclimate, detrital influx, redox parameters, paleoproductivity and sedimentation rate. The TOC decreases first and then increases from the bottom to the top of the Longtan Formation shale, and the TOC for the lower Longtan Formation is higher than the upper Longtan Formation. For the lower Longtan Formation, the positive correlations between TOC and redox indicators (V, U and V/Cr) demonstrate that the dysoxic bottom water environment was the key factor that controlled the accumulation of organic matter. For the upper Longtan Formation, there are positive correlations between the TOC and the paleoclimate and sedimentation rate, which suggests that the enrichment of the organic matter was influenced by both a warm and humid paleoclimate and the high sedimentation rate of an oxic environment. However, the high detrital influx (aluminosilicate) occurred as the diluent decreased the concentration of organic matter. The paleoproductivity has a poor correlation with TOC for the Longtan Formation, suggesting that it was inferior to the gathering of organic matter. The sedimentary models built for the upper and lower Longtan Formation shale can reproduce the enrichment of organic matter. © 2018 Elsevier B.V.

Number of references: 76
Main heading: Organic carbon
Controlled terms: Biogeochemistry - Sedimentation - Trace elements
Uncontrolled terms: Accumulation characteristics - Depositional environment - Geochemical proxies - Longtan Formation - Organic-rich shales - Positive correlations - Preservation condition - Total Organic Carbon
Classification code: 481.2 Geochemistry - 801.2 Biochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds
DOI: 10.1016/j.jngse.2018.06.007
Funding Details: Number: 41572140, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2015XKZD07, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2016ZX05044001, Acronym: -, Sponsor: National Major Science and Technology Projects of China; Number: -, Acronym: -, Sponsor: Qinglan Project of Jiangsu Province of China;
Funding text: This work was supported by the Natural Science Foundation of China (41572140), the National Major Special Project of Science and Technology of China (2016ZX05044001), the Fundamental Research Funds for the Central Universities (2015XKZD07), and the Qing Lan Project .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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100. Innovation and application of an automatic control system for gas wells production in sulige gas field   (*Open Access*)

Accession number: 20185206308264
Authors: Duan, Wenguang (1, 2); Chen, Gang (3, 4)
Author affiliation: (1) China National Petroleum Corporation Xibu Drilling Engineering Company Limited, Science and Technology Department, Urumqi, XinJiang; 830011, China; (2) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China; (3) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (4) Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'an, Shaanxi; 710065, China
Source title: Journal of Physics: Conference Series
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Volume: 1074
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Issue title: International Conference on Mechanical, Electric and Industrial Engineering, MEIE 2018
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Publication year: 2018
Article number: 012123
Language: English
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Document type: Conference article (CA)
Conference name: International Conference on Mechanical, Electric and Industrial Engineering, MEIE 2018
Conference date: May 12, 2018 - May 14, 2018
Conference location: Hangzhou, China
Conference code: 139940
Publisher: IOP Publishing Ltd
Abstract: In this paper, based on the advantages of imported control system and equipment, we designed a new type of automatic control system and equipment for gas well dewatering, by which the daily use of mobile phone can be used as a remote control terminal system. It has the advantages of convenient use, low cost, no need to design the PC software, free maintenance and upgrade PC software costs. Sulige Gas Field has used this system on 20 wells for mass operation test. The systems are till working until now, the equipment runs stably, and the economic benefit is remarkable. U disk data extraction is fast and convenient, and the management cost is reduced by 80%. The number of managing wells of per person is increased. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Control systems
Controlled terms: Automation - Natural gas wells - Natural gas well production - Process control - Costs - Gas industry - Remote control

101. Preparation of crude oil flow improver from vegetable oil and the performance evaluation

Authors: Xu, Jingfang (1, 2); Guo, Zhen (1); Zhang, Fawang (3); Wang, Dachuang (3); Wang, Zhen (4); Zhang, Yongming (4); Chen, Gang (1, 5)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Province Key Lab. of Environ. Poll. Contr. and Reservoir Protect. Technol. of Oilfields, Xi'an; 710065, China; (3) Oil Production Plant No. 11, PetroChina Changqing Oilfield Company, Xi'an; 710200, China; (4) School of Science, Xijing University, Xi'an; 710123, China; (5) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China
Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)

Abstract: In this work, a series of hydroxylmethyl pentamine (HMPA) was synthesized from vegetable oil, tetraethylene pentamine and hexamethylenetetramine, which was evaluated as a crude oil flow improver. The results showed that HMPAs have good viscosity reduction effect on the crude oil from Yanchang Oilfield, with the highest viscosity reduction rate of 93%. The highest pour point reduction depression was achieved as 5.4°C. Paraffin crystal morphology characterization was conducted on the crude oil to elucidate the mechanism of viscosity reduction and pour point depression. © 2018 Trans Tech Publications.

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

102. Far-Red Fluorescent Probe for Imaging of Vicinal Dithiol-Containing Proteins in Living Cells Based on a pKa Shift Mechanism

Accession number: 20180804828300
Authors: Zhang, Shengrui (1, 2); Chen, Guojun (1); Wang, Yuanyuan (1); Wang, Qin (1, 2); Zhong, Yaogang (3); Yang, Xiao-Feng (1); Li, Zheng (3); Li, Hua (4)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of Ministry of Education, College of Chemistry and Materials Science, Northwest University, Xi'an, Shaanxi; 710127, China; (2) Shaanxi Key Laboratory of Catalysis, School of Chemistry and Environment Science, Shaanxi University of Technology, Hanzhong, Shaanxi; 723000, China; (3) College of Life Sciences, Northwest University, Xi'an, Shaanxi; 710069, China; (4) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Yang, Xiao-Feng(xfyang@nwu.edu.cn)
Source title: Analytical Chemistry
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Pages: 2946-2953
Language: English
ISSN: 00032700
E-ISSN: 15206882
CODEN: ANCHAM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Vicinal dithiol-containing proteins (VDPs) play fundamental roles in intracellular redox homeostasis and are responsible for many diseases. In this work, we report a far-red fluorescence turn-on probe MCAs for VDPs exploiting the pKa shift of the imine functionality of the probe. MCAs is composed of a merocyanine Schiff base as the fluorescent reporter and a cyclic 1,3,2-dithiarsenolane as the specific ligand for VDPs. The imine pKa of MCAs is 4.8, and it exists predominantly in the Schiff base (SB) form at physiological pH. Due to the absence of a resonating positive charge, it absorbs at a relatively short wavelength and is essentially nonfluorescent. Upon selective binding to reduced bovine serum albumin (rBSA, selected as the model protein), MCAs was brought from aqueous media to the binding pockets of the protein, causing a large increase in pKa value of MCAs (pKa = 7.1). As a result, an increase in the protonated Schiff base (PSB) form of MCAs was observed at the physiological pH conditions, which in turn leads to a bathochromically shifted chromophore (#abs = 634 nm) and a significant increase in fluorescence intensity (#em = 657 nm) simultaneously. Furthermore, molecular dynamics simulations indicate that the salt bridges formed between the iminium in MCAs and the residues D72 and D517 in rBSA resist the dissociation of proton from the probe, thus inducing an increase of the pKa value. The proposed probe shows excellent sensitivity and specificity toward VDPs over other proteins and biologically relevant species and has been successfully applied for imaging of VDPs in living cells. We believe that the present pKa shift switching strategy may facilitate the development of new fluorescent probes that are useful for a wide range of applications. © 2018 American Chemical Society.
Number of references: 47
Main heading: Proteins
Controlled terms: Physiology - Fluorescence imaging - pH - Probes - Molecular dynamics - Chromophores - Mammals
Uncontrolled terms: Bovine serum albumins - Fluorescence intensities - Fluorescent reporter - Molecular dynamics simulations - New fluorescent probes - Protonated schiff base - Sensitivity and specificity - Switching strategies
Classification code: 461.9 Biology - 746 Imaging Techniques - 801.1 Chemistry, General - 801.4 Physical Chemistry - 804.1 Organic Compounds
Numerical data indexing: Size 6.34e-07m, Size 6.57e-07m
DOI: 10.1021/acs.analchem.7b05429

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

103. Performance of the castor oil in methanol-gasoline as a bi-functional additive

Accession number: 20184205939229
Authors: Xu, Jingfang (1); Xue, Yuying (2); Liu, Man (3); Zhang, Fawang (3); Ying, Tang (1, 4); Zhang, Yongming (5); Zheng, Wang (1, 5)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Province Key Lab. of Environ. Poll. Contr. and Reservoir Protect. Technol. of Oilfields, Xi'an; 710065, China; (3) Oil Production Plant No. 11, PetroChina Changqing Oilfield Company, Xi'an; 710200, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China; (5) School of Science, Xijing University, Xi'an; 710123, China
Corresponding author: Zheng, Wang(1427133955@qq.com)
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Abbreviated source title: Key Eng Mat
Volume: 777 KEM
Part number: 1 of 1
Issue title: Advanced Materials and Engineering Materials VII
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Publication year: 2018
Pages: 232-237
Language: English
ISSN: 10139826
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CODEN: KEMAEY
ISBN-13: 9783035713718
Document type: Conference article (CA)
Conference name: 7th International Conference on Advanced Materials and Engineering Materials, ICAMEM 2018
Conference date: May 17, 2018 - May 18, 2018
Conference location: Bangkok, Thailand
Conference code: 219169
Publisher: Trans Tech Publications Ltd
Abstract: In this paper, the castor oil, as additives, has been investigated on the phase separation temperature of M15, M30, M50 and M65 methanol gasoline at -25.0°C to 40.0°C, respectively. The effect of the additives on the phase stability and saturation vapour pressure was discussed. It was found that castor oil derivatives have good phase stability to various ratio methanol gasoline blends. Introducing water in the methanol gasoline blends need much amount of methyl castor oil to realize phase mixable. Besides, the castor oil can depress the saturation vapour pressure of methanol gasoline effective as well. With these data, it can be concluded that the castor oil have the great potential to be used gasoline-methanol additives. © 2018 Trans Tech Publications.
Number of references: 11
Main heading: Gasoline
Controlled terms: Phase diagrams - Methanol - Additives - Phase separation - Vegetable oils
Uncontrolled terms: Bi-functional - Castor oil - Methanol-gasoline blends - Phase separation temperatures - Saturation vapour pressures
Classification code: 523 Liquid Fuels - 641.1 Thermodynamics - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds
Numerical data indexing: Temperature 2.48e+02K to 3.13e+02K
DOI: 10.4028/www.scientific.net/KEM.777.232
Compendex references: YES

104. Controlling measures for the hidden dangers caused by the vibration of gas compressor sets

Authors: Zhao, Jinsheng (1, 2); Li, Pan (3); Ma, Yuteng (3); Wang, Xuanyi (4, 5)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an; Shaanxi; 710065, China; (3) No.2 Gas Processing Plant, Sulige Gas Field, PetroChina Changqing Oilfield Company, Uxin Qi; Inner Mongolia; 017300, China; (4) Oil and Gas Technology Institute, PetroChina Changqing Oilfield Company, Xi'an; Shaanxi; 710018, China; (5) National Engineering Laboratory of Low-permeability Oil & Gas Exploration and Development, Xi'an; Shaanxi; 710018, China
Abstract: Reciprocating natural gas compressor sets have a widespread problem of excessive vibration, which leads to major hidden dangers to safe production. In this paper, the No.2 Gas Processing Plant of the Sulige Gas Field, operated by the PetroChina Changqing Oilfield Company, was taken as an example to explore the main reasons and controlling measures for such a problem. Based on the energy conservation law, the vibration of the operating compressor sets was studied systematically from the aspects of foundation soil and compressor skid components. Then, a compressor over-vibration control scheme was put forward from the single one to the six-compressor resonance control and from the compressor body to foundation control. And the following research results were obtained. First, the main reason for the excessive vibration of compressors is the resonance of six compressor foundations, and the specific reasons include poor soil compaction around the compressor foundation and process piping, gas pulsation, pipeline resonance and compressor body vibration. Second, by taking some controlling measures, including excavating and tamping the soil around the compressor foundation and process piping, reinforcing the equipment, controlling gas flow, optimizing the startup program and adjusting compressor inlet manifold, the vibration value of the compressor can be kept in the range of standard value, the failure rate is reduced significantly, and the operating efficiency of compressor sets is thus improved. In conclusion, these controlling measures for compressor over-vibration can provide a reference for the safe operation of other natural gas processing plants. © 2018, Natural Gas Industry Journal Agency. All right reserved.
Number of references: 15
Main heading: Flow of gases
Controlled terms: Gases - Failure analysis - Vibration analysis - Soils - Foundations - Gas compressors - Gas plants - Compressibility of gases - Gas industry - Natural gas
Uncontrolled terms: Antivibration - Changqing oilfield companies - Energy conservation law - Gas processing plant - Gas pulsations - Natural gas processing plants - Systematic analysis - Vibration
Classification code: 483.1 Soils and Soil Mechanics - 483.2 Foundations - 522 Gas Fuels - 618.1 Compressors - 631.1.2 Gas Dynamics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.3787/j.issn.1000-0976.2018.12.016
Compendex references: YES

105. Sensitive and Selective Fluorescent Probe for Selenol in Living Cells Designed via a p K a Shift Strategy

Accession number: 20181304938204

Authors: Zhang, Shengrui (1, 2); Wang, Qin (1, 2); Liu, Xiawei (3); Zhang, Jianjian (1); Yang, Xiao-Feng (1); Li, Zheng (3); Li, Hua (4)

Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecule Chemistry, Ministry of Education, College of Chemistry and Materials Science, Northwest University, Xi'an, Shaanxi; 710127, China; (2) Shaanxi Key Laboratory of Catalysis, School of Chemistry and Environment Science, Shaanxi University of Technology, Hanzhong, Shaanxi; 723000, China; (3) College of Life Sciences, Northwest University, Xi'an, Shaanxi; 710069, China; (4) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China

Corresponding author: Yang, Xiao-Feng(xfyang@nwu.edu.cn)

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Publisher: American Chemical Society

Abstract: Selenocysteine (Sec) is a primary kind of reactive selenium species in cells, and its vital roles in physiological processes have been featured. Thus, the development of highly sensitive and selective methods for the sensing of Sec is of great significance. This work reports a turn-on fluorescent probe for selenol based on the unique fluorescence OFF-ON switching between the Schiff base (SB) and its complementary protonated Schiff base (PSB) form of merocyanine dyes. The probe consists of a merocyanine Schiff base fluorophore and a 2,4-dinitrobenzenesulfonamide moiety that reacts especially with selenol. The fluorescence turn-on response of MC-Sec is realized via the selective removal of the strongly electron withdrawing 2,4-dinitrobenzenesulfonyl group by Sec, leading to a shift in the pKa of the imine nitrogen of the probe from 6.40 to 9.04 and thus significantly increasing the population of the fluorescent PSB form of the dye at physiological pH. MC-Sec shows good selectivity and sensitivity for Sec and has been applied in the imaging of exogenous and endogenous selenol in living cells by confocal fluorescence microscopy. The proposed mechanism should be useful for developing future probes directed to other target molecules by employing this simple but effective pKa shift strategy. © 2018 American Chemical Society.

Number of references: 50

Main heading: Probes

Controlled terms: Nitrogen removal - Molecules - Fluorescence - Fluorescence microscopy - pH effects - Physiological models - Fluorescence spectroscopy - Physiology

Uncontrolled terms: Confocal fluorescence microscopy - Electronwithdrawing - Fluorescent probes - Physiological pH - Physiological process - Protonated schiff base - Selective removal - Selectivity and sensitivity

Classification code: 461.9 Biology - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 801.1 Chemistry, General - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 941.3 Optical Instruments - 941.4 Optical Variables Measurements

DOI: 10.1021/acs.analchem.8b00066

Compendex references: YES

Database: Compendex

Data Provider: Engineering Village

106. Kirchhoff Beam Migration Based on Compressive Sensing   (*Open Access*)

Accession number: 20181705054981

Authors: Sun, Hui (1, 2); Zhang, Zhihou (1); Hu, Guangmin (3); Meng, Fanchang (4); Gao, Cheng (5); Liu, Mingchen (6); Tang, Jing (2); Wang, Yaojun (2); Yang, Feilong (7)

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100029, China; (4) School of Mines, Inner Mongolia University of Technology, Huhhot; 010051, China; (5) College for Geoexploration Science Technology, Jilin University, Changchun; 130026, China; (6) School of Geoscience and Technology, Southwest Petroleum University, Chengdu; 610500, China; (7) School of Earth Sciences and Engineering, Xian Shiyou University, Xian; 710065, China
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Abstract: Kirchhoff beam migration (KBM) is a seismic-signal-based imaging method that considers both computational efficiency and computational precision. This method requires the decomposition of the seismic records, at each center-window, to plane waves in different directions. KBM achieves this step via the conventional linear Radon transform (LRT), which has obvious drawbacks. First, many noises and spatial aliasing exist in the transform result; and second, the resolution of the result does not meet a pre-defined threshold. These drawbacks could affect the imaging ability of KBM. To solve these problems, this paper introduced a high-resolution LRT method based on compressive sensing to KBM to improve the quality of the obtained plane waves and imaging results. This paper verifies the seismic-signal imaging method via multiple numerical models. © 2013 IEEE.

Number of references: 48
Main heading: Compressed sensing
Controlled terms: Seismology - Seismic waves - Numerical methods - Mathematical transformations - Wave propagation - Computational efficiency
Uncontrolled terms: Compressive sensing - Computational precision - Plane-wave decomposition - Pre-stack depth migrations - Radon Transform - Seismic imaging - Seismic records - Spatial aliasing
Classification code: 484 Seismology - 484.1 Earthquake Measurements and Analysis - 716.1 Information Theory and Signal Processing - 921.3 Mathematical Transformations - 921.6 Numerical Methods
DOI: 10.1109/ACCESS.2018.2828160

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

107. Supercritical CO2-water-shale Interactions under Supercritical CO2 Stimulation Conditions (*Open Access*)

Accession number: 20183305690027
Authors: Luo, Xiangrong (1); Ren, Xiaojuan (1); Wang, Shuzhong (2)

Author affiliation: (1) Eng. Res. Ctr. of Devmt. and Mgmt. for Low to Extra-Low Permeability Oil and Gas Reservoirs in W. China, Ministry of Education, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, School of Petroleum Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Key Laboratory of Thermo-Fluid Science and Engineering, Ministry of Education, School of Energy and Power Engineering, Xi'An Jiaotong University, Xi'an, Shaanxi; 710049, China
Corresponding author: Luo, Xiangrong

Source title: Energy Procedia

Abbreviated source title: Energy Procedia
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Issue date: 2018
Publication year: 2018
Pages: 182-185
Language: English
ISSN: 18766102
Document type: Conference article (CA)
Conference name: 4th International Symposium on Hydrogen Energy, Renewable Energy and Materials, HEREM 2018
Conference date: June 13, 2018 - June 14, 2018
Conference location: Bangkok, Thailand
Conference code: 138102
Sponsor: International Energy and Environmental Research Institute
Publisher: Elsevier Ltd

Abstract: As one of the main unconventional gas reservoirs, the exploration and exploitation of shale gas reservoirs has been a hot spot of global resources development. The traditional water-based fracturing fluid with the disadvantages of large water consumption and serious formation damage does not apply to shale gas reservoirs stimulation. Supercritical CO2 fracturing technology, using harmlessness CO2 for sand-carrying fluid, was brought forward to apply to development of shale gas reservoirs, with the advantages of no water consumption, no damage to formation, contributing to CH4 desorption, etc. When applying supercritical CO2 as the fracturing fluid, in fractures supercritical CO2 interacts with shale in the presence of water. The study on the interactions of shales and supercritical CO2 in the presence of water is a basic issues in stimulation of supercritical carbon dioxide within shale reservoirs. The objective of this study is to solve the key problems which the interactions of shale, supercritical CO2 and water involves, such as mineral elements migration, microscopic pore structure and so on. © 2018 Elsevier Ltd. All rights reserved.

Number of references: 17
Main heading: Carbon dioxide
Controlled terms: Gases - Petroleum reservoir engineering - Shale gas - Minerals - Supercritical fluid extraction - Petroleum prospecting - Pore structure - Petroleum reservoirs - Fracturing fluids
Uncontrolled terms: Exploration and exploitation - Microscopic pore structures - Presence of water - Shale gas reservoirs - Supercritical carbon dioxides - Supercritical CO2 - Unconventional gas - Water consumption
Classification code: 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.egypro.2018.06.024

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

108. Experimental study on convection heat-transfer characteristics of BCG-CO2 fracturing fluid

Accession number: 20174604407122

Authors: Luo, Xiangrong (1); Ren, Xiaojuan (1); Wang, Shuzhong (2); Li, Xiaoxiao (1); Ma, Huanhuan (1); Liu, Yuyan (1)

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Abstract: A BCG-CO2 fracturing fluid system is especially suitable for shale gas stimulation because it has many advantages, including minimizing water consumption, reducing damage to the formation, and recovering more rapidly and efficiently. A major objective of this experimental study is to ascertain the convection heat-transfer characteristics of a BCG-CO2 fracturing fluid system. A high-parameter foam fracturing fluid test system was adopted in this study. The measurement of convection heat transfer is based on the double-wall heat-transfer theory. Through experimental research, the correlations for BCG-CO2 fracturing fluid convection heat transfer have been obtained under different foam qualities. The average error of the fitting formula for all experimental data is 10.7%. The results indicate that the convection heat-transfer coefficient decreases with increasing temperature, with an average decrease of about 10%. The convection heat-transfer coefficient shows a decreasing trend with increasing foam quality. There is a linear relationship between the convection heat-transfer coefficient and shear rate, and the shear rate has the most pronounced effect on convection heat-transfer characteristics. The results of this study can be used to calculate heat-transfer parameters to determine the temperature field of BCG-CO2 fracturing fluid flow in fracturing design, and they are significant for the engineering application of BCG-CO2 fracturing fluid. © 2017 Elsevier B.V.

Number of references: 25
Main heading: Shear deformation
Controlled terms: Flow of fluids - Heat transfer coefficients - Hydraulic fracturing - Temperature - Shale - Carbon dioxide - Shear flow - Fracturing fluids - Heat convection
Uncontrolled terms: Damage to the formations - Engineering applications - Experimental research - Foam-fracturing fluids - Heat transfer characteristics - Increasing temperatures - Linear relationships - Transfer parameters
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 641.2 Heat Transfer - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 1.00e+01%, Percentage 1.07e+01%
DOI: 10.1016/j.petrol.2017.10.050
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

109. Ultrasound assisted in-situ casting technique for synthesizing small-sized blocky Al3Ti particles reinforced A356 matrix composites with improved mechanical properties

Accession number: 20181104896332
Authors: Yang, Cuicui (1); Liu, Zhiwei (1); Zheng, Qiaoling (1); Cao, Yiliang (1); Dai, Xiaohan (1); Sun, Liang (2); Zhao, Jingrui (3); Xing, Jiandong (1); Han, Qingyou (4)
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Corresponding author: Liu, Zhiwei(liuzhiwei@xjtu.edu.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd

Abstract: The in-situ 5 wt% Al3Ti/A356 composites with high strength and good ductility were prepared from A356-K2TiF6 system by an ultrasound assisted in-situ casting technique at 800 °C. The microstructures and mechanical properties of ultrasonic-treated (UT) and non-ultrasonic (NU) samples were examined. It was found that Si element had a solubility of 9–11 at. % in the in-situ formed Al3Ti particle-reinforcement and this solution tendency was proved by a first-principles calculation. In the ultrasonic fields, the in-situ Al3Ti particles were changed from rod-like to blocky in morphology with a reduced average size of 4 µm. Also, Al3Ti particles were distributed uniformly in the matrix and most of which located inside the α–Al crystals. Owing to the nucleating effect and uniform distribution of Al3Ti, both the equiaxed transition from long columnar dendrite structure and refining of α–Al crystals occurred in the UT sample, which contributed to the improvement of both strength and ductility. Compared with T6-A356, the yield strength, ultimate tensile strength and elongation of the T6-UT sample were improved by 12.0%, 27.2% and 313.3%, respectively. Furthermore, the mechanisms of the improved mechanical properties, including the strength and ductility, of the composites were investigated in this research. © 2018 Elsevier B.V.

Number of references: 52
Main heading: Titanium alloys
Controlled terms: Crystal structure - Morphology - Ultrasonic applications - Textures - Binary alloys - Ductility - Particle reinforced composites - Aluminum alloys - Mechanisms - Tensile strength - Calculations
Uncontrolled terms: Columnar dendrites - First-principles calculation - Microstructures and mechanical properties - Particle reinforcement - Particles reinforced - Strength and ductilities - Ultimate tensile strength - Uniform distribution
Classification code: 541.2 Aluminum Alloys - 542.3 Titanium and Alloys - 601.3 Mechanisms - 753.3 Ultrasonic Applications - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.1 Crystal Lattice - 951 Materials Science
Numerical data indexing: Percentage 1.20e+01%, Percentage 2.72e+01%, Percentage 3.13e+02%, Size 4.00e-06m, Temperature 1.07e+03K
DOI: 10.1016/j.jallcom.2018.02.010

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

110. Adsorption characteristics of clay minerals in shale

Accession number: 20175104563358

Authors: Gu, Yang (1, 3, 4); Ding, Wenlong (1, 3, 4); Yin, Shuai (2); Yin, Min (5); Xiao, Zikang (1, 3, 4)
Author affiliation: (1) School of Energy resource, China University of Geosciences (Beijing), Beijing, China; (2) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an, China; (3) Key laboratory of marine reservoir evolution and hydrocarbon enrichment mechanism, Ministry of Education, China University of Geosciences (Beijing), Beijing, China; (4) Key laboratory of strategy evaluation for Shale gas, Ministry of Land and Resources, China University of Geosciences (Beijing), Beijing, China; (5) Faculty of Engineering, University of New South Wales, Sydney, Australia
Corresponding author: Yin, Shuai(speedysys@163.com)

Abstract: Based on the adsorption potential theory, this paper describes the adsorption characteristics of four kinds of clay minerals, i.e. Montmorillonite, Kaolinite, Chlorite, and Illite, in clay shales, meanwhile adding quartzite as control sample. We focus on adsorption amount a, differential adsorption work A, characteristic energy E, characteristic coefficient n in adsorption potential analysis. The results show that the differential adsorption work decreases as the adsorption energy increases, which can generally represent the change features during each stage; the optimum value of n is around 1.5 for five kinds of inorganic minerals; E slightly decreases as the temperature increases. For clay minerals, the absolute values of adsorption heat and the result of maximum adsorption can meet that Montmorillonite> Kaolinite> Chlorite> Illite. © 2018 Taylor & Francis Group, LLC.

Number of references: 6
Main heading: Pore structure
Controlled terms: Adsorption - Shale - Kaolinite
Uncontrolled terms: Adsorption characteristic - Adsorption energies - Adsorption potential - Adsorption potential theories - Characteristic energy - Differential adsorption - Potential theory - Temperature increase
Classification code: 482.2 Minerals - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1080/10916466.2017.1405031

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

111. Characterization of Continental Coal-Bearing Shale and Shale Gas Potential in Taibei Sag of the Turpan-Hami Basin, NW China

Accession number: 20183905866769

Authors: Guo, Xiaobo (1); Huang, Zhilong (2, 5); Ding, Xiujian (3, 6); Chen, Jinlong (2); Chen, Xuan (4); Wang, Rui (4)
Author affiliation: (1) Shaanxi Key Lab of Petroleum Accumulation Geology, Xi'An Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (3) School of Geosciences, China University of Petroleum, Qingdao; 266580, China; (4) Research Institute of Exploration and Development, Tuha Oilfield Company, CNPC, Hami; 839000, China; (5) No. 18 FuXue Road, Changping, Beijing; 102249, China; (6) No. 66 Changjiang West Road, Huangdao District, Qingdao; 266580, China
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CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society

Abstract: A series of experimental methods were used to characterize the organic geochemistry, mineralogy, and pore structure and to preliminarily evaluate the potential of the coal-bearing shale gas of the Xishanyao Formation in Taibei sag of the Turpan-Hami Basin. The results reveal that more than 50% of the samples have fair to good organic matter (OM) richness with TOC > 1.5%, and the shale samples are dominated by type III kerogen with the relative content of regular C29 sterane averaging as 0.60, and pristine/phytoene (Pr/Ph) values averaging 3.10. Tmax values, biomarker parameters and vitrinite reflectance (Ro) indicate that the OM is mainly at an immature to low mature stage. The dominant mineral composition is clay minerals. Nanometer-scale inorganic matrix pores and fracture pores are developed in the coal-bearing shale, with mean pores diameters ranging from 10.2 to 18.1 nm. Compared with typical marine and lacustrine gas shale, the Xishanyao coal-bearing shale has a fair to good ability to generate low-maturity shale gas, and the clay minerals provide the main adsorption surface for adsorbed gas. The shale with clay minerals content lower than 55% and quartz content higher than 31% can have an appropriate gas adsorption ability and brittleness simultaneously. An analysis of the development conditions of organic rich shale shows that the favorable gas shale is mainly distributed in the margin of the ancient lake basin, which is the preferred target area. Overall, high clay content and deep burial are the main adverse factors for the recent exploration and development of the Xishanyao coal-bearing shale gas. © 2018 American Chemical Society.

Number of references: 72
Main heading: Coal
Controlled terms: Pore structure - Coal deposits - Clay minerals - Fracture mechanics - Gas adsorption - Shale gas - Petroleum prospecting - Gases
Uncontrolled terms: Adsorption ability - Experimental methods - Exploration and development - Inorganic matrices - Mineral composition - Organic geochemistry - Organic-rich shales - Vitrinite reflectance
Classification code: 482.2 Minerals - 503 Mines and Mining, Coal - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 524 Solid Fuels - 802.3 Chemical Operations - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.50e+00%, Percentage 3.10e+01%, Percentage 5.00e+01%, Percentage 5.50e+01%, Size 1.02e-08m to 1.81e-08m
DOI: 10.1021/acs.energyfuels.8b01507

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

112. Rheological Properties of BCG-CO2 Fracturing Fluid for Shale Gas (*Open Access*)

Accession number: 20184606065104
Authors: Wang, Shuzhong (1); Luo, Xiangrong (2); Jing, Zefeng (1)
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Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 186
Part number: 4 of 6
Issue: 4
Issue title: 2018 International Conference of Green Buildings and Environmental Management, GBEM 2018 - Energy, Recycling and Reuse

Issue date: October 11, 2018
Publication year: 2018
Article number: 012026
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 International Conference of Green Buildings and Environmental Management, GBEM 2018
Conference date: August 23, 2018 - August 25, 2018
Conference location: Qingdao City, Shandong Province, China
Conference code: 141571
Publisher: IOP Publishing Ltd

Abstract: BCG-CO2 fracturing fluid system is especially suitable for shale gas stimulation with advantage of minimizing the actual water consumption, reducing the damage to formation, recovering more rapidly and efficiently, etc. A major objective of this article is to ascertain the rheological properties of BCG-CO2 fracturing fluid in a wide range of experimental conditions for guiding the selection of fracturing parameters. The experimental results showed that as the temperature reaches 35 °C, the effective viscosity of BCG-CO2 fracturing fluid has an obvious increase. Apparently the shear rate change below 1000 s-1 is sharper than that above 1000 s-1. The effective viscosity presents an increase trend with increasing foam quality under foamed conditions. It has been concluded that the key factors influencing rheological characteristics of BCG-CO2 fracturing fluid are both temperature and foam quality, and the exponential function form can be used to describe the change rule approximately. © Published under licence by IOP Publishing Ltd.

Number of references: 10
Main heading: Fracturing fluids
Controlled terms: Viscosity - Exponential functions - Carbon dioxide - Rheology - Shale
Uncontrolled terms: Effective viscosity - Experimental conditions - Fracturing parameter - Rheological characteristics - Rheological property - Water consumption
Classification code: 631.1 Fluid Flow, General - 804.2 Inorganic Compounds - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Temperature 3.08e+02K
DOI: 10.1088/1755-1315/186/4/012026

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

113. Friction Performance of BCG-CO2 Fracturing Fluid for Shale Gas   (*Open Access*)

Accession number: 20184606065105

Authors: Wang, Shuzhong (1); Luo, Xiangrong (2); Jing, Zefeng (1)
Author affiliation: (1) Key Laboratory of Thermo-Fluid Science and Engineering, Ministry of Education, School of Energy and Power Engineering, Xi'An Jiaotong University, Xi'an, Shaanxi; 710049, China; (2) Eng. Res. Ctr. of Devmt. and Mgmt. for Low to Extra-Low Permeability Oil and Gas Reservoirs in W. China, Ministry of Education, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, School of Petroleum Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China

Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 186
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Issue: 4
Issue title: 2018 International Conference of Green Buildings and Environmental Management, GBEM 2018 - Energy, Recycling and Reuse
Issue date: October 11, 2018
Publication year: 2018

Article number: 012027
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 2018 International Conference of Green Buildings and Environmental Management, GBEM 2018
Conference date: August 23, 2018 - August 25, 2018
Conference location: Qingdao City, Shandong Province, China
Conference code: 141571
Publisher: IOP Publishing Ltd

Abstract: BCG-CO2 fracturing fluid system is especially suitable for shale gas stimulation with advantage of minimizing the actual water consumption, reducing the damage to formation, recovering more rapidly and efficiently, etc. A major objective of this article is to ascertain the friction performance of BCG-CO2 fracturing fluid in a wide range of experimental conditions for guiding the selection of fracturing parameters. The experimental results showed that the frictional resistance coefficient levels off under the flow velocity greater than 1 m/s. For the impact of the foam quality on the friction resistance coefficient, the completely opposite change rule is showed under foamed and unfoamed conditions. © Published under licence by IOP Publishing Ltd.

Number of references: 8
Main heading: Fracturing fluids
Controlled terms: Friction - Shale gas - Carbon dioxide - Flow velocity - Hydraulic fracturing
Uncontrolled terms: Experimental conditions - Fracturing parameter - Friction performance - Friction resistance coefficient - Frictional resistance - Water consumption
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 631 Fluid Flow - 804.2 Inorganic Compounds - 943.2 Mechanical Variables Measurements
Numerical data indexing: Velocity 1.00e+00m/s
DOI: 10.1088/1755-1315/186/4/012027

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

114. Ultra sensitive NH3 gas detection using microfiber Bragg Grating

Accession number: 20182805531256
Authors: Fu, Haiwei (1); Zhang, Jingle (1); Ding, Jijun (1); Wang, Qiqi (1); Li, Huidong (1); Shao, Min (1); Liu, Yinggang (1); Liu, Qingpeng (1); Zhang, Min (1); Zhu, Yi (1); Yang, Chong (1)
Author affiliation: (1) Ministry of Key Laboratory on Photoelectric oil-gas Logging and detecting, School of Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Fu, Haiwei(hwfu@xsyu.edu.cn)

Source title: Optics Communications
Abbreviated source title: Opt Commun
Volume: 427
Issue date: 15 November 2018
Publication year: 2018
Pages: 331-334
Language: English
ISSN: 00304018
CODEN: OPCOB8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: In this paper, a microfiber Bragg grating (MFBG) is proposed and performed to detect ammonia gas directly with high sensitivity. The sensor is fabricated by etching Fiber Bragg grating (FBG) inscribed in a single mode photosensitive optical fiber. The response of the sensor for ammonia gas detection is studied by experiments. The result shows that the MFBG central wavelength red-shift occurs as the ammonia gas concentration increase. The

experimental concentration detection sensitivity is about 171 pm/(mg/L) in range of 21.84–43.68 mg/L. And the sensor is insensitive for several possible interfering volatile organic compounds. © 2018 Elsevier B.V.

Number of references: 28
Main heading: Etching
Controlled terms: Chemical sensors - Optical fiber fabrication - Gas detectors - Volatile organic compounds - Red Shift - Ammonia - Fiber Bragg gratings - Microfibers - Crystallinity - Blue shift
Uncontrolled terms: Ammonia gas - Ammonia sensing - Central wavelength - Concentration detections - High sensitivity - Micro-fiber - Photosensitive optical fibers - Ultra sensitives
Classification code: 741 Light, Optics and Optical Devices - 741.1 Light/Optics - 741.1.2 Fiber Optics - 801 Chemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 933.1 Crystalline Solids - 943.3 Special Purpose Instruments
DOI: 10.1016/j.optcom.2018.06.059
Funding Details: Number: 61327012, Acronym: NSF, Sponsor: National Science Foundation; Number: 14JS073, Acronym: -, Sponsor: -;
Funding text: This work was supported by the National Science Foundation (NSF) (NO. 61327012 , and NO. 61275088), the Research Foundation of Education Bureau of Shaanxi Province (NO. 14JS073), and the Graduate Student Innovation Fund of Xi'an Shiyou University (NO. YCS16211029).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

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115. The structural, electronic and optical properties of Nd doped ZnO using first-principles calculations

Accession number: 20180204629975
Authors: Wen, Jun-Qing (1); Zhang, Jian-Min (2); Chen, Guo-Xiang (1); Wu, Hua (1); Yang, Xu (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Physics and Information Technology, Shaanxi Normal University, Xi'an; 710062, China
Corresponding author: Wen, Jun-Qing(jqwen1221@xsyu.edu.cn)
Source title: Physica E: Low-Dimensional Systems and Nanostructures
Abbreviated source title: Phys E
Volume: 98
Issue date: April 2018
Publication year: 2018
Pages: 168-173
Language: English
ISSN: 13869477
CODEN: PELNFM
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: The density functional theory calculations using general gradient approximation (GGA) applying Perdew–Burke–Ernzerhof (PBE) as correlation functional have been systematically performed to research the formation energy, the electronic structures, band structures, total and partial DOS, and optical properties of Nd doping ZnO with the content from 6.25% to 12.5%. The formation energies are negative for both models, which show that two structures are energetically stable. Nd doping ZnO crystal is found to be a direct band gap semiconductor and Fermi level shifts upward into conduction band, which show the properties of n-type semiconductor. Band structures are more compact after Nd doping ZnO, implying that Nd doping induces the strong interaction between different atoms. Nd doping ZnO crystal presents occupied states at near Fermi level, which mainly comes from the Nd 4f orbital. The calculated optical properties imply that Nd doping causes a red-shift of absorption peaks, and enhances the absorption of the visible light. © 2018 Elsevier B.V.

Number of references: 37
Main heading: Zinc oxide
Controlled terms: Electronic structure - Magnetic semiconductors - Optical correlation - Calculations - Energy gap - Red Shift - Structural properties - Fermi level - Wide band gap semiconductors - II-VI semiconductors - Density functional theory - Semiconductor doping
Uncontrolled terms: Calculated optical properties - Correlation functionals - Direct band gap semiconductors - Electronic and optical properties - First-principles calculation - General gradient approximation - N-type semiconductors - Strong interaction

116. Atomic simulations of plastic deformation mechanism of MgAl/Mg nanoscale amorphous/crystalline multilayers

Authors: Song, H.Y. (1); Yin, P. (1); Zuo, X.D. (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 author: Song, H.Y.(gsfshy@sohu.com)
Abstract: The deformation behavior of MgAl/Mg nanoscale amorphous/crystalline multilayers (NACMs) with equal layer thicknesses of amorphous and crystalline phases under tension loading is investigated by molecular dynamics simulation method. The results show that the plastic deformation mode of NACMs changes from cross generalized shear bands dominated deformation to finally single shear band plastic deformation with the increase of layer thickness, and the plastic deformation of NACMs with medium layer thickness is realized through cooperative interactions among crystalline layer, amorphous layer and amorphous/crystalline interfaces (ACIs), which could be treated as a transition progress. The results indicate that the peak stresses of the NACMs are greater than that of monolithic amorphous regardless of layer thickness, which is likely to result from the increase of the strong crystalline phase and the strengthening effect of the ACIs. The results also reveal that the ductility and strength of NACMs could be improved effectively by choosing the appropriate layer thickness. In addition, the deformation behavior of NACMs is also quantificationally disclosed and analyzed in current study. © 2018 Elsevier B.V.
Number of references: 38
Main heading: Multilayers
Controlled terms: Nanotechnology - Plastic deformation - Shear bands - Crystalline materials - Molecular dynamics
Uncontrolled terms: Amorphous and crystalline phasis - Amorphous/crystalline interface - Cooperative interactions - Deformation behavior - Layer thickness - Molecular dynamics simulation methods - Molecular dynamics simulations - Plastic deformation mechanisms
Classification code: 761 Nanotechnology - 801.4 Physical Chemistry - 933.1 Crystalline Solids
DOI: 10.1016/j.jnoncrysol.2018.06.039

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

117. The study of structures and properties of PdnHm(n=1–10, m=1,2) clusters by density functional theory

Accession number: 20175104551266

Authors: Wen, Jun-Qing (1); Chen, Guo-Xiang (1); Zhang, Jian-Min (2); Wu, Hua (1)
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Corresponding author: Wen, Jun-Qing(wenjq2013@163.com)

Abstract: The geometrical evolution, local relative stability, magnetism and charge transfer characteristics of PdnHm(n = 1–10, m = 1,2) have been systematically calculated by using density functional theory. The studied results show that the most stable geometries of PdnH and PdnH2 (n = 1–10) can be got by doping one or two H atoms on the sides of Pdn clusters except Pd6H and Pd6H2. It is found that doping one or two H atoms on Pdn clusters cannot change the basic framework of Pdn. The analysis of stability shows that Pd2H, Pd4H, Pd7H, Pd2H2, Pd4H2 and Pd7H2 clusters have higher local relative stability than neighboring clusters. The analysis of magnetic properties demonstrates that absorption of hydrogen atoms decreases the average atomic magnetic moments compared with pure Pdn clusters. More charges transfer from H atoms to Pd atoms for Pd6H and Pd6H2 clusters, demonstrating the adsorption of hydrogen atoms change from side adsorption to surface adsorption. © 2017 Elsevier Ltd
Number of references: 43
Main heading: Density functional theory
Controlled terms: Atoms - Stability - Charge transfer - Gas adsorption - Hydrogen - Magnetic moments
Uncontrolled terms: Analysis of stability - Atomic magnetic moment - Hydrogen atoms - PdnHm clusters - Relative stabilities - Structures and properties - Surface adsorption - Transfer characteristics
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1016/j.jpcs.2017.12.011
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

118. Non-Local Means Denoising Algorithm Based on the Kernelized L2-Norm

Accession number: 20185006228429

Authors: Liu, Xiao-Yan (1); Feng, Xiang-Chu (2); Li, Xiao-Ping (3); Zhao, Zhi-Qin (1)

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Source title: Proceedings - International Conference on Machine Learning and Cybernetics
Abbreviated source title: Proc. Int. Conf. Mach. Learn. Cybern.
Volume: 1
Part number: 1 of 2
Issue title: Proceedings of 2018 International Conference on Machine Learning and Cybernetics, ICMLC 2018
Issue date: November 7, 2018
Publication year: 2018
Pages: 138-142
Article number: 8527050
Language: English
ISSN: 2160133X
E-ISSN: 21601348
ISBN-13: 9781538652121
Document type: Conference article (CA)
Conference name: 17th International Conference on Machine Learning and Cybernetics, ICMLC 2018
Conference date: July 15, 2018 - July 18, 2018
Conference location: Chengdu, China
Conference code: 142377
Publisher: IEEE Computer Society

Abstract: The non-local means (NLM) has been becoming a prevalent method in image denoising. However, the denoised performance of this method depends heavily on the accuracy of similarity measure. In this paper, we present kernelized L2-norm to measure the similarity of image patches. In the proposed measure, both the differences of corresponding pixel between image patches and the difference between the center pixel and other pixels in the same image patch are taken into consideration. Compared with the Gaussian weighted L2-norm, the new similarity measure can protect the image details effectively which leads to the NLM algorithm based on kernelized L2-norm (K-NLM) generate better denoising results. The experimental results illustrate the proposed method is effective. © 2018 IEEE.

Number of references: 10
Main heading: Image denoising
Controlled terms: Pixels
Uncontrolled terms: De-noising - De-noising algorithm - Image details - Image patches - kernelized L^2-norm - Non local means - Non local means (NLM) - Similarity measure
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing
DOI: 10.1109/ICMLC.2018.8527050

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

119. Separation performance of supersonic separator with a rear-set helical guide blade

Accession number: 20204709520687
Authors: Liang, Huirong (1, 2); Zhang, Shuai (2); Kang, Yong (2); Ling, Kegang (1)
Author affiliation: (1) Petroleum Engineering Department, University of North Dakota, Grand Forks; ND, United States; (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China
Source title: Spring Meeting Poster Session and Networking Reception 2018 - Core Programming Area at the 2018 AIChE Spring Meeting and 14th Global Congress on Process Safety
Abbreviated source title: Spring Meet. Poster Sess. Netw. Recept. - Core Program. Area AIChE Spring Meet. Global Congr. Process Saf.
Part number: 1 of 1
Issue title: Spring Meeting Poster Session and Networking Reception 2018 - Core Programming Area at the 2018 AIChE Spring Meeting and 14th Global Congress on Process Safety
Issue date: 2018
Publication year: 2018

Pages: 102-109
Language: English
ISBN-13: 9781510864542
Document type: Conference article (CA)
Conference name: Spring Meeting Poster Session and Networking Reception 2018 - Core Programming Area at the 2018 AIChE Spring Meeting and 14th Global Congress on Process Safety
Conference date: April 22, 2018 - April 25, 2018
Conference location: Orlando, FL, United states
Conference code: 163945
Publisher: AIChE
Abstract: The supersonic separation is a new approach to dehydrate the natural gas in recent years. In the conventional supersonic separator, a cyclone or a delta wing is employed to generate the swirling flow. Unfortunately, the separation efficiency of conventional supersonic separator is low. In order to overcome the disadvantages, helical guide blade was designed to incorporate into the swirling device which is fixed in the middle of the separation straight tube in this paper. The computational fluid dynamics modeling was performed to investigate the flow characteristics in the supersonic separator and optimize the structure of the blade. The swirling flow generated from the blade promoted the separation of the droplets from the gas. The optimization results showed that a pitch of 200 mm and a single blade are the best geometry structure for the swirling device in the supersonic separator in the dehydration process, which can create the stable flow field and benefit the separation effect. © Spring Meeting Poster Session and Networking Reception 2018 - Core Programming Area at the 2018 AIChE Spring Meeting and 14th Global Congress on Process Safety. All rights reserved.
Number of references: 15
Main heading: Swirling flow
Controlled terms: Cyclone separators - Delta wing aircraft - Storms - Computational fluid dynamics - Dehydration
Uncontrolled terms: Computational fluid dynamics modeling - Dehydration process - Flow charac-teristics - Geometry structure - Separation efficiency - Separation performance - Straight tubes - Supersonic separators
Classification code: 443.3 Precipitation - 631.1 Fluid Flow, General - 652.1 Aircraft, General - 723.5 Computer Applications - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 931.1 Mechanics
Numerical data indexing: Size 2.00e-01m
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

120. Effect of amorphous phase on the plastic deformation mechanism of Mg: A molecular dynamics study

Accession number: 20182005189441
Authors: Song, H.Y. (1); Zuo, X.D. (1); Yin, P. (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 author: Song, H.Y.(gsfshy@sohu.com)
Source title: Journal of Non-Crystalline Solids
Abbreviated source title: J Non Cryst Solids
Volume: 494
Issue date: 15 August 2018
Publication year: 2018
Pages: 1-8
Language: English
ISSN: 00223093
CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Improving the plasticity of Mg alloys is an important frontier topic in the field of mechanics and materials. The influence of introduction of amorphous phase, grain size and temperature on the deformation mechanisms of nano-polycrystal Mg under tensile loading here is studied by molecular dynamics simulation method. The results indicate that the introduction of amorphous grain can improve the plasticity of the nano-polycrystal Mg due to cooperative movement of atoms in crystalline and amorphous phases. With the decrease of grain size, the plastic deformation of crystal phase in crystal-amorphous Mg-MgAl nanocomposites change from the nucleation of dislocations and growth of tensile twins to the grain boundaries glide and grains rotation, and the plastic deformation mode of amorphous phase change

from the shear band dominated deformation to the homogeneous plastic deformation. The results also show that the amorphous grain plays a more and more important role during plastic deformation of Mg-MgAl nanocomposites as grain size decreases, and the deformation behavior of nanocomposites obviously depends on temperature. In addition, some quantified analysis about the deformation mechanism of nanocomposites is also presented. © 2018 Elsevier B.V.
Number of references: 39
Main heading: Molecular dynamics
Controlled terms: Aluminum alloys - Plasticity - Grain size and shape - Polycrystals - Ternary alloys - Grain boundaries - Magnesium alloys - Plastic deformation - Nanocomposites
Uncontrolled terms: Cooperative movement - Crystal-amorphous - Deformation behavior - Deformation mechanism - Grain size - Molecular dynamics simulation methods - Molecular dynamics simulations - Plastic deformation mechanisms
Classification code: 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 761 Nanotechnology - 801.4 Physical Chemistry - 933 Solid State Physics - 933.1 Crystalline Solids - 951 Materials Science
DOI: 10.1016/j.jnoncrysol.2018.04.062
Funding Details: Number: 2012KJXX-39, Acronym: -, Sponsor: -; Number: 11572259, 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. 11572259), the Program for New Scientific and Technological Star of Shaanxi Province (No. 2012KJXX-39) and the Graduate Innovation and Practice Project of Xi'an Shiyou University (No. YCS17111005).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

121. Using one axiom to characterize L-fuzzy rough approximation operators based on residuated lattices

Accession number: 20173204022010
Authors: Bao, Yan-Ling (1); Yang, Hai-Long (1); She, Yan-Hong (2)
Author affiliation: (1) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an; 710119, China; (2) College of Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Hai-Long(yanghailong@snnu.edu.cn)
Source title: Fuzzy Sets and Systems
Abbreviated source title: Fuzzy Sets Syst
Volume: 336
Issue date: April 1, 2018
Publication year: 2018
Pages: 87-115
Language: English
ISSN: 01650114
CODEN: FSSYD8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Axiomatic characterization of approximation operators plays an important role in the study of rough set theory. Different axiom sets of abstract operators can illustrate different classes of rough set systems. In this paper, we are devoted to searching for a single axiom to characterize L-fuzzy rough approximation operators based on residuated lattices. Axioms of L-fuzzy set theoretic operators make sure of the existence of certain types of L-fuzzy relations which produce the same operators. We demonstrate that the lower (upper) L-fuzzy rough approximation operators generated by a generalized L-fuzzy relation can be characterized by only one axiom. Furthermore, we also use one axiom to characterize L-fuzzy rough approximation operators produced by the L-fuzzy serial, reflexive, symmetric and T-transitive relations as well as any of their compositions. © 2017 Elsevier B.V.
Number of references: 49
Main heading: Rough set theory
Controlled terms: Approximation algorithms - Fuzzy sets
Uncontrolled terms: Abstract operator - Approximation operators - Axiomatic characterization - Axioms - Fuzzy rough approximation operators - Fuzzy-rough sets - Residuated lattices - Transitive relation
Classification code: 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1016/j.fss.2017.07.016

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

122. Structural and electronic properties of Y doped ZnO with different Y concentration

Accession number: 20174604391934
Authors: Wen, Jun-Qing (1); Zhang, Jian-Min (2); Li, Zhi-Qin (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Physics and Information Technology, Shaanxi Normal University, Xi'an; 710062, China
Corresponding author: Wen, Jun-Qing(wenjq2013@163.com)
Source title: Optik
Abbreviated source title: Optik
Volume: 156
Issue date: March 2018
Publication year: 2018
Pages: 297-302
Language: English
ISSN: 00304026
Document type: Journal article (JA)
Publisher: Elsevier GmbH
Abstract: We have performed a comprehensive calculation about the structures, energy band structures, total and partial density of states of Y doping ZnO with different concentration using the density-functional theory (DFT). The Y doping structures still maintain wurtzite configuration with the increasing of Y content. The research of formation energy shows that Y doping ZnO crystal is energetically stable, and the formation energies reduce with the increasing of Y molar content from 3.125% to 12.5%. The Y doping system exhibits direct band gap like pure ZnO. The Fermi level of doping ZnO crystal shifts upward into conduction, showing the properties of n-type semiconductor and the band gaps of Y doping are larger than that of pure ZnO. There exists a strong localized state at near 5 eV in conduction band, which mainly comes from Y-4d states. The DOS of concentration 12.5% appears a new strong peak at near -24 eV, which mainly originates from the Y-4p states. © 2017
Number of references: 37
Main heading: Electronic structure
Controlled terms: Magnetic semiconductors - II-VI semiconductors - Semiconducting zinc compounds - Zinc oxide - Wide band gap semiconductors - Electronic properties - Semiconductor doping - Zinc sulfide - Density functional theory - Energy gap
Uncontrolled terms: Direct band gap - Formation energies - Localized state - Molar content - N-type semiconductors - Partial density of state - Structural and electronic properties - ZnO crystals
Classification code: 708.4 Magnetic Materials - 712.1 Semiconducting Materials - 712.1.2 Compound Semiconducting Materials - 804.2 Inorganic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: Electron_Volt 5.00e+00eV, Percentage 1.25e+01%, Percentage 3.12e+00% to 1.25e+01%
DOI: 10.1016/j.ijleo.2017.10.146
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

123. High Sensitivity Interferometric Microfiber Ammonia Sensor Based on Optical Fiber Taper

Engineering Village™

Authors: Zhang, Min (1); Fu, Hai-Wei (1); Ding, Ji-Jun (1); Li, Hui-Dong (1); Zhang, Jing-Le (1); Zhu, Yi (1); Shao, Min (1)
Author affiliation: (1) Ministry of Education Key Laboratory on Photoelectric Oil-gas Logging and Detecting, School of Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Fu, Hai-Wei(hwfu@xsyu.edu.cn)
Abstract: A highly sensitive microfiber ammonia (NH3) sensor was fabricated by means of flame melting taper in this paper. The sensor is fabricated by splicing a length of 10 mm Polarization Maintaining Fiber (PMF) in the middle of ordinary Single Mode Fibers (SMF), stretching the PMF down to microscale with diameter of 8.33 μm by using optical fiber melt tapering machine. Based on the principle of Mach-Zehnder Interferometer (MZI), this structure utilizes the interaction of PMF core and cladding modes to achieve inter-mode interference. When the NH3 concentration changes in the external environment, the evanescent field in the cone area changes. By detecting the wavelength shift of the transmission spectrum, the concentration of ammonia can be measured by fabricated sensors in this paper. The experimental result shows that the sensor has a quadratic corelation to ammonia concentration in the range of 8 ppm-56 ppm, and the wavelength shift about 5nm in the direction of the long wave. The experimental result also shows that the sensor has a linear corelation to ammonia concentration with sensitivity of 176.08 pm/ppm in the range of 32 ppm-56 ppm. The sensor has the advantages of small size, easy fabrication and high sensitivity making it a good candidate for NH3 sensor in different fields. © 2018, Science Press. All right reserved.
Number of references: 17
Main heading: Evanescent fields
Controlled terms: Microfibers - Ammonia - Single mode fibers - Mach-Zehnder interferometers - Optical fiber fabrication - Polarization-maintaining fiber
Uncontrolled terms: Ammonia concentrations - Ammonia sensors - External environments - Fused taper - Machzehnder interferometers (MZI) - Micro-fiber - Optical fiber tapers - Transmission spectrums
Classification code: 701 Electricity and Magnetism - 741 Light, Optics and Optical Devices - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 804.2 Inorganic Compounds - 941.3 Optical Instruments
Numerical data indexing: Size 1.00e-02m, Size 5.00e-09m, Size 8.33e-06m
DOI: 10.3788/gzxb20184703.0306002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

124. Effect of crystal phase on shear bands initiation and propagation behavior in metallic glass matrix composites

Authors: Song, H.Y. (1, 2); Li, S. (1); An, M.R. (1); Deng, Q. (2); 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 author: Song, H.Y.(gsfshy@sohu.com)

Publication year: 2018
Pages: 42-46
Language: English
ISSN: 09270256
CODEN: CMMSEM
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: The effect of crystal phase structure on the shear bands (SBs) initiation and propagation behavior of $Cu_{50}Zr_{50}$ metallic glass (MG) matrix composite with a pre-existing crack is studied using molecular dynamics (MD) simulation method. It is found that the crystal diameter has almost no effect on the peak stress of MG-matrix composites, because the change of crystal diameter not only influences the STZ coalesce around the crystal-amorphous interface (CAI) but also affects the magnitude of the repulsive force between CAI and SB. Namely, CAI plays two roles of generating the immature SB and hindering its propagation. The results also indicate that the behavior of SB initiation and propagation shows a stronger dependence on the CAI. Compared with monolithic MGs, the crystal layer changes the propagation path of the SB in the composite. Additionally, we introduce the disorder degree (i.e. entropy) method to analyze the formation process of SBs. © 2018 Elsevier B.V.

Number of references: 33
Main heading: Molecular dynamics
Controlled terms: Crystal structure - Glass - Shear flow - Metallic glass - Binary alloys - Shear bands - Copper alloys - Metallic matrix composites
Uncontrolled terms: Crystal phase structure - Crystal-amorphous - Deformation behavior - Initiation and propagation - Metallic glass matrix composite - Mg matrix composites - Molecular dynamics simulations - Pre-existing crack
Classification code: 531 Metallurgy and Metallography - 544.2 Copper Alloys - 631.1 Fluid Flow, General - 801.4 Physical Chemistry - 812.3 Glass - 933.1.1 Crystal Lattice
DOI: 10.1016/j.commatsci.2018.03.069
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

125. A Novel Surveillance Video Processing Using Stochastic Low-Rank and Generalized Low-Rank Approximation Techniques

Accession number: 20185006228433
Authors: Luo, Liang (1, 2); Zhao, Zhi-Qin (2); Li, Xiao-Pin (1)
Author affiliation: (1) School of Science, Xi'An University of Posts and Telecommunications, Xi'an; 710121, China; (2) School of Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Proceedings - International Conference on Machine Learning and Cybernetics
Abbreviated source title: Proc. Int. Conf. Mach. Learn. Cybern.
Volume: 1
Part number: 1 of 2
Issue title: Proceedings of 2018 International Conference on Machine Learning and Cybernetics, ICMLC 2018
Issue date: November 7, 2018
Publication year: 2018
Pages: 91-98
Article number: 8527059
Language: English
ISSN: 2160133X
E-ISSN: 21601348
ISBN-13: 9781538652121
Document type: Conference article (CA)
Conference name: 17th International Conference on Machine Learning and Cybernetics, ICMLC 2018
Conference date: July 15, 2018 - July 18, 2018

Conference location: Chengdu, China
Conference code: 142377
Publisher: IEEE Computer Society

Abstract: Background extraction and subtraction is a key way for automatic video analysis, especially in the domain of video surveillance. In this paper, we present a non-iterative stochastic technique for background extraction and subtraction from the surveillance video. At the same time, generalized low-rank approximation matrix technique is employed to compress the background subtraction image in transmitting procedure. The simulation results illustrate that the presented technique is effective in separating the background from the activity and more rapid than the method of the latest literature. The employed method is demonstrated that there is low compress ratio which can avoid the restriction of communication bandwidth caused by big data. © 2018 IEEE.

Number of references: 25
Main heading: Extraction
Controlled terms: Stochastic systems - Approximation theory - Monitoring - Security systems - Iterative methods - Approximation algorithms - Video signal processing
Uncontrolled terms: Background extraction - Background subtraction - Communication bandwidth - Low rank approximations - Low-Rank - Random projections - Stochastic techniques - Surveillance video
Classification code: 716.4 Television Systems and Equipment - 731.1 Control Systems - 802.3 Chemical Operations - 914.1 Accidents and Accident Prevention - 921 Mathematics - 921.6 Numerical Methods - 961 Systems Science
DOI: 10.1109/ICMLC.2018.8527059

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

126. A Two-Phase Flow Model for Pressure Transient Analysis of Water Injection Well considering Water Imbibition in Natural Fractured Reservoirs   (*Open Access*)

Accession number: 20183905861920

Authors: Li, Mengmeng (1); Li, Qi (1, 2); Bi, Gang (2); Lin, Jiaen (2)
Author affiliation: (1) College of Petroleum Engineering, China University of Petroleum Beijing, Beijing; 102249, China; (2) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Mengmeng(2015312041@student.cup.edu.cn)

Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2018
Issue date: 2018
Publication year: 2018
Article number: 2896251
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States

Abstract: The pressure injection falloff test for water injection well has the advantages of briefness and convenience, with no effect on the oil production. It has been widely used in the oil field. Tremendous attention has been focused on oil-water two-phase flow model based on the Perrine-Martin theory. However, the saturation gradient is not considered in the Perrine-Martin method, which may result in errors in computation. Moreover, water imbibition is important for water flooding in natural fractured reservoirs, while the pressure transient analysis model has rarely considered water imbibition. In this paper, we proposed a semianalytical oil-water two-phase flow imbibition model for pressure transient analysis of a water injection well in natural fractured reservoirs. The parameters in this model, including total compressibility coefficient, interporosity flow coefficient, and total mobility, change with water saturation. The model was solved by Laplace transform finite-difference (LTFD) method coupled with the quasi-stationary method. Based on the solution, the model was verified by the analytical method and a field water injection test. The features of typical curves and the influences of the parameters on the typical curves were analyzed. Results show that the shape of pressure curves for single phase flow resembles two-phase flow, but the position of the two-phase flow curves is on the upper right of the single phase flow curves. The skin factor and wellbore storage coefficient mainly influence the

peak value of the pressure derivatives and the straight line of the early period. The shape factor has a major effect on the position of the "dip" of pressure derivatives. The imbibition rate coefficient mainly influences the whole system radial flow period of the curves. This work provides valuable information in the design and evaluation of stimulation treatments in natural fractured reservoirs. © 2018 Mengmeng Li et al.

Number of references: 42
Main heading: Two phase flow
Controlled terms: Bottom hole pressure - Transient analysis - Computation theory - Laplace transforms - Radial flow - Injection (oil wells) - Petroleum reservoir engineering - Pressure effects - Fracture
Uncontrolled terms: Design and evaluations - Interporosity flow coefficient - Oil-water two phase flows - Pressure transient analysis - Stimulation treatments - Total compressibilities - Water injection tests - Water injection wells
Classification code: 511.1 Oil Field Production Operations - 512 Petroleum and Related Deposits - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.3 Mathematical Transformations - 931.1 Mechanics - 951 Materials Science
DOI: 10.1155/2018/2896251
Funding Details: Number: 51704237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 13JS090, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: 2015CB250900), the National Natural Science Foundation of China (Grant No. 51704237), and the Research Projects of Shaanxi Provincial Education Department (Grant No. 13JS090).The authors gratefully acknowledge the support of the National Basic Research 973 Program of China (Grant No.
Compendex references: YES
Open Access type(s): All Open Access, Bronze, Green
Database: Compendex
Data Provider: Engineering Village
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127. Research on characteristics of fire flooding zones based on core analysis

Accession number: 20182805527129
Authors: Yuan, Shibao (1); Jiang, Haiyan (1); Yang, Fengxiang (2); Shi, Yaoli (2); Bai, Yu (1); Du, Kun (1)
Author affiliation: (1) Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Research Institute of Exploration and Development, Xinjiang Oilfield Company, Petro China, Karamay; Xinjiang; 834000, China
Corresponding author: Yuan, Shibao(upcysb@126.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 170
Issue date: November 2018
Publication year: 2018
Pages: 607-610
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: In order to better understand the combustion process and to make a better displacement of fire flooding, it is necessary to study the zone characteristics and the advancing law of fire flooding. Firstly, temperature dynamic characteristics of observation well reveal that the combustion of HQ1 fire flooding pilot test is characterized by wet combustion. Then, a series of core tests (rock pyrolysis, mercury intrusion, crude oil group composition analysis, rock and mineral composition) are utilized to analyze the cores from Xinjiang HQ1. By comparing the difference of characteristics between the burned and unburned zone, the result shows that coke deposition occurs under the burning surface, where the coke deposition zone is. And above the surface, kaolinite is converted into illite or montmorillonite. There is evidence to show that montmorillonite will converted into illite under a dry combustion condition(35 °C). These features of rock and mineral can be used to evaluate fire flooding process. © 2018 Elsevier B.V.
Number of references: 18
Main heading: Fires
Controlled terms: Coke - Combustion - Kaolinite - Deposition - Rocks - Floods
Uncontrolled terms: Coke deposition - Combustion pro-cess - Combustion stage - Group composition analysis - Mercury intrusion - Mineral composition - Observation wells - Temperature dynamics
Classification code: 482.2 Minerals - 524 Solid Fuels - 802.3 Chemical Operations - 914.2 Fires and Fire Protection
Numerical data indexing: Temperature 3.08e+02K
DOI: 10.1016/j.petrol.2018.07.014

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

128. A Study of Ergonomic Evaluation with a Simulation Analysis of Workover Rig Driller Operation

Accession number: 20190706499181
Authors: Jianbo, Xu (1, 2); Suihuai, Yu (2); Ting, Ji (1); Jing, Yu (1); Wentao, Qu (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Shaanxi Engineering Laboratory for Industrial Design, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Jianbo, Xu(4234054@qq.com)
Source title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Abbreviated source title: Proc. - Int. Conf. Smart Grid Electr. Automation, ICSGEA
Part number: 1 of 1
Issue title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Issue date: October 18, 2018
Publication year: 2018
Pages: 382-385
Article number: 8498360
Language: English
ISBN-13: 9781538669532
Document type: Conference article (CA)
Conference name: 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Conference date: June 9, 2018 - June 10, 2018
Conference location: Changsha, China
Conference code: 141421
Sponsor: Central South University; Communications Research Institute of Changsha University of Science and Technology; Department of Urban Management, Hunan City College; Hongkong Intelligent Computation Technology and Automation Association
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: A digital 50th percentile dummy of Chinese males was built, and the AnyBody Modeling System was used for an inverse dynamics simulation of driller operation with a workover rig. The muscle activation degree of relevant muscle groups was used as a core indicator for ergonomic evaluation, to investigate the key layout parameters of the operation cabinâ€'the functional relationship between the position of the brake pedal and the muscle activation degree of relevant muscle groups. Regression analysis was employed to determine the weight coefficient of relevant muscle groups, to build a model for the evaluation of overall comfort level of driller operation, and reveal the muscle fatigue characteristic of muscle groups participating in driller operation, thus providing an accurate basis for the fast screening and optimization of layout plans for operation cabins of workover rigs. © 2018 IEEE.
Number of references: 10
Main heading: Muscle
Controlled terms: Ergonomics - Inverse problems - Regression analysis - Infill drilling - Activation analysis
Uncontrolled terms: Driller Operation - Ergonomic evaluation - Functional relationship - Inverse dynamics - Muscle activation - Simulation analysis - Weight coefficients - Workover rig
Classification code: 461.2 Biological Materials and Tissue Engineering - 511.1 Oil Field Production Operations - 922.2 Mathematical Statistics
DOI: 10.1109/ICSGEA.2018.00101
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

129. Microbial enhanced oil recovery in Baolige Oilfield using an indigenous facultative anaerobic strain Luteimonas huabeiensis sp. nov

Authors: Ke, Cong-Yu (1); Sun, Wu-Juan (1); Li, Yong-Bin (2); Lu, Guo-Min (1); Zhang, Qun-Zheng (1); Zhang, Xun-Li (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Petroleum Production Engineering Institute, Huabei Oilfield Company, Renqiu; 062552, China
Corresponding author: Zhang, Xun-Li(xlzhang@xsyu.edu.cn)

Abstract: A facultative strain Luteimonas huabeiensis sp. nov. HB-2 isolated from Baolige Oilfield of China was examined for its growth, biosurfactant production, hydrocarbon degradation and the effects on interfacial properties of oil recovery system. Specifically, the effects on reduction of fluid surface tension and oil viscosity, and on increase in emulsification activity for crude oil were evaluated. This was attributed to the combination of the strain's activities including the production of biosurfactants (cyclic lipopeptides) and the degradation of crude oil. The produced biosurfactants can effectively reduce the interfacial tension of oil-water and viscosity of crude oil. Meanwhile, the long-chain hydrocarbons (C20-C35) of crude oil also can be degraded by bacteria resulting in the increase in shorter chain (C10-C19). These activities demonstrated the suitability of strain HB-2 for application in microbial enhanced oil recovery (MEOR). This was confirmed by a laboratory-based core column flooding evaluation, showing an average increase of 11% in oil recovery, which was followed by an oilfield test involving two water injection wells and eight oil production wells over 16 months, resulting in a remarkable increase in the average single well oil production from 0.48 ton/day (without MEOR) to 1.77 ton/day with the highest reaching 9.5 ton/day by MEOR. © 2018

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

130. New coplanar coil system based on the tri-axial induction logging

Accession number: 20184105915613

Title of translation:

Authors: Zhang, Miaoyu (1, 2); Guo, Baolong (1); Wu, Jie (2)

Author affiliation: (1) Institute of Intelligent Control and Image Engineering, Xidian University, Xi'an; 710071, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China

Source title: Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument

Abbreviated source title: Yi Qi Yi Biao Xue Bao

Volume: 39

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Publication year: 2018

Pages: 170-178

Language: Chinese

ISSN: 02543087

CODEN: YYXUDY

Document type: Journal article (JA)

Publisher: Science Press

Abstract: Abstract:In view of the serious skin effect and relatively large negative response area in the coplanar coil system of existing triaxial array induction logging tools, a new coplanar subarray configuration is presented consisting of two transmitters and one receiver. Firstly, the forward modeling is accomplished by analytic method which introduces Bessel function to solve Hertz vector potential by tangent continuity of the layer boundary, and the horizontal component of the magnetic field intensity is obtained. And the analytical solution of the apparent conductivity is derived for the new coplanar coil system. Secondly, Born geometric factor response characteristics and response characteristics in homogeneous formation are contrasted for two coplanar coil systems. In further, this work analyzes the influences of operating frequency, position and turns of the secondary transmitter coil and coefficient α on the response characteristics of the new coplanar coil system. The results show that the higher operating frequency and the greater coefficient α causes the more serious the skin effect. The more turns of the secondary transmitter coil leads to the greater received signal. Compared with the current coplanar coil system, the new coplanar coil system increases the received signal and reduces the skin effect. In addition, the negative response area is significantly decreased and borehole effect is approximately linear. The new coplanar coil system mechanisms is revealed for reducing skin effect and negative response through analysis of the distribution characteristics of eddy current of the transmitter coil. In summary, this work can provide a theoretical and practical significance for designing and application of triaxial array induction logging tools. © 2018, Science Press. All right reserved.

Number of references: 17

Main heading: Transmitters

Controlled terms: Abstracting - Skin effect - Induction logging - Eddy currents

Uncontrolled terms: Apparent conductivity - Coil systems - Distribution characteristics - Hertz vector potentials - Magnetic-field intensity - Negative response - Response characteristic - Triaxial array induction

Classification code: 512.1.2 Petroleum Deposits : Development Operations - 701.1 Electricity: Basic Concepts and Phenomena - 903.1 Information Sources and Analysis

DOI: 10.19650/j.cnki.cjsi.J1803122

Compendex references: YES

Database: Compendex

Data Provider: Engineering Village

131. Inversion simulation for metal pipe electromagnetic parameters based on induction measurement method

Accession number: 20182305280313

Authors: Wu, Yinchuan (1); Zhang, Jiatian (1)

Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas of Ministry of Education, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China

Source title: UPB Scientific Bulletin, Series C: Electrical Engineering and Computer Science

Abbreviated source title: UPB Sci. Bull. Ser. C Electr. Eng. Comput. Sci.

Volume: 80

Issue: 2

Issue date: 2018

Publication year: 2018

Pages: 245-256
Language: English
ISSN: 22863540
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Document type: Journal article (JA)
Publisher: Politechnica University of Bucharest

Abstract: For correction of metal casing effect in induction logging technology, the casing parameters are obtained. A measure model which consists of one transmitter and two receivers is modeled in cased hole. A formulation of the inverse problem of determination of the electromagnetic parameters of metal tubes from the receiver voltage measured at single frequency is presented. The objective function is constructed based on the least square principle and a multi-parameter search algorithm using golden section search is designed. The results show that: When the true conductivity of metal casing changes from 2×106 S/m to 8×106 S/m, the true relative permeability of metal casing changes from 50 to 100 and the quality coefficient is set to 0.1%, the relative error $\Delta\sigma2$ of the casing conductivity can be a minimum of 0.0288% and a maximum of 0.1700%, the relative error #µ2r of the casing relative permeability can be a minimum of 0.0144% and a maximum of 0.1861%, and the number of the optimum search is 14 or 15. © 2018 Politechnica University of Bucharest. All rights reserved.
Number of references: 16
Main heading: Induction logging
Controlled terms: Electromagnetic logging - Parameter estimation - Metals - Inverse problems
Uncontrolled terms: Electromagnetic parameters - Golden section method - Golden section search - Least square principle - Metal pipes - Objective functions - Parameters inversion - Relative permeability
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism
Numerical data indexing: Percentage 1.00e-01%, Percentage 1.44e-02%, Percentage 1.70e-01%, Percentage 1.86e-01%, Percentage 2.88e-02%
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

132. Simultaneous Measurement of Strain and Temperature Based on Grating Inscribed in Dispersion Compensation Fiber

Accession number: 20182105217865
Authors: Zhang, Xuan (1); Zhang, Li-Song (1); Huang, Dong (1); Yong, Zheng (1); Xie, Qian (1); Gao, Hong (1); Li, Dong-Ming (1); Qiao, Xue-Guang (2)
Author affiliation: (1) Key Laboratory on Photoelectric Oil-Gas Logging and Detecting, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department of Physics, Northwest University, Xi'an; 710069, China
Source title: Guangzi Xuebao/Acta Photonica Sinica
Abbreviated source title: Guangzi Xuebao
Volume: 47
Issue: 3
Issue date: March 2018
Publication year: 2018
Article number: 0306004
Language: Chinese
ISSN: 10044213
CODEN: GUXUED
Document type: Journal article (JA)
Publisher: Chinese Optical Society
Abstract: A compound structure is fabricated by inscribing fiber Bragg gratings in dispersion compensation fiber, which is constituted by interferometer and fiber Bragg grating in a length of fiber. The strain and temperature response mechanisms of cladding mode and Bragg resonance are analyzed. The matrix equation is established through monitoring the cladding modes and Bragg resonance wavelength shift on the reflection spectrum, so that the simultaneous measurement of strain and temperature is achieved. The experimental results indicated that the temperature sensitivity of cladding mode and Bragg resonance are 49.4 pm/ and 11.0 pm/, respectively. The strain sensitivity of cladding modes is 1.05 pm/$_{\mu E}$ and the strain sensitivity of Bragg resonance is 0.651 pm/$_{\mu E.}$ The four parameters show good linearity. Since the compound structure has low-order cladding modes and core modes, it

is insensitive to the environment and can play an important role in the field of strain and temperature simultaneous measurement. © 2018, Science Press. All right reserved.

Number of references: 16
Main heading: Fiber Bragg gratings
Controlled terms: Matrix algebra - Cladding (coating) - Resonance - Fiber optic sensors - Dispersion compensation
Uncontrolled terms: All fiber - Compound structures - Dispersion-compensation fibers - Fiber optics sensors - Parameter measurement - Simultaneous measurement - Temperature response - Temperature sensitivity
Classification code: 741.1.2 Fiber Optics - 921.1 Algebra - 931.1 Mechanics
DOI: 10.3788/gzxb20184703.0306004
Funding Details: Number: 2016JM6055, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province; Number: 2016JQ1027, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province; Number: 61275088, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 61327012, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The National Natural Science Foundation of China (Nos. 61327012, 61275088), Shannxi Province National Science Foundation (Nos.2016JM6055, 2016JQ1027), the Foundation of Shannxi Educational Committee (Nos.2010JS037, 11JS050, 13JS088, O8JZ58).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

133. Evaluation method of delamination crack in ceramic topcoat of thermal barrier coatings

Accession number: 20182205263459
Authors: Dong, Hui (1); Li, Xiao (1); Ren, Yuefei (2); Zhou, Yong (1); Yao, Jiantao (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Changqing Oilfield Company the Third Gas Production Plant, Ordos; 017300, China
Source title: Hanjie Xuebao/Transactions of the China Welding Institution
Abbreviated source title: Hanjie Xuebao
Volume: 39
Issue: 2
Issue date: February 25, 2018
Publication year: 2018
Pages: 101-104 and 109
Language: Chinese
ISSN: 0253360X
CODEN: HHPAD2
Document type: Journal article (JA)
Publisher: Harbin Research Institute of Welding
Abstract: The relationship between crack dimension in ceramic thermal barrier coating(TBCs) and bright spot size on free surface of was ceramic TBCs was characterized quantificationally by the gradient thermal cycling test and finite element analysis (FEA). One thermal cycle duration included 120 s heating and 120 s cooling. The three-dimensional model was established to analyze the heat transfer characteristics of thermal barrier coating including crack. The results show that the temperatures of the crack and its affected zone increase with crack propagation, which provide an essential condition for the accelerated sintering of ceramic coating over the crack. The shape of bright spot on ceramic coating reflects directly the internal shape of the crack. On the basis of the above results, the relationship between bright spot size and crack dimension is independent of the crack propagation path, both their sizes are equivalent. Therefore, the bright spot size can be regarded as the crack dimension. © 2018, Editorial Board of Transactions of the China Welding Institution, Magazine Agency Welding. All right reserved.

Number of references: 11
Main heading: Plasma spraying
Controlled terms: Ceramic coatings - Ceramic materials - Heat transfer - Sintering - Thermal barrier coatings - Crack propagation - Sprayed coatings - Thermal cycling
Uncontrolled terms: Bright spots - Ceramic thermal barrier coatings - Crack propagation path - Delamination crack - Heat transfer characteristics - Thermal barrier coating (TBCs) - Thermal cycling test - Three-dimensional model
Classification code: 641.2 Heat Transfer - 812.1 Ceramics - 813.1 Coating Techniques - 813.2 Coating Materials - 932.3 Plasma Physics - 951 Materials Science
Numerical data indexing: Time 1.20e+02s
DOI: 10.12073/j.hjxb.2018390051

134. A pilot study on large-scale microbial enhanced oil recovery (MEOR) in Baolige Oilfield

Accession number: 20180204642982
Authors: Ke, Cong-Yu (1); Lu, Guo-Min (1); Li, Yong-Bin (2); Sun, Wu-Juan (1); Zhang, Qun-Zheng (1); Zhang, Xun-Li (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Petroleum Production Engineering Research Institute, Huabei Oilfield Company, Renqiu; 062552, China
Corresponding author: Zhang, Xun-Li(xlzhang@xsyu.edu.cn)
Abstract: Industrial application of microbial enhanced oil recovery (MEOR) has been hindered by a lack of large-scale data-based guidelines for process design and operation. In the present work MEOR was investigated in both laboratory and large-scale oilfield studies. Six microbial strains were initially isolated from Baolige Oilfield in China. Laboratory based investigation showed that all six strains were able to decrease the oil viscosity. Two mixtures of strains exhibited greater reduction effects, i.e., 35% and 56%, respectively. The optimal nutrient concentration was found to be 1.0%. The mixtures of strains tested in laboratory core flooding based MEOR also confirmed their greater MEOR performance, i.e., MEOR levels of 9.1% and 13.2%, respectively, compared to that of any single strain ranging from 7.0% % to 8.7%. Using the strain mixture that had been selected under the laboratory based conditions, the pilot field study achieved a significant MEOR: 210,000 tons of crude oil produced over 43 months from 169 production wells. The research results obtained in this work including both laboratory and field studies can be potentially applied in other oilfields with similar geological and physical conditions, for large-scale MEOR process design and operation. © 2017 Elsevier Ltd
Number of references: 56
Main heading: Enhanced recovery
Controlled terms: Process design - Crude oil - Floods - Oil well flooding - Laboratories - Mixtures - Strain
Uncontrolled terms: Design and operations - Laboratory and field studies - Large-scale studies - Microbial enhanced oil recoveries - Microbial enhanced oil recovery (MEOR) - Microbial strain - Nutrient concentrations - Physical conditions
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 951 Materials Science
Numerical data indexing: Age 3.58e+00yr, Mass 1.91e+08kg, Percentage 1.00e+00%, Percentage 1.32e+01%, Percentage 3.50e+01%, Percentage 5.60e+01%, Percentage 8.70e+00%, Percentage 9.10e+00%
DOI: 10.1016/j.ibiod.2017.12.009

135. Ag-K/MnO2 nanorods as highly efficient catalysts for formaldehyde oxidation at low temperature (*Open Access*)

Accession number: 20181705053462

Authors: Lu, Suhong (1); Wang, Xue (1); Zhu, Qinyu (1); Chen, Canchang (1); Zhou, Xuefeng (1); Huang, Fenglin (1); Li, Kelun (2); He, Lulu (1); Liu, Yanxiong (1); Pang, Fanjue (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Coal and Chemical Technology Institute Co., Ltd, Xi'an; 710070, China
Corresponding author: Lu, Suhong(lusuhong@xsyu.edu.cn)

Abstract: A series of Ag-K/MnO2 nanorods with various molar ratios of K/Ag were synthesized by a conventional wetness incipient impregnation method. The as-prepared catalysts were used for the catalytic oxidation of HCHO. The Ag-K/MnO2 nanorods with an optimal K/Ag molar ratio of 0.9 demonstrated excellent HCHO conversion efficiency of 100% at a low temperature of 60 °C. The structures of the samples were investigated by BET, TEM, SEM, XRD, H2-TPR, O2-TPD and XPS. The results showed that Ag-0.9K/MnO2-r exhibited more facile reducibility and greatly abundant surface active oxygen species, endowing it with the best catalytic activity of the studied catalysts. This work provides new insights into the development of low-cost and highly efficient catalysts for the removal of HCHO. © 2018 The Royal Society of Chemistry.

Number of references: 51
Main heading: Nanorods
Controlled terms: Silver compounds - Catalytic oxidation - Molar ratio - Catalyst activity - Temperature
Uncontrolled terms: Efficient catalysts - Formaldehyde oxidation - Incipient impregnation - Low costs - Low temperatures - Surface active
Classification code: 451.2 Air Pollution Control - 641.1 Thermodynamics - 761 Nanotechnology - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 933 Solid State Physics
Numerical data indexing: Percentage 1.00e+02%, Temperature 3.33e+02K
DOI: 10.1039/c8ra01611a

Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

136. Depositional, sedimentary, and diagenetic controls on reservoir quality in carbonate successions: A case study from the carbonate gas reservoirs of the Lower Triassic Feixianguan Formation, eastern Sichuan Basin, China

Accession number: 20181304955069

Authors: Liu, Chao (1); Xie, Qingbin (2)
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Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.

Abstract: The Kaijiang–Liangping trough is an important carbonate gas zone in eastern Sichuan Basin. The western platform of this trough has received less attention than the eastern one due to its lower reservoir potential. The current study mainly investigated depositional, sedimentological, and diagenetic features of the Lower Triassic Feixianguan Formation (T1f) from the Tieshan area located at the western platform, aiming to discuss their controls on reservoir quality. The gentle slope in the Tieshan area (approximately 5°) deposited platform marginal oolitic shoals featured by thin vertical accumulation and long-distance lateral migration, thereby forming small-scale and scattered-distribution reservoirs. Despite intensive diagenesis alterations after sedimentation, the T1f reservoir porosity was controlled by sedimentological factors (i.e., grain size and sorting) at varying degrees. High-quality reservoirs occurred in the dolograinstones with good sorting and coarse grain sizes. The T1f carbonates underwent the near-surface and burial diagenesis in the Tieshan area. Dolomitization and associated syn- and post-dolomitizational dissolutions were important factors for secondary porosity development. Dolomite recrystallization increased intercrystal porosity in dolostones characterized by precursor mud-dominated fabric, thereby resulting in gradual shift from Lucia class 3 to class 1 petrophysical relationships with increasing crystalline sizes. By contrast, the intergrain porosity was not influenced by recrystallization in dolograinstones, which pervasively displayed classes 1 and 2 petrophysical relationships regardless of dolomite crystal sizes. The T1f gas reservoirs evolved from a paleo-oil accumulation as evidenced by pore-filling bitumen, which had negative effects on crystalline dolostones by filling intercrystal pores. However, its influence on dolograinstones was negligible as dissolution in relation to thermochemical sulfate reduction (TSR) reaction occurred during paleo-oil cracking into gas, thereby increasing intergrain porosity and effectively offsetting porosity decrease caused by bitumen filling. TSR dissolution occurred at certain intensity in the Tieshan area, which was evidenced by H2S occurrence in gas. © 2017 Elsevier B.V.

Number of references: 63
Main heading: Dissolution
Controlled terms: Sedimentology - Filling - Quality control - Sulfur compounds - Crystalline materials - Porosity - Carbonates - Carbonation - Gases - Deposition - Grain size and shape - Recrystallization (metallurgy) - Petroleum reservoirs
Uncontrolled terms: Carbonate reservoir - Carbonate successions - Diagenesis - High quality reservoir - Petrophysical relationship - Thermochemical sulfate reduction - Tieshan area - TSR reaction
Classification code: 481.1 Geology - 512.1.1 Oil Fields - 531.1 Metallurgy - 691.2 Materials Handling Methods - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 913.3 Quality Assurance and Control - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1 Crystalline Solids
DOI: 10.1016/j.petrol.2017.12.063
Funding Details: Number: 2017ZX05005-002-004, Acronym: -, Sponsor: -;
Funding text: This study is funded by National Science and Technology Major Project (Grant No., 2017ZX05005-002-004).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

137. First-principles Calculations of Electronic Structure and Elastic Properties of 2H-CuScO2 Under Pressure

Accession number: 20193807454276
Title of translation: 2H-CuScO2
Authors: Liu, Wenting (1); Wei, Zhimin (2)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) The Fourth Academy, China Aerospace Science and Technology Corporation, Xi'an; 710025, China

Pages: 44-49
Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review

Abstract: As an intrinsic p-type transparent conductive oxide, $CuScO_2$ has attracted wide attention of researchers, but there are few studies on its structure and performance under pressure at present. The structural, electronic and elastic properties of $2H-CuScO_2$ under pressure in the range of 0-10 GPa were studied using the plane waves ultrasoft pseudopotential technique based on the density functional theory (DFT) in this paper. The results showed that the lattice constant under 0 GPa was consistent with the experimental results, indicating that the properties of $2H-CuScO_2$ could be reasonably calculated by generalized gradient approximation, and the lattice constant a and c decreased with the increase of pressure. The study on the elastic property showed that $2H-CuScO_2$ was a brittle material within the pressure range of 0-10 GPa, with a mechanical instability pressure point at 9.3 GPa, and the pressure would have different effects on its elastic properties. At the same time, in this pressure range, $2H-CuScO_2$ is a direct band gap semiconductor, and its band gap value decreases slightly with the increase of pressure. © 2018, Materials Review Magazine. All right reserved.

Number of references: 37
Main heading: Electronic structure
Controlled terms: Elasticity - Energy gap - Copper compounds - Lattice constants - Density functional theory
Uncontrolled terms: $2H-CuScO_2$ - Direct band gap semiconductors - First principles - First-principles calculation - Generalized gradient approximations - Structure and performance - Transparent conductive oxides - Ultrasoft pseudopotentials
Classification code: 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1.1 Crystal Lattice
Numerical data indexing: Pressure 0.00e+00Pa, Pressure 0.00e+00Pa to 1.00e+10Pa, Pressure 9.30e+09Pa
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

138. Preparation and Degradation of Lysozyme-loaded Microspheres Based on Polyurethane   (*Open Access*)

Accession number: 20183405734910
Authors: Xue, Dan (1); Lin, Chunling (1); Jiao, Xiaoni (2); Wu, Baoqiang (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) No. 4 Gas Production Plant Changqing Oil Field Company, Xi'an; 710021, China
Corresponding author: Xue, Dan(xdnwpu@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 381
Part number: 1 of 1
Issue: 1
Issue title: 4th Annual International Workshop on Materials Science and Engineering, IWMSE 2018
Issue date: August 16, 2018
Publication year: 2018
Article number: 012069
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 4th Annual International Workshop on Materials Science and Engineering, IWMSE 2018
Conference date: May 18, 2018 - May 20, 2018
Conference location: Xi'an, Shanxi, China
Conference code: 138632
Publisher: IOP Publishing Ltd

Abstract: A series of block polyurethanes based on poly (3-hydroxybutyrate) (PHB-diol, Mn=6180) and poly (ethylene glycol, Mn=1500) segments were synthesized by a facil way of solution polymerization. The chemical structure was systematically characterized by 1H, nuclear magnetic resonance spectrum (NMR) and Fourier transorm infrared spectroscopy. The polyurethanes microspheres were loaded with lysozyme by double emulsion solvent evaporation

and the influence of environment on degradation process was investigated. It was stated that an accelerated degradation process was carried out at pH=9 and 37°C. The cumulative release of drug-loaded microspheres was achieved about 85% in phosphate buffer solution when the degradation time reaches 20 weeks. Moreover, lower degradation of the microspheres was observed after 12 weeks in the release medium. Results showed that the microspheres exhibit different degradadable performance in different media from surface erosion to diffusion bulk collapsing. © 2018 Institute of Physics Publishing. All rights reserved.

Number of references: 16
Main heading: Microspheres
Controlled terms: Targeted drug delivery - Controlled drug delivery - Infrared spectroscopy - Emulsions - Enzymes - Emulsification - Polyethylene glycols - Nuclear magnetic resonance spectroscopy - Polyurethanes
Uncontrolled terms: Accelerated degradation - Double emulsion-solvent evaporation - Drug loaded microsphere - Influence of environments - Magnetic resonance spectra - Phosphate buffer solutions - Poly-3-hydroxybutyrate - Solution polymerization
Classification code: 802.3 Chemical Operations - 804 Chemical Products Generally - 815.1.1 Organic Polymers
Numerical data indexing: Age 2.30e-01yr, Age 3.84e-01yr, Percentage 8.50e+01%, Temperature 3.10e+02K
DOI: 10.1088/1757-899X/381/1/012069
Funding Details: Number: 2017GY-180, Acronym: -, Sponsor: -;
Funding text: The authors are grateful to 2017 Shaanxi Provincial Key Research and Development Plan (2017GY-180) and Innovation Training Program for Undergraduates of Xi'an Shi You University for financial support.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

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139. Reactive Power Optimization of Distribution Network on Improved Genetic Algorithm

Accession number: 20190406426595
Authors: Wu, Xiaomeng (1, 2); Guo, Xinyu (1); Li, Fei (1); Zhang, Achao (1)
Author affiliation: (1) School of Electric Engineering, Xi'an Shiyou University, Xi'an, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province, Xi'an, China
Source title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Technol., Electron. Autom. Control Conf., IAEAC
Part number: 1 of 1
Issue title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Issue date: December 14, 2018
Publication year: 2018
Pages: 2048-2052
Article number: 8577541
Language: English
ISBN-13: 9781538645086
Document type: Conference article (CA)
Conference name: 3rd IEEE Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Conference date: October 12, 2018 - October 14, 2018
Conference location: Chongqing, China
Conference code: 143703
Sponsor: 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., United States
Abstract: An improved genetic algorithm is presented for solving the problem of slow convergence speed and premature phenomenon using traditional genetic algorithm in this paper. Combined with the characteristics of reactive power optimization of power system, binary code, initial population, crossover, mutation and fitness function had been improved by the proposed algorithm. The property and accuracy with the IEEE14 and IEEE30 bus system are tested, the results show that the model and algorithm avoid effectively premature phenomenon and reduce the active power loss in the evolution. © 2018 IEEE.
Number of references: 11
Main heading: Genetic algorithms
Controlled terms: Reactive power

140. Response characteristics of a new coplanar coil system in thin beds

Authors: Zhang, Miaoyu (1, 2); Guo, Baolong (1); Wu, Jie (2); Wu, Yinchuan (1, 2)
Author affiliation: (1) Institute of Intelligent Control and Image Engineering, Xidian University, Xi'an; Shaanxi; 710071, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Zhang, Miaoyu(myzhang1028@163.com)

Abstract: Thin beds cannot be distinguished since the conventional tri-component coplanar coil system causes various responses in them. Therefore we propose a new coplanar coil system based on two-transmitters and one-receiver sub-array configuration. First a modelling is achieved with the analytic method. With tangential continuity in a bed boundary and the Bessel function, the horizontal component of magnetic field intensity is obtained. Then we calculate the response of 8 sub-arrays of two coplanar coil systems in bedded formations, and analyze logging response influence caused by coil spacing, bed thickness, and thin-bed conductivity. The following understandings are obtained: a. The boundary position is clearly shown by the new coplanar coil system when the thin bed thickness is greater than the distance between the primary transmitting and receiving coils, and the measurement accuracy is improved by 53.1% compared with the conventional coplanar coil system; b. Fluctuations occur at the bed boundary due to the influence of the coplanar coil system and surrounding rocks when the thin bed thickness is less than the distance between the primary transmitting and receiving coils, but these fluctuations are less than that of the conventional coplanar coil system. Based on the analysis of the eddy-current distribution of the transmitter coil, we have found the mechanism that the skin-effect and negative-response are reduced by the new coplanar coil system. Our research results have an important significance for the tri-component array meter design and logging response evaluation. © 2018, Editorial Department OIL GEOPHYSICAL PROSPECTING. All right reserved.

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

141. Experimental Study on Simultaneous Absorption and Desorption of CO2, SO2, and NOx Using Aqueous N -Methyldiethanolamine and Dimethyl Sulfoxide Solutions

Authors: Luo, Qinlan (1); Feng, Bin (1); Liu, Zhuhan (1); Zhou, Qulan (1); Zhang, Yafei (2); Li, Na (1)
Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'An Jiaotong University, Xi'an; 710049, China; (2) Mechanical Engineering College, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Na(lyna@mail.xjtu.edu.cn)
Abstract: MDEA+DMSO aqueous solutions, made up of N-methyldiethanolamine (MDEA) and dimethyl sulfoxide (DMSO), were explored for the simultaneous absorption of CO_2, SO_2, and NO_x. Experiments in a semibatch absorption-desorption system were carried out to measure the absorption and desorption performance of aqueous MDEA+DMSO solutions. The influences of concentration proportion, MDEA/DMSO concentration, absorption temperature, desorption temperature, and cycle index on the simultaneous absorption and desorption were investigated. The experimental results indicated that under all experimental conditions the desulfurization efficiency was constant of 100% and the NO_2 absorption efficiency was above 98%, whereas the absorption of CO_2 and NO was significantly affected by the solution concentration and absorption temperature. The 5 mol/L MDEA + 2.5 mol/L DMSO solution exhibited optimal absorption performance with the CO_2, SO_2, NO, and NO_2 absorption efficiency of 91.04%, 100%, 97.14%, and 100%, respectively. A semiempirical formula of CO_2 absorption rate was obtained, and the optimal operating conditions were established; the reusability and stability of MDEA+DMSO solution were also verified in absorption-desorption circulation experiments. Meanwhile, the reaction mechanisms of the absorption and desorption were discussed based on the characterization of removal product by Fourier transform infrared spectroscopy and ion chromatography. Consequently, the aqueous MDEA+DMSO solution would be expected to be a renewable absorbent for simultaneous removal of $CO_2/SO_2/NO_x$. © 2018 American Chemical Society.
Number of references: 62
Main heading: Dimethyl sulfoxide
Controlled terms: Efficiency - Nitrogen oxides - Organic solvents - Desorption - Fourier transform infrared spectroscopy - Carbon dioxide - Reusability
Uncontrolled terms: Absorption and desorptions - Desorption temperatures - Desulfurization efficiency - Dimethyl sulfoxide (DMSO) - Experimental conditions - Optimal operating conditions - Semi-empirical formulas - Simultaneous absorption
Classification code: 801 Chemistry - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 913.1 Production Engineering
Numerical data indexing: Molar_Concentration 2.50e+03mol/m3, Molar_Concentration 5.00e+03mol/m3, Percentage 1.00e+02%, Percentage 9.10e+01%, Percentage 9.71e+01%, Percentage 9.80e+01%
DOI: 10.1021/acs.energyfuels.7b03648
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

142. Visual analysis on the effects of fracture-surface characteristics and rock type on proppant transport in vertical fractures

Accession number: 20184305982375
Authors: Huang, Hai (1); Babadagli, Tayfun (2); Andy Li, Huazhou (2); Develi, Kayhan (3)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, United States; (2) University of Alberta, Canada; (3) Istanbul Technical University, United States
Source title: Society of Petroleum Engineers - SPE Hydraulic Fracturing Technology Conference and Exhibition 2018, HFTC 2018
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 2018, HFTC 2018
Issue date: 2018
Publication year: 2018
Language: English
ISBN-13: 9781510858244
Document type: Conference article (CA)
Conference name: SPE Hydraulic Fracturing Technology Conference and Exhibition 2018, HFTC 2018
Conference date: January 23, 2018 - January 25, 2018
Conference location: The Woodlands, TX, United states
Conference code: 133721
Publisher: Society of Petroleum Engineers
Abstract: The fracture-surface characteristics (such as roughness and fractal dimensions) may greatly affect the proppant transport during hydraulic fracturing operation. Few researches have focused on investigating the proppant transport in vertical fracture with actual surface characteristics. As a continuation of our previous study (Huang et al. 2017), we qualitatively investigatethe migration of proppants in rough and vertical fractures by considering the effects of surface characteristics and rock type on the instantaneous transport and areal spreading of proppant in the fractures. We fractured different types of tight rocks (including limestone, marble, tight sandstone, and granite) with Brazilian test and molded them to manufacture 20×20cm transparent replicas with an aperture of 1 mm. We characterized the surface characteristics of these rock samples with different fractal dimensions. Subsequently, dyed fracturing fluid with or without proppant loading was injected into the rough vertical fracture. In each test, we monitored the inlet pressure continuously while the proppants were being transported in the fracture. The process was videotaped to monitor the proppant distribution in the rough fracture. Different from our previous study (Huang et al. 2017), a higher injection rate is used in this present study. The experimental results obtained in this study further consolidate the many findings reported in our recent study (Huang et al. 2017): in rough and narrow fracture, the surface roughness plays a pivotal role in affecting how proppants settle in the fracture as well as where the proppants settle in the fracture. Roughness of the vertical fractures tends to significantly enhance the vertical placement of proppants in the fracture, leading to a much higher proppant-filling ratio in a rough fracture than in a smooth fracture. Interestingly, in addition to the bridging effect observed in Huang et al. (2017), a previously formed proppants cluster can be broken up under a higher-rate slurry flow. The bridging of proppants and its subsequent breaking up can recursively occur during the high-rate slurry flow, resulting in fluctuations in the proppant filling ratios as well as fluctuations in the pressure profiles recorded in the inlet of the fracture model. The roughness of fracture models not only affects how much area of the fracture is being occupied by the proppants in the fracture, but also affects how tightly the proppants are filling up the fracture. Different types of rock have different surface characteristics, leading to the observed differences with regard to how the proppants migrate, settle down and fill up the fractures. No definite correlation could be established between any of the fractal numbers and the relative coverage of proppants in the fracture. More experiments, however, need to be conducted to reach more concrete conclusions in this regard. © 2018, Society of Petroleum Engineers
Number of references: 20
Main heading: Proppants
Controlled terms: Fracture - Lime - Fractal dimension - Video recording - Fracturing fluids - Surface roughness
Uncontrolled terms: Bridging effects - Fracture surfaces - Narrow fractures - Pressure profiles - Proppant transports - Surface characteristics - Tight sandstones - Vertical fracture
Classification code: 511.1 Oil Field Production Operations - 716.4 Television Systems and Equipment - 804.2 Inorganic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Size 1.00e-03m
DOI: 10.2118/189892-ms

Compendex references: YES

Database: Compendex

Data Provider: Engineering Village

143. Research on Edge Extraction Technique of the Image Border of Welding Pool Based on Mathematical Morphology

Accession number: 20190406426860

Authors: Wu, Xiaomeng (1, 2); Liu, Xinyu (1); Li, Fei (1); Yan, Hao (1); Zhang, Pengbiao (1)

Author affiliation: (1) School of Electric Engineering, Xi'an Shiyou University, Xi'an, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province, Xi'an, China

Source title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018

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Part number: 1 of 1

Issue title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018

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Language: English

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Conference name: 3rd IEEE Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018

Conference date: October 12, 2018 - October 14, 2018

Conference location: Chongqing, China

Conference code: 143703

Sponsor: 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., United States

Abstract: Aimed at the problem of the serious loss of marginal information when it is conducted with binaryzation in the edge extracting of weld pool image by using the method of mathematical morphology, one kind of improved plan is purposed in this paper. We can use local adaptive binarization method to carry out binaryzation, and then apply the median filtering to build connected region at the same time, use search fill algorithm to obtain the final binary image. We can use the method of mathematical morphology to select structural element with suitable shape and size and apply edge detection operator which is used four kinds of basic operation combinations of morphology to carry out edge detection for binary image. The simulation results show that this method can more accurately extract the image edge of welding pool on the basis of protecting marginal information of welding pool commendably. © 2018 IEEE.

Number of references: 10

Main heading: Mathematical morphology

Controlled terms: Image enhancement - Binary images - Image segmentation - Mathematical operators - Median filters - Edge detection - Welding

Uncontrolled terms: Adaptive binarization - Connected region - Edge extraction techniques - Edge-detection operators - Marginal information - Median filtering - Structural elements - Weld pool images

144. A New Method of Force Calculation of Sucker Rod String in Directional Well   (*Open Access*)

Accession number: 20181605014389

Authors: Cai, Wenbin (1); Zeng, Rui (2); Liu, Bohong (1)
Author affiliation: (1) Petroleum Engineering Academy, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) 11th Oil Production Plant of Chang Qing Oil Field Company, Xi' an Shaanxi; 710018, China
Corresponding author: Cai, Wenbin(peter_acai@sina.com)

Abstract: The actual wellbore trajectory of the directional well is an irregular spatial curve which is not only distorted, but also bended compared to the straight well. The complexity of the shape makes the sucker rod string in the work of a complex state of alternating stress, and withstanding axial compression, torsion and bending of the coupling effect. Meanwhile, the phenomenon of eccentric wear and disconnection of the sucker rod string becomes worse and worse. Based on the actual force of the sucker rod string in the directional well and the different force characteristics, a new method of force calculation of sucker rod string in direction well is given in this paper, the mechanics analysis models of the sucker rod string in three-dimensional directional well have been deduced respectively. Through the combination of mathematical geometry and traditional mechanics, the mathematical model can be used to obtain the analytic solution of the mechanical problem of sucker rod string, which is suitable for engineering design calculation and overall evaluation research. © Published under licence by IOP Publishing Ltd.

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

145. A new method for predicting erosion damage of suddenly contracted pipe impacted by particle cluster via CFD-DEM   (*Open Access*)

Accession number: 20184005897794
Authors: Cheng, Jiarui (1); Dou, Yihua (2); Zhang, Ningsheng (1); Li, Zhen (2); Wang, Zhiguo (2)
Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Department of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cheng, Jiarui(cjr88112@163.com)
Abstract: A numerical study on the erosion of particle clusters in an abrupt pipe was conducted by means of the combined computational fluid dynamics (CFD) and discrete element methods (DEM). Furthermore, a particle-wall extrusion model and a criterion for judging particle collision interference were developed to classify and calculate the erosion rate caused by different interparticle collision mechanisms in a cluster. Meanwhile, a full-scale pipe flow experiment was conducted to confirm the effect of a particle cluster on the erosion rate and to verify the calculated results. The reducing wall was made of super 13Cr stainless steel materials and the round ceramsite as an impact particle was 0.65 mm in diameter and 1850 kg/m3 in density. The results included an erosion depth, particle-wall contact parameters, and a velocity decay rate of colliding particles along the radial direction at the target surface. Subsequently, the effect of interparticle collision mechanisms on particle cluster erosion was discussed. The calculated results demonstrate that collision interference between particles during one cluster impact was more likely to appear on the surface with large particle impact angles. This collision process between the rebounded particles and the following particles not only consumed the kinetic energy but also changed the impact angle of the following particles. © 2018 by the authors.
Number of references: 47
Main heading: Erosion
Controlled terms: Kinetic energy - Kinetics - Numerical methods - Finite difference method - Decay (organic) - Computational fluid dynamics
Uncontrolled terms: CFD-DEM - Colliding particles - Collision interference - Extrusion modeling - Inter-particle collision - Particle clusters - Particle collision - Particle-wall contacts
Classification code: 631.1 Fluid Flow, General - 723.5 Computer Applications - 801.2 Biochemistry - 802.2 Chemical Reactions - 921.6 Numerical Methods - 931 Classical Physics; Quantum Theory; Relativity - 931.1 Mechanics
Numerical data indexing: Mass_Density 1.85e+03kg/m3, Size 6.50e-04m
DOI: 10.3390/ma11101858
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

146. Microstructure and mechanical properties of friction stir processed hypoeutectoid steel

Accession number: 20185106253552
Title of translation:
Authors: Wang, Hongduo (1, 2); Wang, Wen (1); Li, Xiao (2); Wang, Kuaishe (1)
Author affiliation: (1) College of Metallurgical Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Kuaishe(wangkuaishe888@126.com)
Source title: Hanjie Xuebao/Transactions of the China Welding Institution
Abbreviated source title: Hanjie Xuebao
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Publication year: 2018
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Language: Chinese
ISSN: 0253360X
CODEN: HHPAD2
Document type: Journal article (JA)
Publisher: Harbin Research Institute of Welding
Abstract: The hot-rolled annealed hypoeutectoid steel plates with a thickness of 3 mm was processed by friction stir processing using K40 cobalt tungsten carbide tool. The microstructures and mechanical properties of the processed zone were investigated. The results show that the microstructure of stir zone and thermo-mechanically affected zone were proeutectoid blocky ferrite, "acicular ferrite" and pearlite. Its transformation characteristic was dynamic recrystallization and phase transformation. However, heat-affected zone was characterized as equiaxed ferrite and lamellar pearlite, which was mainly controlled by recrystallization. Friction stir processing had significant effect on the morphologies of pearlite and the precipitation cementite in above different zones. Microhardness in the processed zone of hypoeutectoid steel sample obviously increased after friction stir processing and its ultimate tensile strength increased by 8.2% compared to that of the base material. As a result, the fracture location of tensile specimens appeared at the base material. The fracture mechanism of samples before and after friction stir processing treatment was dimple ductile fracture. Solid solution strengthening and phase transformation strengthening were the two factors for improving the hardness and the ultimate tensile strength of hypoeuectoid steel sample. © 2018, Editorial Board of Transactions of the China Welding Institution, Magazine Agency Welding. All right reserved.
Number of references: 13
Main heading: Ductile fracture
Controlled terms: Ferrite - Heat affected zone - Pearlite - Phase transitions - Textures - Dynamic recrystallization - Friction stir welding - Hot rolling - Cobalt compounds - Friction - Tungsten carbide - Strengthening (metal) - Tensile strength
Uncontrolled terms: Fracture mechanisms - Friction stir processing - Hypoeutectoid steel - Microstructure and mechanical properties - Microstructures and mechanical properties - Solid solution strengthening - Thermomechanically affected zones - Ultimate tensile strength
Classification code: 531.1 Metallurgy - 531.2 Metallography - 535.1.2 Rolling Mill Practice - 538.2 Welding - 538.2.1 Welding Processes - 801.4 Physical Chemistry - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 8.20e+00%, Size 3.00e-03m
DOI: 10.12073/j.hjxb.2018390246
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

147. Heptamolybdate: A highly active sulfide oxygenation catalyst

Accession number: 20183605783989
Authors: Porter, Ashlin G. (1); Hu, Hanfeng (1); Liu, Xuemei (2); Raghavan, Adharsh (1); Adhikari, Sarju (1); Hall, Derrick R. (1); Thompson, Dylan J. (1); Liu, Bin (1); Xia, Yu (1); Ren, Tong (1)
Author affiliation: (1) Department of Chemistry, Purdue University, 560 Oval Drive, West Lafayette; IN; 47906, United States; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, China
Corresponding author: Xia, Yu(yxia@purdue.edu)
Source title: Dalton Transactions
Abbreviated source title: Dalton Trans.

Abstract: The sulfide oxygenation activities of both heptamolybdate ([Mo7O24]6-, [1]6-) and its peroxo adduct [Mo7O22(O2)2]6- ([2]6-) were examined in this contribution. [Mo7O22(O2)2]6- was prepared in a yield of 65% from (NH4)6[Mo7O24] (1a) upon treatment of 10 equiv. of H2O2 and structurally identified through single crystal X-ray diffraction study. (nBu4N)6[Mo7O22(O2)2] (2b) is an efficient catalyst for the sequential oxygenation of methyl phenyl sulfide (MPS) by H2O2 to the corresponding sulfoxide and subsequently sulfone with a 100% utility of H2O2. Surprisingly, (nBu4N)6[Mo7O24] (1b) is a significantly faster catalyst than 2b for MPS oxygenation under identical conditions. The pseudo-first order kcat constants from initial rate kinetics are 54 M-1 s-1 and 19 M-1 s-1 for 1b and 2b, respectively. Electrospray ionization mass spectrometry (ESI-MS) investigation of 1b under the catalytic reaction conditions revealed that [Mo2O11]2- is likely the main active species in sulfide oxygenation by H2O2. © 2018 The Royal Society of Chemistry.

Number of references: 35
Main heading: Catalysis
Controlled terms: Mass spectrometry - Single crystals - Sulfur compounds - Rate constants - Electrospray ionization - Catalysts - Oxygenation
Uncontrolled terms: Catalytic reactions - Efficient catalysts - Electrospray ionization mass spectrometry - Heptamolybdate - Identical conditions - Oxygenation catalysts - Pseudo-first-order - Single-crystal X-ray diffraction studies
Classification code: 801 Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 933.1 Crystalline Solids
Numerical data indexing: Percentage 1.00e+02%, Percentage 6.50e+01%
DOI: 10.1039/c8dt00583d

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

148. Hydrogen migration in Coulomb explosion of cyclohexane to C2H4+ and C4H8+: Theoretical and experimental studies

Accession number: 20183105643447

Authors: Wu, Hua (1); Wang, Hui (1); Guo, Zihan (2); Wen, Junqing (1)
Author affiliation: (1) School of Sciences, Xi'an Shiyou University, Xi'an, China; (2) State Key Laboratory of Precision Spectroscopy, School of Physics and Materials, East China Normal University, Shanghai, China
Corresponding author: Wu, Hua(whua@xsyu.edu.cn)

Document type: Journal article (JA)
Publisher: John Wiley and Sons Inc, Postfach 10 11 61, 69451 Weinheim, Boschstrabe 12, 69469 Weinheim, Deutschland, 69469, Germany

Abstract: The equilibrium structure of cyclohexane dication $C_6H_{12}^{2+}$ and singly charged ions $C_2H_4^+$ and $C_4H_8^+$ suggests that hydrogen migration can proceed in dissociation process of $C_6H_{12}^{2+}$ to $C_2H_4^+$ and $C_4H_8^+$. Using dc-slice imaging technique, the fragmentation pathway $C_6H_{12}^{2+} \rightarrow C_2H_4^+ + C_4H_8^+$ is detected under an intense femtosecond laser field. Two-body Coulomb explosion (CE) of $C_6H_{12}^{2+}$ to $C_2H_4^+$ and $C_4H_8^+$ is securely identified. The quasi-isotropic distributions of ions indicate the precursor have a relatively long dissociation time. Then, B3LYP density functional theory calculations are performed on this dissociation process, the results show the precursor $C_6H_{12}^{2+}$ undergoes molecular rearrangement and 1, 2- and 6, 5- hydrogen migrations during the dissociation process. These molecular rearrangement and hydrogen migration processes can reduce the anisotropy distribution of fragment ions $C_2H_4^+$ and $C_4H_8^+$, which is consistent with the experimental results. The present work will be useful to understand hydrogen migration processes within the hydrocarbon molecules. © 2018 Wiley Periodicals, Inc.

Number of references: 37
Main heading: Molecules
Controlled terms: Dissociation - Ions - Femtosecond lasers - Laser pulses - Calculations - Cyclohexane - Dielectric devices - Density functional theory - Hydrogen
Uncontrolled terms: Ab initio calculations - Anisotropy distribution - B3LYP density functional - Coulomb explosion - Equilibrium structures - Femtosecond laser field - Hydrogen migration - Molecular rearrangement
Classification code: 744.1 Lasers, General - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1002/qua.25764

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

149. Theoretical and numerical studies of microfiber coil resonator for ambient refractive index sensing

Accession number: 20184806141793

Authors: Luo, Xiaodong (1, 2); Li, Yongfang (1); Ma, Chengju (2); Liu, Yinggang (2); Feng, Dequan (2); Zhang, Jing (1)
Author affiliation: (1) Shaanxi Normal University, School of Physics and Information Technology, Chang-An Zone, Xi'an, China; (2) Xi'An Shiyou University, School of Science, Yan-Ta Zone, Xi'an, China
Corresponding author: Luo, Xiaodong(xdluo@xsyu.edu.cn)

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Publication year: 2018
Article number: 117109
Language: English
ISSN: 00913286
E-ISSN: 15602303
CODEN: OPEGAR
Document type: Journal article (JA)
Publisher: SPIE

Abstract: An ambient refractive index (RI) sensor based on a microfiber coil resonator (MCR) is proposed. Using the coupling wave theory, the resonant properties of the MCR are theoretically studied. And then, using the finite difference time-domain method, the sensing characteristic of the sensor is investigated and the dependence of sensing characteristic on the MCR parameters is examined as well. Results show that the sensor is extremely sensitive to the ambient RI variation. And, the microfiber diameter determines both the sensitivity and detection limit of the sensor. Further, the rod diameter determines the free spectral range of the MCR resonance spectrum and influences the detection range of the sensor. However, the sensor sensitivity is almost constant with the rod diameter change. So, for ensuring a good performance in actual experiment, the microfiber diameter should range from 400 nm to 1 μm, and the rod diameter should range from 20 μm to 2 mm. This work provides a guideline for future research on the RI sensor based on MCR. © 2018 Society of Photo-Optical Instrumentation Engineers (SPIE).

Number of references: 24
Main heading: Refractive index
Controlled terms: Refractometers - Microfibers - Resonators - Finite difference time domain method
Uncontrolled terms: Actual experiments - Coupling wave theory - Free spectral range - Micro-fiber - Microfiber coil resonators - Refractive index sensing - Refractive index sensor - Sensing characteristics
Classification code: 741 Light, Optics and Optical Devices - 741.1 Light/Optics - 741.1.2 Fiber Optics - 921 Mathematics - 941.3 Optical Instruments
Numerical data indexing: Size 2.00e-11m2 to 2.00e-03m2, Size 4.00e-07m to 1.00e-06m
DOI: 10.1117/1.OE.57.11.117109
Funding Details: Number: 14JS073, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: 11474191, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported in part by the National Natural Science Foundation of China under Grant No. 11474191, in part by the Scientific Research Program Funded by Shaanxi Provincial Education Department of China under Grant Nos. 14JS073 and no. 15JK1578.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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150. Combination of band selection and weighted spatial-spectral method for hyperspectral image classification

Accession number: 20191206669467
Authors: Li, Xiangjuan (1); Mountrakis, Giorgos (2); Zhao, ChuanYuan (1); Zhang, Feng (1)
Author affiliation: (1) College of Computer Science, Xi'an ShiYou University, Xi'an; 710065, China; (2) State University of New York College of Environmental Science and Forestry, NY; 13210, United States
Corresponding author: Li, Xiangjuan(xiangjuan_li@126.com)
Source title: International Geoscience and Remote Sensing Symposium (IGARSS)
Abbreviated source title: Dig Int Geosci Remote Sens Symp (IGARSS)
Volume: 2018-July
Part number: 1 of 1
Issue title: 2018 IEEE International Geoscience and Remote Sensing Symposium, IGARSS 2018 - Proceedings
Issue date: October 31, 2018
Publication year: 2018
Pages: 4685-4688
Article number: 8518117
Language: English
CODEN: IGRSE3
ISBN-13: 9781538671504
Document type: Conference article (CA)
Conference name: 38th Annual IEEE International Geoscience and Remote Sensing Symposium, IGARSS 2018
Conference date: July 22, 2018 - July 27, 2018
Conference location: Valencia, Spain
Conference code: 141934
Sponsor: Geoscience and Remote Sensing Society (GRSS); The Institute of Electrical and Electronics Engineers (IEEE)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: In this paper we propose a new method for land cover classification in hyperspectral remote sensing images by combining band selection with weighted spatial-spectral feature fusion. Spectral information for each pixel

is represented by a spectral curve over all the bands. Spatial information is represented by a Bag of visual Words model within a small region around each pixel. A cluster-based band selection method is used before spatial feature extraction to reduce the computation complexity. Then spectral and spatial feature weights are learnt under a Support Vector Machine framework, obtaining a balance between the two basis features for each class. Classification results on three popular hyperspectral remote sensing images demonstrate that the proposed method can yield a higher accuracy and a lower false alarm rate compared with the other similar classifiers. © 2018 IEEE

151. Production analysis for fractured vertical well in rectangular coal reservoirs (*Open Access*)

Authors: Li, Chen (1); Dong, Zhenzhen (2); Li, Xiang (1)
Author affiliation: (1) College of Engineering, Peking University, Peking University, NO. 5 Yihe Road, Beijing, China; (2) Petroleum Engineering Department, Xi'An Shiyou University, 18 Dianzierlu, Xi'an, Shannxi Province, China
Corresponding author: Dong, Zhenzhen(dongzz@xsyu.edu.cn)

Abstract: As one kind of unconventional natural gas, coalbed methane is an important energy resource that is subject to active research. Gas exists in coalbed methane reservoirs in two forms: free gas and adsorbed gas. In the course of coalbed methane production, the reservoir experiences pressure decrease, desorption, diffusion, and seepage. Previous models of coalbed methane production were mainly concerned with circular boundaries. However, field tests revealed that some fractured wells possess the characteristics of rectangular boundaries. For fractured rectangular coalbed methane reservoirs, it is necessary to deal with the four boundaries with mirror image theory, which complicates calculations. In addition, the desorption and adsorption process of coalbed methane exerts a strong effect on the seepage process. Furthermore, the complexity of the rectangular coal seam embedded with the finite-conductivity fracture results in a significant computational challenge. For the first time, this paper presented a fast analytical solution for a finite-conductivity fractured vertical well model with either rectangular closed or constant-pressure boundaries in the coal seam. On the basis of the Fick diffusion law and the Darcy seepage law, a mathematical model that considers diffusion in matrix and seepage within natural fractures was established. Then, we integrated the fracture conductivity function method with the hydraulic fracture model to greatly increase computational efficiency. The analytical solutions were validated against a numerical simulation. Parameter sensitivity analysis reveals that interporosity coefficient and storage coefficient, respectively, affect the appearance time and degree of desorption and diffusion. Desorption coefficient mainly describes the capacity of desorption and diffusion. Well storage coefficient, conductivity factor, and skin factor mainly affect the early stage of production. Finally, the proposed solutions were applied to field history match. The model developed is applicable to production analysis and well testing for coalbed methane reservoirs. The new proposed model extended flow mechanism of coalbed methane, and provided a better production and pressure forecast for coalbed methane reservoirs. In addition, the analytical solutions can be used to generate type curves for fractured vertical wells with finite conductivity and in the rectangular boundary, and provide a sound theoretical basis for well tests in the coal seam. The model is also applicable to other types of unconventional gas reservoirs, such as gas shales, in which the same processes are present. © C. Li.

Number of references: 22
Main heading: Desorption
Controlled terms: Coal bed methane - Sensitivity analysis - Hydraulic fracturing - Methane - Flow of fluids - Fracture - Computational efficiency - Analytical models - Coal - Firedamp - Natural gas wells - Well testing - Coal deposits - Diffusion - Seepage
Uncontrolled terms: Coalbed methane production - Coalbed methane reservoir - Computational challenges - Finite-conductivity fractures - Fracture conductivities - Parameter sensitivity analysis - Storage coefficient - Unconventional natural gas
Classification code: 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 - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 804.1 Organic Compounds - 921 Mathematics - 951 Materials Science
DOI: 10.2516/ogst/2018055
Funding Details: Number: 2016ZX05037003-002, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: Acknowledgments. This article was supported by National Science and Technology Major Project of China (Project No. 2016ZX05037003-002).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

152. The enhancement of seismic signal by the filtering method based on synchrosqueezing transform

Accession number: 20184806164242
Authors: Liu, Yan-Ping (1, 2); Liu, Li (1); Zhang, Qi (1); Shi, Jing-Wen (1)
Author affiliation: (1) Xi'An Shiyou University, Electronic Engineering College, Shaanxi; 710065, China; (2) Ministry of Education, Key Laboratory of Photoelectric Oil and Gas Logging and Detecting, Xi'an; 710065, China
Source title: International Conference on Wavelet Analysis and Pattern Recognition
Abbreviated source title: Int. Conf. Wavelet Anal. Pattern Recogn.
Volume: 2018-July
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Issue title: Proceedings of 2018 International Conference on Wavelet Analysis and Pattern Recognition, ICWAPR 2018
Issue date: November 2, 2018
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Language: English
ISSN: 21585695
E-ISSN: 21585709
ISBN-13: 9781538652176
Document type: Conference article (CA)
Conference name: 15th International Conference on Wavelet Analysis and Pattern Recognition, ICWAPR 2018
Conference date: July 15, 2018 - July 18, 2018
Conference location: Chengdu, China
Conference code: 141935
Sponsor: Chengdu University; et al.; Portsmouth University; The University Adelaide; Ulster University; University of Alberta
Publisher: IEEE Computer Society
Abstract: The Synchrosqueezing Transform (SST) is a new time-frequency analysis method which is adaptive and invertible. It can obtain high time-frequency resolution by condensing and rearranging time-frequency representation (TFR) along the frequency axis. This paper proposes a filtering method based on SST for seismic signal enhancement and random noise reduction. Through experiments on synthetic signals, it demonstrates that the performance of the new method is better than the filtering methods based on conventional time-frequency transforms such as wavelet transform and so on. © 2018 IEEE.
Number of references: 17
Main heading: Wavelet transforms
Controlled terms: Seismic waves - Seismology

153. Corrosion Resistance of Titanium Alloy OCTG in Severe Environment

Authors: Gao, Wenping (1); Lv, Xianghong (1); Xie, Junfeng (2); Ji, Ling (3); Zhao, Mifeng (2); Liang, Jianjun (3); Liang, Wei (1); Zhao, Guoxian (1)
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Petrochina Tarim Oilfield Company, Kuerle; 841000, China; (3) Petrochina Xinjiang Oilfield Company, Karamay; 834000, China
Corresponding author: Lv, Xianghong(lxhong71@sina.com.cn)
Abstract: The corrosion behavior and corrosion mechanism of TC4 titanium alloy OCTG in severe CO_2 environment were studied with high temperature and high pressure and stress corrosion cracking (SCC) test, as well as electrochemical in-situ measurement techniques. The results show TC4 titanium alloy possesses the excellent resistance to uniform corrosion, local corrosion and SCC in high temperature and high pressure CO_2 corrosion environment, and its uniform corrosion rate is only 0.0012 mm/a at the temperature up to 220. The anodic polarization curves of TC4 titanium alloy have the obvious passivation zone in CO_2 environment, and the corrosion reaction is controlled by anodic process. With temperature increasing, the corrosion potential and polarization resistance of TC4 titanium alloy decrease, which indicate that the thermodynamic driving force of the electrochemical corrosion increases, while the dynamic resistance decreases; thus the corrosion rate of TC4 titanium alloy increases. However, the protective potential and pitting potential of TC4 titanium alloy are higher enough in high temperature CO_2 corrosion environment, and the polarization resistance is up to 2328.2 #•cm2 at 180, which still give TC4 titanium alloy the good passivation and re-passivation ability and the superior resistance to CO_2 corrosion at high temperature. © 2018, Science Press. All right reserved.

Classification code: 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 539.2.1 Protection Methods - 542.3 Titanium and Alloys - 641.1 Thermodynamics - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

154. Synthesis of C14-C21 acid fragments of cytochalasin Z8: Via anti -selective aldol condensation and B -alkyl Suzuki-Miyaura cross-coupling   (*Open Access*)

Accession number: 20180504691046
Authors: Han, Weiwei (1, 2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Laboratory of Asymmetric Catalysis and Synthesis, Department of Chemistry, Zhejiang University, Hangzhou; 310027, China
Corresponding author: Han, Weiwei(vivien2014@xsyu.edu.cn)
Source title: RSC Advances
Abbreviated source title: RSC Adv.
Volume: 8
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Issue date: 2018
Publication year: 2018
Pages: 3899-3902
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: An efficient synthesis of the C14-C21 acid fragment of cytochalasin Z8 was accomplished in 10 steps with 14% overall yield. Boron-mediated anti-selective aldol condensation and Pd(OAc)2-Aphos-Y-catalysed B-alkyl Suzuki-Miyaura cross-coupling were employed to construct the requisite C17 and C18 stereogenic centres and alkene subunit. © 2018 The Royal Society of Chemistry.
Number of references: 54
Main heading: Condensation
Controlled terms: Ketones - Condensation reactions
Uncontrolled terms: Aldol condensation - Cytochalasin - Efficient synthesis - Suzuki-Miyaura cross-coupling
Classification code: 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.1 Organic Compounds
Numerical data indexing: Percentage 1.40e+01%
DOI: 10.1039/c7ra13391j
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

155. Characterizing methane hydrate formation in horizontal water-dominated bubbly flow

Accession number: 20190306387380
Authors: Fu, Weiqi (1); Sun, Baojiang (1); Wang, Zhiyuan (1); Zhang, Jianbo (1); Wang, Junqi (2)
Author affiliation: (1) China University of Petroleum, China; (2) Key Laboratory of Well Stability and Fluid and Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University, China
Source title: Society of Petroleum Engineers - SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Abbreviated source title: Soc. Pet. Eng. - SPE Asia Pac. Oil Gas Conf. Exhib., APOGCE
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018

Issue date: 2018
Publication year: 2018
Report number: SPE-191868-MS
Language: English
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Document type: Conference article (CA)
Conference name: SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Conference date: October 23, 2018 - October 25, 2018
Conference location: Brisbane, QLD, Australia
Conference code: 143432
Publisher: Society of Petroleum Engineers

Abstract: Methane hydrate formation in water-based drilling mud is the great important issue for well control during the drilling operation in deep-water environment. However, most of researchers focus on hydrate formation in oil-dominated system and gas-dominated system. Few researchers pay enough attentions to hydrate formation in water-dominated system, especially for bubbly flow. In this work, groups of experiments of methane hydrate formation in horizontal water-dominated bubbly flow are performed at liquid fluid velocities of 0.95 to 1.4m/s and void fractions from 2.5% to 5.0%. According to experimental observations, methane hydrates does not form hydrate shells on gas bubbles in bubbly flow and no complete hydrate shells or plates are observed in experiments. Hydrate particles formed on the surface of bubbles prefers to slough off immediately by high motion of liquid fluid, which results in appearance of tiny bubbles in flow loop. According to analysis of the reaction rate factor, the intrinsic kinetic mainly dominates the hydrate formation at the high subcooling condition but the mass transfer dominates the hydrate formation at the low subcooling condition. A hydrate kinetic model is developed for the horizontal water-dominated bubbly flow, as a function of reaction rate factor, liquid fluid velocity, subcooling temperature and interfacial area. In the new model, the multiphase flow concept of interfacial area concentration is firstly brought in predicting interfacial areas for methane hydrate formation in bubbly flow. Another 8 groups of hydrate formation experiment are conducted to validate the new model and the maximum discrepancy is less than 8%.Ppa. Copyright 2018, Society of Petroleum Engineers
Number of references: 34
Main heading: Void fraction
Controlled terms: Gas hydrates - Methane - Reaction rates - Mass transfer - Hydration - Cooling - Infill drilling - Liquids
Uncontrolled terms: Drilling operation - Hydrate formation - Hydrate particles - Interfacial area concentrations - Interfacial areas - Intrinsic kinetics - Subcooling temperature - Water-based drilling
Classification code: 511.1 Oil Field Production Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 641.2 Heat Transfer - 641.3 Mass Transfer - 802.2 Chemical Reactions - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 2.50e+00% to 5.00e+00%, Percentage 8.00e+00%, Velocity 9.50e-01m/s to 1.40e+00m/s
DOI: 10.2118/191868-ms
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

156. Reaction schemes and characteristics in crude oil oxidation process using a TGA testing method

Accession number: 20183005583927
Authors: Yuan, Shibao (1, 2); Zhao, Liming (1, 2); Jiang, Haiyan (1, 2); Zhang, Yupeng (1, 2); Wang, Boyi (1, 2)
Author affiliation: (1) Petroleum Engineering Institute of Xi'an Shiyou University, Xi'an; Shannxi; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs (SLAST), Xi'an; 710065, China
Corresponding author: Jiang, Haiyan(upcjhy@126.com)
Source title: Fuel

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Volume: 234
Issue date: 15 December 2018
Publication year: 2018
Pages: 604-608
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: Stage characteristics of heavy oil oxidation is important for ignition and production control of fire flooding. A thermogravimetric (TG) experiment is carried out to study the oxidation process on a certain heavy oil sample mixing with quartz sand. Firstly, based on multicomponent theory of heavy oil, four stages corresponding to earlier low temperature oxidation (LTO), later LTO, fuel deposition and high temperature oxidation (HTO) are identified. The kinetic parameters of each oil oxidation stage are calculated by the Coats-Redfern integral method. It demonstrates that the orders of reaction have a great influence on the results of calculation. Then logical and reasonable reaction equations are derived out based on the mechanism of staged crude oil oxidation. The result shows that phase boundary reaction (also known as interfacial reaction, which is defined as a chemical reaction that occurs on a two phase contact interface.) is the main reaction at the stage of low temperature oxidation. And three dimensional diffusion reactions are primary at the stage of high temperature oxidation reaction. Finally thermogravimetric analysis of different viscosity crude oil verifies that the kinetic process of oxidation is determined by reaction mechanisms. And different mechanisms appears at different reaction stages. © 2018 Elsevier Ltd

Number of references: 24
Main heading: Crude oil
Controlled terms: Heavy oil production - Temperature - Production control - Thermooxidation - Thermogravimetric analysis - Kinetic parameters - Testing
Uncontrolled terms: Different mechanisms - High-temperature oxidation reactions - Low-temperature oxidation - Reaction equations - Reaction mechanism - Stage characteristics - Thermo-gravimetric - Thermo-gravimetric experiments
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 801 Chemistry - 802.2 Chemical Reactions - 913.2 Production Control - 931 Classical Physics; Quantum Theory; Relativity
DOI: 10.1016/j.fuel.2018.06.076

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

157. Forming Mechanisms of Low-Frequency Broad Band Gaps in Locally Resonant Phononic Crystal Plates

Accession number: 20190706505032
Title of translation:

Authors: Li, Suobin (1); Dou, Yihua (1); Chen, Tianning (2); Wan, Zhiguo (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Chen, Tianning

Source title: Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University
Abbreviated source title: Hsi An Chiao Tung Ta Hsueh
Volume: 52
Issue: 12
Issue date: December 10, 2018
Publication year: 2018
Pages: 159-166

Abstract: How to obtain a broad band gap in low-frequency is a challenging task for the applications of locally resonant phononic crystal (LRPC) in the reduction of vibration in engineering. A novel structure composed of double-sided clinical composite stubs, which are deposited on 2D locally resonant PC plate, is proposed and theoretically studied. Generation mechanism of low frequency broadband phononic crystal band gaps in phononic crystal plate is studied by using the finite element method (FEM). It is found that, the coupling between the local resonance mode and the Lamb wave mode follows the modal superposition principle, and is responsible for the formation of the band gaps. The influence mechanism of bandwidth is further studied, and the core influencing factor, i.e., the local oscillation modal form of local oscillator, is found. When the local oscillation modal form of local oscillator is in whole vibration state, the bandwidth is the widest. Moreover, the local oscillation modal formed resonator is adjusted by introducing the rubber filler and the novel cylinder composite stub, and then the out-of-plane band gap and the in-plane band gap are adjusted to broad bandwidth, respectively. As a result, the bandwidth of the generated band gap is about 600 Hz due to the overlap between the broad in-plane gap and the out-of-plane band gap. The new structure provides an effective way for phononic crystals to obtain broad locally-resonant band gaps in the low-frequency range, and has applications for low-frequency vibration reduction. © 2018, Editorial Office of Journal of Xi'an Jiaotong University. All right reserved.

Number of references: 20
Main heading: Energy gap
Controlled terms: Phonons - Plates (structural components) - Vibrations (mechanical) - Bandwidth - Crystal structure - Surface waves
Uncontrolled terms: Generation mechanism - Influence mechanism - Low-frequency vibration - Phononic Crystal - Phononic-crystal plate - Plate structure - Reduction of vibrations - Vibration reductions
Classification code: 408.2 Structural Members and Shapes - 716.1 Information Theory and Signal Processing - 931.1 Mechanics - 933.1.1 Crystal Lattice
Numerical data indexing: Frequency 6.00e+02Hz
DOI: 10.7652/xjtuxb201812023
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

158. Viscosity reduction mechanism in high temperature of a Gemini viscoelastic surfactant (VES) fracturing fluid and effect of counter-ion salt (KCl) on its heat resistance

Accession number: 20181504989146
Authors: Mao, Jincheng (1); Yang, Xiaojiang (1); Chen, Yanan (2); Zhang, Zhaoyang (1); Zhang, Chong (1); Yang, Bo (1); Zhao, Jinzhou (1)
Author affiliation: (1) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu; 610500, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Mao, Jincheng(jcmao@swpu.edu.cn)

Abstract: In the past several decades, Gemini viscoelastic surfactant has been applied for many cases due to its specific properties, including clean fracturing fluid. As we know that counter-ions can greatly promote the micelle aggregation of VES and show important effect on its heat resistance. Potassium chloride, as a normal additive for fracturing fluids to control the clay swelling, was investigated as such counter-ions in the context. Thus, a clean fracturing fluid with good heat resistance could be obtained by studying the viscosity reduction of the fluid prepared from a novel Gemini VES. The results of molecular structure characterization showed that potassium chloride has no

effect on the surfactant molecular structure in rheological tests at high temperature. Based on the rheological tests, it can be concluded that the viscosity reduction at the test conditions is mainly of the micelle dissociation. Analysis results, such as microstructure comparison and the dynamic light scattering, suggested that potassium chloride can facilitate the micelles aggregation and entanglement, especially making the micelles tighter. In this way, the fluid could keep higher viscoelasticity at higher temperature and certain shear rate. Based on this mechanism, an improved VES fracturing fluid could be achieved via iterative formation adjustment, whose final viscosity could be maintained about 40 mPa s at 160 °C during 120 min. © 2018 Elsevier B.V.

Number of references: 24

Main heading: Specific heat

Controlled terms: Micelles - Surface active agents - Viscoelasticity - Viscosity - Potash - Light scattering - Molecular structure - Fracturing fluids - Potassium chloride - Ions

Uncontrolled terms: High temperature - Micelle aggregation - Molecular characterization - Specific properties - Structure characterization - Surfactant molecular structure - Viscoelastic surfactants - Viscosity reduction

Classification code: 631.1 Fluid Flow, General - 641.1 Thermodynamics - 741.1 Light/Optics - 801.3 Colloid Chemistry - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics

Numerical data indexing: Temperature 4.33e+02K, Time 7.20e+03s

DOI: 10.1016/j.petrol.2018.01.052

Compendex references: YES

Database: Compendex

Data Provider: Engineering Village

159. Analysis and empirical study on highway travel time interval prediction based on Bootstrap-KNN

Accession number: 20190906552539

Title of translation: Bootstrap-KNN

Authors: Chen, Jiao-Na (1); Zhang, Xiang (2); Zhang, Sheng-Rui (3)

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) CCCC First Highway Consultants Co Ltd, Xi'an; 710075, China; (3) School of Highway, Chang'an University, Xi'an; 710064, China

Corresponding author: Chen, Jiao-Na(chenjn@xsyu.edu.cn)

Source title: Kongzhi yu Juece/Control and Decision

Abbreviated source title: Kongzhi yu Juece Control Decis

Volume: 33

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Publication year: 2018

Pages: 2080-2086

Language: Chinese

ISSN: 10010920

CODEN: KYJUEF

Document type: Journal article (JA)

Publisher: Northeast University

Abstract: With the data source from highway charge system, the prediction model is established based on Bootstrap to improve the reliability of point prediction in travel time. Three indexes are used to evaluate the interval prediction performance, including prediction interval coverage probability(PICP), mean prediction interval width(MPIW), and coverage width-based criterion(CWC). Two key steps are analyzed and verified with actual data in modeling. As the methods used frequently in data-driven, the wavelet neural network and K nearest neighbor are compared about

prediction error. The confidence interval prediction performance is analyzed among four kinds of Bootstrap methods. Under the same confidence level, the result shows that Percentile Bootstrap-KNN is the best with the minimum CWC. The proposed model is validated by Shanxi expressway in the case study. It is proved that interval prediction is better than point prediction under the same algorithm, as the reliability and value can be reflected by the prediction interval width. © 2018, Editorial Office of Control and Decision. All right reserved.

Number of references: 31
Main heading: Travel time
Controlled terms: Highway engineering - Nearest neighbor search - Forecasting - Traffic control - Motion compensation
Uncontrolled terms: Bootstrap - Confidence interval - Interval prediction - K-nearest neighbors - Traffic Engineering
Classification code: 431 Air Transportation - 432 Highway Transportation - 433 Railroad Transportation - 434 Waterway Transportation - 921.5 Optimization Techniques
DOI: 10.13195/j.kzyjc.2017.0729
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

160. The fault diagnosis of gear based on kernel density estimation

Authors: Song, Hong (1); Sun, Cheng (1); Zhang, Chunlin (2); Ren, Tao (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, China; (2) Chengdu North Petroleum Exploration and Development Technology Company Limited, China ZhenHua Oil Co., Ltd, Chengdu, Sichuan, China
Corresponding author: Ren, Tao(Rentao365@126.com)
Abstract: Gear's vibration signal contains the state information of the gear. Different types of gear faults have different vibration features in the time domain. Fault feature extracted from the vibration feature can be used to diagnose the gear fault. In this paper, the vibration feature of the gear signal in the time domain is analyzed, and the fault feature of the gear is extracted by using the kernel density estimation along with the probability statistical method. Then the vibration signal of the gear is processed and the probability density estimation of the amplitude is obtained through the function of kernel density estimation. Then the probability of the sample point falling to each vibration range is calculated. Finally, the fault diagnosis is achieved by identifying the fault feature based on the fault statistics in various amplitude ranges. According to the experimental results, it is shown that the fault feature extracted in this paper can be applied to the fault diagnosis of a gear. © 2018 - IOS Press and the authors. All rights reserved

Number of references: 20
Main heading: Failure analysis
Controlled terms: Probability density function - Statistics - Probability - Time domain analysis - Vibration analysis - Fault detection
Uncontrolled terms: Extract feature - Fault feature - Fault statistics - Kernel Density Estimation - Probability density estimation - Sample point - State information - Vibration signal
Classification code: 921 Mathematics - 922.1 Probability Theory - 922.2 Mathematical Statistics
DOI: 10.3233/JCM-180829

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

161. AHP aided decision-making in virtual machine migration for green cloud

Accession number: 20182705391092
Authors: Zhang, Liumei (1, 2); Ma, Jianfeng (1); Liu, Tianshi (2); Wang, Yichuan (1); Lu, Di (1)
Author affiliation: (1) School of Computer Science and Technology, Xidian University, 2 South Taibai Road, Xi'an, Shaanxi; 710071, China; (2) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Computing and Informatics
Abbreviated source title: Comput. Inf.
Volume: 37
Issue: 2
Issue date: 2018
Publication year: 2018
Pages: 291-310
Language: English
ISSN: 13359150
E-ISSN: 25858807
Document type: Journal article (JA)
Publisher: Slovak Academy of Sciences
Abstract: In this study, an analytical hierarchy process based model is proposed to perform the decision-making for virtual machine migration towards green cloud computing. The virtual machine migration evaluation index system is established based on the process of constructing hierarchies for evaluation of virtual machine migration, and selection of task usage. A comparative judgment of two hierarchies has been conducted. In the experimental study, five-point rating scale has been adopted to map the raw data to the scaled rating score; this rating method is used to analyze the performance of each virtual machine and its task usage data. The results show a significant improvement in the decision-making process for the virtual machine migration. The deduced results are useful for the system administrators to migrate the exact virtual machine, and then switch on the power of physical machine that the migrated virtual machine resides on. Thus the proposed method contributes to the green cloud computing environment. © 2018 Slovak Academy of Sciences. All rights reserved.
Number of references: 26
Main heading: Virtual machine
Controlled terms: Decision support systems - Network security - Decision making - Green computing - Cloud computing - Hierarchical systems
Uncontrolled terms: Analytical Hierarchy Process - Decision making process - Decision supports - Evaluation index system - Green Clouds - System administrators - Virtual machine migrations - Vm migrations
Classification code: 454 Environmental Engineering - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 912.2 Management - 961 Systems Science
DOI: 10.4149/cai_2018_2_291
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

162. Using Polymer Alternating Gas to Enhance Oil Recovery in Heavy Oil   (*Open Access*)

Accession number: 20181104891888
Authors: Yang, Yongzhi (1); Li, Weirong (2); Zhou, Tiyao (1); Dong, Zhenzhen (3)
Author affiliation: (1) State Key Laboratory of Enhanced Oil Recovery, Petrochina, Beijing; 100083, China; (2) BIC-ESAT, Peking University, Beijing; 100193, China; (3) Petroleum Engineeting Department, Xi'An Shiyou University, Xi'an; 710065, China

Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 113
Part number: 1 of 1
Issue: 1
Issue title: 3rd International Conference on Advances in Energy Resources and Environment Engineering
Issue date: February 22, 2018
Publication year: 2018
Article number: 012182
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2017 3rd International Conference on Advances in Energy Resources and Environment Engineering, ICAESEE 2017
Conference date: December 8, 2017 - December 10, 2017
Conference location: Harbin, China
Conference code: 134951
Publisher: IOP Publishing Ltd

Abstract: CO_2 has been used to recover oil for more than 40 years. Currently, about 43% of EOR production in U.S. is from CO_2 flooding. CO_2 flooding is a well-established EOR technique, but its density and viscosity nature are challenges for CO_2 projects. Low density (0.5 to 0.8 g/cm3) causes gas to rise upward in reservoirs and bypass many lower portions of the reservoir. Low viscosity (0.02 to 0.08 cp) leads to poor volumetric sweep efficiency. So water-alternating-gas (WAG) method was used to control the mobility of CO_2 and improve sweep efficiency. However, WAG process has some other problems in heavy oil reservoir, such as poor mobility ratio and gravity overriding. To examine the applicability of carbon dioxide to recover viscous oil from highly heterogeneous reservoirs, this study suggests a new EOR method - polymer-alternating gas (PAG) process. The process involves a combination of polymer flooding and CO_2 injection. To confirm the effectiveness of PAG process in heavy oils, a reservoir model from Liaohe Oilfield is used to compare the technical and economic performance among PAG, WAG and polymer flooding. Simulation results show that PAG method would increase oil recovery over 10% compared with other EOR methods and PAG would be economically success based on assumption in this study. This study is the first to apply PAG to enhance oil recovery in heavy oil reservoir with highly heterogeneous. Besides, this paper provides detailed discussions and comparison about PAG with other EOR methods in this heavy oil reservoir. © Published under licence by IOP Publishing Ltd.

Number of references: 9
Main heading: Carbon dioxide
Controlled terms: Petroleum reservoirs - Crude oil - Petroleum reservoir evaluation - Efficiency - Floods - Reservoirs (water) - Enhanced recovery - Viscosity - Heavy oil production - Oil well flooding
Uncontrolled terms: Economic performance - Enhance oil recoveries - Heavy oil reservoirs - Heterogeneous reservoirs - Polymer flooding - Reservoir modeling - Sweep efficiency - Water alternating gas
Classification code: 441.2 Reservoirs - 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 - 804.2 Inorganic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Age 4.00e+01yr, Mass_Density 5.00e+02kg/m3 to 8.00e+02kg/m3, Percentage 1.00e+01%, Percentage 4.30e+01%
DOI: 10.1088/1755-1315/113/1/012182

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

163. Catalytic Oxidation of Furfural to Maleic Acid by Hierarchical Molecular Sieves CoAPO-5 in Aqueous Phase

Accession number: 20190706505035

Title of translation: CoAPO-5
Authors: Lu, Yang (1); Li, Qiao (1, 2); Wang, Jun (1); Sun, Xueni (1); Shao, Hui (1); Huang, Chunxiang (1); Zhong, Jing (1)

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Corresponding author: Shao, Hui(shaohui200800@cczu.edu.cn)

Source title: Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)
Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
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Issue date: November 25, 2018
Publication year: 2018
Pages: 1075-1081
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Science Press

Abstract: Microporous and hierarchical molecular sieves CoAPO-5 were synthesized by hydrothermal crystallization method. The structural properties of catalysts were characterized by XRD, SEM, NH3-TPD, N2 adsorption and desorption methods.The catalytic performance of the catalysts was evaluated by the reaction of furfural to Maleic acid in aqueous phase,and the influences of the reaction conditions were investigated. Results show that the hierarchical molecular sieves CoAPO-5 have mesoporous pore, which is about 6.16 nm,having a spherical morphology.Compared with the microporous molecular sieves CoAPO-5, the hierarchical molecular sieves CoAPO-5 have larger pore size and more acidity,thus exhibiting better catalytic efficiency. The conversion of furfural is 86.91%,and the yield of Maleic acid reaches 85.89% at 60 for 3 h when m(1,2-dichloroethane):m(hydrogen peroxide):m(furfural) is 3:5:1,with the catalyst dosage of 12% of the mass of furfural. Compared to microporous CoAPO-5, the conversion and the yield over hierarchical CoAPO-5 are increased by 10.91% and 21.62% respectively. © 2018, Editorial Office of Acta Petrolei Sinica(Petroleum Processing Section). All right reserved.

Number of references: 17
Main heading: Molecular sieves
Controlled terms: Ammonia - Catalysts - Microporosity - Pore size - Aldehydes - Furfural - Sieves
Uncontrolled terms: 1 ,2-dichloroethanes - Aqueous phase - Catalytic efficiencies - Catalytic performance - Coapo-5 - Hydrothermal crystallization - Maleic acids - Reaction conditions
Classification code: 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 1.09e+01%, Percentage 1.20e+01%, Percentage 2.16e+01%, Percentage 8.59e+01%, Percentage 8.69e+01%, Size 6.16e-09m, Time 1.08e+04s
DOI: 10.3969/j.issn.1001-8719.2018.06.003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

164. A linear support higher order tensor domain description for one-class classification

Accession number: 20182805521892
Authors: Chen, Yanyan (1, 2); Wang, Kuaini (3); Zhong, Ping (1)

Author affiliation: (1) College of Science, China Agricultural University, Beijing; 100083, China; (2) College of Applied Science and Technology, Beijing Union University, Beijing, China; (3) College of Science, Xi'An Shiyou University, Xi'an, China
Corresponding author: Zhong, Ping(zping@cau.edu.cn)

Source title: Journal of Intelligent and Fuzzy Systems
Abbreviated source title: J. Intelligent Fuzzy Syst.
Volume: 34
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Publication year: 2018
Pages: 4237-4247

Language: English
ISSN: 10641246
E-ISSN: 18758967
Document type: Conference article (CA)
Publisher: IOS Press BV

Abstract: One-class classification is an important problem encountered in a lot of applications. The datasets extracted from the real-world problems are often represented as tensors. The classical support vector domain description (SVDD) for one-class classification problems cannot work directly since its inputs are vectors. This paper develops a linear tensor-based algorithm named as Linear Support Tensor Domain Description (LSTDD) to find a closed hypersphere with the minimal volume in the tensor space which can contain almost entirely of the target samples. LSTDD can keep data topology and make the parameters need to be estimated less, and it is more suitable for learning the high dimensional and small sample size problem. Firstly, we detail the LSTDD model with 2nd-order tensors, and then extend it to the higher order tensors. It has been shown by experiments on the real-world datasets that LSTDD is a promising method for handling one-class classification problems with both 2nd-order and higher order tensor inputs. © 2018 - IOS Press and the authors. All rights reserved.

Number of references: 35
Main heading: Tensors
Controlled terms: Classification (of information)
Uncontrolled terms: Domain description - Higher-order tensor - One-class Classification - Real-world datasets - Real-world problem - Small sample size problems - Support tensor machines - Support vector domain description
Classification code: 716.1 Information Theory and Signal Processing - 903.1 Information Sources and Analysis - 921.1 Algebra
DOI: 10.3233/JIFS-17325
Funding Details: Number: 2016BS17, Acronym: -, Sponsor: -; Number: Zk10201513, Acronym: BUU, Sponsor: Beijing Union University; Number: 11626186, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The work is supported by the National Natural Science Foundation of China (Nos. 11171346, 11626186), New Start Academic Research Projects of Beijing Union University No. Zk10201513, and Xi'an Shiyou University Youth Science and Technology Innovation Fund Project No. 2016BS17.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

165. THEORETICAL and EXPERIMENTAL STUDY on STRESS-DEPENDENCY of OIL-WATER RELATIVE PERMEABILITY in FRACTAL POROUS MEDIA   (*Open Access*)

Accession number: 20181104899876
Authors: Lei, Gang (1); Mo, Shaoyuan (2); Dong, Zhenzhen (3); Wang, Cai (1); Li, Weirong (1)
Author affiliation: (1) ERE and BIC-ESAT, College of Engineering, Peking University, Beijing; 100871, China; (2) Research Institute of Petroleum Exploration and Development, PetroChina, Beijing; 100083, China; (3) Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Lei, Gang(lg1987cup@126.com)
Source title: Fractals
Abbreviated source title: Fractals
Volume: 26
Issue: 2
Issue date: April 1, 2018
Publication year: 2018
Article number: 1840010
Language: English
ISSN: 0218348X
Document type: Journal article (JA)
Publisher: World Scientific

Abstract: The coupled flow deformation behavior in the porous media has drawn tremendous attention in various scientific and engineering fields. It is reported that the porous media will be compressed and relative permeability in porous media will be changed as the effective stress increases. However, previous studies provided contradictory evidence for the stress-dependent irreducible water saturation and stress-dependent relative permeability. Until now, appropriate stress-dependent relative permeability curve for two-phase flow through porous media remains unclear. The goal of this work was to theoretically and experimentally study the stress-dependent relative permeability. Laboratory sample flooding tests were conducted to measure two-phase relative permeability in porous media under

changing effective stress, and a corresponding theoretical model of stress-dependent relative permeability was derived to interpret the experimental results. The predictions from the proposed analytical model exhibited similar variation trends as the experimental data, which verified the theoretical model. Though the results for the stress-dependent relative permeability from previous studies are different, or even opposite, our proposed model with different conditions can provide explanations to these different results. This work provides a comprehensive experimental and theoretical study of stress-dependent relative permeability in porous media, which is beneficial to accurate performance forecasts for the coupled flow deformation behavior in porous media. © 2018 The Author(s).

Number of references: 46
Main heading: Porous materials
Controlled terms: Deformation - Two phase flow - Water levels
Uncontrolled terms: Coupled flow deformation - Effective stress - Experimental investigations - Fractal porous media - Irreducible water saturation - Relative permeability - Relative permeability curves - Theoretical modeling
Classification code: 631.1 Fluid Flow, General - 951 Materials Science
DOI: 10.1142/S0218348X18400108

Compendex references: YES
Open Access type(s): All Open Access, Hybrid Gold
Database: Compendex
Data Provider: Engineering Village

166. FSQGA based 3D complexity wellbore trajectory optimization   (*Open Access*)

Accession number: 20185206298520

Authors: Sha, Linxiu (1, 2); Pan, Zhongqi (2)
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Publisher: Editions Technip

Abstract: Determination of the trajectory of a complex wellbore is very challenging due to the variety of possible well types, as well as the numerous complicated drilling variables and constraints. The well type could be directional wells, cluster wells, horizontal wells, extended reach wells, redrilling wells, and complex structure wells, etc. The drilling variables and constraints include wellbore length, inclination hold angles, azimuth angles, dogleg severity, true vertical depths, lateral length, casing setting depths, and true vertical depth. In this paper, we propose and develop an improved computational model based on Fibonacci sequence to adjust the quantum rotation step in quantum genetic algorithm for achieving cost-efficient complex wellbore trajectories. By using Fibonacci sequence based quantum genetic algorithm (FSQGA) in a complex searching problem, we can find high-quality globally optimal solutions with high speed through a parallel process. The simulation results show that FSQGA can significantly reduce computation complexity, and reach minimum objection values faster. Meanwhile, minimization of the true measurement depth of complex wellbore trajectory in actual gas-oil field shows that the drilling cost can be reduced up to 4.65%. We believe this new algorithm has the potential to improve drilling efficiency, to reduce the drilling time and drilling cost in real-time wellbore trajectory control. © L. Sha and Z. Pan, published by IFP Energies nouvelles, 2018.

Number of references: 20
Main heading: Horizontal wells

Controlled terms: Gas industry - Oil wells - Boreholes - Computational efficiency - Cost reduction - Genetic algorithms - Trajectories - Infill drilling - Oil field equipment
Uncontrolled terms: Complex structure well - Computation complexity - Computational model - Drilling efficiency - Extended reach well - Fibonacci sequences - Quantum genetic algorithm - True vertical depth
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 522 Gas Fuels
Numerical data indexing: Percentage 4.65e+00%
DOI: 10.2516/ogst/2018008
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

167. Nano-scale precipitate evolution and mechanical properties of 7085 aluminum alloy during thermal exposure

Accession number: 20182205263639
Authors: Dai, Pan (1); Luo, Xian (1); Yang, Yanqing (1); Kou, Zongde (1); Huang, Bin (1); Wang, Chen (1, 2); Zang, Jinxin (3); Ru, Jigang (3)
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Abstract: As a new generation of Al-Zn-Mg-Cu alloy, 7085 aluminum alloy is a promising structural material in the field of aerospace industry. However, research on its thermal stability is still lacking. In the present work, thermal exposure was carried out on the T7452-treated 7085 aluminum alloy under different temperatures (100 °C, 125 °C, 150 °C and 175 °C) for 500 h. Variations of tensile properties and hardness were exhibited. The microstructure, nano-scale precipitates and fracture characteristics of the alloy were investigated using optical microscopy (OM), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The results show that with the increase of exposure temperature, the strength and hardness increase first and then decrease while the elongation and the reduction of area increase continuously as compared to those of the non-thermal exposed alloy. The transformation from η' phase to η phase during thermal exposure occurs continuously during thermal exposure. In addition, as the exposure temperature increases, the average dimensions of precipitates and the average spacing of neighbor precipitates become larger. The influence of precipitates on mechanical properties of the alloy is discussed. © 2018 Elsevier B.V.
Number of references: 54
Main heading: Aluminum alloys
Controlled terms: Aerospace industry - Copper alloys - Hardness - High resolution transmission electron microscopy - Magnesium alloys - Microstructure - Nanotechnology - Scanning electron microscopy - Zinc alloys
Uncontrolled terms: 150 ° C - 7085 aluminum alloys - Exposure temperature - Fracture characteristics - Hardness increase - Nano scale - Nonthermal - Reduction of areas - Strength increase - Thermal exposure
Classification code: 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 544.2 Copper Alloys - 546.3 Zinc and Alloys - 549.2 Alkaline Earth Metals - 741.3 Optical Devices and Systems - 761 Nanotechnology - 951 Materials Science
Numerical data indexing: Temperature 3.73e+02K, Temperature 3.98e+02K, Temperature 4.23e+02K, Temperature 4.48e+02K, Time 1.80e+06s
DOI: 10.1016/j.msea.2018.05.092

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

168. Oxidation kinetics of heavy oil based on stage evolution

Accession number: 20184105918416
Title of translation:
Authors: Yuan, Shibao (1, 2); Zhao, Liming (1, 2); Jiang, Haiyan (1, 2); Cheng, Haiqing (3)
Author affiliation: (1) Petroleum Engineering Institute of Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an; 710065, China; (3) Liaohe Oilfield Company, PetroChina, Panjin; 124010, China
Corresponding author: Yuan, Shibao(upcysb@126.com)
Source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)
Abbreviated source title: Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)
Volume: 42
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Issue date: August 20, 2018
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Language: Chinese
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Publisher: University of Petroleum, China
Abstract: Oil oxidation and relevant reactions can be divided into 4 stages during air injection process for in-situ combustion, including the initial stage of low temperature oxidation, the later stage of low temperature oxidation, fuel deposition and high temperature oxidation. To obtain the oxidation kinetics parameters of each stage, a similar oxidation mechanism function has been applied in the literature, in which the reaction characteristics of the 4 reaction stages were not fully considered. In this paper, a Coats-Redfern integral method was used to calculate the oxidation kinetic parameters. Based on a simple reaction mechanism function, the reaction order is assumed as 0,0.5 and 1, and the influence of the reaction order on the oxidation kinetics parameters was analyzed. A reaction kinetics model and its kinetic parameters were obtained via data processing using existing 30 reaction mechanism functions. It is found that the phase boundary reaction is dominant in the low temperature oxidation stage, and the three-dimensional diffusion reaction is the main stage in the high temperature oxidation stage. The Coats-Redfern integral method is suitable for the calculation of the kinetic parameters for crude oil oxidation with high accuracy. © 2018, Periodical Office of China University of Petroleum. All right reserved.
Number of references: 22
Main heading: Kinetic parameters
Controlled terms: Temperature - Crude oil - Heavy oil production - In situ combustion - Thermooxidation - Data handling - Reaction kinetics
Uncontrolled terms: Heavy crude oil - Integral method - Low-temperature oxidation - Oil oxidation - Oxidation kinetics - Oxidation mechanisms - Reaction characteristics - Reaction kinetics models
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 521.1 Fuel Combustion - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 723.2 Data Processing and Image Processing - 802.2 Chemical Reactions - 931 Classical Physics; Quantum Theory; Relativity
DOI: 10.3969/j.issn.1673-5005.2018.04.009
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

169. Assessment of scaling properties for treating oily wasterwater

Accession number: 20183305681570
Authors: Yu, Tao (1, 2); Fan, Daidi (1); Qu, Chengtun (2); Zhang, Huan (2); Xu, Renjun (3)

Author affiliation: (1) School of Chemical Engineering, Northwest University, Xi'an; 710069, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, China; (3) Department of Chemical Engineering, Xi'An Light Industry Research Institute, Xi'an, China
Corresponding author: Fan, Daidi(fandaidi@nwu.edu.cn)

Abstract: In this paper, the SY/T 5523-2006 standard used in the field was analyzing the characteristic of water quality in produced water system of Hengshan production plant. The static simulation method was used to analyze the scaling properties of different layers produced water mixed. The results showed that the produced water in Chang 2, Chang 6 of Hengshan Oil Production belonged to the high-salinity water. The fouling mass was above 300 mg/L and the calcium loss rate was more than 10%, when the blending ratio of Chang 2 and Chang 6 was greater than 1:0.7 and the calcium loss rate is less than 1% when the mixed proportion of Chang 2 and Chang 6 ranges from 1:4 to 1:10, so the loss of the long 2 proportion could lead to the scale quantity reduced. © 2018 UPB Scientific Bulletin, Series B: Chemistry and Materials Science. All rights reserved.

Number of references: 18
Main heading: Produced Water
Controlled terms: Blending - Calcium - Water quality
Uncontrolled terms: Blending ratio - Compatibility - Different layers - Oil production - Production plant - Scaling - Scaling properties - Static simulations
Classification code: 445.2 Water Analysis - 452.3 Industrial Wastes - 549.2 Alkaline Earth Metals - 802.3 Chemical Operations
Numerical data indexing: Mass_Density 3.00e-01kg/m3, Percentage 1.00e+00%, Percentage 1.00e+01%

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

170. The effect of defects on the fracture behavior of trilayer graphene

Accession number: 20184506042886

Authors: An, Minrong (1); Deng, Qiong (2); Li, Yulong (2); Song, Haiyang (1); Su, Mengjia (2)
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Document type: Journal article (JA)
Publisher: Academic Press

Abstract: The fracture behavior of trilayer graphene was investigated using molecular dynamics simulations, with the emphasis on the effect of vacancies and interlayer bonds. While both defects make the fracture happen earlier and reduce the ultimate strength, the exact details of how they change the fracture behavior are different. Interlayer bonds can make the three graphene layers fracture in a more simultaneous way by transferring and distributing load more uniformly between these layers when loaded in the zigzag direction. When loaded in the armchair direction, however, the interlayer bonds can shift the fracture plane from a bifurcating mode to a zigzag direction-dominated mode. In contrast, with increasing tensile strain, vacancies can change the fracturing manner from a catastrophic mode to a successive one, leading to a stepwise stress strain curve and the formation of carbon atom chains and polygonal rings during the fracture process. The mixture of vacancies and interlayer bonds breaks the trilayer graphene in a way coupling the effect of both defects, depending on the chirality and defect density. The results presented in this work can provide a guideline for the design and application of multilayer graphene. © 2018 Elsevier Ltd

Number of references: 40
Main heading: Molecular dynamics
Controlled terms: Defects - Graphene - Fracture mechanics - Tensile strain - Fracture - Stress-strain curves
Uncontrolled terms: Design and application - Distributing-load - Fracture behavior - Interlayer bonds - Molecular dynamics simulations - Multilayer graphene - Tri layers - Ultimate strength
Classification code: 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally - 931.1 Mechanics - 951 Materials Science
DOI: 10.1016/j.spmi.2018.07.014
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

171. Dynamic response of concrete-filled steel tube piers under blast loadings

Accession number: 20183005583557
Authors: Sun, Shan-Shan (1); Zhao, Jun-Hai (1); He, Shuan-Hai (2); Cui, Ying (3); Liu, Yan (1)
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Publication year: 2018
Pages: 27-35 and 74
Language: Chinese
ISSN: 10004750
CODEN: GOLIEB
Document type: Journal article (JA)
Publisher: Tsinghua University
Abstract: Explosion experiments of three concrete-filled steel tube piers and one composite concrete-filled steel tube piers under different charge were deployed, with a TNT charge being 3 kg and 50 kg, respectively. The cylinder overpressure distribution, residual deformation and failure pattern were obtained. With the finite element analysis, the dynamic response, failure mode and parameter influence of concrete-filled steel tube piers under blast load were studied. The results show vhat compared with the composite concrete-filled steel tube piers of 50 mm core steel tube diameter and 4 mm thickness, the ordinary ones are better at resisting deformation while the outer diameter is 273 mm, the TNT charge is 50 kg and the scale distance is 0.14 m/kg. Based on the experimental results, multi-material flow-solid coupling simulation method was established, which effectively simulated the dynamic response of the concrete filled steel tube piers under explosion loads. Typical destruction paradigm can be categorized into flexural damage under low peak overpressure-long duration blast loading, shear fracture under high peak overpressure-short duration

blast loading and bending-shear failure between the above two cases. Residual deformation is negligible when the scale distance is more than 0.3 m/kg and the explosive charge is 50 kg. Enhancing the core concrete's strength grade and enlarging the steel ratio can effectively bring down the residual deformation. Increasing the yield strength can reduce the residual deformation, however with little significance when the yield strength is greater than or equal to 345 MPa. © 2018, Engineering Mechanics Press. All right reserved.

Number of references: 18
Main heading: Yield stress
Controlled terms: Explosions - Concretes - Dynamic response - Deformation - Tubes (components) - Tubular steel structures - Explosives
Uncontrolled terms: Composite concretes - Concrete filled steel tube - Coupling simulation - Explosion experiment - Multi-material flows - Parameter influences - Residual deformation - Resisting blast capability
Classification code: 408.2 Structural Members and Shapes - 412 Concrete - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science
Numerical data indexing: Mass 3.00e+00kg, Mass 5.00e+01kg, Pressure 3.45e+08Pa, Size 2.73e-01m, Size 4.00e-03m, Size 5.00e-02m
DOI: 10.6052/j.issn.1000-4750.2017.03.0246
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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172. An experimental study to determine suitable injection strategies for water-alternating-solvent process in green and brownfields

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Author affiliation: (1) Xi'an Shiyou University, Shaanxi Sheng, Xian Shi, Huxian; 710300, China; (2) University of Alberta, Department of Civil and Environmental Engineering, School of Mining and Petroleum Engineering, Edmonton; Alberta; T6G 1H9, Canada
Corresponding author: Babadagli, Tayfun(tayfun@ualberta.ca)
Abstract: Considering more than 50% of oil is left on average after primary and secondary methods in conventional reservoirs, techniques to recover the remaining oil from these proven and mature reserves is critically important to meet the future energy demand. One of the ways to achieve this is to inject miscible solvents (usually gas), which is performed in the form of water-alternating-gas rather than continuous injection of this type of expensive material. In this case, the process should be optimally designed for slug sizes and proper sequences of the solvent considering several controlling parameters including past history of waterflooding (water content) and wettability. We performed a set of experiments on vertically situated sand pack models saturated with 14cp oil. Heptane was selected as the solvent phase due to high miscibility conditions. Tests were started with waterflooding or solvent injection. Different slug sizes of solvent and water were tested on fully oil-saturated water, oil-wet samples, and samples with connate water (10 and 30%). The amounts of oil and solvent retrieved were monitored using refractometer. Using the collected data, the recovery rates and ultimate recoveries were comparatively analyzed. In addition to the technical feasibility, an economic analysis was performed considering the amount of solvent injected, oil and solvent recovered, and time for recovery. Starting the process with heptane was technically and economically feasible (pay-out time is shorter) in the short run for both the oil- and water-wet cases. This was especially true if the rock were oil-wet, which yielded faster recovery and higher ultimate recovery. Excessive water injection (up to the plateau level) preceding the solvent injection in the oil-wet case resulted in lower recovery factor whereas this design was very effective in the water-wet case. Therefore, the time to switch to solvent injection was critical in the oil-wet case and a short initial cycle of solvent injection followed by short waterflooding cycle is suggested. In the oil-wet case, initial waterflooding resulted in an inefficient process; while it yielded high ultimate recoveries, the process time was longer than other injection options. In the water-wet case, a greater amount of solvent was needed in the first cycle. © 2018 Elsevier B.V.

Number of references: 36
Main heading: Wetting
Controlled terms: Proven reserves - Solvents - Economic analysis - Heptane - Recovery
Uncontrolled terms: Continuous injections - Controlling parameters - Future energies - Injection sequence - Miscible solvent - Recovery factors - Solvent injection - Water alternating gas
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 911.2 Industrial Economics
Numerical data indexing: Percentage 1.00e+01%, Percentage 3.00e+01%, Percentage 5.00e+01%
DOI: 10.1016/j.petrol.2018.02.023

Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

173. Investigation of cationic surfactants as clean flow improvers for crude oil and a mechanism study   (*Open Access*)

Accession number: 20184606063341
Authors: Gu, Xuefan (1); Zhang, Fan (1); Li, Yongfei (1); Zhang, Jie (1); Chen, Shijun (1); Qu, Chengtun (1, 2); Chen, Gang (1, 2)
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Corresponding author: Qu, Chengtun(xianqct@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 164
Issue date: May 2018
Publication year: 2018
Pages: 87-90
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Cetyl trimethyl ammonium chloride (CTAC), cetyl trimethyl ammonium bromide (CTAB), and octadecyl trimethylammonium chloride (OTAC) were evaluated as clean flow improvers for crude oil. The results showed that all of them have some effect on the viscosity of crude oil in a certain temperature range, and can depress the pour point, among which CTAC is the most potent one. The viscosity was reduced to below 540 mPa s under different concentration at 35 °C by CTAC, and it can depress the pour points by 7.5 °C with the concentration of 0.03%. DSC analysis and microscopic morphology analysis discovered the interaction of CTAC and saturated hydrocarbon component of the crude oil, which can reduce the wax peak temperature and wax precipitation point of crude oil. CTAC may precipitate and pack with the long-chain alkane to form the crystal nucleus, while the cationic part and the corresponding Cl- anion can act as a wax crystal modifier and block the wax crystal to grow up, thereby reduce the risk to form three-dimensional networks. © 2018
Number of references: 18
Main heading: Cationic surfactants
Controlled terms: Hydrocarbons - Crude oil - Viscosity - Chlorine compounds - Precipitation (chemical) - Dyes
Uncontrolled terms: Cetyltrimethylammonium bromide - Cetyltrimethylammonium chloride - Flow improvers - Mechanism studies - Microscopic morphology - Pour points - Saturated hydrocarbons - Three-dimensional networks

Classification code: 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 3.00e-02%, Temperature 2.81e+02K, Temperature 3.08e+02K
DOI: 10.1016/j.petrol.2018.01.045
Funding Details: Number: 21763030, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JQ2041, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 16JS094, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was financially supported by the grants from National Science Foundation of China (21763030), Natural Science Foundation of Shaanxi Province (2017JQ2041) and Scientific Research Program Funded of Shaanxi Provincial Education Department (16JS094).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village
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174. Simulation of coalescence and breakup of dispersed water droplets in continuous oil phase

Accession number: 20184606057517
Authors: Yuan, Shuxia (1, 2); Dabirian, Ramin (2); Mohan, Ram S. (3); Shoham, Ovadia (2)
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Source title: American Society of Mechanical Engineers, Fluids Engineering Division (Publication) FEDSM
Abbreviated source title: ASME Fluids Eng Div Publ FEDSM
Volume: 1
Volume title: Flow Manipulation and Active Control; Bio-Inspired Fluid Mechanics; Boundary Layer and High-Speed Flows; Fluids Engineering Education; Transport Phenomena in Energy Conversion and Mixing; Turbulent Flows; Vortex Dynamics; DNS/LES and Hybrid RANS/LES Methods; Fluid Structure Interaction; Fluid Dynamics of Wind Energy; Bubble, Droplet, and Aerosol Dynamics
Part number: 1 of 3
Issue title: ASME 2018 5th Joint US-European Fluids Engineering Division Summer Meeting, FEDSM 2018
Issue date: 2018
Publication year: 2018
Report number: FEDSM2018-83314
Language: English
ISSN: 08888116
CODEN: FEDSDL
ISBN-13: 9780791851555
Document type: Conference article (CA)
Conference name: ASME 2018 5th Joint US-European Fluids Engineering Division Summer Meeting, FEDSM 2018
Conference date: July 15, 2018 - July 20, 2018
Conference location: Montreal, QC, Canada
Conference code: 141102
Sponsor: Fluids Engineering Division
Publisher: American Society of Mechanical Engineers (ASME), United States
Abstract: Petroleum industry uses shear devices such as chokes, valves, orifices and pumps, which cause droplet coalescence and breakup making the downstream separation process very challenging. Droplet-droplet coalescence leads to formation of larger droplets, which accelerate the phase separation, whereas the breakup of larger droplets into smaller ones delays the separation process. Computational Fluid Dynamic (CFD) simulations are conducted by ANSYS-Fluent software to track the droplet breakup and droplet-droplet coalescence, where the interfaces between the two phases are tracked by the Volume of Fluid (VOF) model. The material of droplet is water, while the continuous phase is oil. In this study, the effect of variables such as droplet diameter, droplet relative velocities as well as droplet motion directions on the time evolution of droplet-droplet coalescence and breakup is evaluated. The simulation results confirm that smaller droplet collisions lead to coalescence under wide ranges of droplet relative velocities, while larger droplet collisions result in droplet breakup at higher relative velocities. During coalescence, two droplets combine into one droplet, which deform in several times from one direction to orthogonal direction until recovering its shape or breakup. In addition, the simulation results show that fastest coalescence takes place when droplet collisions occur at

optimum relative velocity, whereas droplet breakup occurs at higher velocities than the optimum velocity, and delay in coalescence happens at lower velocity. Furthermore, the simulation results clearly show that droplet moving direction play an important role in the occurrence of droplet coalescence and breakup. Comparison of the simulation results with the collected experimental data from literature confirm that the simulations are capable of predicting the evolution time of the droplet coalescence and breakup with high accuracy. Copyright © 2018 ASME.

Number of references: 20
Main heading: Velocity
Controlled terms: Drop breakup - Computational fluid dynamics - Coalescence - Multiphase flow - Phase separation - Petroleum transportation
Uncontrolled terms: Coalescence and breakups - Downstream separation - Droplet coalescence - Droplet collision - Orthogonal directions - Relative velocity - Separation process - Volume of fluid model
Classification code: 631.1 Fluid Flow, General - 641.1 Thermodynamics - 723.5 Computer Applications - 801.3 Colloid Chemistry - 802.3 Chemical Operations - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1115/FEDSM2018-83314
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

175. Application of polymethacrylate from waste organic glass as a pour point depressor in heavy crude oil (*Open Access*)

Authors: Chen, Gang (1, 2); Yuan, Weihua (1); Zhang, Fan (1); Gu, Xuefan (1); Du, Weichao (1); Zhang, Jie (1); Li, Jinling (1, 2); Qu, Chengtun (1, 2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China
Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)
Abstract: Polymethyl methacrylate (PMMA, organic glass) is widely used as a substitute for glass, known as organic glass. During the processing and after use, there are amount of castoff. Based on the similar framework, PMMA could be useful the feed stock to synthesis polymethacrylate (PMA) used for crude oil additive. In this work PMA was prepared by transesterification of PMMA and aliphatic alcohol catalyzed by a base. The performance of PMA on heavy oil was evaluated as pour point depressant as well as viscosity reducer. The highest pour point reduction depression was achieved as 7.1 °C with the dosage of 2000 ppm PMA-1. The viscosity of crude oil was also substantially reduced from 182000 mPa#s to 64500 mPa#s. Differential scanning calorimetry and paraffin crystal morphology studies were clearly reflected that PMA affects the wax crystallization of crude oil. Base on this work, the waste organic glass can be reused as a valuable material in oil field. © 2017 Elsevier B.V.
Number of references: 14
Main heading: Crude oil
Controlled terms: Glass - Polymethyl methacrylates - Differential scanning calorimetry - Heavy oil production - Viscosity
Uncontrolled terms: Aliphatic alcohol - Crystal morphologies - Organic glass - Polymethacrylates - Pour point depressants - Pour points - Viscosity reducer - Wax crystallization
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 812.3 Glass - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 944.6 Temperature Measurements
Numerical data indexing: Temperature 2.80e+02K
DOI: 10.1016/j.petrol.2017.12.041

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

176. Rock-Fluid Interactions and their Effects on Site Selection of CO2 Storage in Saline Aquifer

Accession number: 20183205654277
Authors: Cui, Guo-Dong (1); Pan, Zhong (2); Yang, Chang-Hua (3); Xu, Yan-Mei (2); Zhang, Liang (1); Wang, Yi (1); Ren, Shao-Ran (1)
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Source title: Gao Xiao Hua Xue Gong Cheng Xue Bao/Journal of Chemical Engineering of Chinese Universities
Abbreviated source title: Gao Xiao Hua Xue Gong Cheng Xue Bao
Volume: 32
Issue: 3
Issue date: June 2018
Publication year: 2018
Pages: 696-707
Language: Chinese
ISSN: 10039015
CODEN: GHGXEG
Document type: Journal article (JA)
Publisher: Zhejiang University
Abstract: In order to study rock-fluid interactions and their effects on reservoir physical properties and injectivity during CO2 geological storage, a comprehensive reaction transport model was established by coupling salt precipitation and geochemical reactions. Effects of fluid flow, mineral dissolution/precipitation and salt precipitation on reservoir physical properties were studied by sensitivity analysis. Simulation results show that the reservoir can be divided into three zones along with CO2 migration, which are dry-out zone (i.e. CO2 only), gas-liquid two-phase seepage zone and single aqueous phase zone with dissolved CO2. Salt precipitation mainly occurs in the dry-out zone, and mineral dissolution/precipitation caused by geochemical reactions mainly occurs in the gas-liquid two-phase seepage zone and single aqueous phase zone. Mineral dissolution/precipitation happens in large areas but with little variation during CO2 injection. Therefore, its effect on reservoir physical properties can be neglected during injection. Back flow of formation water results in large amount of NaCl moving towards the edge of the drying zone, which precipitates in that zone and seriously damages reservoir porosity and permeability. Therefore, salt precipitation has significant effects on the reservoir physical properties and CO2 injectivity. Factors including injection rate, salinity, and permeability show great effects on salt precipitation, and saline aquifer with moderate injection rate, salinity, and permeability should be considered for CO2 geological storage. © 2018, Editorial Board of "Journal of Chemical Engineering of Chinese Universities". All right reserved.
Number of references: 33
Main heading: Carbon dioxide
Controlled terms: Site selection - Flow of fluids - Sensitivity analysis - Precipitation (chemical) - Transport properties - Sodium chloride - Geochemistry - Minerals - Petroleum reservoir engineering - Aquifers - Hydrogeology - Dissolution - Seepage
Uncontrolled terms: Co2 geological storages - Geochemical reaction - Injectivity - Saline aquifers - Salt precipitation
Classification code: 444.2 Groundwater - 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.3969/j.issn.1003-9015.2018.03.027
Compendex references: YES
Database: Compendex

177. Improvement of high temperature oxidation behavior of Cr3C2-20 wt % Ni cermets by adding 1 wt % Mo

Authors: Zhai, Wenyan (1); Gao, Yimin (1); Sun, Liang (2); He, Lin (1); Wang, Yiran (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; Shaanxi Province; 710049, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China
Corresponding author: Zhai, Wenyan(zhaiwy0427@163.com)
Abstract: Cr3C2-20 wt % Ni cermets were prepared by Cr, C and Ni mixed powders using high energy milling and reactive sintering method comparing with the one contains 1 wt % Mo addition. Isothermal oxidation experiments were conducted at 800 °C in the static air from 10 h to 100 h using cyclic oxidation method. The high temperature oxidation behavior of Cr3C2-20 wt % Ni cermets effected by 1 wt % Mo addition was investigated. After 100 h oxidation, the oxidation weight increase and parabolic rate constants of the one with Mo decreased from 0.126 to 0.080 mg/cm2 and 4.41×10^{-12} to 1.78×10^{-12} kg2/m4·s, respectively. Generally, two positive effects were found by Mo additive, such as increasing the Cr atom concentration in the Ni and minimizing the formation of NiO during oxidation. The oxidation products of the cermets changed from forming the Cr2O3 and NiCr2O4 to that only forming Cr2O3 after adding molybdenum element. Pure Cr2O3 possessed better and denser crystal structure than that of NiCr2O4. The cermets were protected due to the formation of the dense oxide films on the surfaces of the substrates at high temperature. This novel mechanism was of academic influence and could serve as a guide for the further research on Cr3C2 - 20 wt % Ni cermets. © 2017 Elsevier B.V.
Number of references: 32
Main heading: Thermooxidation
Controlled terms: Cermets - Chromium compounds - Crystal structure - High temperature corrosion - Mechanical alloying - Rate constants - Sintering - Nickel oxide - Oxide films
Uncontrolled terms: Cyclic oxidation - High temperature - High temperature oxidation Behavior - Isothermal oxidations - Mo additions - Oxidation products - Parabolic rate constants - Reactive sintering
Classification code: 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.1 Ceramics - 933.1.1 Crystal Lattice
Numerical data indexing: Surface_Density 1.26e-03kg/m2 to 8.00e-04kg/m2, Temperature 1.07e+03K, Time 3.60e+04s to 3.60e+05s, Time 3.60e+05s
DOI: 10.1016/j.jallcom.2017.10.012
Compendex references: YES
Database: Compendex

178. A finite element model of carbon steel welded joint corrosion under plastic strain

Authors: Lu, Y.X. (1, 2, 3); Jing, H.Y. (2, 3); Han, Y.D. (2, 3); Xu, L.Y. (2, 3)

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Corresponding author: Xu, L.Y.(xulianyong@tju.edu.cn)

Abstract: A finite element (FE) model is presented in this work that simulates and predicts the mechano-chemical corrosion behavior of welded joint under different plastic strains. The FE model contains two parts: the stress calculating of welded joint using Abaqus software and the chemical reaction of welded joint using COMSOL Multiphysics® software. The simulating corrosion depth of weld metals center are close to experimental measurements on the welded joint under different plastic strains. Meanwhile, effect of weld reinforcement, strain, and welding material on the mechano-chemical corrosion behavior of welded joint under different plastic strains was investigated using the FE model. © 2017 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim

Number of references: 26
Main heading: Welds
Controlled terms: Finite element method - Low carbon steel - Strain - ABAQUS - Welding - Welded steel structures - Steel corrosion - Corrosive effects - Plastic deformation
Uncontrolled terms: ABAQUS software - Comsol multiphysics - Corrosion depth - Mechanochemicals - Steel welded joints - Weld metal - Weld reinforcement - Welding materials
Classification code: 538.2 Welding - 539.1 Metals Corrosion - 545.3 Steel - 723.5 Computer Applications - 921 Mathematics - 921.6 Numerical Methods - 951 Materials Science
DOI: 10.1002/maco.201709620

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

179. Occurrence characteristics and influential factors of movable fluids in pores with different structures of Chang 63 reservoir, Huaqing Oilfield, Ordos Basin, China

Accession number: 20183205661708

Authors: Li, Pan (1, 2); Sun, Wei (1, 2); Wu, Bolin (1, 2); Gao, Yongli (3); Du, Kun (1, 2)
Author affiliation: (1) State Key Laboratory of Continental Dynamics of Ministry of Geology, Northwest University, Xi'an; 710069, China; (2) Department of Geology, Northwest University, Xi'an; 710069, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Pan(122078558@qq.com)

Abstract: Exploration and development of Chang 63 reservoir in the Huaqing Oilfield, Ordos Basin is challenging because of the complex geological features, including strong heterogeneity, complicated microscopic pore structures, low saturation of movable fluids, and distinct fluid distribution characteristics. Confronted with this challenge, this study used the nuclear magnetic resonance (NMR) technique to quantitatively evaluate the movable fluids in pores with different structures. Moreover, microscopic experiments were conducted to analyze the occurrence characteristics and influential factors of movable fluids in pores with different structures, including conventional physical property analysis, image porosity measurement, casting thin section observation, SEM analysis, high pressure mercury intrusion testing, and constant pressure mercury intrusion testing. The results showed that gray and grayish brown lithic feldspar sandstones were the dominant types of sandstone. Residual intergranular pores and feldspar dissolved pores were the main pore types, with unevenly distributed pore throat radii, among which small pores and micropores were primary. Four types of pore structures could be divided according to comprehensive analysis of capillary pressure curves, namely Types I, II, III, and IV, and they were featured by movable fluids with distinct occurrence characteristics in them. Reservoir permeability was well correlated with movable fluid saturation. Multiple factors were demonstrated to influence the movable fluid saturation in pores with different structures, including pore throat radius, pore-throat radius ratio, sorting coefficient, effective pore and throat volume, maximum mercury saturation in pores and throats, and interstitial clay minerals. Generally, good physical properties led to larger variation of movable fluid saturation. Among them, effective pore throat radius and pore-throat radius ratio were the dominant factors, effective pore and throat volume as well as sorting coefficient had some degree of influence, and maximum mercury saturation and physical properties had little effect on the movable fluid saturation. © 2018 Elsevier Ltd
Number of references: 42
Main heading: Nuclear magnetic resonance
Controlled terms: Metamorphic rocks - Petroleum reservoir engineering - Textures - Structural geology - Physical properties - Sandstone - Pore structure - Feldspar
Uncontrolled terms: Capillary pressure curves - Comprehensive analysis - Exploration and development - Microscopic pore structures - Movable fluid - Nuclear magnetic resonance techniques - Strong heterogeneities - Throat radius
Classification code: 481.1 Geology - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.marpetgeo.2018.07.033
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

180. Dissipative soliton with sidebands on spectrum in an all-fibre laser

Accession number: 20183205659079
Authors: Duan, Lina (1); Zhang, Ting (2); Wang, Hushan (2); Wang, Yishan (2); Li, Yan (1); Fu, Haiwei (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

Document type: Journal article (JA)
Publisher: IOP Publishing Ltd

Abstract: We experimentally observed a dissipative soliton (DS) in an all-fiber laser with large-normal dispersion. The nonlinear polarization rotation (NPR) technique was used as the mode locker. The DS exhibited obvious sidebands on the spectrum, a feature that is distinctly different to that of the common DS previously reported. The spectral bandwidth was 57.43 nm, and the pulse duration was 2.20 ps. Remarkably, in the whole mode-locked pump regime, the DS remained in the single pulse state without multipulse shaping. Moreover, the pulse was compressed to $\sim$140 fs by a negative dispersion device outside the cavity, and the pulse peak power reached 3.79 KW. We assumed that the spectral sidebands originated from the combined action of the nonlinear phase chirp and NPR-induced transmittance modulation, which may help to keep the mode-locked pulse working in the single pulse state. This work could help us gain a deeper insight into the DS formed in the normal dispersion regime. © 2018 Astro Ltd.

Number of references: 27
Main heading: Solitons
Controlled terms: Locks (fasteners) - Optical pumping - Dispersion (waves) - Pulse shaping - Fiber lasers
Uncontrolled terms: Dissipative solitons - Mode-locked pulse - Nonlinear polarization rotation - Normal dispersion - Spectral bandwidth - Spectral sidebands - Temporal solitons - Ultra-fast
Classification code: 713.4 Pulse Circuits - 744.4 Solid State Lasers
Numerical data indexing: Size 5.74e-08m, Time 2.20e-12s
DOI: 10.1088/1555-6611/aacb4d

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

181. Study on fracturing flowback fluid treatment technology for shale gas in Yangzhou (*Open Access*)

Accession number: 20181304956866

Authors: Shi, Shengwei (1); Du, Jiajia (1); Kang, Dingyu (1); Chen, Xinjian (1); Qu, Chengtun (1, 2); Yu, Tao (1, 2)
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Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 121
Part number: 5 of 5
Issue: 5
Issue title: International Conference on Energy Engineering and Environmental Protection, EEEP 2017 - Energy Technique and Management
Issue date: March 16, 2018
Publication year: 2018
Article number: 052002
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2nd International Conference on Energy Engineering and Environmental Protection, EEEP 2017
Conference date: November 20, 2017 - November 22, 2017
Conference location: Sanya, China
Conference code: 135344

Publisher: IOP Publishing Ltd

Abstract: Shale gas fracturing flowback fluid has the characteristics of high viscosity, large displacement, complex components and difficult to deal with. Therefore, it is of great significance for environmental protection to treat and reuse it. In this paper, Yangzhou shale gas is taken as an object to study the treatment of shale gas fracturing flowback fluid. The results shown that the viscosity of the fracturing flowback fluid before treatment was 16.75mPa•s, and when the pH was adjusted to 3.5, with Cerium(III) sulfate and ferrous sulfate as catalyst and the dosage were 60mg/L and 120 mg/L respectively, and hydrogen peroxide dosage was 0.5%, the viscosity of fracturing folwback fluid was reduced from 16.75mPa•s to 1.97mPa•s; After the oxidation treatment, adjusting pH to 7.5, and treating it with inorganic flocculant and organic flocculant, the water quality met the reinjection requirement of the average air permeability of less than or equal to 0.01 μm2. © Published under licence by IOP Publishing Ltd.

Number of references: 20
Main heading: Viscosity
Controlled terms: Shale gas - Cerium compounds - Sulfur compounds - Water quality - Flocculation
Uncontrolled terms: Complex components - Ferrous sulfate - Fluid treatments - Fracturing flowback - High viscosities - Inorganic flocculant - Large displacements - Oxidation treatments
Classification code: 445.2 Water Analysis - 512.2 Natural Gas Deposits - 522 Gas Fuels - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Area 1.00e-14m2, Mass_Density 1.20e-01kg/m3, Mass_Density 6.00e-02kg/m3, Percentage 5.00e-01%
DOI: 10.1088/1755-1315/121/5/052002

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

182. An improved structure of coplanar coil system and its logging response

Accession number: 20183005584471

Authors: Zhang, Miaoyu (1, 2); Guo, Baolong (1); Wu, Jie (2)
Author affiliation: (1) Institute of Intelligent Control and Image Engineering, Xidian University, South Taibai Road 2, Xi'an; 710071, China; (2) College of Electronic Engineering, Xi'an Shiyou University, Second East Dianzi Road 18, Xi'an; 710065, China
Corresponding author: Zhang, Miaoyu(wwx421@163.com)

Source title: Journal of Applied Geophysics
Abbreviated source title: J. Appl. Geophys.
Volume: 158
Issue date: November 2018
Publication year: 2018
Pages: 29-40
Language: English
ISSN: 09269851
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: An improved structure of coplanar system with a narrow negative response, minimal skin effect and horns is presented, which consist of two transmitters and one receiver coil. To obtain the response of the improved coplanar system, we use an analytic method to solve Hertz potentials by applying tangential continuity in layer boundary and get the horizontal component of magnetic field intensity. Further, the models for received signals are analysed in the cylindrically and the horizontally layered formation respectively. Compared with the traditional coplanar configuration, the negative response area of the new coplanar system is significantly decreased, the responses are approximately linear and the spatial resolution is enhanced by two times. Furthermore, the improved coplanar system mechanisms are revealed for reducing skin effect and negative response through analysis of the distribution characteristics of eddy current of the transmitter coil. The results of experiments demonstrate the superiority of the proposed coplanar system. © 2018 Elsevier B.V.

Number of references: 24
Main heading: Skin effect
Controlled terms: Transmitters

183. Stress corrosion cracking behavior of X90 pipeline steel and its weld joint at different applied potentials in near-neutral solutions

Accession number: 20185006230379
Title of translation: X90
Authors: Luo, Jinheng (1, 2); Luo, Sheji (3); Li, Lifeng (1, 2); Zhang, Liang (1, 2); Wu, Gang (1, 2); Zhu, Lixia (1, 2)
Author affiliation: (1) CNPC Tubular Goods Research Institute, Xi'an; Shaanxi; 710077, China; (2) State Key Laboratory of Performance and Structural Safety for Petroleum Tubular Goods and Equipment Material, Xi'an; Shaanxi; 710077, China; (3) Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 38
Issue: 8
Issue date: August 25, 2018
Publication year: 2018
Pages: 96-102
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: X90 pipeline steel is a new generation of pipeline steel developed after X80 and X100 pipeline steels, and it is now a new research hotspot at home. In order to thoroughly study the effect of applied potential on the soil stress corrosion cracking (SCC) behavior of X90 pipeline steel, we investigated the SCC behaviors of base metal and weld joint samples in the straight-weld pipe of X90 pipeline steel at different applied potentials in near-neutral solution using electrochemical measurements methods and slow strain rate testing (SSRT). Besides, the fracture surfaces were observed through scanning electron microscopy (SEM) and the mechanisms of the corrosion cracking behaviors were analyzed. And the following research results were obtained. First, the polarization curves of the base metal and weld joint samples in NS4 solution present the typical characteristics of anodic dissolution but no activation-passivation phenomenon happens. Second, In NS4 solution, the base metal and weld joint samples present SCC sensitivity. The SCC sensitivity indicator which is expressed by yield loss percentage elongation and yield loss percentage elongation area decreases firstly and then increases with the negative increase of the applied potential, and the SCC sensitivity of weld joint is higher than that of base metal. Third, there are three mechanisms on the SCC behaviors of base metal and weld joint samples, i.e., anodic dissolution mechanism when the applied potential is open circuit potential (EOCP), anodic dissolution and hydrogen embrittlement mechanism when the applied potential is -850 mV, and hydrogen embrittlement mechanism when the applied potential is -1000 mV and -1200 mV. It is concluded that the research results can provide a technical support and theoretical basis for the large-scale application of X90 pipeline steel. © 2018, Natural Gas Industry Journal Agency. All right reserved.
Number of references: 23
Main heading: Stress corrosion cracking
Controlled terms: Residual stresses - Cracks - Pipeline corrosion - Steel corrosion - Steel pipe - Welds - Pipelines - Soils - Soil testing - Metals - Strain rate - Dissolution - Underground corrosion - Hydrogen - Hydrogen embrittlement - Scanning electron microscopy
Uncontrolled terms: Anodic dissolution - Applied potentials - Base metals - Pipeline steel - Soil stress - Weld joints - Weld pipe
Classification code: 483.1 Soils and Soil Mechanics - 531.1 Metallurgy - 538.2 Welding - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 802.3 Chemical Operations - 804 Chemical Products Generally

Numerical data indexing: Voltage -1.00e+00V, Voltage -1.20e+00V, Voltage -8.50e-01V
DOI: 10.3787/j.issn.1000-0976.2018.08.014
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

184. Influencing factors and prediction model of material surface wettability

Accession number: 20183205669547
Authors: Jiang, Hua-Yi (1); Zhang, Yi-Xiang (1, 2); Liang, Ai-Guo (3); Qi, Hong-Yuan (4)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) China University of Petroleum (East China), Qingdao; 266580, China; (3) 1st Oil Extraction Plant, Xinjiang Oil Field, Kelamayi; 834000, China; (4) Xinan Shiyou University, Chengdu; 610500, China
Source title: Surface Technology
Abbreviated source title: Surf. Technol.
Volume: 47
Issue: 1
Issue date: 2018
Publication year: 2018
Pages: 60-65
Language: Chinese
E-ISSN: 10013660
Document type: Journal article (JA)
Publisher: Chongqing Wujiu Periodicals Press
Abstract: The work aims to predict wettability of surfaces between different liquids and materials. Nine different panels and fourteen kinds of experimental liquids were selected, experimental materials of different roughness and surface energy were obtained by sanding all panels with 60-1200 pieces of sandpaper. Effects of liquid surface tension, solid roughness and solid surface energy were studied in control variable method, based on which uniform design experiment involving three factors at ten levels was carried out, and the experimental results were linearly analyzed with SPSS software. Under the effect of different kinds of liquids, contact angle increased along with the increase of liquid tension in the same liquid, and the surface tension of distilled water was the maximum (70.13 mN/m), its contact angle in the three materials was the maximum as well. When roughness of the material surfaces was the same, the contact angle decreased as surface energy increased, and the solid surface energy reached peak value (67.72 mJ/m2) when the contact angle was the minimum (25.1°). Obviously, the roughness played a contrary role on contact angle as the roughness increased on the material surface of the same surface energy, that is, the contactangle increased continuously with the increase of roughness when $\theta > 90°$ and decreased with the increase of roughness when θ © 2018 Chongqing Wujiu Periodicals Press. All rights reserved.
Number of references: 16
Main heading: Contact angle
Controlled terms: Forecasting - Interfacial energy - Liquids - Site selection - Surface properties - Surface roughness - Surface tension - Wetting
Uncontrolled terms: Experimental materials - Factor model - Liquid surface tension - Material's surface - Prediction modelling - Roughness surfaces - Solid surface energy - SPSS software - Surface wettability - Uniform design
Classification code: 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Surface_Tension 7.01e-02N*m
DOI: 10.16490/j.cnki.issn.1001-3660.2018.01.010
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

185. Organochlorine Compounds with a Low Boiling Point in Desalted Crude Oil: Identification and Conversion

Accession number: 20181905179982
Authors: Wu, Bencheng (1); Li, Yongfeng (1); Li, Xiaohui (2); Zhu, Jianhua (1); Ma, Rui (1); Hu, Shaojian (1)
Author affiliation: (1) State Key Laboratory of Heavy Oil Processing, College of Chemical Engineering, China University of Petroleum, Beijing; 102249, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China

Corresponding author: Wu, Bencheng(wu_bc@cup.edu.cn)
Abstract: Organochlorine compounds (OOCs) with a low boiling point in desalted crude oil were identified via gas chromatography (GC) with electron capture detection (ECD), and the possibility of their hydrolysis was evaluated thermodynamically under the conditions of industrial distillation of desalted crude oil. Six fractions, namely, gasoline, aviation kerosene, light diesel, heavy diesel, lubricating oil, and residual oil, were obtained via true boiling point distillation. Chlorine concentration results indicated that OOCs with low and high boiling points were concentrated in the gasoline fraction and residual oil, respectively. Qualitative and quantitative analyses of low-boiling-point OOCs, such as carbon tetrachloride, tetrachloroethylene, 1,1,1,3-tetrachloropropane, and 1,2,4-trichlorobenzenem were performed via GC-ECD. The four types of OOCs coexisted in the gasoline, aviation kerosene, and light diesel fractions. Thermodynamic analysis results indicated that the four types of OOCs could hydrolyze to form corrosive HCl during industrial distillation of desalted crude oil. High-temperature and low-pressure conditions will enhance the OOC hydrolysis. © 2018 American Chemical Society.
Number of references: 31
Main heading: Gas chromatography
Controlled terms: Thermoanalysis - Boiling point - Chlorine compounds - Hydrolysis - Diesel engines - Kerosene - Crude oil - Distillation - Gasoline
Uncontrolled terms: Chlorine concentration - Electron capture detection - Low-pressure conditions - Organochlorine compounds - Qualitative and quantitative analysis - Tetrachloroethylenes - Thermo dynamic analysis - True boiling point distillation
Classification code: 512.1 Petroleum Deposits - 513.3 Petroleum Products - 523 Liquid Fuels - 612.2 Diesel Engines - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations
DOI: 10.1021/acs.energyfuels.8b00205
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

186. Two-archive method for aggregation-based many-objective optimization

Accession number: 20173804171019
Authors: Cai, Lei (1); Qu, Shiru (2); Cheng, Guojian (3)
Author affiliation: (1) Faculty of Computer Science and Engineering, Xi'an University of Technology, Xi'an; 710048, China; (2) School of Automation, Northwestern Polytechnical University, Xi'an; 710072, China; (3) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cai, Lei(caileid@gmail.com)

Abstract: In this paper, a novel two-archive method is proposed for solving many-objective optimization problems. Our aim is to exploit the advantages of using two separate archives to balance the convergence and diversity. To this end, two updating strategies based on the aggregation-based framework are presented and incorporated into the two-archive method. In addition, we further extend this method by eliminating the restricted neighbourhood models. The proposed algorithms have been tested extensively on a number of well-known benchmark problems with 3–20 objectives. Experimental results reveal that the proposed algorithms work well on the many-objective optimization problems with different characteristics. © 2017 Elsevier Inc.
Number of references: 41
Main heading: Evolutionary algorithms
Controlled terms: Optimization
Uncontrolled terms: Bench-mark problems - Many-objective optimizations - Multi objective evolutionary algorithms - Neighbourhood models - Two archives - Updating strategy
Classification code: 921.5 Optimization Techniques
DOI: 10.1016/j.ins.2017.08.078
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

187. La0.6Sr0.4Co0.2Fe0.79M0.01O3-# (M=Ni, Pd) perovskites synthesized by Citrate-EDTA method: Oxygen vacancies effect on electrochemical properties

Accession number: 20183305700497
Authors: Guo, Shaoli (1, 2); Puleo, Fabrizio (2); Wang, Liuding (3); Wu, Hongjing (3); Liotta, Leonarda F. (2)
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Corresponding author: Puleo, Fabrizio(fabrizio.puleo@pa.ismn.cnr.it)
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Abbreviated source title: Adv Powder Technol
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Language: English
ISSN: 09218831
E-ISSN: 15685527
CODEN: APTEEE
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: La0.6Sr0.4Co0.2Fe0.8O3-# (LSCF08), La0.6Sr0.4Co0.2Fe0.79Ni0.01O3-# (LSCF08-Ni) and La0.6Sr0.4Co0.2Fe0.79Pd0.01O3-# (LSCF08-Pd) perovskites were synthesized by Citrate-EDTA method, by using NiCl2 or PdCl2 as metal precursors, and their physicochemical properties were characterized by XRD, TGA, TPD and TPR. XRD data evidenced an expansion of the lattice parameters of LSCF08-Pd, while a contraction of the lattice occurred for LSCF08-Ni, with respect to the undoped LSCF, suggesting different oxygen vacancies content in the perovskite (confirmed by TGA) likely due to a different oxidation state of Ni and Pd species stabilized in the structure. TEM analyses performed over LSCF08-Pd revealed the presence of metallic Pd nanoparticles well dispersed in the matrix that accounts for the increased reducibility of the Co and Fe species with respect to LSCF08-Ni and undoped perovskite. AC impedance measurements that were carried out on symmetric cells consisting of LSCF-based materials deposited onto Ce0.8Gd0.2O2-# (GDC) electrolyte proved the enhanced electrochemical performances of Ni/Pd doped LSCF. The electrochemical characterization of LSCF08, LSCF08-Ni and LSCF08-Pd electrodes was completed by performing cyclic voltammetry experiments in the range of temperature 600–800 °C, varying the potential (U) between 0.3 V and -1 V, at scan rates in the range 1–50 mV s-1 and working under flow of 0.7 vol% O2 in He (30 ml/min). © 2018 The Society of Powder Technology Japan
Number of references: 44

Main heading: Perovskite
Controlled terms: Nickel compounds - Oxygen vacancies - Physicochemical properties - Cyclic voltammetry - Chlorine compounds - Palladium compounds - X ray diffraction - Electrolytes
Uncontrolled terms: AC impedance measurement - B-site substitution - Electrochemical characterizations - Electrochemical performance - La0.6sr0.4co0.2fe0.8o3 - Metal precursor - Oxidation state - PD nano particle
Classification code: 482.2 Minerals - 702 Electric Batteries and Fuel Cells - 801.4 Physical Chemistry - 801.4.1 Electrochemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 933.1 Crystalline Solids
Numerical data indexing: Voltage 3.00e-01V
DOI: 10.1016/j.apt.2018.07.029
Funding Details: Number: -, Acronym: CSC, Sponsor: China Scholarship Council;
Funding text: This work was supported by China Scholarship Council.
Compendex references: YES
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188. Elucidating the Reaction Mechanisms between Triazine and Hydrogen Sulfide with pH Variation Using Mass Spectrometry

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Authors: Wang, Xiaoting (1); Zheng, Yajun (1, 2); Shi, Jun (1); Gong, Xiaoyun (3); Ji, Yue (1); Han, Weiwei (1); Jiang, You (3); Austin, Daniel E. (2); Fang, Xiang (3); Zhang, Zhiping (1)
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Corresponding author: Austin, Daniel E.(zhangzp0304@gmail.com)
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Abbreviated source title: Anal. Chem.
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CODEN: ANCHAM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Triazine is one of the most economical and effective scavengers for hydrogen sulfide (H2S) removal, but the reaction mechanisms between triazine and H2S with pH variation in solution are still poorly understood. Herein, we show that the reaction process can be directly probed by means of paper spray mass spectrometry, in which an aprotic solvent (e.g., acetonitrile) is more favorable to the observation of reaction intermediates than a protic solvent (e.g., methanol), because of hydrogen bond interaction. Varying the pH of the reaction leads to completely different reaction pathways. With the pH in the range of 5.58 to 7.73, the major product was thiadiazine. With a pH of 3.02-3.69, thiadiazine is converted to 2-(5-(2-hydroxyethyl)-1,3,5-thiadiazinan-3-yl)acetaldehyde, which differs from the traditional pathway of analogous reactions. However, as ammonia was added into the reaction and the pH was adjusted to the range 8.45-9.43, triazine readily undergoes hydrolysis, and the formed intermediate reacts with ammonia and formaldehyde generated in situ from triazine to produce 1-(2-hydroxyethyl)-3,5,7-triaza-1-azoniatricyclo [3.3.1.13,7]decane (HTAD). Further increasing the pH up to 10.27-11.21 leads to the decomposition of HTAD. Based on the experimental observation and evidence from high-resolution and tandem mass spectrometry, we propose the plausible reaction mechanisms between triazine and H2S, as well as the derived reaction from triazine under different pH conditions. © 2018 American Chemical Society.
Number of references: 35
Main heading: Hydrogen sulfide
Controlled terms: Hydrogen bonds - Organic solvents - Mass spectrometry - Ammonia - Reaction intermediates - Sulfur determination
Uncontrolled terms: Analogous reactions - Aprotic solvents - High resolution - Hydrogen bond interaction - Reaction mechanism - Reaction pathways - Reaction process - Tandem mass spectrometry

189. Strain energy density distribution of a tight gas sandstone reservoir in a low-amplitude tectonic zone and its effect on gas well productivity: A 3D FEM study

Authors: Yin, Shuai (1); Zhao, Jingzhou (1); Wu, Zhonghu (2); Ding, Wenlong (3)
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Abstract: The tight gas sandstone reservoirs in the Paleozoic of the Sulige gas field in China are highly heterogeneous, and fractures are key factors for stable reservoir production. Low-amplitude folds or nose-like structures are widely developed in the Upper Paleozoic strata in this area. To effectively predict gas well productivity, in this paper, a 3D FEM numerical simulation based on the deformation and energy variation of the rock mass was used to predict the "sweet spots" of gas well productivity in a tight gas sandstone reservoir using the He8 segment of the Middle Permian Xiashihezi Formation in the Central Sulige block as an example. The paleotectonic stress field of the study area during the maximum episode of compression in the Yanshanian movement was restored, and the two rupture parameters of the integrated rupture rate (IF) and strain energy density (U) were constructed. The strain energy density distribution has a high correlation with gas well productivity, indicating that it can better predict the rock rupture degree in low-amplitude tectonic zones. A complex relationship exists between the strain energy density distribution and low-amplitude folds. The high strain energy density zones are mainly distributed among the high positions and wing areas of the low-amplitude fold zone, but the top area of the low-amplitude fold does not necessarily have a high strain energy density. Portions of the high strain energy density zones are located in the gentle tectonic zone, located near but outside the low-amplitude fold zone. The strain energy in these gentle tectonic zones with a high strain energy density value is relatively high, and the rock mass is prone to rupture. This study is of great value in enriching the prediction of "sweet spots" in tight gas sandstone reservoirs in low-amplitude tectonic zones worldwide. © 2018 Elsevier B.V.

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

190. Finite element simulation of carbon steel welded joint corrosion

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Title of translation:
Authors: Lu, Yongxin (1, 2, 3); Li, Xiao (1); Jing, Hongyang (2, 3); Xu, Lianyong (2, 3); Han, Yongdian (2, 3)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Materials Science and Engineering, Tianjin University, Tianjin; 300072, China; (3) Tianjin Key Laboratory of Advanced Joining Technology, Tianjin University, Tianjin; 300072, China
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Publication year: 2018
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Language: Chinese
ISSN: 0253360X
CODEN: HHPAD2
Document type: Journal article (JA)
Publisher: Harbin Research Institute of Welding
Abstract: Due to welded joint corrosion resistance and mechanical properties difference among various regions, the local corrosion is likely to appear in the welded joint. It seriously threatens the safety of pipeline operation, and it is need to predict the corrosion behaviour of welded joint. The finite element model of carbon steel welded joint is established based on the galvanic corrosion principle, combing the COMSOL software, the welded joint corrosion morphology under three kinds of temperature is predicted. Then the effect of weld reinforcement, the area ratio of weld metal and base metal, and weld metal defects on the weld metal corrosion rate were investigated with the model. The result showed that the finite element model not only can predict the corrosion behaviour of welded joint, and can provide the theory basis for the welded joint design of oil and gas pipeline. © 2018, Editorial Board of Transactions of the China Welding Institution, Magazine Agency Welding. All right reserved.
Number of references: 15
Main heading: Welds
Controlled terms: Pipelines - Welded steel structures - Localized corrosion - Corrosive effects - Finite element method - Pipeline corrosion - Corrosion resistance - Metals - Corrosion rate - Galvanic corrosion - Steel corrosion - Welding
Uncontrolled terms: CO_2 corrosion - COMSOL - Corrosion behaviour - Corrosion morphology - Finite element simulations - Oil-and-Gas pipelines - Safety of pipelines - Steel welded joints
Classification code: 538.2 Welding - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 921.6 Numerical Methods
DOI: 10.12073/j.hjxb.2018390112
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

191. Biocatalytic Asymmetric Synthesis of Danshensu Borneol Ester by Baker's Yeast

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Title of translation:
Authors: Kuang, Xin-Mou (1); Sun, Ying (2); Bai, Ya-Jun (2); Nan, Ye-Fei (3); Zheng, Xiao-Hui (2)

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Corresponding author: Zheng, Xiao-Hui(zhengxh@nwu.edu.cn)
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Abstract: β-(3,4-dihydroxyphenyl) pyruvic acid was first synthesized by Knoevenagel condensation and hydrolysis reactions of 3,4-dihydroxybenzaldehyde. Then, β-(3,4-dihydroxyphenyl) pyruvate borneol ester was prepared from β-(3,4-dihydroxyphenyl) pyruvic acid with borneol in the presence of a catalytic amount of p-toluenesulfonic acid. Finally, biocatalytic synthesis of target product Danshensu borneol ester (DBZ) catalyzed by bread's yeast was obtained. The factors affecting synthesis of DBZ such as amount of glucose, reaction time, pH valve and amount of β-cyclodextrin were systematacially investigated. The results showed that when the amount of β-(3,4-dihydroxyphenyl) pyruvate borneol ester was 0.5 g, the optium reaction conditions were as follows: amount of glucose 30 g, reaction time 24 h, pH 7, amount of β-cyclodextrin 1.5 g. Under these conditons, enantiomeric excess (e.e.) valve of the target product was as high as 84.9%, and S enantiomer was the predominant component. The process in this paper is mild and low cost, and is a very valuable process for the production of DBZ. © 2018, Editorial Office of FINE CHEMICALS. All right reserved.
Number of references: 19
Main heading: Catalysis
Controlled terms: Condensation reactions - Cyclodextrins - Enantiomers - Esters - Glucose - Organic acids - Yeast
Uncontrolled terms: 3 ,4-dihydroxybenzaldehyde - Asymmetric reduction - Baker's yeast - Biocatalysis - Biocatalytic synthesis - Danshensu - Knoevenagel condensation - Ptoluenesulfonic acid
Classification code: 802.2 Chemical Reactions - 804.1 Organic Compounds - 822.3 Food Products
Numerical data indexing: Mass 1.50e-03kg, Mass 3.00e-02kg, Mass 5.00e-04kg, Percentage 8.49e+01%, Time 8.64e+04s
DOI: 10.13550/j.jxhg.20170546
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

192. Structural and elastic properties of CaMg2 Laves phase by Y-parameter and Reuss-Voigt-Hill methods   (*Open Access*)

Accession number: 20184906171856
Authors: Fu, Jia (1); Guo, Jukui (2); Bai, Hao (1); Lin, Weihui (3)
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Issue date: November 6, 2018
Publication year: 2018
Article number: 012052
Language: English

Abstract: Structural, mechanical properties of CaMg2 Laves phase are investigated by the first-principle calculations and then the homogenized moduli are calculated by both the classical Reuss-Voigt-Hill estimation and a so-called Y parameter. Above all, the optimized crystal parameters are in very good agreement with the experimental data reported. Besides, elastic constants Cij are calculated, thus the shear modulus, bulk modulus, Young's modulus, Poisson's ratio are calculated to compare with the relative data in references. Contrary to Hill approach, the Y parameter enables to investigate the anisotropic characteristics and isotropic elastic properties of CaMg2 structure. By using Y parameter, we can see that Young's modulus and Poisson's ratio as a function of the compliance coefficient Sij (or elastic constants Cij) and plane orientation are distributed within a reasonable range, which are useful for the DFT study of similar hexagonal crystal structure at nanoscale. © 2018 Institute of Physics Publishing. All rights reserved.

Number of references: 30
Main heading: Magnesium alloys
Controlled terms: Elastic constants - Calcium alloys - Elasticity - Crystal orientation - Poisson ratio - Binary alloys - Elastic moduli
Uncontrolled terms: Crystal parameters - Elastic properties - First principle calculations - Hexagonal crystal structure - Laves-phase - Nano scale - Plane orientation - Y-parameters
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.1 Crystal Lattice - 951 Materials Science
DOI: 10.1088/1757-899X/423/1/012052

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Open Access type(s): All Open Access, Bronze
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Data Provider: Engineering Village

193. High Dimensional Feature for Hyperspectral Image Classification   (*Open Access*)

Accession number: 20185206315918

Authors: Wang, Cailing (1); Wang, Hongwei (2); Zhang, Yinyong (3); Wen, Jia (4); Yang, Fan (1)
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Conference code: 143365
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Abstract: Making a high dimensional (e.g., 100k-dim) feature for hyperspectral image classification seems not a good idea because it will bring difficulties on consequent training, computation, and storage. In this paper, we study the performance of a high-dimensional feature by texture feature. The texture feature based on multi-local binary pattern descriptor, can achieve significant improvements over both its tradition version and the one we proposed in our previous work. We also make the high-dimensional feature practical, we employ the PCA method for dimension reduction and support vector machine for hyperspectral image classification. The two real hyperspectral image datasets are employed. Our experimental results with real hyperspectral images indicate that the high dimensional feature can enhance the classification accuracy than some low dimensional. © The Authors, published by EDP Sciences, 2018.
Number of references: 10
Main heading: Local binary pattern
Controlled terms: Spectroscopy - Support vector machines - Image classification - Classification (of information) - Image enhancement - Textures
Uncontrolled terms: Classification accuracy - Descriptors - Dimension reduction - High dimensional feature - High-dimensional - Local binary patterns - Low dimensional - Texture features
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
DOI: 10.1051/matecconf/201824603041
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

194. Effects of Amphoteric Surfactant/Polymer on Water Separation Rate and Viscosity-Reducing Rate of Heavy Oil-in-Water Emulsion

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Title of translation: /
Authors: Sun, Nana (1); Jiang, Huayi (1); Xie, Yapeng (2); Zhang, Lanxin (1); Huang, Na (1); Jin, Kaibin (1)
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Corresponding author: Sun, Nana(bingyuxuan6666@126.com)
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Publisher: Science Press
Abstract: To be effective for transportation heavy crude oil at room temperature, the effects of the types and contents of surfactants and polymers on the water separation rate and viscosity-reducing rate of heavy oil-in-water emulsion were systematically studied. Experimental results show that the emulsion prepared by the amphoteric surfactant CAB-35 has a great stability, with water separation rate of 10.0% in 3 h and the viscosity-reducing ratio of over 98%. The water separation rates firstly decreases with the increase of surfactant contents, and then it goes to a relatively stable value. Whereas as the surfactant content increases, the viscosity-reducing rates get decreased, but they all maintain above 96%. In order to improve the stability of emulsion, the nonionic polyacrylamide PAM, the anionic

polyacrylamide HPAM, the cationic polyacrylamide CPAM and the amphoteric polyacrylamide ACPAM were added in the surfactant CAB-35 solution, resepectively. Experimental results show that amphoteric surfactant content obviously depends on the water separation rate. The magnitude of the effects of four kinds of polymers examined on the water separation rate is: ACPAM>CPAM>HPAM>PAM, with viscosity-reducing rate more than 96%. As the HPAM concents increases, both water separation rate and the viscosity-reducing rate reduce. © 2018, Editorial Office of Acta Petrolei Sinica(Petroleum Processing Section). All right reserved.

Number of references: 16
Main heading: Viscosity
Controlled terms: Emulsions - Emulsification - Heavy oil production - Crude oil - Petroleum transportation - Separation
Uncontrolled terms: Anionic polyacrylamide - Cationic polyacrylamides - Heavy crude oil - Heavy oil-in-water emulsion - Nonionic - Surfactant content - Water separation
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 1.00e+01%, Percentage 9.60e+01%, Percentage 9.80e+01%, Time 1.08e+04s
DOI: 10.3969/j.issn.1001-8719.2018.03.021
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

195. Deformation mode transitions in Cu50Zr50 amorphous/Cu crystalline nanomultilayer: A molecular dynamics study

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Authors: Song, H.Y. (1, 2, 3); Wang, M. (1, 2); Deng, Q. (3); Li, Y.L. (3)
Author affiliation: (1) School of Science, Xi'an University of Posts and Telecommunications, Xi'an; 710121, China; (2) College of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Song, H.Y.(gsfshy@sohu.com)
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Abbreviated source title: J Non Cryst Solids
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ISSN: 00223093
CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: The amorphous/crystalline (A/C) nanomultilayers have been aroused great interest in people due to its first-class mechanical properties. The effects of the thickness of crystalline and amorphous on the deformation mechanism of A/C CuZr/Cu nanomultilayers under tension loading here are investigated by molecular dynamics method. The results indicate that the mechanical behavior of nanomultilayer strongly depends on the bidirectional synergistic deformation mechanism between crystal phase and amorphous phase. The deformation behavior of nanomultilayers can be controlled by integrating the thickness of different phases to achieve high strength and superplastic multilayer materials. For the nanomultilayers with constant crystal layer, the plastic deformation changes from shear band propagation to a pronounced interface slip-accommodation mechanism, and ultimately to crack propagation mode with decreasing amorphous thickness. For the nanomultilayers with fixed amorphous layer thickness, the mechanical behavior changes from localization to plastic co-deformation mode with the crystalline thickness decreases. This study proposes an approach for achieving a good balance between strength and ductility, which is useful for the synthesis of A/C nanomultilayer with high strength and predominant ductility. © 2018 Elsevier B.V.

Number of references: 49
Main heading: Molecular dynamics
Controlled terms: Copper alloys - Crystalline materials - Behavioral research - Binary alloys - Ductility - Zircaloy
Uncontrolled terms: Crystalline interfaces - Mechanical behavior - Molecular dynamics simulations - Nanomultilayers - Size effects

196. N-Donor ligand activation of titanocene for the Biginelli reaction via the imine mechanism   (*Open Access*)

Authors: Zheng, Shaohua (1); Jian, Yajun (1); Xu, Shan (1); Wu, Ya (1, 2); Sun, Huaming (1); Zhang, Guofang (1); Zhang, Weiqiang (1); Gao, Ziwei (1)
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Abstract: The remarkable activation of stable titanocene dichloride (Cp2TiCl2) was achieved using N-donor ligand urea in an alcoholic solvent, leading to the formation of a Ti(iv) species [(MeO)2Ti(NHCONH2)]+, the existence of which was verified by ESI-MS, ESI-MS/MS, and NMR. Catalyzed by the newly formed Ti(iv) species, a myriad of 3,4-dihydropyrimidin-2-(1H)-ones were produced via a three-component Biginelli reaction. Further mechanistic investigation indicated that the Biginelli reaction had taken place via the imine route. © 2018 The Royal Society of Chemistry.

197. A Novel Localization Algorithm Based on Invasive Weed Optimization in Wireless Sensor Networks

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Abstract: Localization is one of the most critical issues in wireless sensor networks (WSNs). An important research direction within localization is to develop schemes by using optimization methods. In this paper, invasive weed optimization (IWO) algorithm is used for the field of WSNs localization. Furthermore, two measures are proposed to improve the performance of algorithm. Firstly, the idea of proactive estimation is put forward and used to narrow down and restrict the feasible solution space, which helps to speed up the global search. Then, an adaptive standard deviation (SD) is presented to replace the constant SD in the original IWO, which helps the algorithm to improve the convergence speed, and make it more exploitive. Results show that the proposed localization algorithm achieves higher accuracy with lower network costs and energy consumption compared to the existing schemes. © 2018 IEEE.

198. Effects of bentonite activation methods on chitosan loading capacity   (*Open Access*)

Accession number: 20180504696613
Authors: Yu, Tao (1); Qu, Chengtun (2); Fan, Daidi (1); Xu, Renjun (3)
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Source title: Bulletin of Chemical Reaction Engineering & Catalysis
Abbreviated source title: Bull. Chem. React. Eng. Catal.
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Publication year: 2018
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Language: English
ISSN: 19782993
Document type: Journal article (JA)
Publisher: Diponegoro University
Abstract: The adsorption capacity of bentonite clay for heavy metal removal from wastewater can be significantly enhanced by a high loading of chitosan on the surface. In order to enhance the chitosan loading, we tested activating bentonite clay by three methods prior to chitosan loading: sulfuric acid, calcination, and microwave treatments. Meanwhile, several parameters during chitosan loading, namely the initial chitosan concentration, stirring speed, reaction time, temperature, and pH value were investigated. Our results indicate that chitosan is attached to bentonite clay through intercalation and surface adsorption according to X-ray Diffraction (XRD), Scanning Eelectron Microscopy (SEM), and Fourier Transform Infrared Spectroscopy (FTIR) analyses. The maximum chitosan loading on 200-mesh raw bentonite clay (126.30 mg/L) was achieved under the following conditions: the initial chitosan concentration of 1000 mg/L, the stirring speed of 200 rpm, pH of 4.9, 60 min of reaction time, and temperature of 30 °C. The chitosan loading was further increased to 256.30, 233.70, and 208.83 mg/g, when using bentonite clay activated through 6 min of microwave irradiation (800 W), 10 % sulfuric acid treatment, and calcinations at 600 °C, respectively. When the chitosan loading was increased from 34.76 to 233.7 mg/g, the removal percentages of Cu(II), Cr(VI), and Pb(II) were improved, respectively from 78.90 to 95.5 %, from 82.22 to 98.74 %, from 60.09 to 86.18 %. Copyright © 2018 BCREC Group. All rights reserved.
Number of references: 28
Main heading: Chemical activation
Controlled terms: Chitosan - Copper compounds - Microwave irradiation - Sulfuric acid - Chromium compounds - Solutions - Fourier transform infrared spectroscopy - Adsorption - Calcination - Heavy metals - Lead compounds - Chemicals removal (water treatment)
Uncontrolled terms: Activation method - Adsorption capacities - Chitosan concentration - Heavy metal removal - Loading capacities - Microwave treatment - Sulfuric acid treatment - Surface adsorption
Classification code: 452.3 Industrial Wastes - 531 Metallurgy and Metallography - 711 Electromagnetic Waves - 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
Numerical data indexing: Mass_Density 1.00e+00kg/m3, Mass_Density 1.26e-01kg/m3, Percentage 1.00e+01%, Percentage 6.01e+01% to 8.62e+01%, Percentage 7.89e+01% to 9.55e+01%, Percentage 8.22e+01% to 9.87e+01%, Power 8.00e+02W, Rotational_Speed 2.00e+02RPM, Temperature 3.03e+02K, Temperature 8.73e+02K, Time 3.60e+02s, Time 3.60e+03s
DOI: 10.9767/bcrec.13.1.1040.14-23
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Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
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199. Re-injection feasibility study of fracturing flow-back fluid in shale gas mining (*Open Access*)

Accession number: 20181304956896
Authors: Kang, Dingyu (1); Xue, Chen (3); Chen, Xinjian (1); Du, Jiajia (1); Shi, Shengwei (1); Qu, Chengtun (1, 2); Yu, Tao (1, 2)
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Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
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Issue title: International Conference on Energy Engineering and Environmental Protection, EEEP 2017 - Energy Technique and Management
Issue date: March 16, 2018
Publication year: 2018
Article number: 052032
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 2nd International Conference on Energy Engineering and Environmental Protection, EEEP 2017
Conference date: November 20, 2017 - November 22, 2017
Conference location: Sanya, China
Conference code: 135344
Publisher: IOP Publishing Ltd
Abstract: Fracturing flow-back fluid in shale gas mining is usually treated by re-injecting into formation. After treatment, the fracturing flow-back fluid is injected back into the formation. In order to ensure that it will not cause too much damage to the bottom layer, feasibility evaluations of re-injection of two kinds of fracturing fluid with different salinity were researched. The experimental research of the compatibility of mixed water samples based on the static simulation method was conducted. Through the analysis of ion concentration, the amount of scale buildup and clay swelling rate, the feasibility of re-injection of different fracturing fluid were studied. The result shows that the swelling of the clay expansion rate of treated fracturing fluid is lower than the mixed water of treated fracturing fluid and the distilled water, indicating that in terms of clay expansion rate, the treated fracturing flow-back fluid is better than that of water injection after re-injection. In the compatibility test, the maximum amount of fouling in the Yangzhou oilfield is 12mg/L, and the maximum value of calcium loss rate is 1.47%, indicating that the compatibility is good. For the fracturing fluid with high salinity in the Yanchang oilfield, the maximum amount of scaling is 72mg/L, and the maximum calcium loss rate is 3.50%, indicating that the compatibility is better. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Fracturing fluids
Controlled terms: Oil fields - Water pollution - Calcium - Hydraulic fracturing - Shale gas - Water treatment
Uncontrolled terms: After-treatment - Compatibility test - Distilled water - Expansion rate - Experimental research - Feasibility studies - Ion concentrations - Static simulations
Classification code: 445.1 Water Treatment Techniques - 453 Water Pollution - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 549.2 Alkaline Earth Metals
Numerical data indexing: Mass_Density 1.20e-02kg/m3, Mass_Density 7.20e-02kg/m3, Percentage 1.47e+00%, Percentage 3.50e+00%
DOI: 10.1088/1755-1315/121/5/052032
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

200. Higher-order partial least squares for predicting gene expression levels from chromatin states (*Open Access*)

Accession number: 20181605017448
Authors: Sun, Shiquan (1, 3); Sun, Xifang (2); Zheng, Yan (1)
Author affiliation: (1) Northwestern Polytechnical University, School of Computer Science, Xi'an, Shaanxi; 710072, China; (2) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) University of Michigan, Department of Biostatistics, Ann Arbor; MI; 48109, United States
Corresponding author: Sun, Shiquan(sqsun@nwpu.edu.cn)
Source title: BMC Bioinformatics
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Volume: 19
Issue date: April 11, 2018
Publication year: 2018
Article number: 113
Language: English
E-ISSN: 14712105
CODEN: BBMIC4
Document type: Journal article (JA)
Publisher: BioMed Central Ltd, United Kingdom
Abstract: Background: Extensive studies have shown that gene expression levels are strongly affected by chromatin mark combinations via at least two mechanisms, i.e., activation or repression. But their combinatorial patterns are still unclear. To further understand the relationship between histone modifications and gene expression levels, here in this paper, we introduce a purely geometric higher-order representation, tensor (also called multidimensional array), which might borrow more unknown interactions in chromatin states to predicting gene expression levels. Results: The prediction models were learned from regions around upstream 10k base pairs and downstream 10k base pairs of the transcriptional start sites (TSSs) on three species (i.e., Human, Rhesus Macaque, and Chimpanzee) with five histone modifications (i.e., H3K4me1, H3K4me3, H3K27ac, H3K27me3, and Pol II). Experimental results demonstrate that the proposed method is more powerful to predicting gene expression levels than several other popular methods. Specifically, our method enable to get more powerful performance on both commonly used criteria, R and RMSE, as high as 1.7% and 11%, respectively. Conclusions: The overall aim of this work is to show that the higher-order representation is able to include more unknown interaction information between histone modifications across different species. © 2018 The Author(s).
Number of references: 34
Main heading: Forecasting
Controlled terms: Gene expression - Least squares approximations - Tensors
Uncontrolled terms: Chromatin states - Gene expression levels - Histone modification - Partial least square (PLS) - Tensor decomposition
Classification code: 461.9 Biology - 921.1 Algebra - 921.6 Numerical Methods
Numerical data indexing: Percentage 1.10e+01%, Percentage 1.70e+00%
DOI: 10.1186/s12859-018-2100-y
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

201. Dual micro-holes-based in-fiber Fabry-Perot interferometer sensor   (*Open Access*)

Accession number: 20190806543747
Title of translation: -
Authors: Zhang, Wei (1); Liu, Ying-Gang (2); Zhang, Ting (2); Liu, Xin (2); Fu, Hai-Wei (2); Jia, Zhen-An (2)
Author affiliation: (1) School of Environmental and Municipal Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China; (2) Key Laboratory of Photoelectric Oil and Gas Logging and Testing, Ministry of Education, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Ying-Gang(ygliu@xsyu.edu.cn)
Source title: Wuli Xuebao/Acta Physica Sinica
Abbreviated source title: Wuli Xuebao
Volume: 67
Issue: 20
Issue date: October 20, 2018

Abstract: A kind of dual micro-holes-based in-fiber Fabry-Perot interferometer sensor is proposed in this paper. The theoretical model of the reflection spectrum of proposed sensor is established based on the interference among four light beams, where both the relationships of the spectrum intensity with the length of micro-hole, refractive index (RI) of medium in cavity, transmission loss and reflection loss, and the characteristic parameters of fiber are demonstrated, and the temperature and RI responses of reflection spectra are also simulated. Through machining two micro-holes in singlemode fiber with 193 nm excimer laser, we fabricate the proposed fiber sensor which can be used for measuring the multi-physical quantities, and the corresponding experiments are demonstrated simultaneously. The results show that the sensor has better linear responses to temperature and RI change, and the corresponding linearity is superior to 99%. Due to having two sets of different temperature and RI sensitivities (i.e. -0.172 nm/ and 1050.700 nm/RIU; 0.004 nm/ and 48.775 nm/RIU) and better linearity, this kind of sensor can be used for measuring the temperature, the ambient RI and even the simultaneous discrimination of temperature and ambient RI. The RI and temperature resolutions are 1.0×10^{-5} RIU and 0.2, respectively. Furthermore, the sensor can also be used for sensing the gas pressure, and its measurement accuracy can reach to. 3 kPa. Owing to its high sensitivity, stability, small volume and easy fabrication, the sensor will be widely used in sensing technology. © 2018 Chinese Physical Society.

Number of references: 26
Main heading: Refractive index
Controlled terms: Fabry-Perot interferometers - Fibers - Excimer lasers
Uncontrolled terms: 193 nm excimer lasers - Fiber Sensor - Measurement accuracy - Physical quantities - Reflection spectra - Spectrum intensity - Temperature resolution - Theoretical modeling
Classification code: 741.1 Light/Optics - 941.3 Optical Instruments
Numerical data indexing: Percentage 9.90e+01%, Pressure 3.00e+03Pa, Size 1.93e-07m
DOI: 10.7498/aps.67.20180528

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

202. Polymer-Assisted Microbial-Enhanced Oil Recovery

Accession number: 20181905151943

Authors: Ke, Cong-Yu (1); Sun, Wu-Juan (1); Li, Yong-Bin (2); Hui, Jun-Feng (3); Lu, Guo-Min (1); Zheng, Xiao-Yan (3); Zhang, Qun-Zheng (1); Zhang, Xun-Li (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Petroleum Production Engineering Research Institute, Huabei Oilfield Company, Renqiu; 062552, China; (3) School of Chemical and Engineering, Northwest University, Xi'an, Shaanxi; 710069, China
Corresponding author: Sun, Wu-Juan(sunwj@xsyu.edu.cn)

Abstract: Uncontrolled flow through different permeability zones in oil reservoirs remains a huge challenge during water flooding, which can significantly limit microbial-enhanced oil recovery (MEOR)) efficiency. The aim of the present work was to use polymer-based plugging to assist MEOR through laboratory simulation and field tests. An indigenous strain HB3 was evaluated under field-relevant conditions. A polymeric HPAM/Cr(III) plugging system was optimized which was also compatible with the microorganism. Laboratory-based simulation demonstrated the selective plugging with HPAM/Cr(III) resulting in enhanced oil recovery more significantly in the low-permeability core, increasing from 12.8% to 47.5%, compared to that in the high-permeability one, from 47.1% to 63.2%. A subsequent microbial injection enhanced the oil recovery further, also with more effective enhancement in the low-permeability core, increasing from 49.5% to 70.0% while from 67.5% to 78.0% in the high-permeability one. The field tests involving two water injection and nine oil production wells confirmed the improvement of deep profile control by polymer-based plugging, resulting in a more uniform distribution of water absorption. With subsequent microbial injection, oil recovery was significantly enhanced, achieving an ultimate recovery of 57.6% and a cumulative oil increment of 3486 t in nine wells over the 7 month field tests. It was demonstrated that the application of polymer-based plugging significantly improved MEOR efficiency, providing a new route for EOR, especially for heterogeneous reservoirs. © 2018 American Chemical Society.

Number of references: 55
Main heading: Enhanced recovery
Controlled terms: Petroleum reservoirs - Petroleum reservoir engineering - Efficiency - Water absorption - Reservoirs (water) - Oil well flooding
Uncontrolled terms: Application of polymers - Deep profile control - Enhanced oil recovery - Heterogeneous reservoirs - Laboratory simulation - Microbial enhanced oil recoveries - Microbial enhanced oil recovery (MEOR) - Uniform distribution
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations - 913.1 Production Engineering
Numerical data indexing: Age 5.83e-01yr, Percentage 1.28e+01% to 4.75e+01%, Percentage 4.71e+01% to 6.32e+01%, Percentage 4.95e+01% to 7.00e+01%, Percentage 5.76e+01%, Percentage 6.75e+01% to 7.80e+01%
DOI: 10.1021/acs.energyfuels.8b00812

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

203. Integrated FPI-FBG composite all-fiber sensor for simultaneous measurement of liquid refractive index and temperature

Accession number: 20183505741925

Authors: Liu, Ying-gang (1); Liu, Xin (1); Zhang, Ting (1); Zhang, Wei (2)
Author affiliation: (1) Key Laboratory of Photoelectricity Gas & Oil Logging and Detecting of Ministry of Education, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Environmental and Municipal Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China
Corresponding author: Liu, Ying-gang(ygliu@xsyu.edu.cn)

Source title: Optics and Lasers in Engineering
Abbreviated source title: Opt Lasers Eng
Volume: 111
Issue date: December 2018
Publication year: 2018
Pages: 167-171
Language: English
ISSN: 01438166
CODEN: OLENDN
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: A miniature and all-optical fiber sensor based on integration of Fabry–Perot interferometer (FPI) and fiber Bragg grating (FBG) is proposed and experimentally demonstrated for simultaneous measurement of refractive index

(RI) and temperature in this paper. The integrated FPI-FBG composite fiber sensor is constructed by manufacturing a micro-hole in FBG, where two parallel reflecting surfaces of micro-hole perform as cavity mirrors of FPI. Experimental results show that the temperature and RI sensitivity of spectral dip wavelength for FPI are -0.189 nm/°C and 1210.490 nm/RIU, respectively. The temperature sensitivity for FBG is 0.011 nm/°C, and the FBG is insensitive to RI. Using these different sensitivities, a matrix can be constructed and used in simultaneous measurement of RI and temperature. The resolutions of 0.1 °C and 1.5×10-5 RIU can be obtained. Owing to compact size in dimensions, the sensor can be used to measure RI and temperature simultaneously in tiny liquid environment. © 2018

204. Kinetic parameter estimation and simulation of trickle-bed reactor for hydrodesulfurization of whole fraction low-temperature coal tar

Authors: Feng, Xian (1); Li, Dong (1); Chen, Junghui (2); Niu, Menglong (3); Liu, Xu (1); Chan, Lester Lik Teck (2); Li, Wenhong (1)
Author affiliation: (1) School of Chemical Engineering, Northwest University, Xi'an; 710069, China; (2) Department of Chemical Engineering, Chung-Yuan Christian University, Chung-Li, Taoyuan; 32023, Taiwan; (3) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Dong(lidong@nwu.edu.cn)

Abstract: With whole-fraction low temperature coal tar (LTCT) as raw material, which boiling point range is 209–514 °C. This paper conducts hydrotreatment (HDT) test for 1176 h on trickle-bed reactor (TBR) with commercial NiMo/Al2O3-SiO2 catalyst. The reaction conditions are as follows: reaction temperature 613–653 K, reaction pressure 10–14 MPa, liquid hourly space velocity (LHSV) 0.2–0.4 h-1, and hydrogen-to-oil volume ratio 1000:1. Considering the short life of coal tar HDT catalyst, a kinetic model of whole-fraction LTCT hydrodesulfurization (HDS) including running time (t1) and catalyst half-life (tc) was established. The kinetic parameter estimation was conducted according to the experimental data, and the results are as follows: activation energy 94965 J/mol, reaction order 1.5, and the relative error of the model is less than 5%. Based on the premise of steady state operation, the HDS reaction happened in the three-phase trickle-bed reactor was simulated by combining the mass transfer, reaction kinetics model and physical property data of LTCT. The results show that the experimental and simulated values of sulphur content at the exit of the reactor are within the error range of 5%. By simulating the whole-fraction LTCT HDS reactor, the pattern of changes in the concentrations of hydrogen sulfide, hydrogen and sulfur in gas, liquid and solid phases according to the length of the reactor were obtained. Based on this, this paper discusses on the impacts of each process parameter and hydrogen sulfide partial pressure on LTCT HDS, and works out the reaction characteristics of whole-fraction LTCT HDS different from crude oil fraction. Finally, this paper analyzes the influence of different process conditions on

internal gradients of catalyst, and concludes the influence of each parameter on effectiveness factor of particle. The increase of temperature, decrease of pressure or increase of LHSV can all cause the decrease of effectiveness factor, wherein the temperature has the most significant effect on the effectiveness factor, followed by LHSV, and pressure has the weakest effect. These findings contribute to a more in-depth understanding of the features and rules of LTCT HDS, and can also give us some guidance for industrial reactor simulation. © 2018 Elsevier Ltd

Number of references: 64
Main heading: Parameter estimation
Controlled terms: Catalysts - Reaction kinetics - Sulfur determination - Temperature - Sulfur - Chemical reactors - Coal - Coal tar - Hydrogen sulfide - Activation energy - Hydrodesulfurization - Mass transfer - Kinetic parameters
Uncontrolled terms: gPROMS - HDS kinetics - In-depth understanding - Liquid hourly space velocity - Low temperature coal tar - Reaction characteristics - Reaction kinetics models - Simulation
Classification code: 411.2 Coal Tar - 524 Solid Fuels - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 641.3 Mass Transfer - 801 Chemistry - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Percentage 5.00e+00%, Time 4.23e+06s
DOI: 10.1016/j.fuel.2018.05.023
Funding Details: Number: 14JF026, Acronym: -, Sponsor: -; Number: 2016KTZDGY08-03, Acronym: -, Sponsor: -; Number: 2016KJXX-32, Acronym: -, Sponsor: -; Number: 21646009, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The financial supports of this work are provided by the National Natural Science Foundation of China (21646009), Shaanxi Province Department of Education Industrialization Training Project (14JF026 ; 15JF031), Shaanxi Province Science and Technology Co-ordination Innovation Project Planned Program (2014KTCL01-09 ; 2016KTZDGY08-03), and Young Science and Technology Star Project of Shaanxi Province (2016KJXX-32).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

205. The strong metric dimension of the power graph of a finite group   (*Open Access*)

Authors: Ma, Xuanlong (1); Feng, Min (2); Wang, Kaishun (3)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Science, Nanjing University of Science and Technology, Nanjing; 210094, China; (3) Sch. Math. Sci. & Lab. Math. Com. Sys., Beijing Normal University, Beijing; 100875, China
Corresponding author: Feng, Min(fengmin@njust.edu.cn)
Abstract: We characterize the strong metric dimension of the power graph of a finite group. As applications, we compute the strong metric dimension of the power graph of a cyclic group, an abelian group, a dihedral group and a generalized quaternion group. © 2017 Elsevier B.V.
Number of references: 30
Main heading: Group theory
Uncontrolled terms: Abelian group - Cyclic group - Dihedral groups - Finite groups - Metric dimensions - Power graphs - Quaternion group - Strong resolving set
Classification code: 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1016/j.dam.2017.12.021
Funding Details: Number: 11701281,2017kJXX-60, Acronym: -, Sponsor: -; Number: 61472471, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 11671043,BK20170817, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province;

Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

206. Combustion characteristics and NOx emission through a swirling burner with adjustable flaring angle   (*Open Access*)

Accession number: 20183605790120
Authors: Zhang, Yafei (1); Luo, Rui (2); Dou, Yihua (1); Zhou, Qulan (3)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Thermal Power Research Institute Co., Ltd., Xi'an; 710032, China; (3) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Dou, Yihua(yhdou@vip.sina.com)
Source title: Energies
Abbreviated source title: Energies
Volume: 11
Issue: 8
Issue date: August 2018
Publication year: 2018
Article number: 2173
Language: English
E-ISSN: 19961073
Document type: Journal article (JA)
Publisher: MDPI AG

Abstract: A swirling burner with a variable inner secondary air (ISA) flaring angle β is proposed and a laboratory scale opposed-firing furnace is built. Temperature distribution and NOx emission are designedly measured. The combustion characteristics affected by variable β are experimentally evaluated from ignition and burnout data. Meanwhile, NOx reduction by the variable β is analyzed through emissions measurements. Different inner/outer primary coal-air concentration ratios γ, thermal loads and coal types are considered in this study. Results indicate that β variation provides a new approach to promote ignition and burnout, as well as NOx emission reduction under conditions of fuel rich/lean combustion and load variation. The recommended β of a swirling burner under different conditions is not always constant. The optimal #opt of the swirling burner under all conditions for different burning performance are summarized in the form of curves, which could provide reference for exquisite combustion adjustment. © 2018 by the authors.

Number of references: 32
Main heading: Ignition
Controlled terms: Nitrogen oxides - Emission control
Uncontrolled terms: Air concentrations - Combustion characteristics - Emissions measurements - Flaring angle - Fuel rich/lean combustion - Load variations - Low load - Swirling burner
Classification code: 451.2 Air Pollution Control - 521.1 Fuel Combustion - 804.2 Inorganic Compounds
DOI: 10.3390/en11082173
Compendex references: YES
Open Access type(s): All Open Access, Gold

207. Cyclic oxidation behaviour of Co/Si co-doped β_NiAl coating on nickel based superalloys

Authors: Meng, Xiaoxia (1); Yuwen, Pei (1); Shao, Wei (1); Qu, Wentao (2); Zhou, Chungen (1)
Author affiliation: (1) Department of Materials Science and Engineering, Beijing University of Aeronautics and Astronautics, Key Laboratory of Aerospace Materials and Performance (Ministry of Education), Beijing; 100191, China; (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhou, Chungen(cgzhou@buaa.edu.cn)
Abstract: Co/Si co-doped β_NiAl coating on nickel based superalloys was prepared using pack cementation method. Microstructure and cyclic oxidation behaviour of the coating were investigated. The weight loss of the coating is less than 3 mg/cm2 after 3200 cycles at 1050 °C. The coating exhibits a good cyclic oxidation resistance. The addition of Si decreases the growth stress in the oxide scale by inhibiting the formation of harmful NiO. The formation of SiO2 particles at the scale/coating interface decreases the growth rate of the Al2O3 scale. Moreover, Si addition promotes the formation of the high Al-content phase β_NiAl. © 2018 Elsevier Ltd
Number of references: 46
Main heading: Superalloys
Controlled terms: Silicon - Alumina - Growth rate - Silica - Aluminum oxide - Oxidation resistance - Aluminum coatings - Nickel alloys - Oxidation - Nickel coatings - Nickel oxide
Uncontrolled terms: Cyclic oxidation - Cyclic-oxidation resistance - Growth stress - High Al content - Ni-al coatings - Nickel- based superalloys - Pack-cementation method - Weight loss
Classification code: 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 548.2 Nickel Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 813.2 Coating Materials
Numerical data indexing: Surface_Density 3.00e-02kg/m2, Temperature 1.32e+03K
DOI: 10.1016/j.corsci.2018.01.032
Compendex references: YES

208. Catalytic hydrogenation of Low temperature coal tar into jet fuel by using two-reactors system

Authors: Gang, Yong (1, 2); Pan, Liuyi (1, 2); Niu, Menglong (3); Zhang, Xu (1); Li, Dong (1, 2); Li, Wenhong (1, 2)
Author affiliation: (1) School of Chemical Engineering, Northwest University, Xi'an; Shaanxi; 710069, China; (2) Shaanxi Research Center of Chemical Engineering Technology for Resource Utilization, Xi'an; 710069, China; (3) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Wenhong(coal723@163.com)

Abstract: The experiment of the jet fuel fraction through hydrogenation was investigated via hydrogenation in two-stage xed beds reactor filled with hydroning catalyst and hydroisomerization catalyst with low-temperature coal tar (LTCT) distillate (-1. The results showed that at a xed pressure (10 MPa), reaction temperature (380 °C), LHSV (0.8 h-1) and the H2/oil ratio of (1600:1), the yield of the jet fuel fraction and the content of saturated hydrocarbons in the prodcuts were 58.0% and 60.7%, respectively. Finally, by GC–MS analysis, cyclanes and i-alkanes were dominant components in the jet fuel fraction, approximately accounting for 63.08% and 20.25%, respectively. © 2018 Elsevier B.V.

Number of references: 42
Main heading: Catalysts
Controlled terms: Hydrogenation - Temperature - Coal tar - Chemical analysis - Coal - Jet fuel
Uncontrolled terms: Carbon number distribution - Catalytic hydrogenation - Experimental conditions - Hydro-isomerization - Liquid hourly space velocity - Low temperature coal tar - Reaction temperature - Saturated hydrocarbons
Classification code: 411.2 Coal Tar - 523 Liquid Fuels - 524 Solid Fuels - 641.1 Thermodynamics - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally
Numerical data indexing: Percentage 2.02e+01%, Percentage 5.80e+01%, Percentage 6.07e+01%, Percentage 6.31e+01%, Pressure 1.00e+07Pa, Temperature 6.53e+02K
DOI: 10.1016/j.jaap.2018.06.009

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

209. Design and Improvement of the Investment Casting Process for the Ring-shaped Aluminum Alloy based on PROCAST software   (*Open Access*)

Accession number: 20183105623843

Authors: Guo, Jukui (1); Li, Yongxin (1); Fu, Jia (2, 3)
Author affiliation: (1) Xi'An Brake Branch, AVIC Aircraft Co. LTD., Xinping; 713106, China; (2) School of Material Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) Material Science and Engineering, Taiyuan University of Science and Technology, Taiyuan; 030024, China
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Advanced Materials, Intelligent Manufacturing and Automation, AMIMA 2018
Conference date: May 23, 2018 - May 26, 2018
Conference location: China
Conference code: 138024
Sponsor: Nanjing University of Information Science and Technology; University of Information Technology
Publisher: IOP Publishing Ltd

Abstract: The investment casting process of a ring-shaped ZL101 alloy is investigated based on PROCAST software, the alloy phase diagram and the thermophysical properties are analyzed. Besides, the initial casting temperature and the casting process were determined. After the analysis of the geometry model and temperature field model during the casting solidification process, results shows as: 1) the shrinkage and porosity is formed at the two sides and bottom end of casting pieces in the initial casting process, while slag inclusion is enriched at the top. 2) To avoid these two kinds of defects, the casting process is optimized and simulated. The simulated result is in compliance with the experiment, the agreement confirm that the improved process is reasonable. 3) The improved casting process is finally designed and the simulation shows that the experiment is in good agreement with the simulation results, which provides the actual guidance for the design of other casting pieces as well. © Published under licence by IOP Publishing Ltd.

Number of references: 19
Main heading: Slags
Controlled terms: Investment casting - Shrinkage - Thermodynamic properties - Aluminum alloys
Uncontrolled terms: Alloy phase diagrams - Casting solidification process - Casting temperatures - Improved process - Investment casting process - Shrinkage and porosities - Simulated results - Temperature field model
Classification code: 534.2 Foundry Practice - 541.2 Aluminum Alloys - 641.1 Thermodynamics - 951 Materials Science
DOI: 10.1088/1757-899X/382/4/042006

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

210. Method for User Interface Development with Perceptual Control Theory Based Task Analysis

Accession number: 20190706505066
Title of translation: PCTBTA

Authors: Li, Juan-Ni (1, 2); Hua, Qing-Yi (1); Wu, Hao (1); Chen, Rui (1); Su, Hui (1); Zhou, Yun (3)
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Corresponding author: Hua, Qing-Yi(huaqy@nwu.edu.cn)

Source title: Ruan Jian Xue Bao/Journal of Software
Abbreviated source title: Ruan Jian Xue Bao
Volume: 29
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Issue date: December 1, 2018
Publication year: 2018
Pages: 3692-3715
Language: Chinese
ISSN: 10009825
CODEN: RUXUEW
Document type: Journal article (JA)
Publisher: Chinese Academy of Sciences

Abstract: Nowadays, a number of methods on model-based user interface development (MBUID) have been applied to deal with the diversity of users, devices, environments, and development platforms in a pervasive computing environment. In general, those methods attempt to specify a user interface once on an abstract level, and to run anywhere by use of model transformation. Due to the limitation of task model used in the current MBUID methods, however, it is still an open question whether the generated user interfaces can meet usability requirements in a divergent context of applications. In this paper, a task model based user interface development framework is proposed for modeling and implementing effective, efficient and satisfactory user interfaces. In order to cope with the usability requirements, a novel perceptual control theory based task analysis (PCTBTA) method is presented to specify the user tasks in a divergent environment, in which the context information is introduced into the task analysis process, and the interaction content is reflected at a higher level of abstraction, providing the task space for usability design. For model transformation, a method is provided for converting PCTBTA task model into a variety of interface models. Finally, a case study is provided to illustrate the feasibility of the proposed method, and the effectiveness of the method is demonstrated by comparing it with other methods in terms of availability and performance. © Copyright 2018, Institute of Software, the Chinese Academy of Sciences. All rights reserved.

Number of references: 28
Main heading: Computation theory
Controlled terms: User interfaces - Control theory - Ubiquitous computing - Usability engineering - Job analysis
Uncontrolled terms: Model based user interface development (MBUID) - Model-based user interface development - Perceptual control - Pervasive computing environment - Task modeling - Usability - Usability requirements - User interface development
Classification code: 461.4 Ergonomics and Human Factors Engineering - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 722.2 Computer Peripheral Equipment - 723.5 Computer Applications - 731.1 Control Systems
DOI: 10.13328/j.cnki.jos.005432

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

211. In situ attenuated total reflection-Fourier transform infrared (ATR-FTIR) spectroscopy combined with non-negative matrix factorization for investigating the synthesis reaction mechanism of 3-amino-4-amino-oxime furazan

Accession number: 20185106267547
Authors: Zhang, Tianlong (1); He, Ting (1); Yan, Chunhua (1); Gao, Xinyu (1); Ma, Junxiu (1); Li, Hua (1, 2)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecular Chemistry, Ministry of Education, College of Chemistry and Material Science, Northwest University, Xi'an; 710069, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Hua(huali@nwu.edu.cn)
Source title: Analytical Methods
Abbreviated source title: Anal. Methods
Volume: 10
Issue: 48
Issue date: December 28, 2018
Publication year: 2018
Pages: 5817-5822
Language: English
ISSN: 17599660
E-ISSN: 17599679
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: In situ attenuated total reflection-Fourier transform infrared (ATR-FTIR) spectroscopy combined with a non-negative matrix factorization (NMF) algorithm was proposed to elucidate the synthesis reaction mechanism of

3-amino-4-amino-oxime furazan (AAOF). An in situ ATR-FTIR fiber was used to monitor the reaction process, and discrete wavelet transform (DWT) was used to preprocess the IR spectra. A subspace comparison method (SCM) was employed to determine the optimal number of components; then the NMF algorithm was applied to decompose the optimal IR spectra into spectral and concentration profiles of the reactants, intermediates and product. Quantum mechanical calculations based on density functional theory (DFT) were applied to simulate the vibrational spectra of the intermediates at the B3LYP/6-31+G(d,p) level, and the calculated spectra were compared to the decomposed spectra of the intermediates involved in the synthesis. The spectra obtained by the NMF algorithm were consistent with quantum mechanical calculations. Finally, a reliable mechanism for the synthesis of AAOF was proposed based on the shifts in the IR bands of the reactants, intermediates and product. The results indicate that the ATR-FTIR technique combined with an NMF algorithm can be used to explore the mechanism of AAOF formation. © 2018 The Royal Society of Chemistry.

Number of references: 28
Main heading: Matrix algebra
Controlled terms: Infrared reflection - Quantum theory - Vibrations (mechanical) - Density functional theory - Electromagnetic wave reflection - Non-negative matrix factorization - Fourier transform infrared spectroscopy
Uncontrolled terms: Attenuated total reflection fourier transform infrared - Calculated spectrum - Comparison methods - Concentration profiles - Non-negative matrix factorization algorithms - Nonnegative matrix factorization - Quantum-mechanical calculation - Synthesis reaction
Classification code: 711 Electromagnetic Waves - 746 Imaging Techniques - 801 Chemistry - 921 Mathematics - 921.1 Algebra - 922.1 Probability Theory - 931.1 Mechanics - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1039/c8ay01924j
Funding Details: Number: -, Acronym: NWU, Sponsor: Northwest University; Number: 17JK0780, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department; Number: 2018JQ2013, Acronym: -, Sponsor: -; Number: 21675123, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The work was supported by the National Natural Science Foundation of China (No. 21873076, 21675123 and 21605123), Natural Science Basic Research Plan in Shaanxi Province of China (No. 2018JQ2013), Scientic Research Plan Projects of Shaanxi Education Department (No. 17JK0780) and Northwest University Graduate Innovation and Creativity Funds (No. YZZ17126).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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212. Adsorption of 3d transition metal atoms on graphene-like gallium nitride monolayer: A first-principles study

Accession number: 20181104901773
Authors: Chen, Guo-Xiang (1); Li, Han-Fei (1); Yang, Xu (1); Wen, Jun-Qing (1); Pang, Qing (2); Zhang, Jian-Min (3)
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Corresponding author: Chen, Guo-Xiang(guoxchen@xsyu.edu.cn)
Source title: Superlattices and Microstructures
Abbreviated source title: Superlattices Microstruct
Volume: 115
Issue date: March 2018
Publication year: 2018
Pages: 108-115
Language: English
ISSN: 07496036
E-ISSN: 10963677
CODEN: SUMIEK
Document type: Journal article (JA)
Publisher: Academic Press
Abstract: We study the structural, electronic and magnetic properties of 3d transition metal (TM) atoms (Cr, Mn, Fe, Co, Ni and Cu) adsorbed GaN monolayer (GaN-ML) using first-principles calculations. The results show that, for 6 different TM adatoms, the most stable adsorption sites are the same. The adsorption of TM atoms results in significant lattice distortions. A covalent chemical bonding character between TM adatom and GaN-ML is found in TM adsorbed systems. Except for Ni adsorbed system, all TM adsorbed systems show spin polarization implying that the adsorption

of TM induces magnetization. The magnetic moments of the adsorbed systems are concentrated on the TM adatoms and the nearest-neighbor N atoms of the adsorption site contributed slightly. Our analysis shows that the GaN-ML properties can be effectively modulated by TM adsorption, and exhibit various electronic and magnetic properties, such as magnetic metals (Fe adsorption), half-metal (Co adsorption), and spin gapless semiconductor (Cu adsorption). These present properties of TM adsorbed GaN-ML may be of value in electronics and spintronics applications. © 2018 Elsevier Ltd

Number of references: 43
Main heading: Density functional theory
Controlled terms: Gallium nitride - Magnetic properties - Spin polarization - Atoms - Magnetic moments - Monolayers - Chemical bonds - Copper compounds - Nickel - Adatoms - Electronic structure - Calculations - Graphene - Iron compounds - Wide band gap semiconductors - III-V semiconductors - Adsorption - Chromium compounds - Cobalt compounds - Manganese compounds
Uncontrolled terms: 3d transition metals - Covalent chemical bonding - Electronic and magnetic properties - First-principles calculation - First-principles study - Lattice distortions - Spintronics application - Stable adsorption
Classification code: 548.1 Nickel - 701.2 Magnetism: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 761 Nanotechnology - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 921 Mathematics - 922.1 Probability Theory - 931.1 Mechanics - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 932.1 High Energy Physics
DOI: 10.1016/j.spmi.2018.01.023
Funding Details: Number: 11247228,11304246, 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 11247228), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Natural Science Basic Research Plan in Shaanxi Province of China (Grant no. 2014JQ6206).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

213. Determination of coal properties using laser-induced breakdown spectroscopy combined with kernel extreme learning machine and variable selection

Accession number: 20184906204537
Authors: Yan, Chunhua (1); Qi, Juan (1); Liang, Jing (1); Zhang, Tianlong (1); Li, Hua (1, 2)
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Abstract: Rapid and online analysis of coal properties is extremely important for reasonable and clean utilization of coal. In this study, laser-induced breakdown spectroscopy (LIBS) was applied for analysis of coal properties. The kernel extreme learning machine (K-ELM) method was used to establish a nonlinear model, and particle swarm optimization (PSO) was used as the variable selection method to eliminate useless information and improve prediction ability of the model. The influence of different pretreatment methods was also investigated by 10-fold cross validation (CV); moreover, based on the optimal pretreatment method, three K-ELM models with full spectra, characteristic lines and PSO were developed and compared for predicting ash content, volatile matter content and calorific value of coal. The root mean squared error of cross-validation (RMSECV), correlation coefficient of cross-validation (RCV), root mean square error of prediction (RMSEP) and correlation coefficient of prediction (RP) were used to evaluate

model performance; the corresponding RMSEP and RP values were 1.8957% and 0.9936 for ash content based on the K-ELM model with characteristic lines, 1.0874% and 0.9945 for volatile matter, and 0.6999 MJ kg-1 and 0.9872 for calorific value based on the K-ELM model with PSO. The results demonstrate that LIBS coupled with K-ELM and variable selection is a promising technique for rapid analysis of coal properties, and it will also be helpful for effective, clean utilization of traditional energy sources. © 2018 The Royal Society of Chemistry.

Number of references: 39
Main heading: Forecasting
Controlled terms: Mean square error - Calorific value - Knowledge acquisition - Atomic emission spectroscopy - Machine learning - Coal - Particle swarm optimization (PSO)
Uncontrolled terms: 10-fold cross-validation - Characteristic lines - Correlation coefficient - Extreme learning machine - Laserinduced breakdown spectroscopy (LIBS) - Root mean squared errors - Root-mean-square error of predictions - Variable selection methods
Classification code: 524 Solid Fuels - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 921.5 Optimization Techniques - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 1.09e+00%, Percentage 1.90e+00%, Specific_Energy 7.00e+05J/kg
DOI: 10.1039/c8ja00284c
Funding Details: Number: 2018JQ2013, Acronym: -, Sponsor: -; Number: 21375105,21605123,21675123,21873076, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NWU, Sponsor: Northwest University; Number: 17JK0780, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 21873076, 21675123, 21605123 and 21375105), Natural Science Basic Research Plan in Shaanxi Province of China (No. 2018JQ2013), Scientic Research Plan Projects of Shaanxi Education Department (No. 17JK0780) and Northwest University Graduate Innovation and Creativity Funds (No. YZZ17126).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

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214. The Design and Implementation of Multi-Precision Floating Point Arithmetic Unit Based on FPGA

Accession number: 20182805538398
Authors: Kang, Lei (1); Wang, Cailing (1)
Author affiliation: (1) Xian Shiyou University, Shaanxi Province,7, Xian; 10065, China
Source title: Proceedings - 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Abbreviated source title: Proc. - Int. Conf. Intell. Transp., Big Data Smart City, ICITBS
Volume: 2018-January
Part number: 1 of 1
Issue title: Proceedings - 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Issue date: April 5, 2018
Publication year: 2018
Pages: 587-591
Language: English
ISBN-13: 9781538642016
Document type: Conference article (CA)
Conference name: 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Conference date: January 25, 2018 - January 26, 2018
Conference location: Xiamen, China
Conference code: 135790
Sponsor: Communication Research Institute of Changsha University of Science and Technology; Cooperative Vehicle Infrastructure System; et al.; Hunan Key Laboratory of Smart Highway; St. John's University; Xiamen University Tan Kah Kee College
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Floating point arithmetic is very important in digital signal processing. It's usually to select different precision floating point numbers among various kinds of engineering application, this makes the floating point arithmetic unit capable of operating on different precision floating point numbers. The rapid development of FPGA technology provides the possibility for the flexible design of floating point arithmetic. This paper describes the process of building a

general floating point arithmetic unit using Verilog HDL based on FPGA. The floating point arithmetic unit can perform addition and subtraction operations of a couple of double precision floating point numbers or two couple of single precision floating point numbers. At the end of this paper, the features and calculation correctness are proved through simulation and hardware experiments. © 2018 IEEE.

Number of references: 6
Main heading: Field programmable gate arrays (FPGA)
Controlled terms: Precision engineering - Digital signal processing - Integrated circuit design - Digital arithmetic
Uncontrolled terms: addition and subtraction - Design and implementations - Engineering applications - Hardware experiment - IEEE-754 - Multi precision - Precision floating point - Single precision
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 721.2 Logic Elements - 921.6 Numerical Methods
DOI: 10.1109/ICITBS.2018.00154
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

215. Enhanced photoluminescence properties of Al doped ZnO films (*Open Access*)

Accession number: 20180904831254
Authors: Chen, H.X. (1); Ding, J.J. (1)
Author affiliation: (1) College of Science, Xian Shiyou University, Xian, Shaanxi; 710065, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 292
Part number: 1 of 1
Issue: 1
Issue title: 2nd International Conference on New Material and Chemical Industry, NMCI 2017
Issue date: February 5, 2018
Publication year: 2018
Article number: 012103
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2nd International Conference on New Material and Chemical Industry, NMCI 2017
Conference date: November 18, 2017 - November 20, 2017
Conference location: Sanya, China
Conference code: 134405
Publisher: IOP Publishing Ltd
Abstract: Al doped ZnO films are fabricated by radio frequency magnetron sputtering. In general, visible emission is related to various defects in ZnO films. However, too much defects will cause light emission quench. So it is still a controversial issue to control appropriate defect concentrations. In this paper, based on our previous results, appropriate Al doping concentration is chosen to introduce more both interstitial Zn and O vacancy defects, which is responsible for main visible emission of ZnO films. A strong emission band located at 405 nm and a long tail peak is observed in the samples. As Al is doped in ZnO films, the intensity of emission peaks increases. Zn interstitial might increase with the increasing Al^{3+} substitute because ZnO was a self-assembled oxide compound. So Zn interstitial defect concentration in Al doped ZnO films will increase greatly, which results in the intensity of emission peaks increases. © 2018 Published under licence by IOP Publishing Ltd.
Number of references: 13
Main heading: Zinc oxide
Controlled terms: Magnetron sputtering - Metallic films - Aluminum - Semiconductor doping - II-V semiconductors - Zinc
Uncontrolled terms: Al-doped zno films - Defect concentrations - Intensity of emission - Oxide compounds - Photoluminescence properties - Radio frequency magnetron sputtering - Visible emissions - Zn-interstitial
Classification code: 541.1 Aluminum - 546.3 Zinc and Alloys - 712.1 Semiconducting Materials - 804.2 Inorganic Compounds
Numerical data indexing: Size 4.05e-07m
DOI: 10.1088/1757-899X/292/1/012103

Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

216. Investigation on photoluminescence emission of (reduced) graphene oxide paper (*Open Access*)

Accession number: 20180904831465
Authors: Ding, J.J. (1); Chen, H.X. (1); Feng, D.Q. (1); Fu, H.W. (1)
Author affiliation: (1) College of Science, Xian Shiyou University, Xian, Shaanxi; 710065, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 292
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Issue: 1
Issue title: 2nd International Conference on New Material and Chemical Industry, NMCI 2017
Issue date: February 5, 2018
Publication year: 2018
Article number: 012097
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2nd International Conference on New Material and Chemical Industry, NMCI 2017
Conference date: November 18, 2017 - November 20, 2017
Conference location: Sanya, China
Conference code: 134405
Publisher: IOP Publishing Ltd
Abstract: In order to contrastively investigate optical properties of graphene oxide (GO) and reduced graphene oxide (rGO) paper, GO is prepared by improved Hummer method and controlled reduced using hydration hydrazine to obtain good dispersive rGO in organic solvent. Finally, GO and rGO paper are obtained by vacuum filtration method. Samples morphology and optical properties are analyzed by scanning electron microscopy (SEM) images, Raman spectra, absorbance spectra and photoluminescence (PL) spectra. Results indicate that there are large numbers of localized states in both GO and rGO paper, and optical gaps of two samples are 0.62 eV. In PL spectra of GO paper, we observe three emission peaks at 565, 578 and 608 nm, respectively whose intensity decreases evidently after reduced, which is due to the decrease of oxide functionalized groups and expansion of sp2 clusters. PL emission will gradually decrease during GO are reduced. © 2018 Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Optical properties
Controlled terms: Paper - Nitrogen compounds - Photoluminescence - Scanning electron microscopy - Graphene
Uncontrolled terms: Absorbance spectrum - Graphene oxide papers - Localized state - Photoluminescence emission - Photoluminescence spectrum - Reduced graphene oxides (RGO) - Scanning electron microscopy image - Vacuum filtration
Classification code: 741.1 Light/Optics - 761 Nanotechnology - 804 Chemical Products Generally - 811.1 Pulp and Paper
Numerical data indexing: Electron_Volt 6.20e-01eV, Size 5.78e-07m, Size 6.08e-07m
DOI: 10.1088/1757-899X/292/1/012097

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

217. Study on Application of Visualization in Optimum Structural Design

Accession number: 20190706499374
Authors: Sun, Yuhong (1)
Author affiliation: (1) Xi'An Shiyou University, China
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Source title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Abbreviated source title: Proc. - Int. Conf. Smart Grid Electr. Automation, ICSGEA
Part number: 1 of 1
Issue title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Issue date: October 18, 2018
Publication year: 2018
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Article number: 8498301
Language: English
ISBN-13: 9781538669532
Document type: Conference article (CA)
Conference name: 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Conference date: June 9, 2018 - June 10, 2018
Conference location: Changsha, China
Conference code: 141421
Sponsor: Central South University; Communications Research Institute of Changsha University of Science and Technology; Department of Urban Management, Hunan City College; Hongkong Intelligent Computation Technology and Automation Association
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Scientific visualization technology used in the area of optimum structural design is discussed. A software platform is taken for example to elaborate the concrete method of realizing visualization in the optimum structural design of the antenna structure. As for the visualization platform, the main frame, the implementation process, the data structure and key technology are concerned in this paper. It is of great reference value in different areas of engineering optimization design, and it is helpful for engineers to do different specific work to realize visualization technology in their own optimum design. © 2018 IEEE.
Number of references: 6
Main heading: Data visualization
Controlled terms: Antennas - Structural design - Structural optimization - Visualization
Uncontrolled terms: Antenna structures - Engineering optimization design - Implementation process - Optimum structural design - Reference values - Software platforms - Visualization platforms - Visualization technologies
Classification code: 408.1 Structural Design, General - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 921.5 Optimization Techniques
DOI: 10.1109/ICSGEA.2018.00042
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

218. Multi-users Coordinated Sharing Grid Resource Management System (*Open Access*)

Accession number: 20185206315916
Authors: Wang, Zheng (1); Dong, Mei (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Foreign Languages, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Wang, Zheng(wangzheng@xsyu.edu.cn)
Source title: MATEC Web of Conferences
Abbreviated source title: MATEC Web Conf.

Volume: 246
Part number: 1 of 1
Issue title: 2018 International Symposium on Water System Operations, ISWSO 2018
Issue date: December 7, 2018
Publication year: 2018
Article number: 03039
Language: English
ISSN: 22747214
E-ISSN: 2261236X
Document type: Conference article (CA)
Conference name: 1st International Symposium on Water System Operations, ISWSO 2018
Conference date: October 16, 2018 - October 20, 2018
Conference location: Beijing, China
Conference code: 143365
Publisher: EDP Sciences

Abstract: The fundamental task of grid resource management system is to supply on-demand resources service for various users and applications by aggregate heterogeneous, dynamic and increase resource. Most current grid resource management system is exclusive which brings two sides of deficiency distinctively. We bring forward and realize a multi-user coordinated sharing resource management system, which is a utility oriented resource management system to support resources sharing by multi users or multi workload schedulers, thus extendable resource serving capability can be improved. When the system is used in an "intelligent building" and "intelligent community", the IT cost of the community enterprises can be reduced significantly. © The Authors, published by EDP Sciences, 2018.

Number of references: 9
Main heading: Intelligent buildings
Controlled terms: Economics - Natural resources management - Resource allocation
Uncontrolled terms: Grid resource management - Intelligent community - Multi-user - On demands - Resource management systems - Resources sharing - Sharing resources
Classification code: 402 Buildings and Towers - 723.5 Computer Applications - 731.1 Control Systems - 912.2 Management - 971 Social Sciences
DOI: 10.1051/matecconf/201824603039
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

219. Calculation of friction factors and downhole weight on bit using analytical model of torque and drag

Accession number: 20184405995990
Authors: Wu, Zebing (1); Guo, Longlong (1); El Mokhtari, Adnane (1); Pan, Yujie (1); Wang, Yongyong (1); Zhang, Shuai (1); Wang, Wenjuan (1); Lv, Lantao (1)
Author affiliation: (1) Xi'an Shiyou University, xi'an, Shanxi, China
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: 8
Volume title: Polar and Arctic Sciences and Technology; Petroleum Technology
Part number: 9 of 13
Issue title: ASME 2018 37th International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2018
Issue date: 2018
Publication year: 2018
Report number: OMAE2018-78694
Language: English
CODEN: PIOSEB
ISBN-13: 9780791851296
Document type: Conference article (CA)
Conference name: ASME 2018 37th International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2018
Conference date: June 17, 2018 - June 22, 2018

Conference location: Madrid, Spain
Conference code: 140007
Sponsor: Ocean, Offshore and Arctic Engineering Division
Publisher: American Society of Mechanical Engineers (ASME), United States

Abstract: To maintain high rate of penetration (ROP) and to realize automatic drilling, it is necessary to monitor and control the weight on bit (WOB). Generally, the WOB is measured at the wellhead, and it is called surface WOB (SWOB). During directional drilling, there is big difference between the SWOB and downhole WOB (DWOB). In this paper, an analytical model for torque and drag of the drillstring is developed to calculate the DWOB. When building the model, the well profiles are separated to two categories, including straight section and curved section. Moreover, for the curved section, the azimuth and inclination of a well are considered while modeling, adequately. Based on a set of field tests, the friction factors and DWOB are calculated. The results indicate that there is a good match in value and trend between the data calculated and the one measured. In practice, the model can be used to predict and adjust the DWOB in autodriller system for real-time drilling monitoring. In addition, the model can also be applied to estimate downhole conditions and diagnose drilling status. © 2018 ASME.

Number of references: 17
Main heading: Analytical models
Controlled terms: Infill drilling - Friction - Drag - Offshore oil well production - Arctic engineering - Directional drilling
Uncontrolled terms: Automatic drilling - Downhole conditions - Friction factors - Monitor and control - Real time drilling - Torque and drags - Weight on bits - Well profile
Classification code: 511.1 Oil Field Production Operations - 921 Mathematics
DOI: 10.1115/OMAE2018-78694

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

220. A comparative research of microwave, conventional-heating, and microwave/chemical demulsification of tahe heavy-oil-in-water emulsion

Accession number: 20182405304731
Authors: Sun, N.N. (1); Jiang, H.Y. (1); Wang, Y.L. (1); Qi, A.J. (1)
Author affiliation: (1) Petroleum Engineering College, Xi'an Shiyou University, China
Source title: SPE Production and Operations
Abbreviated source title: SPE Prod. Oper.
Volume: 33
Issue: 2
Issue date: May 2018
Publication year: 2018
Pages: 371-381
Language: English
ISSN: 19301855
Document type: Journal article (JA)
Publisher: Society of Petroleum Engineers (SPE)

Abstract: We consider the emulsion stabilized by organic base and compound surfactants too stable to separate automatically. To obtain an efficient demulsification technique, the influences of microwave-radiation, conventional-heating, and microwave/chemical methods on the demulsification of heavy-oil-in-water (O/W) emulsions were investigated separately. The results showed that as microwaveradiation time increased, the water-separation rate increased initially and then decreased; with increasing microwave-radiation power, the water-separation rate increased sharply first and then increased moderately; and for both microwave and conventional heating, a higher temperature did not imply a better demulsification effect. In addition, the demulsification efficiency was higher and the separated water was clearer by use of the microwave/chemical approach, which needs less demulsifier in a shorter time for O/W emulsion. © 2018 Society of Petroleum Engineers.

Number of references: 26
Main heading: Demulsification
Controlled terms: Heavy oil production - Emulsions - Microwaves - Microwave heating - Crude oil - Emulsification

221. Calculation of active source Rayleigh wave phase velocity by Aki's spectral formula

Authors: Li, Xinxin (1); Fang, Hongping (2)
Author affiliation: (1) Xi'an Shiyou University; (2) China Communications Construction Company
Corresponding author: Li, Xinxin
Abstract: Rayleigh surface wave survey is an effective, nondestructive method for near-surface structure detection. One of the critical steps in Rayleigh wave imaging is obtaining accurate phase velocities in different frequencies. In this study, we propose to calculate phase velocities by Aki's spectral formula which was originally derived in the microtremors spatial autocorrelation theory by Aki (1957). We first introduce the formula and explain the feasibility and applicability for this formula using in active-source Rayleigh wave survey. Then synthetic data of three models are used to calculate phase velocities and show the correctness of the proposed algorithm. Finally, a real-world shot-gather with poor data quality and bad traces are utilized to generate a dispersive energy, and phase velocities calculated by Aki's spectrum formula are compared with the dispersive energy, the results of the real-world example demonstrates that the Aki's spectral formula algorithm can fast estimate the phase velocities of Rayleigh wave and provides a tool of cross-checking the generated dispersive energy with low resolution. © 2018 SEG

222. Advances in the origin of overpressures in sedimentary basins   (*Open Access*)

Authors: Zhao, Jingzhou (1, 2); Li, Jun (1, 2); Xu, Zeyang (1, 2)
Author affiliation: (1) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Shaanxi; 710065, China; (2) School of Earth Sciences and Engineering, Xi'an Shiyou University, Shaanxi; 710065, China
Corresponding author: Li, Jun(lijun@xsyu.edu.cn)

Abstract: Much progress in the studies on overpressuring mechanisms has been made during the past one to two decades. (1) The causes of overpressure are divided into five categories, namely, disequilibrium compaction, fluid expansion, diagenesis, tectonic compression and pressure transfer. The fluid expansion involves hydrocarbon generation, oil cracking to gas and hydrothermal expansion. The diagenesis includes smectite-to-illite transformation. (2) Six methods for identifying overpressure origin are proposed, including log curves combination analysis, Bowers method (loading-unloading diagram), velocity-density crossplotting, correlation of porosities, pressure calculation and correlation, and comprehensive analyses. (3) With more and more application of empirical methods in the study of overpressure formation, almost all of the overpressure cases that are traditionally thought to be caused by disequilibrium compaction are denied totally or partly. Instead, the hydrocarbon generation is demonstrated to be the most significant mechanism for overpressure formation; the clay diagenesis (especially the smectite-illite transformation) as well as tectonic compression and pressure transfer are also important for overpressure formation. In addition, the overpressure formation in many basins is thought to be influenced by the combination of two or more overpressuring mechanisms. (4) Causes of overpressuring differ in lithology; for mudstones, the overpressure formation in source rocks is usually different from that of non-source rocks, the former of which is frequently related to hydrocarbon generation and sometimes also affected by diagenesis, while the later of which is commonly related to disequilibrium compaction, diagenesis and pressure transfer; for permeable rocks such as sandstones, overpressure is mainly caused by pressure transfer. (5) Because organic matter has an obvious influence on logging parameters such as density and acoustic velocity, an appropriate correction on the content of organic matter is needed when these logging data are used to analyze overpressure formation in organic-rich mudstones. It has been revealed that the cause of overpressuring based on the corrected log data can be quite different from that without correction. © 2018 Chinese Petroleum Society

Number of references: 92
Main heading: Lithology
Controlled terms: Acoustic wave velocity - Biogeochemistry - Carbonates - Clay minerals - Compaction - Hydrocarbons - Sedimentary rocks - Sedimentology - Tectonics - Unloading
Uncontrolled terms: Analysis method - Disequilibrium compaction - Empirical method - Fluid expansion - Organic matter correction - Overpressure - Overpressure formation - Pressure transfer - Theoretical analyse method - Undercompaction
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 691.2 Materials Handling Methods - 751.1 Acoustic Waves - 801.2 Biochemistry - 804.1 Organic Compounds - 804.2 Inorganic Compounds
DOI: 10.1016/j.ptlrs.2018.03.007

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

223. Study on Energy Analysis of Drilling Rig and Energy Storage Supercapacitor Configuration   (*Open Access*)

Accession number: 20191306703290
Authors: Peng, Yong (1); Liu, Yibing (1); Xia, Shengyong (1)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 452
Part number: 4 of 4
Issue: 4
Issue title: 2018 3rd International Conference on Insulating Materials, Material Application and Electrical Engineering - Electrical Engineering and Automation
Issue date: December 13, 2018
Publication year: 2018
Article number: 042128
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2018 3rd International Conference on Insulating Materials, Material Application and Electrical Engineering, IMMAEE 2018
Conference date: September 15, 2018 - September 16, 2018
Conference location: Melbourne, VIC, Australia
Conference code: 146105
Publisher: IOP Publishing Ltd
Abstract: It is an effective approach for recycling the energy during the process of lowering drill string and casing to reduce the cost of the oil drilling rig lifting system. In the present work, for the multi-model drilling rig, the total energy recovery and energy-saving ratio are calculated with considering the effect of hook without loading. The total energy recovery and energy-saving ratio is significantly increased when hook without loading is considered. Employing the supercapacitor, an automatic energy storage system is designed, and the control strategy of this system is discussed. The energy of lowering drill string and hook without loading is recycled for the energy replenish of lifting drill string and hook without loading. The selection and analysis of the supercapacitor in the system configuration must take into consideration the quantity, volume, quality, and the utilization of the supercapacitor at the same time, selecting the suitable capacity of the supercapacitor for reducing the cost of drilling effectively. © 2018 Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Quality control
Controlled terms: Cost benefit analysis - Cost reduction - Energy conservation - Supercapacitor - Recycling - Drills - Loading - Drill strings - Hooks - Infill drilling
Uncontrolled terms: Control strategies - Effective approaches - Energy analysis - Energy storage systems - Lifting systems - Oil-drilling rig - System configurations - Total energy recoveries
Classification code: 452.3 Industrial Wastes - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 525.2 Energy Conservation - 603.2 Machine Tool Accessories - 691.2 Materials Handling Methods - 704.1 Electric Components - 911 Cost and Value Engineering; Industrial Economics - 912.2 Management - 913.3 Quality Assurance and Control
DOI: 10.1088/1757-899X/452/4/042128
Funding Details: Number: 2011AA040401, Acronym: -, Sponsor: -;
Funding text: The work was supported by a grant from the National High Technology Research and Development Program of China (863 Program) [2011AA040401].
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

224. Research on customer credit demand forecasting based on big data analysis

Accession number: 20184706125903
Authors: Zhang, Han (1); Wang, Kuisheng (1)
Author affiliation: (1) Xi'an Shiyou University, P.O. Box 710065, Xi'an, China

Corresponding author: Zhang, Han(247441772@qq.com)
Source title: ACM International Conference Proceeding Series
Abbreviated source title: ACM Int. Conf. Proc. Ser.
Part number: 1 of 1
Issue title: Proceedings of 2nd International Conference on Computer Science and Application Engineering, CSAE 2018
Issue date: October 22, 2018
Publication year: 2018
Article number: a28
Language: English
ISBN-13: 9781450365123
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Science and Application Engineering, CSAE 2018
Conference date: October 22, 2018 - October 24, 2018
Conference location: Hohhot, China
Conference code: 141755
Sponsor: Association for Science and Engineering (ASciE)
Publisher: Association for Computing Machinery, 2 Penn Plaza, Suite 701, New York, NY 10121-0701, United States

Abstract: With1 the rapid development of the Internet, Internet credit business has emerged and the process is now booming. As a result, there is a problem of predicting credit demand of users. Therefore, we propose a method of using big data analysis to forecast the credit demand of users in this paper, which is used to reduce the risk of credit business and improve the utilization of funds. © 2018 Association for Computing Machinery. ACM.

Number of references: 10
Main heading: Big data
Controlled terms: Decision trees - Information analysis - K-means clustering - Forecasting - Risk assessment
Uncontrolled terms: Credit demand - Customer credits - Demand forecasting - Feature extraction algorithms - Gradient boosting
Classification code: 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 914.1 Accidents and Accident Prevention - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
DOI: 10.1145/3207677.3277994
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

225. Investigation on automatic recognition of stratigraphic lithology based on well logging data using ensemble learning algorithm

Accession number: 20190306387586
Authors: Gong, Ke (1); Ye, Zhihui (1); Chen, Dong (1); Zhu, Dandan (1); Wang, Wanting (2)
Author affiliation: (1) China University of Petroleum, China; (2) Xi'an Shiyou University, China
Source title: Society of Petroleum Engineers - SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Abbreviated source title: Soc. Pet. Eng. - SPE Asia Pac. Oil Gas Conf. Exhib., APOGCE
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Issue date: 2018
Publication year: 2018
Report number: SPE-192006-MS
Language: English
ISBN-13: 9781613995952
Document type: Conference article (CA)
Conference name: SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Conference date: October 23, 2018 - October 25, 2018
Conference location: Brisbane, QLD, Australia
Conference code: 143432
Publisher: Society of Petroleum Engineers

Abstract: The automation of lithology identification based on natural gamma, resistivity, neutron density and other well logging data is an important step to perform intelligent drilling/geo-steering. The current identification of lithology normally is based on the statistical results of the previous well logging data or on empirical methods, which may not be efficient or accurate. Therefore, a machine learning method is introduced here to improve the efficiency and accuracy of lithologic identification. With the development of a classification algorithm, the ensemble learning method becomes more influential since it can compensate the weak learning algorithm by using multiple learning algorithms to obtain better performance. The present research tries to identify different strata in complex sedimentary environment underground during the drilling process with a typical integrated learning method, the Adaboost algorithm, based on three wells in the Daan section, Longqian area of China. Typical single classification algorithms are used to identify the lithology, such as decision trees, SVMs (Support Vector Machines), and Bayes, etc. Comparing the results of single classifiers, the results of ensemble learning algorithm performed better than the selected single classifier. As such, the accuracy rate of lithology prediction can be increased from 66% to 90%. Copyright 2018, Society of Petroleum Engineers.
Number of references: 47
Main heading: Lithology
Controlled terms: Gasoline - Oil well logging - Infill drilling - Neutron logging - Stratigraphy - Decision trees - Adaptive boosting - Support vector machines
Uncontrolled terms: Automatic recognition - Classification algorithm - Ensemble learning algorithm - Lithologic identification - Lithology identification - Machine learning methods - Multiple learning algorithms - Sedimentary environment
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 723 Computer Software, Data Handling and Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
Numerical data indexing: Percentage 6.60e+01% to 9.00e+01%
DOI: 10.2118/192006-ms
Funding Details: Number: -, Acronym: CAS, Sponsor: Chinese Academy of Sciences;
Funding text: This paper is supported by the Strategic Priority Research Program of the Chinese Academy of Sciences, Grant No. XDA14040402.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

226. Can water-alternating-solvent injection be an option for efficient heavy-oil recovery?: An experimental analysis for different reservoir conditions

Accession number: 20182705409012
Authors: Babadagli, T. (1, 2); Cao, N. (2)
Author affiliation: (1) Xi'an Shiyou University, China; (2) University of Alberta, Canada
Corresponding author: Babadagli, T.(tayfun@ualberta.ca)
Abstract: We performed a set of experiments on vertically situated sandpack models. Different slug sizes of water and solvent (heptane used in the experiments) were tested for 2000 cp heavy-oil. As a benchmark, tests were also performed for 14 cp light oil for comparative analysis. In addition to the technical feasibility, an economic analysis was performed considering the amount of solvent injected and oil and solvent recovered. Experiments were repeated for oil-wet systems. For both light and heavy oils, starting the process with the solvent was feasible in the short run technically and economically. If the process starts with water, excess amount of it occupies the largest pores and hinders solvent-oil interaction for mixing and oil displacement. This was true especially if the rock is oil-wet and oil is heavy, which yielded faster recovery and higher ultimate recovery than the water-wet case. The time for switching to solvent injection is more critical in the heavy-oil case as it is more sensitive to the amount of existing water in the system. As oil becomes heavier and if the rock is water-wet, starting the process with waterflooding is not suggested. In this case,

more solvent needs to be injected in the first cycle compared to oil-wet systems. Due to partial miscibility and more gravity stable nature, solvent retrieval and sweep with water can be more effective in case of heavy-oil compared to light oil (fully miscible case) and, as a result, can be even more profitable. This is highly critical in exploitation of heavy-oil reservoirs if thermal options are limited and greenhouse gas emission is a concern. © 2018 Elsevier B.V.

Number of references: 18
Main heading: Solvents
Controlled terms: Economic analysis - Crude oil - Greenhouse gases - Petroleum reservoir engineering - Petroleum reservoirs - Recovery - Heavy oil production
Uncontrolled terms: Comparative analysis - Experimental analysis - Heavy oil recovery - Heavy oil reservoirs - Injection sequence - Partial miscibility - Reservoir conditions - Solvent injection
Classification code: 451.1 Air Pollution Sources - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 911.2 Industrial Economics
DOI: 10.1016/j.petrol.2018.06.046

This paper is an improved version of the paper (SPE-KSA-95) presented at the SPE Kingdom of Saudi Arabia Annual Technical Symp. and Exh. held in Dammam, Saudi Arabia, 23–26 Apr. 2018. Appendix Produced fluid compositions for different injection sequences of water and solvent (heptane): Fig. A1 Composition of the produced fluid for the base case (water injection) followed by heptane and water. Fig. A1 Fig. A2 Composition of the produced fluid for the base case (heptane injection) followed by single slug of water. Fig. A2 Fig. A3 Composition of the produced fluid for the base case (water injection) followed by heptane and water. Fig. A3 Fig. A4 Composition of the produced fluid for the base case (heptane injection) followed by single slug of water. Fig. A4 Fig. A5 Composition of the produced fluid for the heptane-water (15-15) case. Fig. A5 Fig. A6 Composition of the produced fluid for the heptane-water (5–10) case. Fig. A6 Fig. A7 Composition of the produced fluid for the heptane-water (10-10) case. Fig. A7 Fig. A8 Composition of the produced fluid for the water-heptane (10–5) case. Fig. A8 Fig. A9 Composition of the produced fluid for the water-heptane (5–10) case. Fig. A9

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

227. Retraction: Research on the Structure of Thickening Zone of Oil Drill Pipe and the Characteristics of Flow Field for Drilling Fluid Circulation (Proceedings - 2018 3rd International Conference on Smart City and Systems Engineering, ICSCSE 2018)

Accession number: 20231413855846
Authors: Airong, Xu (1)
Author affiliation: (1) Xi'An Shiyou University, Mechatronic Engineering Department, Xi'an; 710065, China
Corresponding author: Airong, Xu(1584485889@qq.com)
Source title: Proceedings - 2018 3rd International Conference on Smart City and Systems Engineering, ICSCSE 2018
Abbreviated source title: Proc. - Int. Conf. Smart City Syst. Eng., ICSCSE
Part number: 1 of 1
Issue title: Proceedings - 2018 3rd International Conference on Smart City and Systems Engineering, ICSCSE 2018
Issue date: July 2, 2018
Publication year: 2018
Pages: 218-223
Language: English
ISBN-13: 9781728113661
Document type: Erratum (ER)
Conference name: 3rd International Conference on Smart City and Systems Engineering, ICSCSE 2018
Conference date: December 29, 2018 - December 30, 2018
Conference location: Xiamen, China

228. A study on combustion characteristics under enriched-oxygen condition by exergy analysis (*Open Access*)

Abstract: The object of this paper is to investigate the effect of operating parameters on Oxygen-enriched combustion (OEC) by exergy balance analysis during methane combustion process. In this work, the specific exergy value of fuel, feed gas and products were calculated on the basis of the second law of thermodynamics in different reaction conditions, so that availability destructions and exergy efficiencies of OEC process can be obtained based on exergy balance, and the influence of initial fuel temperature, oxygen concentration, exhaust gas recirculation ratio and equivalence ratio were addressed. It is observed that during methane OEC process, the exergy efficiency is mainly affected by products temperature, in the case of products temperature lower than 1870K, exergy efficiency of combustion increase with products temperature, and opposite changes was appeared when the products temperature higher than 1870K. Meanwhile, appropriate control of equivalence ratio can also be used to improve exergy efficiency by suppressing the dissociation of product. © 2018 Institute of Physics Publishing. All rights reserved.

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

229. Experimental study on deep hole drilling of 17-4PH material   (*Open Access*)

Accession number: 20181104889264
Authors: Uzhanfeng, L.I. (1); Uquantai, L.I. (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xian, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 307
Part number: 1 of 1
Issue: 1
Issue title: International Conference on Mechanical Engineering and Applied Composite Materials
Issue date: February 19, 2018
Publication year: 2018
Article number: 012036
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2017 International Conference on Mechanical Engineering and Applied Composite Materials, MEACM 2017
Conference date: November 23, 2017 - November 24, 2017
Conference location: Hong Kong, China
Conference code: 134960
Publisher: IOP Publishing Ltd
Abstract: This paper uses 17-4PH material as the research object, according to the material characteristics of 17-4PH, designed and carried out deep hole drilling test. The purpose of the experiment is to study and discuss the three major problems of tool wear, chip shape and axial deviation of the hole in the process of deep hole drilling of 17-4PH materials. Through the deep hole drilling test of 17-4PH material, the variation of the chip shape and the deflection of the hole axis was obtained under different wear conditions. © Published under licence by IOP Publishing Ltd.
Number of references: 11
Main heading: Infill drilling
Controlled terms: Wear of materials - Cutting tools - Manufacture
Uncontrolled terms: Chip shape - Deep hole drilling - Hole axis - Material characteristics - Research object - Tool wear - Wear condition
Classification code: 511.1 Oil Field Production Operations - 537.1 Heat Treatment Processes - 603.2 Machine Tool Accessories - 913.4 Manufacturing - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/1757-899X/307/1/012036
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

230. Rock Images Analysis of FCM Clustering Algorithm Based on Weighted Color Texture Features   (*Open Access*)

Accession number: 20183805838697
Authors: Cheng, Guojian (1); Yue, Qingqing (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Shaanxi, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1069
Part number: 1 of 1

Issue: 1
Issue title: 3rd Annual International Conference on Information System and Artificial Intelligence, ISAI 2018
Issue date: August 30, 2018
Publication year: 2018
Article number: 012185
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 3rd Annual International Conference on Information System and Artificial Intelligence, ISAI 2018
Conference date: June 22, 2018 - June 24, 2018
Conference location: Suzhou, Jiangsu, China
Conference code: 139531
Publisher: IOP Publishing Ltd

Abstract: The identification and division of different components rock image are of great significance in the field of geological research. It is time-consuming and subjective to identify the rock thin sections artificially under the microscope, and the analysis results are difficult to quantify and characterize. Therefore, the use of digital image processing technology to analyse the rock image has become a hot topic in current research. It is difficult to obtain the ideal result by applying the image segmentation algorithm to the rock image for component division directly, and it can't meet the requirements of rock image analysis. Therefore, in this paper, some weights are used to combine the color features of the rock components with the texture features, and the FCM clustering algorithm is used to achieve the division and identification of rock components. The experimental results show that the algorithm can more accurately classify sandstone particles, pores, feldspar and other minerals. © 2018 Institute of Physics Publishing. All rights reserved.

Number of references: 10
Main heading: Image analysis
Controlled terms: Image segmentation - Image texture - Rocks - Clustering algorithms - Textures - Feldspar
Uncontrolled terms: Color features - Color texture features - Digital image processing technologies - Geological research - Hot topics - Image segmentation algorithm - Texture features - Thin section
Classification code: 482.2 Minerals - 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1069/1/012185
Funding Details: Number: 2018JM4004,2018JM4005, Acronym: -, Sponsor: -;
Funding text: This research is supported by the Shaanxi Provincial Natural Science Basis Research 2018 with the Project No. 2018JM4004 and 2018JM4005.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

231. Research on Network Privacy Protection Mechanism Based on Trust Agent in Big Data Environment (*Open Access*)

Accession number: 20190306399323
Authors: Wang, Hong (1); Lei, Na (1); Zhang, Liumei (1)
Author affiliation: (1) School of Computer, Xi'An Shiyou University, Shaanxi, Xian, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 466
Part number: 1 of 1
Issue: 1
Issue title: 2018 the 2nd Annual International Conference on Cloud Technology and Communication Engineering
Issue date: December 28, 2018
Publication year: 2018
Article number: 012022
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)

Conference name: 2018 2nd Annual International Conference on Cloud Technology and Communication Engineering, CTCE 2018
Conference date: August 17, 2018 - August 19, 2018
Conference location: Nanjing, China
Conference code: 144035
Publisher: IOP Publishing Ltd
Abstract: The problem of personal information and behavioral privacy disclosure in the big data environment has aroused great concern in the whole society. This paper analyzes the user privacy leakage problem in the big data environment supported by cloud computing, proposes a privacy protection mechanism based on trust agent model, and studies the specific method and implementation path of using distributed trust routing and private cloud to realize privacy protection, and its core is to prevent users from leaking real private information through the localization and virtualization of privacy data. It also discusses the problem of user privacy information being corrupted by active privacy data pollution. © Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Data privacy
Controlled terms: Trusted computing - Big data
Uncontrolled terms: Data environment - Network privacy - Personal information - Privacy disclosures - Privacy protection - Private clouds - Private information - Trust routing
Classification code: 723.2 Data Processing and Image Processing
DOI: 10.1088/1757-899X/466/1/012022
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village
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232. Progress in Additive Manufacturing Technique Based on Pulsed TIG

Accession number: 20190406418879
Title of translation: TIG
Authors: Guo, Long-Long (1); He, Yu-Tian (1); Ju, Lu-Yan (1); Wu, Ze-Bing (1); Zhang, Yong (1); Lyu, Lan-Tao (1); Wang, Wen-Juan (1)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Guo, Long-Long(llguo@xsyu.edu.cn)
Source title: Cailiao Gongcheng/Journal of Materials Engineering
Abbreviated source title: Cailiao Gongcheng
Volume: 46
Issue: 12
Issue date: December 20, 2018
Publication year: 2018
Pages: 10-17
Language: Chinese
ISSN: 10014381
CODEN: CAGOEW
Document type: Journal article (JA)
Publisher: Beijing Institute of Aeronautical Materials (BIAM)
Abstract: Additive manufacturing based on PTIG (pulsed tungsten inert gas, PTIG) is a branch of arc additive manufacturing technique. Its notable advantages are low cost, high deposition rate, high material utilization ratio, and suitable for manufacturing parts of large size. In this paper, the research results on the control of formation quality, microstructure and properties of the parts deposited by PTIG additive manufacturing were emphasized in view of experimental research and numerical simulation. Meanwhile, the shortcomings of current investigations were also summarized. Based on accurate prediction and accurate control on the formation quality, microstructure and properties, the research directions for further study on PTIG additive manufacturing technique in the future were put forward, including the influence mechanism of process factors on the formation quality, defects forming mechanism and the suppression measures, numerical simulation on microstructure evolution in molten pool, formation and regulation mechanisms on internal stress and deformation, and the establishment on quantitative relationship model between the microstructure and mechanical properties. © 2018, Journal of Materials Engineering. All right reserved.
Number of references: 48
Main heading: Microstructure
Controlled terms: Inert gases - 3D printers - Deposition rates - Quality control - Mechanisms - Numerical models - Additives - Industrial research

Uncontrolled terms: Formation qualities - Manufacturing techniques - Micro-structure evolutions - Microstructure and mechanical properties - Microstructure and properties - Pulsed TIG - Regulation mechanisms - Stress and deformation
Classification code: 601.3 Mechanisms - 745.1.1 Printing Equipment - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 901.3 Engineering Research - 912.1 Industrial Engineering - 913.3 Quality Assurance and Control - 921 Mathematics - 951 Materials Science
DOI: 10.11868/j.issn.1001-4381.2018.000267
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

233. Experimental Study on the Velocities, Length and Frequency of Liquid Slug in Horizontal Curved Tube   (*Open Access*)

Accession number: 20183505761285
Authors: Deng, Zhian (1); Sun, Xiao (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 392
Part number: 2 of 6
Issue: 2
Issue title: International Conference on Manufacturing Technology, Materials and Chemical Engineering, MTMCE - 1. Building Materials, Iron and Steel, and Ceramic
Issue date: August 3, 2018
Publication year: 2018
Article number: 022020
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2018 International Conference on Manufacturing Technology, Materials and Chemical Engineering, MTMCE 2018
Conference date: June 22, 2018 - June 24, 2018
Conference location: Zhuhai, China
Conference code: 138695
Publisher: IOP Publishing Ltd
Abstract: In order to explore the characteristics of slug flow in horizontal curved tube, four kinds of curved tubes are researched in this paper of which are with 0.5m circumference, 26mm inner diameter. When the superficial liquid velocity or the superficial gas velocity increases, the probability distribution of the average velocity, average length and average frequency of liquid slug conform to the Gaussian distribution at all of the experimental conditions. The average velocity, average length and average frequency of liquid slug increase with the increase of superficial gas velocity. In addition, as the radius of curvature of the pipeline increases, the average velocity, average length, and average frequency of the fluid plug increase. © 2018 Institute of Physics Publishing. All rights reserved.
Number of references: 6
Main heading: Velocity
Controlled terms: Velocity distribution - Liquids
Uncontrolled terms: Average frequency - Average length - Average velocity - Experimental conditions - Inner diameters - Radius of curvature - Superficial gas velocities - Superficial liquid velocity
Classification code: 922.2 Mathematical Statistics
Numerical data indexing: Size 2.60e-02m, Size 5.00e-01m
DOI: 10.1088/1757-899X/392/2/022020
Funding Details:
Funding text: This paper is funded by Xi'an Petroleum University's graduate innovation and practical ability training program.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
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Data Provider: Engineering Village

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Detailed results: 313
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234. Research on Feasibility of Convolution Neural Networks for Rock Thin Sections Image Retrieval

Accession number: 20184406018755
Authors: Cheng, Guojian (1); Yue, Qingqing (1); Qiang, Xinjian (1)
Author affiliation: (1) Xi'An Shiyou University, School of Computer Science, Xi'an, China
Source title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Manag., Commun., Electron. Autom. Control Conf., IMCEC
Part number: 1 of 1
Issue title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Issue date: September 20, 2018
Publication year: 2018
Pages: 2539-2542
Article number: 8469642
Language: English
ISBN-13: 9781538618035
Document type: Conference article (CA)
Conference name: 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Conference date: May 25, 2018 - May 27, 2018
Conference location: Xi'an, China
Conference code: 140123
Sponsor: Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; Xi'an Peihua University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In recent years, convolution neural networks have attracted extensive attention from researchers. It has outstanding performance in large-scale image processing, especially in the field of pattern recognition. Combining geological exploration with computer technology, it has achieved good achievements in rock image processing, and it is still being explored in order to better integrate it into practice. For geological exploration researchers, how to perform rapid and effective retrieval of a large number of rock thin sections image is worth investigating. Traditional text-based retrieval methods can no longer meet the requirements. For this reason, this paper attempts to introduce the convolution neural network into the retrieval of rock thin sections and analyze its feasibility in the retrieval of rock thin sections images. © 2018 IEEE.
Number of references: 14
Main heading: Rocks
Controlled terms: Image retrieval - Convolution - Image processing - Geology - Pattern recognition
Uncontrolled terms: Computer technology - Convolution neural network - Geological exploration - Text-based retrieval - Thin section
Classification code: 481.1 Geology - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing
DOI: 10.1109/IMCEC.2018.8469642
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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235. A Finite-Difference-Based Multiscale Approach for Electromagnetic Digital Rock Modeling

Accession number: 20182705390848
Authors: Yu, Mengping (1); Chen, Jinhong (1); Wu, Dagang (1); Chen, Yanjun (2); Chan, Ji (1); Wang, Hanming (1)
Author affiliation: (1) University of Houston, Houston; TX; 77204, United States; (2) Department of Electronic Engineering, Xian Shiyou University, Xian; 710300, China
Corresponding author: Wang, Hanming(Hanming.Wang@chevron.com)
Source title: IEEE Journal on Multiscale and Multiphysics Computational Techniques
Abbreviated source title: IEEE J. Multiscale Multiphys. Comp. Tech.

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Volume: 3
Issue date: June 26, 2018
Publication year: 2018
Pages: 66-73
Article number: 8396859
Language: English
E-ISSN: 23798793
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: Conventional methods to extract the electrical properties from Micro-CT rock images require significant computational resources. This paper describes a novel multiscale method for such large-scale modeling, based on a hierarchy approach. Without losing any information from the original Micro-CT images, the method uses the mixing theory to extract equivalent rock electrical properties at multilevel and cascades all results at different level to achieve the overall rock properties. The method proposed in this paper effectively overcomes previous approximation that needs to decimate the original images and all the vital information will be retained. Real-world sandstone images were used as an example to demonstrate the accuracy and efficiency of this approach. Modeling and simulations are performed at multiscale with different choices of submodel sizes to understand the effect of partition on the overall accuracy. It shows that relative larger submodel size will generally lead to better solution but requires more computational resources. A preliminary investigation on the tradeoff between submodel size and the relative errors are presented. Numerical examples demonstrate the accuracy and efficiency of this approach. © 2016 IEEE.
Number of references: 14
Main heading: Rocks
Controlled terms: Computation theory - Efficiency - Iterative methods - Computerized tomography
Uncontrolled terms: Computational resources - Conventional methods - Direct solvers - Iterative solvers - Model and simulation - Multi-scale approaches - multiscale - Rock physics
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.5 Computer Applications - 913.1 Production Engineering - 921.6 Numerical Methods
DOI: 10.1109/JMMCT.2018.2850764
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

236. Finite element analysis of conical teeth for hydraulic pipe tongs   (*Open Access*)

Accession number: 20185206307761

Authors: Gao, Yagang (1); Liu, Yuan (2)
Author affiliation: (1) Yanchang Oilfield Co. Ltd., Research Center, China; (2) Xi'An Shiyou University, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1074
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Issue: 1
Issue title: International Conference on Mechanical, Electric and Industrial Engineering, MEIE 2018
Issue date: August 30, 2018
Publication year: 2018
Article number: 012033
Language: English
ISSN: 17426588
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Conference name: International Conference on Mechanical, Electric and Industrial Engineering, MEIE 2018
Conference date: May 12, 2018 - May 14, 2018
Conference location: Hangzhou, China
Conference code: 139940
Publisher: IOP Publishing Ltd

Abstract: During well operation, corrosive gas such as H2S in the well will cause serious corrosion damage to the column. In order to minimize the impact of corrosion, the oilfield gradually replaced the standard steel casing by a corrosion-resistant alloy (CRA) casing. Conventional tongs was widely used on casing for mark-up and break-out operation. But Zhou et al [1] thought that the tong teeth destroys the galvanized layer of CRA on the casing surface, where the corrosion easily happens. Therefore, a design scheme of the conical teeth for hydraulic pipe tongs was

proposed, and the mechanical properties of the conical teeth were simulated by finite element software to analyze the degree of damage to the casing. © Published under licence by IOP Publishing Ltd.

Number of references: 9
Main heading: Corrosion resistant alloys
Controlled terms: Finite element method - Oil fields - Steel corrosion - Corrosion resistance
Uncontrolled terms: Corrosion damage - Corrosive gas - Degree of damages - Design scheme - Finite element software - Hydraulic pipes - Mark-up - Steel casing
Classification code: 512.1.1 Oil Fields - 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 545.3 Steel - 921.6 Numerical Methods
DOI: 10.1088/1742-6596/1074/1/012033
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

237. Lunar vector enhanced XNAV and its adaptive filtering algorithm

Accession number: 20191006584291
Title of translation: XNAV
Authors: Jiao, Rong (1); Gan, Wei (1); Xiao, Zhihong (1); Wu, Yinchuan (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Huazhong Keji Daxue Xuebao (Ziran Kexue Ban)/Journal of Huazhong University of Science and Technology (Natural Science Edition)
Abbreviated source title: Huazhong Ligong Daxue Xuebao
Volume: 46
Issue: 11
Issue date: November 23, 2018
Publication year: 2018
Pages: 70-75
Language: Chinese
ISSN: 16714512
Document type: Journal article (JA)
Publisher: Huazhong University of Science and Technology
Abstract: In view of the problem that the accurate process noise statistical characteristics cannot be obtained and the navigation accuracy is low in X-ray pulsar navigation system (XNAV), a multi-information fusion navigation method based on adaptive divided difference Kalman filter (ADDF) was proposed. Two observation variables of the field angle and Moon's direction vectors were added into the XNAV positioning system. The measurement model of field angle and direction vector was formulated by processing the Moon image obtained from optical camera. This measurement model was integrated into the spacecraft orbit dynamics to build the filter model. Numerical simulation results demonstrate that the ADDF performance is better than unscented Kalman filter (UKF) and divided difference Kalman filter (DDF). The position precision is improved by more than 60% and the velocity by more than 25%. The navigation precision is evidently improved by more than 50% with the augmented XNAV based on the field angle and direction vector of the moon in a comparison with the conventional XNAV. © 2018, Editorial Board of Journal of Huazhong University of Science and Technology. All right reserved.

Number of references: 19
Main heading: Information fusion
Controlled terms: Moon - Orbits - Pulsars - Time of arrival - Extended Kalman filters - Navigation systems
Uncontrolled terms: Adaptive filtering algorithms - Divided difference filter - Multi-information fusion - Navigation accuracy - Navigation precision - Statistical characteristics - Unscented Kalman Filter - X-ray pulsars
Classification code: 657.2 Extraterrestrial Physics and Stellar Phenomena - 716.1 Information Theory and Signal Processing - 903.1 Information Sources and Analysis
Numerical data indexing: Percentage 2.50e+01%, Percentage 5.00e+01%, Percentage 6.00e+01%
DOI: 10.13245/j.hust.181113
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

238. Micro-structured optical fiber sensor for simultaneous measurement of temperature and refractive index

Authors: Liu, Ying-gang (1); Liu, Xin (1); Ma, Cheng-ju (1); Zhou, Yu-min (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) Mechanical and Electrical Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Ying-gang(ygliu@xsyu.edu.cn)

Abstract: Through using micro-machining method for optical fiber sensor, a kind of miniature, compact and composite structural all-fiber sensor is presented. Based on manufacturing two micro-holes with certain distance in ordinary single-mode fiber Bragg grating (FBG) by excimer laser processing technique, we fabricate a dual Fabry–Perot-FBG (FP-FBG) composite fiber interferometric sensor, which can be used in simultaneous measurement for liquid's refractive index (RI) and temperature change. Due to every micro-hole and the dual micro-holes in fiber acting as different Fabry–Perot (FP) cavities, this kind of sensor has not only different RI sensitivities but also different temperature sensitivities, which are corresponding to the wavelength shifts of the fine interference fringes and spectral envelope, respectively. The experimental results show that the spectral wavelength shift keep better linear response for temperature and RI change, so that we can select the higher temperature and RI sensitivities as well as the analyzed sensitivities of FBG to utilize them for constituting a sensitivity coefficients matrix. Finally, the variations of liquid's temperature and RI are detected effectively, and the resolutions can reach to 0.1 °C and 1.0×10^{-5} RIU. These characteristics are what other single-type sensors don't have, so that this kind of all-fiber dual FP-FBG composite fiber interferometric sensor can be used in extremely tiny liquid environment for measuring different physical quantities simultaneously. © 2018 Elsevier Inc.

239. The Application of Multi-perception User Experience in Emotional Design Characteristic Parameter Models

Authors: Ting, Ji (1); Jing, Yu (1); Jianbo, Xu (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Ting, Ji(16010691@qq.com)

Abstract: An analysis was conducted on the application of multi-perception user experience in emotional design. This paper studied the constraint relation between multi-perception factors in emotional design and each level of emotional design under the intermediary effect of user experience, the constraint value of which was calculated with formulas. Besides, an emotional feature database of design elements was built. An experiment was made to verify the specific value of applying multi-perception user experience in emotional design characteristic parameter models, to effectively improve the satisfaction of user experience and the expressive accuracy of emotional design. © 2018 IEEE.

240. Multi-dimensional aggregation recommendation algorithm based on average prediction   (*Open Access*)

Authors: Han, Jiaxin (1); Wei, Wenjuan (1); Xia, Haiyang (1)
Author affiliation: (1) School of Computer Science, Xi'An ShiYou University, Shaanxi; 710065, China
Corresponding author: Wei, Wenjuan(wenjuan2018@163.com)

Abstract: Traditional collaborative filtering recommendation algorithm uses single dimensional data to calculate the similarity between users or items, ignoring the user's preference, thus affect the recommendation accuracy. To this end, an averaging forecasting based multi-dimensional aggregation recommendation algorithm was proposed in this paper, which constructs the relationship aggregation function by user's total score and dimension scores firstly, then apply the aggregation function to the initial multi-dimensional score that calculated by the modified averaging forecasting algorithm. The experiment result shows that compared with the previous collaborative filtering based recommendation algorithm, it has higher recommendation accuracy. © The Authors, published by EDP Sciences, 2018.
Number of references: 19
Main heading: Forecasting
Controlled terms: Collaborative filtering
Uncontrolled terms: Aggregation functions - Collaborative filtering recommendations - Forecasting algorithm - Multi dimensional - Recommendation accuracy - Recommendation algorithms - User's preferences
Classification code: 903.1 Information Sources and Analysis
DOI: 10.1051/matecconf/201817303043
Funding Details: Number: 2016kw-047, Acronym: -, Sponsor: -;
Funding text: This research is supported by the International Science and Technology Cooperation and Exchange plan Project of Shaanxi province (2016kw-047).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

241. Influence of droplet coalescence and breakup on the separation process in wave-plate separators

Accession number: 20182405310336
Authors: Yuan, Shuxia (1); Fan, Yuguang (1); Li, Jingming (1); Zhou, Sanping (1); Cao, Yinping (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi, China
Corresponding author: Yuan, Shuxia(flowingcloud269@163.com)
Abstract: The purpose of this study is to investigate the numerical simulation method regarding the coalescence and breakup of droplets occurring during the gas-liquid separation process and their influence on the separation efficiency and pressure drop. The Euler-Lagrange method was used, and the discrete phase was simulated as an unsteady process. The results of the study indicate that numerical simulation results show better agreement with the experiment results when the coalescence and breakup model is taken into account. During the unsteady process, it was concluded that the simulation can meet the accuracy requirements as long as the Courant number of droplets is less than 1/3. The coalescence increases the droplet diameter, which improves the separation efficiency and reduces the pressure drop, whereas the opposite effect occurs with the breakup. Compared with other factors, the influence of the surface tension on the coalescence and breakup is more apparent, and droplets with a lower surface tension may be prone to coalescing or breaking. The coalescence occurs with a lower separation velocity, whereas breakup becomes predominant with higher separation velocity. The present research provides valuable suggestions on choosing strategies to improve the separation efficiency. For droplets with small surface tension, the separation velocity is restricted to not resulting breakup, and the separation efficiency can be improved by changing the shapes

and spaces of the wave plate. In contrast, for droplets with large surface tension, increasing the velocity is an effective way to improve the separation efficiency. © 2017 Canadian Society for Chemical Engineering

Number of references: 25
Main heading: Velocity
Controlled terms: Separators - Numerical models - Surface tension - Drop breakup - Efficiency - Numerical methods
Uncontrolled terms: Coalescence and breakups - Droplet coalescence - Droplet diameters - Euler-Lagrange method - Gas-liquid separation - Numerical simulation method - Separation efficiency - Waveplates
Classification code: 913.1 Production Engineering - 921 Mathematics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1002/cjce.23089
Funding Details: Number: 51404198, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016JM5046, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by the Natural Science Foundation of Shaanxi Province of China (grant number 2016JM5046), and National Natural Science Foundation of China (grant number 51404198). The authors are grateful for their support.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

242. Background self-adaptive weakly-monotonic averaging image reduction operator   (*Open Access*)

Accession number: 20183205673940
Authors: Han, Jiaxin (1); Xia, Haiyang (1); Wei, Wenjuan (1)
Author affiliation: (1) School of Computer Science, Xi'An ShiYou University, Shannxi; 710065, China
Corresponding author: Han, Jiaxin(Haiyang_xia@qq.com)
Source title: MATEC Web of Conferences
Abbreviated source title: MATEC Web Conf.
Volume: 173
Part number: 1 of 1
Issue title: 2018 International Conference on Smart Materials, Intelligent Manufacturing and Automation, SMIMA 2018
Issue date: June 19, 2018
Publication year: 2018
Article number: 03042
Language: English
ISSN: 22747214
E-ISSN: 2261236X
Document type: Conference article (CA)
Conference name: 2018 International Conference on Smart Materials, Intelligent Manufacturing and Automation, SMIMA 2018
Conference date: May 24, 2018 - May 26, 2018
Conference location: Nanjing, China
Conference code: 138215
Sponsor: China and University of Information Technology; Nanjing University of Information Science and Technology
Publisher: EDP Sciences
Abstract: Image reduction can simplify the raw image while preserve the structure feature and details information of pictures. Traditional monotonic averaging-based image reduction operator usually lose the detail features of the raw image after reduction. Recent proposed weakly-monotone image reduction algorithm need to specify the background colour manually in the image reduction process, if the background colour of the image to be reduced is not consistent with the former specified colour, this method does not work as expect. For filling this research gap, a new background adaptive weakly-monotonic averaging image reduction operator which can identify the background and adjust the weight according to the pixel distribution of the image was proposed in this paper. The experiment shows that compared with the previous image reduction operator, it has a better applicability and robustness. © The Authors, published by EDP Sciences, 2018.
Number of references: 12
Main heading: Color
Uncontrolled terms: Image reduction - Pixel distribution - Raw images - Structure features - Weakly-monotones
Classification code: 741.1 Light/Optics

DOI: 10.1051/matecconf/201817303042
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

243. Comparative studies of microscopic pore throat characteristics of unconventional super-low permeability sandstone reservoirs: Examples of Chang 6 and Chang 8 reservoirs of Yanchang Formation in Ordos Basin, China   (*Open Access*)

Accession number: 20174604398637
Authors: Wang, Ruifei (1); Chi, Yungang (1); Zhang, Lei (1); He, Runhua (1); Tang, Zhixia (1); Liu, Zheng (1)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Ruifei(wrfei@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 160
Issue date: January 2018
Publication year: 2018
Pages: 72-90
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: It's difficult to evaluate the unconventional super-low permeability sandstone reservoir by conventional mercury injection test. In order to evaluate this kind of reservoir more efficiently, in this study, we mainly measure the microscopic pore throat characteristic parameters and the curves of the reservoir by constant-rate mercury injection test, such as the average pore radius, average throat radius, pore throat radius ratio, maximum throat radius and other parameters. The reservoir characteristic curves include the pore radius distribution, throat radius distribution, pore throat radius ratio, and capillary pressure. Samples of tight sandstone in typical blocks from the Chang 6 and Chang 8 reservoirs were analyzed by a constant-rate mercury injection test to determine the differences in microscopic pore throat characteristics of unconventional super-low permeability sandstone oil reservoirs in the Yanchang formation of the Ordos Basin. According to the comprehensive classification results of PetroChina, a current super-low permeability reservoir can be classified as super-low permeability class I: 0.5 mD $\leq$ K $\leq$ 1.0 mD, super-low permeability class II: 0.3 mD $\leq$ K © 2017 Elsevier B.V.
Number of references: 56
Main heading: Metamorphic rocks
Controlled terms: Sandstone - Low permeability reservoirs - Testing - Petroleum reservoir engineering
Uncontrolled terms: Mercury injection - Ordos Basin - Pore throat - Super low permeabilities - Yanchang Formation
Classification code: 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1016/j.petrol.2017.10.030
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

244. A parameter adaptive genetic algorithm based service compositions   (*Open Access*)

Accession number: 20183205673949

Authors: Yang, Huizhou (1); Zhang, Li (1)
Author affiliation: (1) School of Computer Science, Xi'An ShiYou University, Shaanxi; 710065, China
Corresponding author: Zhang, Li(zhangli0223@163.com)
Source title: MATEC Web of Conferences
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Volume: 173
Part number: 1 of 1
Issue title: 2018 International Conference on Smart Materials, Intelligent Manufacturing and Automation, SMIMA 2018
Issue date: June 19, 2018
Publication year: 2018
Article number: 03051
Language: English
ISSN: 22747214
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Smart Materials, Intelligent Manufacturing and Automation, SMIMA 2018
Conference date: May 24, 2018 - May 26, 2018
Conference location: Nanjing, China
Conference code: 138215
Sponsor: China and University of Information Technology; Nanjing University of Information Science and Technology
Publisher: EDP Sciences
Abstract: How to select and combine many services with similar functions reasonably and efficiently to provide users with better service is the main challenge in the service composition problem. This is thorny when the number of the candidate Services is huge. Recently, researches transform the service compositions problem as a multi-objective optimizing task, and then the genetic algorithm is commonly used to tackle this issue. However, the fixed crossover probability and mutation probability settings in genetic algorithm usually result to it falls into a local optimal. To improve the performance of the genetic algorithm in the service composition task, this paper proposes an adaptive parameter adjust strategy, which can adjust the crossover probability and mutation probability automatically. The experiment result shows our method has greatly improved the maximum fitness of the final solutions of traditional genetic algorithm. © The Authors, published by EDP Sciences, 2018.
Number of references: 18
Main heading: Genetic algorithms
Controlled terms: Multiobjective optimization - Probability - Quality of service - Parameter estimation
Uncontrolled terms: Adaptive parameters - Cross-over probability - Local optimal - Multi objective - Mutation probability - Parameter adaptive - Service compositions - Traditional genetic algorithms
Classification code: 921.5 Optimization Techniques - 922.1 Probability Theory
DOI: 10.1051/matecconf/201817303051
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

245. Design and Implementation of Online Shopping System Based on B/S Model   (*Open Access*)

Accession number: 20185206315910
Authors: Wei, Fan (1); Zhang, Qian (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Shaanxi; 710065, China
Corresponding author: Zhang, Qian(1125055998@qq.com)
Source title: MATEC Web of Conferences
Abbreviated source title: MATEC Web Conf.
Volume: 246
Part number: 1 of 1
Issue title: 2018 International Symposium on Water System Operations, ISWSO 2018
Issue date: December 7, 2018
Publication year: 2018
Article number: 03033
Language: English

ISSN: 22747214
E-ISSN: 2261236X
Document type: Conference article (CA)
Conference name: 1st International Symposium on Water System Operations, ISWSO 2018
Conference date: October 16, 2018 - October 20, 2018
Conference location: Beijing, China
Conference code: 143365
Publisher: EDP Sciences

Abstract: B/S structure (Browser/Server) is one hidden client mode after WEB development. This kind of network structure mode unifies WEB browser as the client-side in order to integrate the core part of system function realization to the server. B/S model simplifies system development, maintenance, and usage. The client only needs one Browser under the B/S model, and the browser interact data with database through Web Server. Since the B/S model has such huge advantages, this online shopping system is based on this model. The system through the MVC(Model, View, and Controller) framework integrate network of online shopping system, completing the control layer management, processing data access. Finally, the system can meet online shopping requirements basically, and its also a good application of e-commerce. Customers can know the relevant information of products at any time, and they can have mass commodity information. Besides, the drawbacks of traditional shopping such as geographical and time limitations have been solved completely. © The Authors, published by EDP Sciences, 2018.

Number of references: 10
Main heading: Information management
Controlled terms: Manufacture - Electronic commerce - Access control
Uncontrolled terms: Control layers - Design and implementations - Network structures - On-line Shopping systems - Online shopping - System development - System functions - Web development
Classification code: 537.1 Heat Treatment Processes - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 913.4 Manufacturing
DOI: 10.1051/matecconf/201824603033
Funding Details: Number: 201805038YD16CG22, Acronym: -, Sponsor: -;
Funding text: This research was sponsored by Xi'an Science and Technology Project of China under the grant No. 201805038YD16CG22(2).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

246. Experimental Study on the Pressure-Difference Fluctuation Characteristics of Slug Flow in Horizontal T-Junction Tube (*Open Access*)

Accession number: 20183405733444
Authors: Deng, Zhian (1); Sun, Xiao (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Sun, Xiao(370927228@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1064
Part number: 1 of 1
Issue: 1
Issue title: 2018 2nd International Conference on Fluid Mechanics and Industrial Applications
Issue date: August 10, 2018
Publication year: 2018
Article number: 012032
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2018 2nd International Conference on Fluid Mechanics and Industrial Applications, FMIA 2018
Conference date: July 12, 2018 - July 14, 2018
Conference location: Guilin, China
Conference code: 138625
Sponsor: Asian Union of Information Technology

Publisher: IOP Publishing Ltd

Abstract: In practice, two-phase fluids may be often mixed or separated in T-junction tube, and alternating flow of liquid plug and gas plug may cause its working condition to be complex and changeable, so the study on it needs to be improved at present. Based on air and water, the characteristics of response to differential pressure of gas-liquid two-phase slug flow in two kinds of transparent horizontal T-junction PMMA tubes with different diameters are studied in depth and systematically, and data collection and processing are conducted by LabVIEW platform to obtain the probability density function (PDF) and the power spectral density function (PSD) characteristics of slug flow in different periods and forms. All characteristics provide reliable slug flow identification for flow pattern recognition. © 2018 Institute of Physics Publishing. All rights reserved.

Number of references: 6

Main heading: Probability density function

Controlled terms: Data handling - Spectral density - Pattern recognition

Uncontrolled terms: Data collection - Differential pressures - Fluctuation characteristics - Gas liquids - Pressure differences - Probability density function (pdf) - T junctions - Two phase fluid

Classification code: 723.2 Data Processing and Image Processing - 922.1 Probability Theory

DOI: 10.1088/1742-6596/1064/1/012032

Compendex references: YES

Open Access type(s): All Open Access, Gold

Database: Compendex

Data Provider: Engineering Village

247. A novel method of testing the pour point of waxy crude oil at high pressure (*Open Access*)

Accession number: 20181104891880

Authors: Nie, Xiangrong (1); Chen, Junbin (1); Li, Shuai (1)

Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China

Source title: IOP Conference Series: Earth and Environmental Science

Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.

Volume: 113

Part number: 1 of 1

Issue: 1

Issue title: 3rd International Conference on Advances in Energy Resources and Environment Engineering

Issue date: February 22, 2018

Publication year: 2018

Article number: 012174

Language: English

ISSN: 17551307

E-ISSN: 17551315

Document type: Conference article (CA)

Conference name: 2017 3rd International Conference on Advances in Energy Resources and Environment Engineering, ICAESEE 2017

Conference date: December 8, 2017 - December 10, 2017

Conference location: Harbin, China

Conference code: 134951

Publisher: IOP Publishing Ltd

Abstract: A novel method to measure pour point at high pressure is presented. This approach uses the pour point and viscosity data at atmospheric pressure as the basic data. The viscosity data at certain high pressure are also used. The results show that, at the pressure of 0.1, 6.9, 13.79 and 24.14 MPa, the pour point is 45, 45.56, 46.76 and 48.98°C respectively. The pour point increases by about 0.17°C respectively when the pressure increases per 1 MPa. The method presented in this paper makes up for the shortage of the existing methods which can only measure the pour point at atmospheric pressure. © Published under licence by IOP Publishing Ltd.

Number of references: 19

Main heading: Atmospheric pressure

Controlled terms: Viscosity

Uncontrolled terms: High pressure - Pour points - Pressure increase - Viscosity data - Waxy Crude Oil

Classification code: 443.1 Atmospheric Properties - 631.1 Fluid Flow, General - 931.2 Physical Properties of Gases, Liquids and Solids

248. Can solvent injection be an option for cost effective enhanced oil recovery?: An experimental analysis for different oil and rock characteristics

Accession number: 20190806534369
Authors: Babadagli, T. (1); Cao, N. (2)
Author affiliation: (1) Xi'an Shiyou University, University of Alberta, Canada; (2) University of Alberta, Canada
Source title: Society of Petroleum Engineers - SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition 2018, SATS 2018
Abbreviated source title: Soc. Pet. Eng. - SPE Kingd. Saudi Arabia Annu. Tech. Symp. Exhib., SATS
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition 2018, SATS 2018
Issue date: 2018
Publication year: 2018
Report number: SPE-192164-MS
Language: English
ISBN-13: 9781613996201
Document type: Conference article (CA)
Conference name: SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition 2018, SATS 2018
Conference date: April 23, 2018 - April 26, 2018
Conference location: Dammam, Saudi arabia
Conference code: 144855
Publisher: Society of Petroleum Engineers

Abstract: We performed a set of experiments on vertically situated sandpack models. Different slug sizes of water and solvent (heptane used in the experiments) were tested for 2,000 cp heavy-oil. As a benchmark, tests were also performed for 14 cp light oil for comparative analysis. In addition to the technical feasibility, an economic analysis was performed considering the amount of solvent injected and oil and solvent recovered. Experiments were repeated for oil-wet systems. For both light and heavy oils, starting the process with the solvent was feasible in the short run technically and economically. If the process starts with water, excess amount of it occupies the largest pores and hinders solvent-oil interaction for mixing and oil displacement. This was true especially if the rock is both oil-wet and heavy, which yielded faster recovery and higher ultimate recovery than the water-wet case. The time for switching to solvent injection is more critical in the heavy-oil case as it is more sensitive to the amount of existing water in the system. As oil becomes heavier and if the rock is water-wet, starting the process with waterflooding is not suggested. In this case, more solvent needs to be injected in the first cycle compared to oil-wet systems. Due to partial miscibility and more gravity stable nature, solvent retrieval and sweep with water can be more effective in case of heavy-oil compared to light oil (fully miscible case) and, as a result, can be even more profitable. This is highly critical in exploitation of heavy-oil reservoirs if thermal options are limited and greenhouse gas emission is a concern. © 2018, Society of Petroleum Engineers.

Number of references: 15
Main heading: Solvents
Controlled terms: Petroleum reservoir engineering - Economic analysis - Heavy oil production - Crude oil - Recovery - Enhanced recovery - Petroleum reservoirs - Cost effectiveness - Greenhouse gases
Uncontrolled terms: Comparative analysis - Enhanced oil recovery - Experimental analysis - Heavy oil recovery - Heavy oil reservoirs - Injection sequence - Rock characteristics - Solvent injection
Classification code: 451.1 Air Pollution Sources - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 911.2 Industrial Economics
DOI: 10.2118/192164-ms

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

249. Research on the Early Intelligent Warning System of Lost Circulation Based on Fuzzy Expert System

Accession number: 20182805543588
Authors: Xu, Yingzhuo (1); Li, Chengyuan (1)
Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Proceedings - 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Abbreviated source title: Proc. - Int. Conf. Intell. Transp., Big Data Smart City, ICITBS
Volume: 2018-January
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Issue title: Proceedings - 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Issue date: April 5, 2018
Publication year: 2018
Pages: 540-544
Language: English
ISBN-13: 9781538642016
Document type: Conference article (CA)
Conference name: 3rd International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2018
Conference date: January 25, 2018 - January 26, 2018
Conference location: Xiamen, China
Conference code: 135790
Sponsor: Communication Research Institute of Changsha University of Science and Technology; Cooperative Vehicle Infrastructure System; et al.; Hunan Key Laboratory of Smart Highway; St. John's University; Xiamen University Tan Kah Kee College
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: The reasons for the drilling process such as getting fuzzy, incomplete or uncertain information, and the lack of adjacent well data, it is difficult for the lost circulation warning to establish an accurate mathematical model by use of the traditional method or establish intelligent model based on sample information. Therefore, an intelligent method for the early warning of lost circulation in well drilling based on fuzzy expert system is proposed in this paper, and the corresponding early warning software system is developed. First of all, the system inputs the experience and knowledge of experts into the fuzzy rule base, and uses the fuzzy production rules to represent knowledge, at the same time lost circulation characteristic parameters are fuzzified, and then combined with the fuzzy inference machine to resolve the problem by reasoning, so as to realize the intelligent early warning of lost circulation. Finally, the system is tested by field data. The results show that the warning method can meet the requirements of field application, and can effectively improve the accuracy and intelligent level of the early lost circulation warning. © 2018 IEEE.

Number of references: 6
Main heading: Fuzzy inference
Controlled terms: Infill drilling - Fuzzy rules
Uncontrolled terms: Fuzzy expert systems - Intelligent Warning - Knowledge - Lost circulation - Rule
Classification code: 511.1 Oil Field Production Operations - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.4.1 Expert Systems
DOI: 10.1109/ICITBS.2018.00142
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

250. Theories, Applications and Trends of Non-Technical Losses in Power Utilities Using Machine Learning

Accession number: 20184406018424
Authors: Zhang, Tiantian (1); Gao, Rongfang (1); Sun, Shaohua (1)
Author affiliation: (1) Xi'An Shiyou University, College of Computer Science and Technology, China
Source title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Manag., Commun., Electron. Autom. Control Conf., IMCEC
Part number: 1 of 1
Issue title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Issue date: September 20, 2018
Publication year: 2018
Pages: 2324-2329
Article number: 8469410
Language: English
ISBN-13: 9781538618035
Document type: Conference article (CA)
Conference name: 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Conference date: May 25, 2018 - May 27, 2018
Conference location: Xi'an, China
Conference code: 140123
Sponsor: Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; Xi'an Peihua University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: With the popularization of smart meter and electric information collecting system, the application of machine learning is also more widely in non-technical loss (NTL) detection. In this paper, the concept and solution of NTL is introduced. Among them, the contributions are the application of machine learning and concluding privacy-preserving methods in NTL detection. This paper introduces the application of data acquisition, data pre-processing and data mining modeling in NTL detection from the perspective of data mining, and sums up the applicable scenarios and characteristics of each method. Next, it lists the potential risks caused by privacy leakage of power users, as well as the privacy protection methods currently proposed in NTL detection, and analyzes these method. Finally, the current status of NTL detection is summarized, and the future research trends of NTL detection in feature processing, real-time monitoring, large-scale data sets and other issues are discussed. © 2018 IEEE.

Number of references: 44
Main heading: Machine learning
Controlled terms: Privacy-preserving techniques - Data acquisition - Electric power transmission networks - Data mining - Electric losses
Uncontrolled terms: Data mining models - Electricity theft - Information collecting - Large scale data sets - Non-technical loss - Privacy preserving - Privacy protection - Real time monitoring
Classification code: 706.1.1 Electric Power Transmission - 716 Telecommunication; Radar, Radio and Television - 718 Telephone Systems and Related Technologies; Line Communications - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence
DOI: 10.1109/IMCEC.2018.8469410
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

251. Research on Indoor em Radiation Intensity for Control of Intelligent Devices in Architecture (*Open Access*)

Accession number: 20183105622722
Authors: Jing, Liu (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Jing, Liu(kaileave4992@163.com)
Source title: IOP Conference Series: Materials Science and Engineering

Abstract: In an indoor environment, electromagnetic (EM) radiation exceeding a certain threshold can potentially harm organisms, however, electromagnetic signals below a certain threshold value cannot make the device work properly. Therefore, how to choose a reasonable antenna radiation intensity is a problem worth studying. This paper calculates the intensity of electromagnetic radiation received in different rooms when the antenna is placed at the ceiling of the living room in a general house structure. Accordance to the limits in the environmental radiation evaluation standards, the radiation power of the antenna is controlled to get appropriate radiation intensity in different rooms. The results in this paper is helpful for the researches about indoor electromagnetic radiation. © Published under licence by IOP Publishing Ltd.

252. A Study of Graphic Symbol Design Based on Visual Efficiency

Accession number: 20190706499155
Authors: Jing, Yu (1); Jianbo, Xu (1); Ting, Ji (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Jing, Yu(41399244@qq.com)

Conference code: 141421
Sponsor: Central South University; Communications Research Institute of Changsha University of Science and Technology; Department of Urban Management, Hunan City College; Hongkong Intelligent Computation Technology and Automation Association
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: The improvement of the visual efficiency of graphic symbols in user interfaces is an important way to quickly and effectively transmit information and optimize interactive experience. This paper presented a method for user interface design based on visual efficiency, by analyzing the influence of such elements composing graphic symbols as color, shape, size, location and dynamic effect on visual efficiency, grading the important degree of graphic symbols through visual attention, and calculating the frequency of use with the method of paired comparison. Furthermore, an APP user interface was used as a case to verify the method, the result of which shows that the method can effectively improve the efficiency of user interfaces in use, as well as optimize the interactive experience of users. © 2018 IEEE.

Number of references: 6
Main heading: User interfaces
Controlled terms: Grading - Efficiency - Behavioral research
Uncontrolled terms: Dynamic effects - Frequency of use - Graphic symbols - Interactive experience - Method of paired comparisons - User interface designs - Visual Attention
Classification code: 461.4 Ergonomics and Human Factors Engineering - 722.2 Computer Peripheral Equipment - 913.1 Production Engineering - 971 Social Sciences
DOI: 10.1109/ICSGEA.2018.00069
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

253. Factors influencing corrosion resistance of reinjection water treatment system in a gas processing plant in northern Shaanxi

Accession number: 20183205669568
Authors: Ma, Yun (1, 2); Zhang, Qing-Bo (1); Fan, Yang-Jie (3); Lu, Ya-Ting (3)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Key Lab. of Environ. Poll. Contr. Technol. of Oil Gas Fld. and Reservoir Protect. in Shaanxi Prov., Xi'An Petroleum University, Xi'an; 710065, China; (3) Changqing Oilfield 10th Oil Recovery Company, Qingcheng, China
Source title: Surface Technology
Abbreviated source title: Surf. Technol.
Volume: 47
Issue: 1
Issue date: 2018
Publication year: 2018
Pages: 154-159
Language: Chinese
E-ISSN: 10013660
Document type: Journal article (JA)
Publisher: Chongqing Wujiu Periodicals Press

Abstract: The work aims to investigate corrosion situation of reinjection water treatment system in gas processing plant in northern Shaanxi, and guarantee safe production of the system. The 20# and L316 steel on the site were used to study the corrosion situation of the system on the basis of water quality analysis. Water sample in the cycle subject to worst corrosion was selected as the medium. Effects of temperature, pH, dissolved oxygen and bacteria on corrosion rate of 20# steel were investigated in static weight-loss method. Total salinity of water produced from a gas field in northern Shaanxi was high (about 30 000 mg/L), so was content of metal cations including Ca^{2+} and Mg^{2+}. The corrosion rate increased as dissolved oxygen content increased, and the corrosion rate was up to 0.4001 mm/a at 80 °C provided with 5.07 mg/L DO. The corrosion rate increased from 0.1065 mm/a to 0.2155 mm/a while the TGB increased from 60 cfu/mL to 6×104 cfu/mL, and SRB from 6 cfu/mL to 6×103 cfu/mL as bacteria content and corrosion rate increased. The corrosion rate decreased from 0.3039 mm/a to 0.0710 mm/a aspH value increased from 5.9 to 8.50. Corrosion of the system can be reduced by taking appropriate anticorrosion measurements including pH adjustment, sterilization and oxygen isolation. © 2018 Chongqing Wujiu Periodicals Press. All rights reserved.

Number of references: 16
Main heading: Corrosion rate
Controlled terms: Bacteria - Biochemical oxygen demand - Corrosion resistance - Dissolved oxygen - Gas industry - Produced Water - Steel corrosion - Water quality - Water treatment

Uncontrolled terms: Gas processing plant - Gas produced water - Influencing factor - Northern shaanxi - Reinjection - Safe production - Static weight-loss method - Water quality analysis - Water treatment systems - Weight loss method
Classification code: 445.1 Water Treatment Techniques - 445.2 Water Analysis - 452.3 Industrial Wastes - 522 Gas Fuels - 539.1 Metals Corrosion - 545.3 Steel
Numerical data indexing: Mass_Density 3.00e+01kg/m3, Temperature 3.53e+02K
DOI: 10.16490/j.cnki.issn.1001-3660.2018.01.024
Funding Details: Number: 51504193, Acronym: -, Sponsor: National Natural Science Foundation of China;
Funding text: Supported by the National Natural Science Foundation of China (51504193)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

254. The investigation of Ce doped ZnO crystal: The electronic, optical and magnetic properties

Accession number: 20180404664852
Authors: Wen, Jun-Qing (1); Zhang, Jian-Min (2); Qiu, Ze-Gang (3); Yang, Xu (1); Li, Zhi-Qin (3)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Physics and Information Technology, Shaanxi Normal University, Xi'an; 710062, China; (3) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wen, Jun-Qing(wenjq2013@163.com)
Source title: Physica B: Condensed Matter
Abbreviated source title: Phys B Condens Matter
Volume: 534
Issue date: April 1, 2018
Publication year: 2018
Pages: 44-50
Language: English
ISSN: 09214526
CODEN: PHYBE3
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The electronic, optical and magnetic properties of Ce doped ZnO crystal have been studied by using first principles method. The research of formation energies show that Ce doped ZnO is energetically stable, and the formation energies reduce from 6.25% to 12.5% for Ce molar percentage. The energy band is still direct band gap after Ce doped, and band gap increases with the increase of Ce–Ce distance. The Fermi level moves upward into conduction band and the DOS moves to lower energy with the increase of Ce concentration, which showing the properties of n-type semiconductor. The calculated optical properties imply that Ce doped causes a red-shift of absorption peaks, and enhances the absorption of the visible light. The transition from ferromagnetic to antiferromagnetic has been found in Ce doped ZnO. © 2018 Elsevier B.V.
Number of references: 33
Main heading: Electronic structure
Controlled terms: Crystal structure - Magnetic properties - Molar ratio - Red Shift - Energy gap - Cerium - II-VI semiconductors - Wide band gap semiconductors - Zinc oxide
Uncontrolled terms: Antiferromagnetics - Calculated optical properties - Ce concentration - Ce-doped - First principles method - Formation energies - Molar percentage - N-type semiconductors
Classification code: 547.2 Rare Earth Metals - 701.2 Magnetism: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 741.1 Light/Optics - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 933.1.1 Crystal Lattice
Numerical data indexing: Percentage 6.25e+00% to 1.25e+01%
DOI: 10.1016/j.physb.2018.01.035
Funding Details: Number: 2014JQ6206, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 11547118, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors acknowledge computational supports from the National Natural Science Foundation of China (Grant Nos. 11247229 , 21606177 and 11547118), the Natural Science Foundation of Shaanxi Province of China (Grant Nos. 2014JQ6206 and 2016JQ1027).
Compendex references: YES
Database: Compendex

255. Study of dynamometer cards identification based on root-mean-square error algorithm

Accession number: 20173003971786
Authors: Ren, Tao (1); Kang, Xiaoqing (1); Sun, Wen (1); Song, Hong (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Ren, Tao(rentao365@126.com)
Source title: International Journal of Pattern Recognition and Artificial Intelligence
Abbreviated source title: Int J Pattern Recognit Artif Intell
Volume: 32
Issue: 2
Issue date: 2018
Publication year: 2018
Article number: 1850004
Language: English
ISSN: 02180014
CODEN: IJPIEI
Document type: Journal article (JA)
Publisher: World Scientific
Abstract: The surface dynamometer cards are important working condition data of sucker-rod pumping system. It has a very important practical significance for the analysis of transmission system and the diagnosis of oil production condition of sucker-rod pumping system. The pump dynamometer cards are important reference for the diagnosis of oil production condition, and its key technology is the identification of pump dynamometer cards. A new similar pattern recognition algorithm based on root-mean-square error (RMSE) is proposed, a theoretical model of the similarity matching algorithm based on RMSE is established, and the algorithm is studied and analyzed. The three-dimensional vibration mathematical models for the surface dynamometer cards are created, by which the surface dynamometer cards can be transformed to the pump dynamometer cards. The accuracy, reliability and stability between the algorithm of RMSE similarity matching and the classical algorithms of similarity pattern matching are studied. The research shows that the resistance to the graphics deformation of RMSE algorithm is the highest among all algorithms. The application of RMSE algorithm and classic similarity matching algorithms to the identification of real pump dynamometer cards and the fault diagnosis of oil wells indicates that the RMSE algorithm has very high identification reliability and accuracy. The remarkable feature of the RMSE algorithm is that it has very high identification accuracy for small difference, while the classical similarity matching algorithms do not have this feature. © 2018 World Scientific Publishing Company.
Number of references: 22
Main heading: Errors
Controlled terms: Pattern matching - Mean square error - Three dimensional computer graphics - Dynamometers - Pumping plants - Oil well pumps
Uncontrolled terms: Dynamometer card - Identification techniques - Matching algorithm - Oil production - Root mean square errors
Classification code: 446 Waterworks - 511.2 Oil Field Equipment - 618.2 Pumps - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 922.2 Mathematical Statistics - 943.1 Mechanical Instruments
DOI: 10.1142/S0218001418500040
Compendex references: YES
Database: Compendex

256. The Xi'an Construction Market Supervision Information System

Accession number: 20190706499088
Authors: Fan, Wei (1); Huijing, Ge (1); Xianwei, Zhang (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Abbreviated source title: Proc. - Int. Conf. Smart Grid Electr. Automation, ICSGEA
Part number: 1 of 1
Issue title: Proceedings - 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Issue date: October 18, 2018
Publication year: 2018

Pages: 428-431
Article number: 8498371
Language: English
ISBN-13: 9781538669532
Document type: Conference article (CA)
Conference name: 2018 International Conference on Smart Grid and Electrical Automation, ICSGEA 2018
Conference date: June 9, 2018 - June 10, 2018
Conference location: Changsha, China
Conference code: 141421
Sponsor: Central South University; Communications Research Institute of Changsha University of Science and Technology; Department of Urban Management, Hunan City College; Hongkong Intelligent Computation Technology and Automation Association
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: With the acceleration of social development, the construction projects of the xi'an's construction market are also increasing. Construction projects not only affect the daily life of the citizens in Xi'an, but also bring difficulties to Xi'an's supervision departments. Therefore, the leader of the Xi'an construction market supervision department decides to develop a construction market supervision information system to manage the building projects data and make rapid and accurate judgment on the project management of the building market. The application system contain the site inspection module, the case handling module, the fines payment module and the system configuration module. The application system is based on javaEE web technology platform, and uses Spring MVC, Spring, Shiro, Mybatis technology and Encache technology. © 2018 IEEE.

Number of references: 7
Main heading: Web services
Controlled terms: Project management - Commerce - Information management - Information systems - Information use
Uncontrolled terms: Application systems - Building markets - Building projects - Construction markets - Construction projects - Site inspections - Social development - System configurations
Classification code: 903.2 Information Dissemination - 903.3 Information Retrieval and Use - 912.2 Management
DOI: 10.1109/ICSGEA.2018.00112
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

257. A Kite Simulator Based on Aerodynamic Model   (*Open Access*)

Accession number: 20185206315919
Authors: Kangl, Lei (1); Liang, Jianzhe (2); Wang, Cailing (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an, Shaanxi Province, China; (2) Tsinghua University, Beijing, China
Corresponding author: Kangl, Lei(kangl@xsyu.edu.cn)

Source title: MATEC Web of Conferences
Abbreviated source title: MATEC Web Conf.
Volume: 246
Part number: 1 of 1
Issue title: 2018 International Symposium on Water System Operations, ISWSO 2018
Issue date: December 7, 2018
Publication year: 2018
Article number: 03042
Language: English
ISSN: 22747214
E-ISSN: 2261236X
Document type: Conference article (CA)
Conference name: 1st International Symposium on Water System Operations, ISWSO 2018
Conference date: October 16, 2018 - October 20, 2018
Conference location: Beijing, China
Conference code: 143365
Publisher: EDP Sciences

Abstract: Kite simulator is important for training air borne wind energy controllers. A kite model based on aerodynamics and ordinary differential equation has been proposed to calculate kites' trajectory in the air. A constant problem solver has also been developed to study the system's stability and cross validate the simulators behaviour.

Elementary evaluation shows a typical trajectory of a kite and verifies the system's stability. © The Authors, published by EDP Sciences, 2018.

Number of references: 3
Main heading: Simulators
Controlled terms: Ordinary differential equations - Aerodynamics - System stability - Wind power
Uncontrolled terms: Aerodynamic modeling - Air borne - Model-based OPC - Problem solvers - System's stabilities - Wind energy controller
Classification code: 615.8 Wind Power (Before 1993, use code 611) - 651.1 Aerodynamics, General - 921.2 Calculus - 961 Systems Science
DOI: 10.1051/matecconf/201824603042
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

258. Structure Design of Spiral Driven Adaptive Pipeline Robot under Complex Conditions

Accession number: 20184406018744
Authors: Zheng, Jie (1); Liu, Man (1); Dou, Yi-Hua (1); Zhu, Li-Tao (1)
Author affiliation: (1) Xi'An Shiyou University, School of Mechanical Engineering, Xi'an, Shaanxi; 710065, China
Source title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Manag., Commun., Electron. Autom. Control Conf., IMCEC
Part number: 1 of 1
Issue title: Proceedings of 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Issue date: September 20, 2018
Publication year: 2018
Pages: 1838-1841
Article number: 8469631
Language: English
ISBN-13: 9781538618035
Document type: Conference article (CA)
Conference name: 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference, IMCEC 2018
Conference date: May 25, 2018 - May 27, 2018
Conference location: Xi'an, China
Conference code: 140123
Sponsor: Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; Xi'an Peihua University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In order to solve the problem of motion interference when the pipe robot pass through the elbow, the robot can fit the different pipe diameter when the robot pass through the geometric irregular pipe, we design a screw-driven adaptive pipe robot under complex working conditions. The robot is mainly composed of a driving mechanism, a holding mechanism and an elastic mechanism. The design of the main structural transmission components are carried out by the technical requirements and the analysis of the movement state of the robot pass through the elbow. Simultaneously, we established three-dimensional solid modeling of the pipeline robot to verify that the mechanism can meet the speed ratios. The results show that the pipeline robot can pass the elbow without interference, which has certain diameter adaptability and obstacle clearance ability. © 2018 IEEE.
Number of references: 11
Main heading: 3D modeling
Controlled terms: Pipelines - Robots - Machine design
Uncontrolled terms: adaptability - Complex condition - Elastic mechanism - Obstacle clearance - Oil pipelines - Structural transmission - Technical requirement - Three-Dimensional Solid Modeling
Classification code: 601 Mechanical Design - 619.1 Pipe, Piping and Pipelines - 723.2 Data Processing and Image Processing - 731.5 Robotics
DOI: 10.1109/IMCEC.2018.8469631
Funding Details: Number: 2017JQ5114, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 16JK1611, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 5167041385, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

259. The test of short electric arc trepanning machining and analysis of electrode machining characteristics   (*Open Access*)

Accession number: 20184205961829
Authors: Peng, Hai (1); Chai, Hui (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, Shannxi; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1087
Part number: 4 of 6
Issue: 4
Issue title: 1st International Conference on Advanced Algorithms and Control Engineering, ICAACE 2018 - Systems, Automation and Process Control
Issue date: October 2, 2018
Publication year: 2018
Article number: 042072
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 1st International Conference on Advanced Algorithms and Control Engineering, ICAACE 2018
Conference date: August 10, 2018 - August 12, 2018
Conference location: Pingtung, Taiwan
Conference code: 140314
Sponsor: Chongqing University; National Pingtung University of Science and Technology
Publisher: IOP Publishing Ltd

Abstract: Short electric arc machining is a non-contact and inter-pole discharge processing technology, which belongs to the category of special electric processing technology. Short electric arc machining is especially suitable for processing some hard working materials with high hardness, high strength, high toughness, etc. However, it is very difficult to process the trepanning of the difficult-to-machine material. Therefore, it is a new research direction to apply the short electric arc machining technology to the trepanning machining. In this paper, the machining characteristics of the electrode are analyzed by the test of short electric arc trepanning in order to determine the effect of different electrical machining parameters on the removal rate of the workpiece material and the loss rate of electrode. Several electrode materials and different electrode structures are selected for short electric arc trepanning test in order to determine the processing characteristics of the electrode. The result shows that when the power supply voltage increases, the removal rate of the workpiece material and the loss rate of the electrode also increase accordingly. under the same discharge voltage conditions, the removal rate of the titanium alloy TC4 by the graphite electrode is higher than that of the Ni-base high-temperature alloy In625. While, the tooth structure electrode of the same electrode material has a better processing effect. © Published under licence by IOP Publishing Ltd.
Number of references: 7
Main heading: Titanium alloys
Controlled terms: Manufacture - Graphite electrodes - Electric power systems - Electric arcs - Electric losses
Uncontrolled terms: Difficult to machine materials - Electrode structure - Machining characteristics - Machining parameters - Machining technology - Power supply voltage - Processing technologies - Short electric arcs
Classification code: 537.1 Heat Treatment Processes - 542.3 Titanium and Alloys - 701.1 Electricity: Basic Concepts and Phenomena - 706.1 Electric Power Systems - 913.4 Manufacturing
DOI: 10.1088/1742-6596/1087/4/042072
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex

260. Temporal response and sensing properties of reflected light for a rectangular laser pulse incident to a Fabry-Perot interferometer

Authors: Xu, Shichao (1); Zhang, Lu (1); Luo, Mingshi (2); Fa, Yuan (1)
Author affiliation: (1) Monitoring Center, Shaanxi Earthquake Agency, Xian, Shanxi; 710068, China; (2) School of Computer Science, Xian Shiyou University, Xian, Shanxi; 710065, China

Abstract: With the development of laser technology, rectangular laser pulses can get narrower rising and falling edge, and the time scale of the rising or falling edge can reach nanosecond. When the falling edge of a rectangular laser pulse is incident to a Fabry-Perot interferometer and the time scale is less than the single round-trip time of light traveling in the Fabry-Perot cavity, the fast degradation of incident light intensity causes the change of the reflected light intensity and energy. The reflected light intensity and energy vary with the time scale of the rectangular laser pulse for an invariant phase difference of the light propagating through the Fabry-Perot cavity. For a fixed time scale of the rectangular laser pulse, the intensity and energy of reflected light vary with the phase difference. In this paper, the temporal response of the reflected light intensity and energy of the Fabry-Perot interferometer is studied, and a high precision sensing scheme can be achieved. To improve the sensitivity of the reflected light energy to phase difference by optimizing the parameters of the rectangular laser pulse and the Fabry-Perot interferometer, we calculate the signal-to-noise of the reflected light energy versus the response time, reflectivity and phase difference of Fabry-Perot interferometer. Furthermore, we analyze absorption property of the Fabry-Perot interferometer to expand the field of application of this sensing scheme. © 2018 SPIE.

261. High efficiency and fast separation of active proteins by HIC chromatographic pie with sub-2μm polymer packings

![Engineering Village logo]

Authors: Ke, Cong-Yu (1); Lu, Guo-Min (1); Sun, Wu-Juan (1); Zhang, Xun-Li (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Ke, Cong-Yu(kcy@xsyu.edu.cn)

Abstract: This paper reports the development of hydrophobic interaction chromatography (HIC) by synthesizing sub-2 μm polymer packings which was packed into a chromatographic pie for fast separation of native proteins at low pressures demonstrating high efficiency. Using styrene as monomer and ethylene dimethacrylate (EDMA)as swelling agent, the polystyrene seeds with an average particle size of 0.8 μm and monodisperse polymeric microspheres with a particle size of 1.5–5.0 μm were synthesized through dispersion polymerization and one-step swelling method, respectively. In order to separate active proteins, the microspheres were modified to hydrophobic chromatographic packings through covalent bonding with benzene methanol. Compared with the traditional column chromatography, the sub-2 μm polymer packings in chromatographic pie exhibited higher column efficiency for protein separation at lower column pressures, even at higher flow rates. The van Deemter curve showed that the flow rate had insignificant effect on column efficiency of chromatographic pie. Seven example proteins were clearly separated within 3 min at a flow rate of 10 mL/min. The applicability of this method was further demonstrated by the separation of human serum samples. The results indicated that this chromatographic mode can be potentially applied for the fast separation of complex active proteins, such as protein drugs from natural products. © 2018 Elsevier B.V.

Number of references: 46
Main heading: Column chromatography
Controlled terms: Hydrophobicity - Microspheres - Drug products - Ethylene - Particle size - Styrene - Hydrophobic chromatography - Biosynthesis - Proteins - Efficiency
Uncontrolled terms: Average particle size - Chromatographic packings - Chromatographic pie - Dispersion polymerization - Ethylene dimethacrylate - HPLC - Hydrophobic interaction chromatography - Protein separations
Classification code: 461.8 Biotechnology - 801 Chemistry - 801.2 Biochemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Size 8.00e-07m, Time 1.80e+02s
DOI: 10.1016/j.jchromb.2017.12.027

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

262. Pore structure differences of the extra-low permeability sandstone reservoirs and the causes of low resistivity oil layers: A case study of Block Yanwumao in the middle of Ordos Basin, NW China

Accession number: 20183805826896
Title of translation: ——

Authors: Wang, Jianmin (1); Zhang, San (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China

Abstract: The influence of pore structure difference on rock electrical characteristics of reservoir and oil reservoir was analyzed taking Triassic Chang 6 reservoir in Block Yanwumao in the middle of Ordos Basin as an example. The relationship between the pore structure difference and the low resistivity oil layer was revealed and demonstrated through core observation, lab experiments, geological research, well log interpretation and trial production etc. The results show that there were two kinds of oil layers in Chang 6 Member, normal oil layer and low resistivity oil layer in the region, corresponding to two types of pore structures, pore type mono-medium and micro-fracture-pore type double-medium; the development of micro-fracture changed greatly the micro-pore structure of the reservoir, and the pore structure difference had an important influence on the rock electrical characteristics of the extra-low permeability sandstone reservoir and oil reservoir; the normal oil layers had obvious characteristics of pore-type mono-medium, and were concentrated in Chang 61, Chang 622 and Chang 623; the low resistivity oil layers had obvious characteristics of micro-fracture-pore type double-medium, which were mainly distributed in Chang 621 and Chang 63. The mud filtrate penetrated deep into the oil layers along the micro-cracks, leading to sharp reduction of resistivity, and thus low resistivity of the oil layer; the low resistivity oil layers had better storage capacity and higher productivity than the normal oil layers. © 2018, The Editorial Board of Petroleum Exploration and Development. All right reserved.
Number of references: 24
Main heading: Pore structure
Controlled terms: Oil well logging - Low permeability reservoirs - Metamorphic rocks - Petroleum reservoir engineering - Fracture
Uncontrolled terms: Chang 6 oil layers - Extra low-permeability - Low resistivity - Mud invasion - Ordos Basin
Classification code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.11698/PED.2018.02.08
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

263. Evaluating the CBM reservoirs using NMR logging data   (*Open Access*)

Authors: Liu, Zhi-Di (1); Zhao, Jing-Zhou (1); Zhang, Peng (1); Sun, Jia-Xing (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Zhi-Di(liuzhidi@xsyu.edu.cn)

Abstract: This paper discussed the application of nuclear magnetic resonance (NMR) logging in evaluating the pore structure of coal seams, physical properties, aquosity and sealing of the coal seam roof and floor. The study results show that T2 relaxation time spectrum could reflect the pore structure characteristics of the coal. The NMR transverse relaxation time (T2) of coal is 0.5~2.5, 20~50, and more than 100 ms, three spectral peaks represent meso pores, large pores and fractures. The larger the spectral peaks are where more pores and fractures develop. The T2 relaxation time spectrum of coal reservoirs in the research area is generally characterized by double-peak structure characteristics, which shows that the coal reservoir is microporous with meso pores. There are obvious gaps and poor continuities between the two peaks, and the break point is approximately 10 ms between the two peaks point. This indicates that the bound water and movable fluid in the coal reservoir cannot be connected effectively. NMR can reflect

the level of porosity and permeability of the coal reservoir. Greater development of fracture and better permeability in the coal reservoir cause greater right peak of T2 relaxation time spectrum of the NMR. The effective porosity of coal reservoirs in the study area is generally less than 3%, which reflects the matrix pores of the coal seam. The fractures of large pore have little contribution to the porosity. The left peak of the T2 spectrum of a coal seam and its roof and floor are higher, which indicates that the meso pores and tiny pores develop, and there is less movable water. The low left peak and high right peak of T2 spectrum show that the meso and macro pores develop, and there is more movable water. In a well area with good sealing capability, the right peak of the NMR logging T2 spectrum of the coal seam roof and floor is low, the T2 spectrum peak amplitude is low, and there are low porosity and poor permeability. NMR logging technology can be used to evaluate the CBM (coalbed gas reservoir) effectively, and then correctly evaluate and effectively develop the CBM reservoir. © 2018 Zhi-di Liu et al. published by De Gruyte.

Number of references: 18
Main heading: Porosity
Controlled terms: Petroleum reservoir engineering - Coal - Fracture - Mechanical permeability - Roofs - Floors - Nuclear magnetic resonance - Coal deposits - Nuclear magnetic logging - Pore structure
Uncontrolled terms: aquosity - Cbm reservoirs - Coal-bed gas reservoirs - Double peak structure - NMR transverse relaxations - Nuclear magnetic resonance logging - Pores and fractures - Structure characteristic
Classification code: 402 Buildings and Towers - 503 Mines and Mining, Coal - 512.1.2 Petroleum Deposits : Development Operations - 524 Solid Fuels - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 3.00e+00%, Time 1.00e-01s, Time 1.00e-02s
DOI: 10.1515/geo-2018-0043
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Funding text: Acknowledgement: The authors would like to acknowledge the reviewers and the editor for their many helpful comments and suggestions, which significantly improved the manuscript. Thanks are also given to the key laboratory of science research project in Shaanxi province department of education (Grant NO: 14JS082; 14JS084) and the foundation research project of natural science in Shaanxi Provincial (Grant NO: 2013JQ5008) for their support during the completion of this paper.
Compendex references: YES
Open Access type(s): All Open Access, Gold
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Data Provider: Engineering Village
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264. The definition, current situation and development trend of latent aspect rating analysis in text mining

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Abstract: The field of latent aspect rating analysis has been developed in the last few years. Firstly, we introduce the background and definition of latent aspect rating analysis in text mining. Secondly, we have collected literature on the latent aspect rating analysis of the research in recent years and summarized the development status of this

field. Finally, the future development trend and expectation of this field are put forward according to relevant literature. Furthermore, the main contribution of this paper is to describe the field and analyze its development trend according to the author's research work. © 2018 Association for Computing Machinery.

Number of references: 21
Main heading: Data mining
Uncontrolled terms: Aspect - Current situation - Development status - Development trends - Latent Aspect Rating Analysis
Classification code: 723.2 Data Processing and Image Processing
DOI: 10.1145/3232829.3232833
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

265. Polystyrene-impregnated paper substrates for direct mass spectrometric analysis of proteins and peptides in complex matrices

Authors: Li, Jin (1); Zheng, Yajun (1); Mi, Wei (1); Muyizere, Theoneste (1); Zhang, Zhiping (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Zhiping(zhangzp0304@gmail.com)
Abstract: Direct analysis of proteins and peptides in complex matrices is of significant importance for biological, medicinal and toxicological studies. Paper spray mass spectrometry is a promising method for the rapid determination of target compounds in various samples, but such a protocol is greatly limited by the hydrogen-bond and van der Waals interactions between the paper substrate and proteins and peptides. In this study, we reported the development of a robustly hydrophobic polystyrene-impregnated paper substrate with a surface energy of 49.0 mN m-1 for paper spray in the analyses of proteins and peptides. The substrate was prepared by first coating polystyrene microspheres on the surface of filter paper followed by baking at 180 °C. We found that the baking temperature and coating amount of polystyrene had pronounced effects on the surface properties of the generated paper and the performance of paper spray in the analysis of target compounds. In addition, the capability of polystyrene-impregnated paper during paper spray was closely related to the composition of spray solvent. The developed paper has also been used for the measurement of various proteins and peptides (e.g., cytochrome c, lysozyme, myoglobin, angiotensin II and hemoglobin) in complex matrices (e.g., PBS and Tris buffer solutions and whole blood samples). The results demonstrated that in contrast to uncoated filter paper, the analysis sensitivity of paper spray using polystyrene-impregnated paper could be improved 12-1348-fold. This could ultimately make the PS-impregnated paper a potential substrate for paper spray in the direct analysis of proteins and peptides in various complex samples. © The Royal Society of Chemistry.

Number of references: 43
Main heading: Polystyrenes
Controlled terms: Substrates - Hydrogen bonds - Sensitivity analysis - Peptides - Coatings - Mass spectrometry - Van der Waals forces
Uncontrolled terms: Baking temperature - Complex matrices - Impregnated paper - Mass spectrometric analysis - Paper substrate - Polystyrene micro-sphere - Potential substrate - Van Der Waals interactions
Classification code: 461.9 Biology - 801 Chemistry - 801.4 Physical Chemistry - 813.2 Coating Materials - 815.1.1 Organic Polymers - 921 Mathematics - 931.3 Atomic and Molecular Physics
Numerical data indexing: Surface_Tension 4.90e-02N*m, Temperature 4.53e+02K
DOI: 10.1039/c8ay01081a

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

266. Chemical-Microwave-Ultrasonic compound conditioning treatment of highly-emulsified oily sludge in gas fields

Accession number: 20191306691393
Title of translation: --
Authors: Su, Biyun (1); Huang, Li (1); Li, Shanjian (1); Ding, Liqin (1); Liu, Bo (1); Zhang, Ao (1)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 38
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Issue date: December 25, 2018
Publication year: 2018
Pages: 134-139
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: The highly-emulsified oily sludge in gas fields is complex in components and serious in emulsification, which makes effective reduction extremely difficult only by a single direct mechanical separation method such as microwave heating, ultrasonic treatment, chemical conditioning, etc. In view of this, this paper presented a new chemical-physical compounding conditioning technology for such highly emulsified oily sludge in gas fields. The experimental samples, from the Mizhi Natural Gas Processing Plant of the PetroChina Changqing Oilfield Company, were treated through chemical conditioning, from which the optimal formula, dosages and dosing order were determined. On this basis, the compound technology of chemical-physical conditioning was applied to reduce the specific resistance to filtration (SRF) of the sludge, thus achieving a satisfactory result. The following results were obtained. (1) The chemical conditioning agent with the formula of the oxidant MN-S, calcium oxide and sodium hydroxide was proved to achieve the fastest dewatering speed, and the specific resistance of sludge can be reduced from 130.3 to 3.81 trillion m3 per kg. (2) Comparison between microwave and ultrasonic conditioning methods shows that the latter is better in reducing the SRF (the ultrasonic frequency of 40 kHz was applied to reduce the SRF down to 14.01 trillion m3 per kg after 4 minutes of conditioning treatment). (3) The ultrasonic treatment effect after chemical conditioning is the best; the SRF was reduced to 2.77 trillion m3 per kg, and the moisture content of the sludge after mechanical dewatering was only 68.71%, decreased by 21.46% compared with the original content of 90.17%. In conclusion, this presented chemical-microwave-ultrasonic compound conditioning technology can reduce the sludge's SRF and the moisture content of filter cakes so as to achieve effective reduction of the highly-emulsified sludge in gas fields. © 2018, Natural Gas Industry Journal Agency. All right reserved.
Number of references: 16
Main heading: Moisture
Controlled terms: Emulsification - Lime - Microwave heating - Microwaves - Natural gas - Sodium hydroxide - Dewatering - Ultrasonics - Gas industry - Manganese compounds
Uncontrolled terms: Changqing oilfield companies - Chemical conditioning - Conditioning treatment - Mechanical separation - Natural gas processing plants - Oily sludges - Sludge - Specific resistance to filtration
Classification code: 522 Gas Fuels - 642.1 Process Heating - 711 Electromagnetic Waves - 711.1 Electromagnetic Waves in Different Media - 753.1 Ultrasonic Waves - 802.3 Chemical Operations - 804.2 Inorganic Compounds
Numerical data indexing: Frequency 4.00e+04Hz, Percentage 2.15e+01%, Percentage 6.87e+01%, Percentage 9.02e+01%, Time 2.40e+02s

267. Research on the Structure of Thickening Zone of Oil Drill Pipe and the Characteristics of Flow Field for Drilling Fluid Circulation

Authors: Airong, Xu (1)
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Abstract: Due to the poor service environment of the thickening oil drill pipe, the piercing leakage and fracture failure often occur in the thickening transition. In this paper, the FEA is used to analyze the effect of the geometric structure change of the thickening zone of the drill pipe on the flow field characteristics of drilling fluid circulation by using the ANSYS CFD fluid calculation module and taking the API thickening drill pipe as an example. The study results show that, when drilling fluid circulates, the negative pressure in and out of the pipe thickening zone is larger, and the eddy current flow will be generated by the larger negative pressure. And the change of the transition arc radius and the m_{iu} in the thickening zone will have a great influence on the flow field pressures. The variation of m_{eu} has a great influence on the negative pressure of the annulus flow field, while the change of L_{eu} and L_{iu} has little effect on the characteristics of the flow field of in-pipe and outer annulus. The research provides a theoretical reference for the design and production of thickening oil drill pipe with high quality and long life. © 2018 IEEE.

268. Atomistic simulations of effect of hydrogen atoms on mechanical behaviour of an α-Fe with symmetric tilt grain boundaries

Authors: Song, H.Y. (1); Li, C.F. (1); Geng, S.F. (1); An, M.R. (1); Xiao, M.X. (1); Wang, L. (1)
Author affiliation: (1) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Song, H.Y.(gsfshy@sohu.com)
Abstract: The effects of the hydrogen concentration, crystal orientation and grain size on the mechanical properties of an α-Fe bicrystal with symmetric tilt grain boundaries under tensile loading are investigated by molecular dynamics simulation. The results indicate that regardless of crystal orientation, the yield strength of bicrystal α-Fe decreases with the increase of hydrogen concentration. Hydrogen atoms have no influence on the primary dislocation (or twin) nucleation mechanism, but rather influence their multiplication process. The results also show that the degree of hydrogen embrittlement is obviously dependent on the misorientation angle, but it is almost independent of the grain size. © 2018 Elsevier B.V.
Number of references: 37
Main heading: Molecular dynamics
Controlled terms: Crystal orientation - Grain boundaries - Grain refinement - Grain size and shape - Atoms - Bicrystals - Hydrogen embrittlement - Hydrogen
Uncontrolled terms: Atomistic simulations - Deformation behaviour - Hydrogen concentration - Mechanical behaviour - Misorientation angle - Molecular dynamics simulations - Nucleation mechanism - Tilt grain boundary
Classification code: 531.1 Metallurgy - 801.4 Physical Chemistry - 804 Chemical Products Generally - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.1016/j.physleta.2018.06.005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

269. Supramolecular & oil displacement fluid for hydraulic fracturing

Authors: Cui, Weixiang (1); Zou, Honglan (1); Wang, Chunpeng (1); Yang, Jiang (2); Yan, Jun (3)
Author affiliation: (1) Petrochina Research Institute of Petroleum Exploration and Development, China; (2) Xi'an Shiyou University, China; (3) Petrochina Research Institute of Petroleum Exploration and Development, China

Language: English
Document type: Conference article (CA)
Conference name: SPE Asia Pacific Oil and Gas Conference and Exhibition 2018, APOGCE 2018
Conference date: October 23, 2018 - October 25, 2018
Conference location: Brisbane, QLD, Australia
Conference code: 143432
Publisher: Society of Petroleum Engineers
Abstract: This paper studied a new fracturing fluid based on a supramolecular complex between associative polymer and viscoelastic surfactant (VES). The combination of VES and associative polymer synergistically enhances the viscosity several times more than that of the individual components alone. The fluid system was optimized by experimental design. The microstructure of wormlike micelle and complex formation was verified by electron microscopy. The proppant transport test in a large-scale fracture simulator showed good proppant suspension ability. After fracturing, the nano- surfactant molecule in the liquid have a high surface energy, which can play a good oil displacement effect in the crack. The fluid has 50% lower formation damage than that of conventional guar. The fluid was prepared with less additives and formed gel instantly, which can be mixed on the fly in the field. The gel can be completely broken with almost no residue. By flooding and [1]nuclear magnetic resonance experiments results, compared to the conventional fracturing fluid and water, oil displacement efficiency can be increased by 12% to 20%, more micro-pores in the oil and gas drive for higher pressure stimulation effect for tight oil reservoir. Field application of the new fracturing fluid in 10 tight gas wells showed the enhancement of gas production over 100%. The fluid has 20% lower friction pressure than that of guar fluid. Hence, the new supramolecular fluid is an effective fracturing fluid. Supramolecular fracturing fluid provides a new fracturing system with less formation damage to fracturing operation. This paper will be beneficial to all engineers and technologists who are currently working at tight gas stimulation applications. Copyright 2018, Society of Petroleum Engineers
Number of references: 10
Main heading: Fracturing fluids
Controlled terms: Supramolecular chemistry - Tight gas - Additives - Petroleum reservoir evaluation - Micelles - Proppants - Reservoirs (water) - Gases - Petroleum reservoirs - Surface active agents
Uncontrolled terms: Associative polymers - Fracturing operations - Individual components - Oil-displacement efficiency - Pressure stimulation - Supramolecular complexes - Surfactant molecules - Viscoelastic surfactants
Classification code: 441.2 Reservoirs - 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 - 801.3 Colloid Chemistry - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals
Numerical data indexing: Percentage 1.00e+02%, Percentage 1.20e+01% to 2.00e+01%, Percentage 2.00e+01%, Percentage 5.00e+01%
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

270. Influence of preheating temperature on weldability of X100 pipeline steel

Accession number: 20185006230348
Title of translation: X100
Authors: Xu, Xueli (1); Huang, Jingpeng (1); Zheng, Genggeng (1); Wang, Tao (1)
Author affiliation: (1) School of materials science and engineering, Xi'an shiyou university, Xi'an; 710065, China
Corresponding author: Huang, Jingpeng(404064734@qq.com)
Source title: Hanjie Xuebao/Transactions of the China Welding Institution
Abbreviated source title: Hanjie Xuebao
Volume: 39
Issue: 9
Issue date: September 25, 2018
Publication year: 2018
Pages: 36-40
Language: Chinese

Document type: Journal article (JA)
Publisher: Harbin Research Institute of Welding
Abstract: Comprehensive study the influence of preheating temperature on weldability of X100 pipeline steel. The results showed that with the increase of preheating temperature, X100 pipeline steel critical fracture stress increases gradually, HAZ hardness reduced gradually; As preheating temperature increases, the lath bundle of BF is more and more narrow and the distribution is more and more closely; As preheating temperature increases, the HIC features reduced gradually. Though the implant test method and heat affected zone the highest hardness method, this article measure the critical fracture stress and hardness value of heat affected zone of X100 pipeline steel under different preheat temperatures which is 80, 120, and 160, analysis the microstructure and fracture morphology. This paper research the influence of preheating temperature on weldability of X100 pipeline steel. The results showed that with the increase of preheating temperature, the critical fracture stress of X100 pipeline steel increases gradually and the hardness of HAZ reduced. The lath bundle of BF become narrower and closer, and the HIC features in the cracking zone decreased when the preheating temperature raised. © 2018, Editorial Board of Transactions of the China Welding Institution, Magazine Agency Welding. All right reserved.
Number of references: 9
Main heading: Hardness
Controlled terms: Fracture - Morphology - Preheating - Heat affected zone - Steel pipe
Uncontrolled terms: Fracture morphology - Fracture stress - Hardness values - Implant tests - Paper research - Preheat temperature - Preheating temperature - X100 pipeline steels
Classification code: 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 642.1 Process Heating - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.12073/j.hjxb.2018390220
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

271. Characterization of Amorphous Ni-Cu-Ce-B Catalysts and Their Surface Interaction Mechanism in Phenol Hydrogenation

Accession number: 20183305699469
Title of translation: Ni-Cu-Ce-B
Authors: Xu, Haisheng (1); Wang, Bo (1); Wang, Hao (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: 34
Issue: 1
Issue date: January 25, 2018
Publication year: 2018
Pages: 161-166
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Supported and non-supported amorphous Ni-Cu-Ce-B catalysts were prepared by combining impregnation and chemical reduction methods, with $NiCl_2$, $Cu(NO_3)_2$ and $Ce(NO_3)_3$ as raw materials and KBH_4 as reducing agent. These catalysts were characterized by differential scanning calorimetry (DSC), physical adsorption instrument (BET method), scanning electron microscope (SEM) and X-ray diffractometer (XRD). The surface interaction mechanism and catalytic performance of Cu and Ce modified $Ni-B/\gamma-Al_2O_3$ catalysts were studied by the hydrogenation of phenol to cyclohexanone as probe reaction. The results demonstrated that introducing Cu and Ce atoms favors increasing the lowest crystallized temperature, thus strengthening the thermal stability. When they are located on the $\gamma-Al_2O_3$ support, both specific surface area and dispersity of active components can be significantly improved. Moreover, promoting the electronic transfer between Cu and Ni and the enhancement of the basicity by doping Ce are beneficial to increase the selectivity of cyclohexanone. © 2018, Editorial Office of Acta Petrolei Sinica(Petroleum Processing Section). All right reserved.
Number of references: 17
Main heading: Alkalinity

272. Development of a trapezoidal MgO catalyst for highly-efficient transesterification of glycerol and dimethyl carbonate

Authors: Bai, Zongquan (1); Zheng, Yajun (1); Han, Weiwei (1); Ji, Yue (1); Yan, Tianlan (1); Tang, Ying (1); Chen, Gang (1); Zhang, Zhiping (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Tang, Ying(tangying78@xsyu.edu.cn)

Abstract: A series of micro-sized MgO catalysts with various morphologies have been prepared by varying the reaction temperature and stirring time during precipitation, and were investigated for the production of glycerol carbonate from the transesterification of glycerol with dimethyl carbonate. In contrast to other morphologies of MgO (e.g., rod-like, spherical, flower-like and nest-like), trapezoidal MgO demonstrated a superior performance with a yield of glycerol carbonate of more than 99%. Various techniques including N_2 physical adsorption, XRD, CO_2 chemical adsorption and EDS revealed that the unique catalytic activity of trapezoidal MgO was related to its lower specific surface area, bigger crystallite size, weaker surface basicity and fewer Mg atom vacancies compared to the other morphologies of MgO. The experimental conditions (e.g., the catalyst amount, solvent, reaction temperature and molar ratio between glycerol and dimethyl carbonate) were also found to play crucial roles in determining the yield of glycerol carbonate. Furthermore, CO_2-TPD profiles and FT-IR spectra indicated that the weak surface basic sites occurring at 150 °C and the CO_3^{2-} stretching vibration around 1448 cm-1 were responsible for the catalytic activity of the developed trapezoidal MgO in regeneration. © 2018 The Royal Society of Chemistry.

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

273. Exploring the characteristics and genesis of low amplitude structures on the Yishaan Slope, Ordos Basin

Accession number: 20183805818096
Title of translation:
Authors: Wang, Jianmin (1); Zhang, San (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Earth Science Frontiers
Abbreviated source title: Earth Sci. Front.
Volume: 25
Issue: 2
Issue date: March 1, 2018
Publication year: 2018
Pages: 246-253
Language: Chinese
ISSN: 10052321
Document type: Journal article (JA)
Publisher: Science Frontiers editorial department
Abstract: This work was carried out in the Yanwumao block of Zhidan oilfield in the Ordos Basin. Based on a wealth of drilling data, three-dimensional modeling of large-scale dense well pattern and multi-factor composite analysis from both macro and micro perspective, the characteristics and genesis of low amplitude structures on the Yishaan slope in the Ordos Basin were explored. Results show that the low-amplitude structures developed widely; simple and inerratic macroscopic characteristics of the structures can be seen through micro-scale sparse well pattern, while more refined and complex microscopic characteristics are shown through large-scale dense well pattern. Each macroscopic low amplitude structure consists of a series of microscopic structures bearing local trap; its tectonic axis direction is close to the EW direction, perpendicular to the direction of the regional sedimentary facies belt distribution, and not conform to the formation conditions of differential compaction structure. The tectonic stress field was the power source in developing the essential characteristics of low amplitude structures of directional extension, side-by-side fold combination, large-scale development, regional distribution and inheritance evolution. The comprehensive effect of the Indosinian, Yanshan and Himalayan three-period stress field on the Yishan slope embodied a form of SN compressional stress and pressure-torsion impact, resulting in sedimentary cover so as to generate a series of nose folds that stretched nearly along the EW and arrayed regularly. At the same time, the adjustment of the subsequent two periods of the stress fields forced the macroscopically simple low amplitude structures of Indosinian, developed into a series of microscopically more complex and changeable low amplitude structures through inheritance evolution, therefore eventually formed the special low amplitude structural patterns which contain "both simple and complex" characteristics on the Yishan slope. © 2018, Editorial Office of Earth Science Frontiers. All right reserved.
Number of references: 25
Main heading: Tectonics
Controlled terms: Stresses - Sedimentology - Metamorphic rocks
Uncontrolled terms: Differential compaction - Essential characteristic - Large-scale development - Low-amplitude - Microscopic characteristics - Ordos Basin - Yanwumao block - Yishaan Slope
Classification code: 481.1 Geology
DOI: 10.13745/j.esf.yx.2017-12-27
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

274. Characteristics and Reutilization of Pyrolytic Residues of Oily Sludge: an Overview

Accession number: 20190206354109
Title of translation:
Authors: Li, Jinling (1, 2); Qu, Chengtun (1, 2); Zhu, Shidong (2, 3); Fan, Xiayun (1); Zhu, Zhihui (3)

Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Pollution Control, Beijing; 102206, China; (3) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Cailiao Daobao/Materials Review
Abbreviated source title: Cailiao Daobao/Mater. Rev.
Volume: 32
Issue: 9
Issue date: September 10, 2018
Publication year: 2018
Pages: 3023-3032
Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review

Abstract: The requirement of reduction, harmlessness and reutilization for oily sludge treatment provokes researchers' interest upon the pyrolysis technology, which is developed on the basis of high temperature coking technology and is regarded as the most promising sludge treatment methodology owing to its advantages of entire disposal, high reduction effect, high recovery rate, flexible recycling and capability to immobilize heavy metals. The pyrolytic products of oily sludge include three phases: liquid products (water, low condensation point crude, etc.), gaseous products (usually methane, carbon dioxide, carbon monoxide, hydrogen, etc.) and solid phase (residues in the reactor after pyrolysis reaction) which is generally called char. At present, research of oily sludge pyrolysis is mainly concentrated on pyrolysis process and yield and properties of pyrolytic oil and gas, while scant works have covered pyrolytic residues. The solid residues, which take a large portion of pyrolytic product and contain unrecovered oil and some heavy metals, will cause secondary pollution if not disposed of effectively. The pyrolytic residues of oily sludge has now been included in National Catalogue of Hazardous Waste, and the corresponding disposal and reutilization technology has become a thorny obstacle. The fundamental characteristics of pyrolytic residues is of crucial importance in disposal and reutilization. Analyses of the elemental composition and structure characteristics have revealed that the residues mainly contain ash and carbon, in which the former consists of oxides, sulfates, carbonates and a small amount of heavy metals, and the latter occupies about 35%-50% of residues total weight. The high carbon content leads to loose and porous structure featured by large pores and micropores, and in consequence, facilitates residues reutilization. In addition, the source and characteristics of oily sludge, the pyrolysis process parameters, the introduction of activation, activation methods (including oily sludge activation and residues activation), all these facts would affect the elemental types, content and structure of the residues, and further provide references for determining disposal and reutilization methodology. This article briefly introduces the gaseous, liquid and solid phase products of oily sludge pyrolysis, summarizes the effects of oil sludge characteristics, moisture content, particle size, activation condition, and pyrolysis temperature, holding time and heating rate on the productivity, elementary composition, surface chemical properties, pore structure and surface morphology of pyrolytic residues. It also outlines the application of pyrolytic residues in producing adsorbents, catalysts, flocculants and hydrogen-rich fuel gas. © 2018, Materials Review Magazine. All right reserved.
Number of references: 78
Main heading: Chemical activation
Controlled terms: Carbon monoxide - Carbon - Carbonization - Metal recovery - Particle size analysis - Sulfur compounds - Pyrolysis - Carbon dioxide - Recycling - Heavy metals - Particle size
Uncontrolled terms: Activation conditions - Elemental compositions - Fundamental characteristics - Oily sludges - Pyrolysis temperature - Pyrolytic residue - Structure characteristic - Surface chemical properties
Classification code: 452.3 Industrial Wastes - 531 Metallurgy and Metallography - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Percentage 3.50e+01% to 5.00e+01%
DOI: 10.11896/j.issn.1005-023X.2018.17.015
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

275. Micro-indentation hardness model of AISI1045 steel during micro-plasticity indentation experiment considering size effect (*Open Access*)

Accession number: 20183105622634
Authors: Zhang, Zhaoyuan (1); Fu, Jia (2, 3)

Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) Material and Chemistry Department, Southern University of Science and Technology, ShenZhen; 518055, China
Corresponding author: Fu, Jia(fujia@xsyu.edu.cn)

Abstract: The analytical method is used to study micro-plasticity indentation and the increment equation is worked out by analyzing the contacted nodes between rigid indenter with material. Then the experiment under various maximum loads (50mN, 100mN, 200mN, 300mN, 400mN, 500mN and 650mN) at the constant loading speed 9.6841mN/s is carried out on MCT-W501 micro-indentation tester and the constitutive equation of AISI1045 steel is obtained by Taylor equation. The experimental result shows great indentation size effects, so the intrinsic material length is introduced to accurately simulate the micro-indentation plasticity changes. Based on ABAQUS analyzing software, the equation obtained by experiment is input to simulate the loading curve between indentation load and indentation depth considering the effect of strain gradient. The result shows that the square of hardness relative value has a linear decrease with the increase of indentation diagonal. Based on the result of simulation and calculation, the final constitutive equation is proposed and the data of modified equation is quite coordinate with experimental and calculated data with relative error less than 4.92% thus the constitutive equation is verified. © Published under licence by IOP Publishing Ltd.

Number of references: 22
Main heading: Constitutive equations
Controlled terms: ABAQUS - Plasticity - Hardness - Indentation
Uncontrolled terms: Analytical method - Indentation depth - Indentation experiment - Indentation size effects - Micro indentation - Micro-indentation hardness - Modified equation - Simulation and calculations
Classification code: 723.5 Computer Applications - 921 Mathematics - 951 Materials Science
Numerical data indexing: Force 1.00e-01N, Force 2.00e-01N, Force 3.00e-01N, Force 4.00e-01N, Force 5.00e-01N, Force 5.00e-02N, Force 6.50e-01N, Percentage 4.92e+00%
DOI: 10.1088/1757-899X/382/2/022028
Funding Details:

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

276. Multi-fluid modeling biomass fast pryolysis with particle shrinkage model for complex reaction kinetics

Accession number: 20181705038405
Authors: Zhong, Hanbin (1); Zhang, Juntao (1); Zhu, Yuqin (1); Liang, Shengrong (1)

Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Zhong, Hanbin(hanbinzhong@126.com)

Abstract: In the gas-solid fluidized bed reactors for biomass fast pyrolysis, the diameter of particles normally shrink with the process of reaction, which not only affects the hydrodynamics such as segregation/mixing and entrainment behavior, but also influences the yield and composition of the products. Since the particle shrinkage model developed by our previous work (Powder Technology, 2016, 294: 43–54.) could be only applied for the simplified non-competitive single-component single-step reaction kinetics, in order to develop the advanced particle shrinkage model for complex pyrolysis reaction kinetics, three types of pyrolysis reaction kinetics considering the competitive reactions, the secondary cracking of tar, and the intermediate stage between virgin biomass and final products, respectively, were selected as the examples to illustrate the method for developing the relevant particle shrinkage models based on the mass conservation at the particle scale. Consequently, the biomass fast pyrolysis process in a bubbling fluidized bed reactor was simulated combing the particle shrinkage model and relevant pyrolysis reaction kinetics simultaneously. The influences of different particle shrinkage models and reaction kinetics on the flow and reaction behavior were revealed, and the predicted product yields were also compared with the experimental data. © 2018 Elsevier B.V.

Number of references: 30
Main heading: Fluidized beds
Controlled terms: Reaction kinetics - Association reactions - Supersaturation - Kinetics - Fluid catalytic cracking - Biomass - Fluidized bed furnaces - Chemical reactors - Reaction intermediates
Uncontrolled terms: Bubbling fluidized bed reactor - Competitive reactions - Diameter of particle - Fast pyrolysis process - Gas-solid fluidized bed - Multi-fluid models - Secondary cracking - Single step reaction
Classification code: 631.1 Fluid Flow, General - 642.2 Industrial Furnaces and Components - 801.4 Physical Chemistry - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 804 Chemical Products Generally - 931 Classical Physics; Quantum Theory; Relativity
DOI: 10.1016/j.cep.2018.03.030

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

277. The experimental research for moisture content on-line detecting sensor in high water-cut crude oil

Accession number: 20184806165297

Authors: Dong, Pengmin (1); Lv, Peizhi (1); Jiang, Jiebo (1); Dong, Mancang (2); Pi, Fuqiang (2); Chu, Xiaohong (2)
Author affiliation: (1) Department of Mechanical Engineering, Xian Shiyou University, Xi'an, China; (2) Fuxian Oil production Plant of SHAANXI YANCHANG PETROLUM (GROUP)CO.,LTD, Yan'an, China
Corresponding author: Lv, Peizhi

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Language: English
ISSN: 03795462
CODEN: IPPTDO
Document type: Journal article (JA)
Publisher: Indian Pulp and Paper Technical Association

Abstract: Microwave is one of the effective methods for on-line detecting moisture content in high water-cut crude oil. The microwave sensor for detecting moisture content based on dielectric constant is developed, the on-line detecting for moisture content of high water-cut crude oil is realized. To improve the detection accuracy of the microwave sensor, the influence of temperature on the microwave sensor was studied experimentally, and the correction formula was obtained, which was used in temperature compensation;the influence of one-component salinity(NaCl) and double-component salinity($CaCl_2$ and $MgCl_2$) on the sensor were studied experimentally, and the formula to correct the influence of one-component salinity(NaCl) was obtained, which were used in salinity compensation. Through the above methods, they are ensured that the moisture content detection error is less than 2.5% in high water-cut crude oil. © 2018 Indian Pulp and Paper Technical Association. All Rights Reserved.

Number of references: 15
Main heading: Moisture
Controlled terms: Moisture determination - Magnesium compounds - Microwaves - Crude oil - Sodium chloride - Microwave sensors
Uncontrolled terms: Content detection - Correction formulas - Detection accuracy - Experimental research - High water-cut - Microwave methods - Temperature compensation - Temperature correction
Classification code: 512.1 Petroleum Deposits - 711 Electromagnetic Waves - 732.2 Control Instrumentation - 944.2 Moisture Measurements
Numerical data indexing: Percentage 2.50e+00%
Funding Details: Number: KJ2018A0466, Acronym: -, Sponsor: -;
Funding text: This work was support by Key Projects of Natural Science in Anhui Higher Education Institutions (KJ2018A0466),. Key Projects of Natural Science in Huainan Normal University (2017xj01zd) and Key Projects of Natural Science in Huainan Normal University (2018xj16zd).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

278. Detection and identification of hemorrhages in fundus images of diabetic retinopathy

Accession number: 20210309802629
Authors: Li, Lipin (1); Celenk, Mehmet (2)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) Ohio University, Athens; OH; 45701, United States
Corresponding author: Li, Lipin(llphyq77@163.com)
Source title: International Conference on Biological Information and Biomedical Engineering, BIBE 2018
Abbreviated source title: Int. Conf. Biol. Inf. Biomed. Eng., BIBE
Part number: 1 of 1
Issue title: International Conference on Biological Information and Biomedical Engineering, BIBE 2018
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Language: English
ISBN-13: 9783800747276
Document type: Conference article (CA)
Conference name: 2nd International Conference on Biological Information and Biomedical Engineering, BIBE 2018
Conference date: July 6, 2018 - July 8, 2018
Conference location: Shanghai, China
Conference code: 164576
Publisher: VDE Verlag GmbH

Abstract: Diabetic retinopathy(DR)is a progressive eye complication of diabetes which may cause sight loss and blindness if not detected and treated in time. Hemorrhage is one of the early signs of diabetic retinopathy. The accurate detection of hemorrhages is critical for early screening and diagnosis of DR and protecting the vision of diabetic patients. In this paper, we present a novel method that detects and identifies hemorrhages of diabetic retinopathy in fundus color images. Firstly, the fusion algorithm of morphological top-hat transform and maximum entropy

thresholding are applied for enhancement and segmentation of blood vessels. This, in turn, captures thin vessels and produces accurate vesselness measures in low-contrast and local intensity of DR images. A feature vector is formed by extracting the size, shape, intensity and statistics of the hemorrhage candidate regions. The extracted feature vector is then used in a Fuzzy C-means clustering classifier to exclude spurious hemorrhages. Finally, the proposed method is evaluated and tested on the two standard diabetic retinopathy datasets DIARETDB0 and DIARETDB1. Experimental results show that a mean sensitivity of 92.87% and a mean positive predictive value of 88.62% are achieved by the proposed algorithm. Further, the experimental results also demonstrate that the method described herein has higher sensitivity and positive predictive value than recently published methods, which make the proposed scheme better suited for early diagnosis and treatment of DR hemorrhages. © VDE VERLAG GMBH - Berlin - Offenbach.

Number of references: 20
Main heading: Blood vessels
Controlled terms: Diagnosis - Eye protection - Image segmentation
Uncontrolled terms: Detection and identifications - Diabetic patient - Diabetic retinopathy - Fusion algorithms - Fuzzy C means clustering - Mean sensitivity - Positive predictive values - Top-hat transform
Classification code: 461.2 Biological Materials and Tissue Engineering - 461.6 Medicine and Pharmacology - 914.1 Accidents and Accident Prevention
Numerical data indexing: Percentage 8.86e+01%, Percentage 9.29e+01%
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

279. The sintering behavior of plasma-sprayed YSZ coating over the delamination crack in low temperature environment

Accession number: 20174804453087
Authors: Dong, Hui (1); Yao, Jian-Tao (1); Li, Xiao (1); Zhou, Yong (1); Li, Yuan-Bo (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Dong, Hui(donghuihyy@163.com)
Source title: Ceramics International
Abbreviated source title: Ceram Int
Volume: 44
Issue: 3
Issue date: 2018
Publication year: 2018
Pages: 3326-3332
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The sintering behavior of plasma-sprayed yttria-stabilized zirconia (YSZ) coating over the delamination crack and its influence on YSZ cracking were investigated via gradient thermal cycling test and finite element model (FEM). The gradient thermal cycling test was performed at a peak surface temperature of 1150 °C with a duration of 240 s for each cycle. A three-dimensional model including delamination cracks with different lengths was employed to elaborate the temperature evolution characteristics in YSZ coating over the delamination cracks. The temperature over the delamination crack increases linearly with the crack propagation, which continuously promotes the sintering of YSZ coating in the region. As a result, the YSZ coating over the delamination crack sinters dramatically despite of the low temperature exposure. Meanwhile, the temperature distribution difference in YSZ coating induces an nonuniform sintering along both free surface and thickness of YSZ coating. Correspondingly, the maximum vertical crack driving force locates at the YSZ free surface over the delamination crack center, which makes the vertical cracks generate in this region and propagate to the interface of YSZ /bond coat with YSZ further sintering. The vertical crack promotes the delamination crack propagation via accelerating the oxidation velocity of the bond coat. The influence of temperature rise on delamination crack propagation can be divided into two stages: the little contribution stage and the promotion stage. For the actual engine exposure to low temperature, the study of phase transformation of YSZ over the

delamination crack is indeed needed because of an extended remarkable temperature rise period. © 2017 Elsevier Ltd and Techna Group S.r.l.
Number of references: 38
Main heading: Plasma spraying
Controlled terms: Yttria stabilized zirconia - Finite element method - Plasma jets - Thermal cycling - Crack propagation - Delamination - Failure (mechanical) - Sprayed coatings - Temperature distribution - Sintering - Thermal barrier coatings - Yttrium oxide
Uncontrolled terms: Delamination crack propagation - Low temperature environment - Low temperatures - Sintering behaviors - Temperature variation - Thermal barrier coating (TBCs) - Three-dimensional model - Yttria-stabilized zirconias (YSZ)
Classification code: 641.1 Thermodynamics - 804.2 Inorganic Compounds - 813.1 Coating Techniques - 813.2 Coating Materials - 921.6 Numerical Methods - 932.3 Plasma Physics - 951 Materials Science
Numerical data indexing: Temperature 1.42e+03K, Time 2.40e+02s
DOI: 10.1016/j.ceramint.2017.11.113
Funding Details: Number: YS37020203, Acronym: -, Sponsor: -; Number: 16JK1597, Acronym: -, Sponsor: -; Number: P2018-17, Acronym: HUST, Sponsor: Huazhong University of Science and Technology; Number: 2016JQ5077, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: The present project is financially supported by the Natural Science Foundation Research Project of Shaanxi Province (No. 2016JQ5077), Special Research Project in Shaanxi Province Department of Education (No. 16JK1597), Materials Science and Engineering of Provincial Advantage Disciplines in Xi'an Shiyou University (No. YS37020203) and State Key Laboratory of Materials Processing and Die & Mould Technology, Huazhong University of Science and Technology (No. P2018-17).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

280. Resolution Enhancement for Low-resolution Text Images Using Generative Adversarial Network (*Open Access*)

Accession number: 20185206315917
Authors: Kong, Jie (1); Wang, Congying (1)
Author affiliation: (1) Xi'An Shiyou University, School of Computer Science, No. 18 2nd Dianzi Road, Xian, China
Corresponding author: Kong, Jie(jkong@xsyu.edu.cn)
Source title: MATEC Web of Conferences
Abbreviated source title: MATEC Web Conf.
Volume: 246
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Issue title: 2018 International Symposium on Water System Operations, ISWSO 2018
Issue date: December 7, 2018
Publication year: 2018
Article number: 03040
Language: English
ISSN: 22747214
E-ISSN: 2261236X
Document type: Conference article (CA)
Conference name: 1st International Symposium on Water System Operations, ISWSO 2018
Conference date: October 16, 2018 - October 20, 2018
Conference location: Beijing, China
Conference code: 143365
Publisher: EDP Sciences
Abstract: In recent years, although Optical Character Recognition (OCR) has made considerable progress, low-resolution text images commonly appearing in many scenarios may still cause errors in recognition. For this problem, the technique of Generative Adversarial Network in super-resolution processing is applied to enhance the resolution of low-quality text images in this study. The principle and the implementation in TensorFlow of this technique are introduced. On this basis, a system is proposed to perform the resolution enhancement and OCR for low-resolution text images. The experimental results indicate that this technique could significantly improve the accuracy, reduce the error rate and false rejection rate of low-resolution text images identification. © The Authors, published by EDP Sciences, 2018.
Number of references: 16

Main heading: Generative adversarial networks
Controlled terms: Image enhancement - Optical character recognition
Uncontrolled terms: Adversarial networks - False rejection rate - Low qualities - Low resolution - Optical character recognition (OCR) - Resolution enhancement - Super resolution - Text images
Classification code: 723.4 Artificial Intelligence - 741.1 Light/Optics
DOI: 10.1051/matecconf/201824603040

Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

281. Quantitative study on the blockage degree of pores due to asphaltene precipitation in low-permeability reservoirs with NMR technique

Accession number: 20174804455479
Authors: Wang, Chen (1); Li, Tiantai (1); Gao, Hui (1); Zhao, Jinsheng (1); Gao, Yuan (2)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China; (2) Shaanxi Gas Group Co., Ltd., Xi'an, China
Corresponding author: Li, Tiantai(13891911165@163.com)
Source title: Journal of Petroleum Science and Engineering
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Volume: 163
Issue date: April 2018
Publication year: 2018
Pages: 703-711
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: With the nuclear magnetic resonance (NMR) technology, a new experimental method was proposed to study the blockage degree of pores due to asphaltene precipitation during CO_2 flooding in Low-Permeability Reservoirs. By comparing the T2 spectrum measured before and after CO_2 flooding, the blockage degree by asphaltene precipitation was quantitatively determined for the pores with different sizes. It was found that, at the immiscible flooding stage, oil was mainly recovered from the larger pores (1.0–100.0 μm) and the asphaltene tended to precipitate in such pores. Compared with the larger pores, nearly no asphaltene precipitation was formed in the smaller pores (0.1–1.0 μm) at the immiscible stage. At CO_2 injection pressures above the minimum miscibility pressure (MMP), asphaltene precipitation formed in the lager pores; precipitation also took place in the smaller pores, filling up a significant portion of space in the smaller pores. At the miscible flooding stage, the total amount of asphaltene precipitation was reduced. The observed permeability reductions correlate reasonably with the amount of asphaltene precipitation for all flooding stages. By analyzing the T2 spectrum in different pores before and after CO_2 flooding, it was observed that the smaller pores were more apt to be blocked by the asphaltene precipitation than the larger pores. Since the asphaltene-blocking phenomena significantly affect the smaller pores, the core permeability may be substantially compromised after CO_2 flooding. © 2017 Elsevier B.V.
Number of references: 25
Main heading: Low permeability reservoirs
Controlled terms: Floods - Reservoirs (water) - Nuclear magnetic resonance - Oil well flooding - Asphaltenes - Carbon dioxide - Petroleum reservoir engineering
Uncontrolled terms: Asphaltene precipitation - Blockage - Injection pressures - Minimum miscibility pressure - New experimental method - NMR techniques - Nuclear magnetic resonance(NMR) - Permeability reduction
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 513 Petroleum Refining - 804.2 Inorganic Compounds
Numerical data indexing: Size 1.00e-06m to 1.00e-04m, Size 1.00e-07m to 1.00e-06m
DOI: 10.1016/j.petrol.2017.11.021

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

282. Adaptive Resolution Optimization and Tracklet Reliability Assessment for Efficient Multi-Object Tracking

Accession number: 20182705521584
Authors: Yu, Ruixing (1); Cheng, Irene (2); Zhu, Bing (3); Bedmutha, Sweta (2); Basu, Anup (2)
Author affiliation: (1) Northwestern Polytechnical University, Xi'an; 710072, China; (2) University of Alberta, Edmonton; AB; T6G 2E8, Canada; (3) Electrical Engineering Department, Xian Shiyou University, Xi'an; 710065, China
Abstract: Recent digital acquisition systems can acquire high-resolution videos, generating a large amount of dynamic data and leading to higher computational cost in online target tracking and learning, especially for complex scenes. We introduce an efficient and robust approach to improve the performance of multi-object online tracking and learning. Prior methods saved on computational cost by scaling down each video frame to a fixed smaller resolution, without considering the image features. Our algorithm computes the optimal image resolution adaptively by exploiting the correlation between an image's gray-value distribution and resolution. This dimensionality reduction step significantly improves the time performance in subsequent online tracking and learning, while preserving high tracking accuracy. Since a small detection error in one frame can cause cumulative error in the video sequence leading to incorrect labeling and tracking, we introduce a new tracklet reliability assessment metric to eliminate incorrect samples. Experimental results show that our approach can successfully track multiple objects in real time with both high precision and recall. © 1991-2012 IEEE.
Number of references: 44
Main heading: Image resolution
Controlled terms: Target tracking - Learning systems - E-learning - Online systems - Reliability analysis
Uncontrolled terms: Adaptive resolution - Composite features - Computational costs - Cumulative errors - Digital acquisition systems - Multi-object tracking - Reliability assessments - Robust approaches
Classification code: 722.4 Digital Computers and Systems
DOI: 10.1109/TCSVT.2017.2668278
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

283. Drilling Material Data Warehouse ETL System Research Based on Crowd-Sourcing (*Open Access*)

Accession number: 20184906176934
Authors: Zhou, Jie (1, 2); Fang, Ming (1, 2); Cao, Xin-Ran (1)
Author affiliation: (1) Institute of Computer, Xi'An Shiyou University, Xi'an, China; (2) Engineering Research Centre of OilandGas Information System, Xi'an, China
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Document type: Conference article (CA)
Conference name: 2nd International Conference on Electronic Information Technology and Computer Engineering, EITCE 2018
Conference date: October 12, 2018 - October 14, 2018
Conference location: Shanghai, China
Conference code: 142300
Publisher: EDP Sciences
Abstract: Drilling material data warehouse is an important platform for assisting drilling engineering decision support and data analysis. The construction of high-efficiency and high-quality enterprise-level data warehouse puts high requirements on data quality. The operation targets of oil and gas drilling engineering are buried underground, and there are difficulties in data obtaining. This causes many uncertain data in the oil and gas drilling business database. At the same time, the business database in one area is quite different from those of other areas due to geographical environmental impacts,so the database selection and integration strategy is uncertain. In order to solve these uncertain problem, this paper proposes building a drilling materials data warehouse ETL system based on crowd-sourcing, and improve the data quality of the data warehouse, thereby improving the efficiency of data warehouse construction. © The Authors, published by EDP Sciences, 2018.
Number of references: 5
Main heading: Data warehouses
Controlled terms: Environmental impact - Crowdsourcing - Data reduction - Production efficiency - Infill drilling - Decision support systems
Uncontrolled terms: Data quality - Drilling engineering - High quality - High-efficiency - Integration strategy - Material data - Oil and gas - Uncertain datas
Classification code: 454.2 Environmental Impact and Protection - 511.1 Oil Field Production Operations - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.3 Database Systems - 912.2 Management - 913 Production Planning and Control; Manufacturing - 913.4 Manufacturing
DOI: 10.1051/matecconf/201823201017
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

284. Research on the changing trend of farmland area in China and its driving factors from 1996 to 2016 (*Open Access*)

Accession number: 20183505762230
Authors: Wang, J.Y. (1); Li, X.M. (2)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) Shaanxi Provincial Land Engineering Construction Group, Xi'an; 710075, China
Corresponding author: Li, X.M.(xmlisdc@126.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.

Abstract: The paper was to research the changing trend of farmland area from 1996 to 2016. The original data of farmland area of China in these years were collected, data mining technology was used, and ARIMA model was chosen to predict each other between the two periods of 1996-2008 and 2008-2016, so the original farmland area data could be corrected and normalized. Then correlation analysis was used to study the driving factors. The trend research result showed, the farmland area decreased from 1996 to 2016, the decreasing rate was faster before 2004, and then it decreased slowly. The correlation analysis result showed, the added value proportion of primary industry, the total population, and the urban population were the most important driving factors, their coefficients were 0.959, -0.918 and -0.896 respectively. It could be concluded by the result that the industry configuration and the urbanization could affect the farmland area changing with the development of social economy. © Published under licence by IOP Publishing Ltd.

285. Corrosion reasons and control measures of a natural gas pipeline

Authors: Bing, Wang (1); Xiao-Juan, Liu (2); Zhe, Xiong (1); Jing-Jing, Cheng (2); Bo, Yang (1); Chang-Hai, Yu (2)
Author affiliation: (1) PetroChina Changqing Oilfield Third Gas Plant, Erdos; 017300, China; (2) Xi'An Shiyou University, Xi'an; 710065, China

Abstract: The work aims to analyze corrosion characteristics of a typical pipe section of natural gas pipeline, and clarify the cause and mechanism of pipeline corrosion. Scanning electron microscope (SEM) was used for surface and section microscopic observation of corrosion morphology in different positions on inner wall of the pipeline. Quantitative

analysis of the composition was carried out in X-ray diffraction and EDS method. Corrosion characteristics in the natural gas pipeline were studied by referring to such service conditions as natural gas composition delivered by the pipeline and pigging records. CO_2 corrosion was the main cause of corrosion in this natural gas pipeline. The corrosion pit in 12 o'clock direction was about 0.18 mm deep, and that in 3 o'clock and 6 o'clock direction was about 0.1 mm. The corrosion products were mainly Fe_2O_3 and $FeCO_3$. The corrosion products in 6 o'clock direction was the thickest, and those in 3 o'clock direction were the thinnest. The corrosion products in 3 and 6 o'clock direction were mainly Fe, O and C, and the corrosion products in 12 o'clock direction contained S and may be subject to bacterial corrosion simultaneously, SiO_2 was contained in the residual sludge in the pipeline itself, the pipeline may have been corroded before it was put into operation. Relevant corrosion prevention and control measures were put forward specifically, and frequency of pipeline replacement decreased by 56% after adoption of the measures. Internal corrosion of natural gas pipeline is mostly localized corrosion. During operation, corrosion shall be avoided as much as possible, and appropriate control measures shall be taken in time to avoid unnecessary losses. © 2018 Chongqing Wujiu Periodicals Press. All rights reserved.

Number of references: 16
Main heading: Carbon dioxide
Controlled terms: Clocks - Corrosion prevention - Gases - Hematite - Internal corrosion - Localized corrosion - Morphology - Natural gas - Natural gas pipelines - Scanning electron microscopy   - Silica
Uncontrolled terms: Control measures - Corrosion characteristics - Corrosion morphology - Corrosion products - Internal corrosion - Microscopic observations - Pipeline corrosion - Prevention and controls - Prevention measures - Scanning electrons
Classification code: 482.2 Minerals - 522 Gas Fuels - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 619.1 Pipe, Piping and Pipelines - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 943.3 Special Purpose Instruments - 951 Materials Science
Numerical data indexing: Percentage 5.60e+01%, Size 1.00e-04m, Size 1.80e-04m
DOI: 10.16490/j.cnki.issn.1001-3660.2018.06.014
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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286. Detecting Suspicious Social Astroturfing Groups in Tourism Social Networks

Accession number: 20191906903330
Authors: Alallaq, Noora (1); Al-Khiza'Ay, Muhmmad (1); Han, Xin (2)
Author affiliation: (1) Deakin University, School of Information Technology, Australia; (2) Xi'An Shiyou University, College of Computer Science, Xi'an, China
Source title: Proceedings - 2018 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing, BESC 2018
Abbreviated source title: Proc. - Int. Conf. Behav., Econ., Socio-Cult. Comput., BESC
Part number: 1 of 1
Issue title: Proceedings - 2018 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing, BESC 2018
Issue date: July 2, 2018
Publication year: 2018
Pages: 58-62
Article number: 8697307
Language: English
ISBN-13: 9781728102078
Document type: Conference article (CA)
Conference name: 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing, BESC 2018
Conference date: November 12, 2018 - November 14, 2018
Conference location: Kaohsiung, Taiwan
Conference code: 147582
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In the contemporary era, people are increasingly depending on online reviews before making shopping decisions. However in tourism and hospitality social networks, some astro-Turfing campaigns are made by organizations to promote their product or service. Astroturfing reviews can cause many issues to tourists who make decisions based on online reviews available. In this paper we proposed Latent Group Detective Model based on the Latent Dirichlet Allocation (LDA) model for efficient discovery of suspicious social astroturfing groups in tourism domain, and then a case study is presented to show the potentials of the proposed method. © 2018 IEEE.
Number of references: 15

Main heading: Statistics
Controlled terms: Social networking (online)
Uncontrolled terms: Astroturfing groups - GraphicaL model - Latent dirichlet allocations - Model-based OPC - Online reviews - Spam detection
Classification code: 723 Computer Software, Data Handling and Applications - 922.2 Mathematical Statistics
DOI: 10.1109/BESC.2018.8697307
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

287. Research on structure design and flow field characteristics of the novel jet bit for radial horizontal drilling   (*Open Access*)

Accession number: 20183505758946

Authors: Bi, Gang (1, 2); Li, Mengmeng (3); Dou, Liangbin (1); Qu, Zhan (1, 2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi, China; (2) Shaanxi Key Laboratory of Well Stability and Fluid and Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; Shaanxi, China; (3) College of Petroleum Engineering, China University of Petroleum, Beijing, China
Corresponding author: Bi, Gang(big@xsyu.edu.cn)

Abstract: The self-propelled swirling jet bit was designed to ensure the rock-breaking efficiency of radial horizontal drilling and meet the roundness of borehole diameter and borehole shape. The jet bit provides swirling jet through internal rotating impellers and increases the drilling depth by jetting through the central holes on the impeller. Based on numerical simulation method, RNG k_{-E} turbulence model was employed to analyze the three-dimensional flow characteristics of flow field inside and outside of the two kinds of jet bits. Moreover, the rock-breaking efficiency of the two jet bits was also compared and analyzed in accordance with the laboratory experiments. The results show that the simulated bottom-hole flow field for the two jet bits can be both divided into bottom-hole overflow area, forward jetting area, and backward jetting area. The forward jet is a jet beam which consists of a central jet and four circumferentially equispaced jets, which generates more complex overflow area at the bottom hole. The maximum jet speed and the jet impact energy of forward jetting from the combined swirling and round multijet bit are larger than that of the swirling multijet bit. The speed attenuation law of forward jet nozzle from the two kinds of jet bits is similar. They both increase slowly in the mixing zone, while increase remarkably when approach to the nozzle. Then decrease linearly in the impact zone, and decline straightly when get close to the impact area. The simulation results of flow field characteristics are in coincidence with the actual rock-drilling features. Therefore, the simulation results of flow field characteristics can provide guidance for jet bit design and structure parameter optimization for radial horizontal drilling. © 2018 The Authors. Energy Science & Engineering published by the Society of Chemical Industry and John Wiley & Sons Ltd.

Number of references: 17
Main heading: Numerical methods
Controlled terms: Nozzle design - Boreholes - Rocket nozzles - Infill drilling - Structural optimization - Turbulence models - Flow fields - Horizontal drilling - Impellers
Uncontrolled terms: Flow field characteristics - Laboratory experiments - Multiple jets - Numerical simulation method - Rock breaking efficiencies - Rotating impellers - Structure parameter - Three-dimensional flow
Classification code: 408 Structural Design - 511.1 Oil Field Production Operations - 601.2 Machine Components - 631.1 Fluid Flow, General - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1002/ese3.230

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

288. Elastic constants and homogenized moduli of manganese carbonate structure based on molecular dynamics and Reuss-Voigt-Hill methods   (*Open Access*)

Accession number: 20184906171600
Authors: Fu, Jia (1, 2); Bai, Hao (1); Zhang, Zhaoyuan (3); Lin, Weihui (4)
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Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 423
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Issue: 1
Issue title: 2018 4th International Conference on Applied Materials and Manufacturing Technology, ICAMMT 2018
Issue date: November 6, 2018
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Conference name: 2018 4th International Conference on Applied Materials and Manufacturing Technology, ICAMMT 2018
Conference date: May 25, 2018 - May 27, 2018
Conference location: Nanchang, China
Conference code: 142231
Publisher: IOP Publishing Ltd
Abstract: With the development of computer technology, the crystal structure of atomic-scale dynamics simulation is a hot research in recent years. The manganese carbonate crystal structure is chosen as the research object, as the elasticity of manganese carbonate crystal structure has been studied based on the plane wave ultra-soft first-principles density functional theory framework pseudopotential method. Based on molecular dynamics, interatomic potential function was introduced to describe the interactions between atoms of manganese carbonate crystals and then elasticity contants of manganese carbonate crystals, bulk modulus, shear modulus, Young's modulus were simulated. Influencing of the pressure on elastic properties has been studied, the results indicate that: 1) the structure of manganese carbonate crystal shows anisotropy due to the different types of atoms of Coulomb force and van der Waals forces; 2) elastic moduli are also obtained, of which the bulk modulus B is 107.682GPa, shear modulus G is 52.09GPa; 3) the values are very consistent to the results of Chen (B 108GPa and G 49.8GPa), thus the established model and the selected potential functions are verified to be reliable. © 2018 Institute of Physics Publishing. All rights reserved.
Number of references: 14
Main heading: Elastic moduli
Controlled terms: Atoms - Elasticity - Shear strain - Structural design - Molecular dynamics - Crystal atomic structure - Density functional theory - Carbonation - Van der Waals forces - Manganese compounds
Uncontrolled terms: Computer technology - Dynamics simulation - Elastic properties - First-principles density functional theory - Interatomic potential function - Manganese carbonate - Potential function - Pseudopotential method

289. Determination of the Absolute Adsorption Isotherms of CH4 on Shale with Low-Field Nuclear Magnetic Resonance

Authors: Liu, Yueliang (1); Wang, Chen (2, 3, 4)
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Corresponding author: Wang, Chen(cwangxsyu@163.com)

Abstract: Understanding of the absolute adsorption behavior of CH4 on shale is critically important in estimating shale gas storage in shale gas reservoirs. In this work, two approaches are applied to obtain the absolute adsorption isotherms of CH4 on shale samples. In the first approach, we first measure the excess adsorption isotherms of CH4 on two shale samples at the temperature of 298.15 K and pressures up to 12.0 MPa. Then, grand canonical Monte Carlo (GCMC) simulations are used to calculate the adsorption-phase density; such density values are consequently applied to calibrate the measured excess adsorption and obtain the accurate absolute adsorption isotherms. As for the second approach, we apply the low-field nuclear magnetic resonance (NMR) method to describe the absolute adsorption of CH4 on shale. A NMR-based setup is designed to measure the T2 spectrum distributions in shale samples by injecting CH4 into dry shale samples. The injecting pressure is set up to 12.0 MPa, which is similar to the conditions used in the excess adsorption measurements. On the basis of the measured T2 spectrum and the injected molar amount of CH4, the adsorbed molar quantity of CH4 can be assessed on the shale samples under specific conditions. We then compare the absolute adsorption isotherms obtained from both methods and evaluate the capability of the NMR approach in determining the absolute adsorption of CH4 on shale. With GCMC simulations, we find that the calculated adsorption-phase density strongly correlates with the system pressure and temperature. By taking into consideration the adsorption-phase density, the absolute adsorption isotherm is always higher than the measured excess adsorption curves; that is, the measured excess adsorption underestimates the actual adsorption capacity on shale. On the basis of the comparison results, the adsorption isotherms obtained from the NMR method have a good agreement with the corresponding absolute adsorption isotherms after calibrating with the adsorption-phase density; it indicates that the low-field NMR-based setup is a good tool in obtaining the absolute adsorption isotherms of CH4 on shale. © 2018 American Chemical Society.

Number of references: 39
Main heading: Adsorption isotherms
Controlled terms: Monte Carlo methods - Adsorption - Petroleum reservoirs - Nuclear magnetic resonance spectroscopy - Nuclear magnetic resonance

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

290. Optimization design and rock-breaking characteristics analysis of a self-propelled swirling multi-jet bit   (*Open Access*)

Authors: Bi, Gang (1, 2); Li, Mengmeng (3); Dou, Liangbin (1); Qu, Zhan (1, 2); Zhao, Kai (1)
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Corresponding author: Bi, Gang(big@xsyu.edu.cn)
Abstract: High rock-breaking efficiency with limited discharge rate and increasing the extension capacity of the radial horizontal hole as far as possible are the key of the novel radial horizontal drilling technology. The performance of jet bit is the primary problem to be solved in this key technology. Based on multijet bit, a self-propelled swirling jet bit was developed, and the design method was also presented. By conducting rock-breaking experiments, the type and structural parameters of the self-propelled swirling jet bit were optimized. The results demonstrate that when the jet pressure and standoff distance are constant, the rock-breaking efficiency of self-propelled combined swirling and round multijet bit is better than that of a self-propelled swirling multijet bit. The combined swirling and round multijet bit with 1 + 4 holes is optimal. Since many structural parameters influence the rock-breaking efficiency of the self-propelled swirling jet bit, the optimal values for the structural parameters can be determined by adjusting the rock-breaking capacity and drilling performance with different structural parameters. The proposed novel jet bit improves the speed of radial horizontal drilling significantly. © 2018 The Authors. Energy Science & Engineering published by the Society of Chemical Industry and John Wiley & Sons Ltd.

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

291. Vertical Attitude Measurement Based on Four Euler Rotations

Accession number: 20201408365890
Authors: Cheng, Weibin (1); Jiang, Liping (1); Liu, Feng (1); Gan, Yuanying (1); Wei, Na (1)
Author affiliation: (1) Xi'an Shiyou University, Laboratory of Measurement and Control Technology for Oil and Gas Wells, Shaanxi; 710065, China
Source title: 2018 IEEE CSAA Guidance, Navigation and Control Conference, CGNCC 2018
Abbreviated source title: IEEE CSAA Guid., Navig. Control Conf., CGNCC
Part number: 1 of 1
Issue title: 2018 IEEE CSAA Guidance, Navigation and Control Conference, CGNCC 2018
Issue date: August 2018
Publication year: 2018
Article number: 9019057
Language: English
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Conference name: 2018 IEEE CSAA Guidance, Navigation and Control Conference, CGNCC 2018
Conference date: August 10, 2018 - August 12, 2018
Conference location: Xiamen, China
Conference code: 158207
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: The weak signal and low signal-noise ratio (SNR)in the vertical attitude measurement system are the major two factors lowing the measurement accuracy greatly. Based on the defect analysis of the conventional attitude measurement system for vertical position, a novel system based on four Euler rotations is presented to increase the amplitude and SNR of original signal. As a first step, the theoretical model of the proposed system is established. Then the effect on the amplitude and SNR of original signal using the proposed model in the vertical measurement system is studied. Finally, the measurement error of the proposed system is tested. Experimental results suggest that the proposed system can effectively enhance the original signal amplitude over 20 times and improve the overall accuracy of the vertical attitude measurement system. © 2018 IEEE.
Number of references: 16
Main heading: Signal to noise ratio
Uncontrolled terms: Attitude measurement - Measurement accuracy - Measurement system - Original signal - Overall accuracies - Signal-noise ratio - Theoretical modeling - Vertical positions
Classification code: 716.1 Information Theory and Signal Processing
DOI: 10.1109/GNCC42960.2018.9019057
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

292. A Data Fusion-Based Methodology of Constructing Health Indicators for Anomaly Detection and Prognostics

Authors: Chen, Shaowei (1); Wen, Pengfei (1); Zhao, Shuai (1); Huang, Dengshan (1); Wu, Meng (1); Zhang, Yaming (2)
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Abstract: Anomaly detection and Remaining Useful Life (RUL) prediction are the most significant components of Prognostics and Health Management. A typical workflow is to extract features or construct health indicators by sensor fusion of the equipment and then perform anomaly detection and RUL prediction according to the health indicators. In this paper, we present a data-fusion based methodology for constructing two composite health indicators through integrating multiple run-To-failure sensor data towards to the anomaly detection and the RUL prediction, respectively. A novel optimization methodology termed as the Genetic Algorithm is proposed for constructing the composite health indicators, which are capable of presenting a better reflection of the health condition of systems. This optimization methodology makes the fusion of multiple sensor data no longer limited in linear fusion. For this algorithm, the property of a health indicator is the fitness and the different fusion methods to produce health indicators are individuals of a population. Our methodology was verified by applying to a degradation dataset of an aircraft gas turbine engine that was generated by the Commercial Modular Aero-Propulsion System Simulation (C-MAPSS). The result shows that the extracted feature have better performance than using original data in the anomaly detection and the RUL prediction. © 2018 IEEE.

Number of references: 10
Main heading: Anomaly detection
Controlled terms: Genetic algorithms - Health - Feature extraction - Systems engineering - Sensor data fusion - Forecasting - Propulsion
Uncontrolled terms: Aircraft gas turbine engines - Health condition - Health indicators - Optimization methodology - Prognostics and health managements - Propulsion system - Remaining useful life predictions - Rul predictions
Classification code: 461.6 Medicine and Pharmacology - 723.2 Data Processing and Image Processing - 961 Systems Science
DOI: 10.1109/SDPC.2018.8664723

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

293. IGCT Circuit Model Based on Pspice Modeling Platform

Accession number: 20192707152359
Authors: Song, Yang (1, 2); Wang, Cailin (1); Yang, Wuhua (1); Yang, Jing (1)
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Source title: 2018 1st Workshop on Wide Bandgap Power Devices and Applications in Asia, WiPDA Asia 2018
Abbreviated source title: Workshop Wide Bandgap Power Devices Appl. Asia, WiPDA Asia
Part number: 1 of 1
Issue title: 2018 1st Workshop on Wide Bandgap Power Devices and Applications in Asia, WiPDA Asia 2018
Issue date: May 2018
Publication year: 2018
Pages: 114-117
Article number: 8734669
Language: English
ISBN-13: 9781538643921
Document type: Conference article (CA)
Conference name: 1st Workshop on Wide Bandgap Power Devices and Applications in Asia, WiPDA Asia 2018
Conference date: May 16, 2018 - May 18, 2018
Conference location: Xi'an, China
Conference code: 148714
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In this paper, the structural features and operation principle of Integrated Gate Commutated Thyristors (IGCT) are analyzed, a M-2T-3R circuit model of IGCT is built based on Pspice modeling platform, which consist of one MOSFET, two transistors and three resistances, and the MOSFET is SiC power MOSFET model. Then the key model parameters are extracted and the test circuit is established, and the current and voltage waveforms during IGCT switching are simulated. The accuracy of the model is verified by comparing the simulation and the measurement waveforms. © 2018 IEEE.
Number of references: 11
Main heading: Silicon carbide
Controlled terms: SPICE - Power MOSFET - Thyristors - Timing circuits
Uncontrolled terms: Circuit modeling - hard-driven - IGCT - Integrated gate-commutated thyristors - PSpice models - Structural feature - Test circuit - Voltage waveforms
Classification code: 713 Electronic Circuits - 713.4 Pulse Circuits - 714.2 Semiconductor Devices and Integrated Circuits - 723.5 Computer Applications - 804.2 Inorganic Compounds
DOI: 10.1109/WiPDAAsia.2018.8734669
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

294. Triple-band metamaterial-loaded small monopole antenna for mobile applications

Accession number: 20191106635476
Authors: Shi, Xiaomin (1); Wang, Chenhao (2); Zhao, Chuanyuan (1); Zhang, Yan (1); Zhao, Yuchen (2); Xi, Xiaoli (2)
Author affiliation: (1) Department of Computer Science, Xi'An Shiyou University, Xi'an, China; (2) Department of Electronic Engineering, Xi'An University of Technology, Xi'an, China
Source title: 2018 12th International Symposium on Antennas, Propagation and EM Theory, ISAPE 2018 - Proceedings
Abbreviated source title: Int. Symp. Antennas, Propag. EM Theory, ISAPE - Proc.
Part number: 1 of 1
Issue title: 2018 12th International Symposium on Antennas, Propagation and EM Theory, ISAPE 2018 - Proceedings
Issue date: July 2, 2018
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Language: English
ISBN-13: 9781538673027
Document type: Conference article (CA)
Conference name: 12th International Symposium on Antennas, Propagation and EM Theory, ISAPE 2018
Conference date: December 3, 2018 - December 6, 2018
Conference location: Hangzhou, China

Conference code: 144876
Sponsor: Chinese Institute of Electronics (CIE); CIE Antennas Society; CIE Radio Propagation Society
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: A simple tri-band metamaterial-loaded small planar monopole antenna is proposed in this letter. In addition to the regular monopole resonance, two inverted L-shaped slots on the monopole patch are introduced to realize two other resonances. The metamaterial loading is then used to expand the lower resonant frequency. The proposed monopole antenna operates at two narrow bands, 5.2 and 6.0 GHz, and one wide band, 2.3-4.1 GHz, covering 2.4-GHz WLAN/Bluetooth (2400-2484 MHz), mobile WiMAX (2500-2690/3400-3690 MHz), 5-GHz WLAN (5150-5350/5725-5825 MHz), and ITS (5795-6400 MHz) with the advantages of simple fabrication, miniaturization, and compactness. © 2018 IEEE.
Number of references: 11
Main heading: Monopole antennas
Controlled terms: Slot antennas - Natural frequencies - Miniature instruments - Wireless local area networks (WLAN) - Metamaterial antennas - Metamaterials - Microwave antennas
Uncontrolled terms: L-shaped slot - miniaturization - Mobile applications - Mobile WiMAX - Narrow bands - Planar monopole antenna - Tri-bands - Triple band
Classification code: 716 Telecommunication; Radar, Radio and Television - 951 Materials Science
Numerical data indexing: Frequency 5.20e+09Hz, Frequency 5.80e+09Hz to 6.40e+09Hz, Frequency 6.00e+09Hz, Frequency 2.30e+09Hz to 4.10e+09Hz, Frequency 2.40e+09Hz to 2.48e+09Hz, Frequency 5.00e+09Hz
DOI: 10.1109/ISAPE.2018.8634049
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

295. Robust semi-supervised extreme learning machine

Accession number: 20182905548224
Authors: Pei, Huimin (1); Wang, Kuaini (2); Lin, Qiang (1); Zhong, Ping (1)
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Corresponding author: Zhong, Ping(zping@cau.edu.cn)
Source title: Knowledge-Based Systems
Abbreviated source title: Knowl Based Syst
Volume: 159
Issue date: 1 November 2018
Publication year: 2018
Pages: 203-220
Language: English
ISSN: 09507051
CODEN: KNSYET
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The existence of outliers among labeled data is a major challenge for semi-supervised learning. An effective method to handle this problem is to employ the non-convex loss functions, which give constant penalties to outliers to avoid their negative influences. Along this line, in this paper, by adopting the non-convex squared loss function, we propose a novel robust semi-supervised learning algorithm to overcome the limitation of the classical semi-supervised extreme learning machine (SS-ELM) that it is sensitivity to outliers, termed as robust SS-ELM, or RSS-ELM for short. After expressing the non-convex squared loss function by a difference of two convex ones, RSS-ELM is effectively solved with the help of the concave-convex procedure (CCCP) approach. For the specific implementation, RSS-ELM iteratively builds the output function by solving a sequence of linear systems at each iteration. Moreover, we analyze the computational complexity of RSS-ELM, and prove its convergence and robustness from a theoretical point of view. The proposed RSS-ELM includes the conventional ELM and SS-ELM as its special cases. Extensive experiments conducted across multiple image datasets and benchmark datasets validate that RSS-ELM not only inherits the advantages of semi-supervised learning, but also enjoys the merit of robustness. © 2018 Elsevier B.V.
Number of references: 37
Main heading: Iterative methods

Controlled terms: Linear systems - Statistics - Knowledge acquisition - Learning algorithms - Supervised learning
Uncontrolled terms: Benchmark datasets - CCCP - Concave-convex procedure - Extreme learning machine - Non-convex loss function - Output functions - Robust - Theoretical points
Classification code: 723.4 Artificial Intelligence - 723.4.2 Machine Learning - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 961 Systems Science
DOI: 10.1016/j.knosys.2018.06.029
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Funding text: The work is supported by the National Natural Science Foundation of China (Grants Nos. 11171346 and 11626186). The authors also gratefully acknowledge the helpful comments and suggestions of the reviewers, which have improved the presentation.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

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296. Fast Cartoon-Texture Decomposition Filtering Based License Plate Detection Method (*Open Access*)

Authors: Wang, Yingjun (1); Zhao, Chenping (1); Liu, Xiaoyan (2); Zhao, Mingfu (1); Bai, Linfeng (1)
Author affiliation: (1) Henan Institute of Science and Technology, Xinxiang; 453003, China; (2) School of Science, Xi'An Shiyou University, Xi'an; 710126, China
Corresponding author: Zhao, Chenping(zcp0378@163.com)
Abstract: Vehicle license plate detection is an important step in automatic license plate recognition, which is prone to be influenced by the background interference and complex environment conditions. It is known that cartoon-texture decomposition split an image into geometric cartoon and texture component, which can remove background interference away from the vehicle image. In this paper, we introduce a fast cartoon-texture decomposition filter into the detection process. Combining the edge detection, morphological filtering and Radon transform based tilt correction method, we formulate a new license plate detection algorithm. Experiment results confirm that the proposed algorithm can remove background interference away, inhibit the emergence of fake license plates, and improve the detection accuracy. Moreover, there is no inner loop iteration in the new algorithm, so it is fast and high-efficiency. © 2018 Yingjun Wang et al.
Number of references: 26
Main heading: Edge detection
Controlled terms: Iterative methods - Optical character recognition - Image texture - License plates (automobile) - Textures
Uncontrolled terms: Automatic license plate recognition - Cartoon-texture decompositions - Complex environments - Detection accuracy - License plate detection - Morphological filtering - Texture components - Vehicle license plates
Classification code: 662.1 Automobiles - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 921.6 Numerical Methods
DOI: 10.1155/2018/3901906
Funding Details: Number: 16JK1603, Acronym: -, Sponsor: -; Number: 61772389, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 19A110015, Acronym: -, Sponsor: Key Scientific Research Project of Colleges and Universities in Henan Province;
Funding text: This work is supported by the National Natural Science Foundation of China under (Grant no. 61772389), Key Scientific Research Projects in Henan Colleges and Universities (19A110015), and Foundation of Shannxi Education Committee (16JK1603).
Compendex references: YES

297. Theoretical study on stress sensitivity of fractal porous media with irreducible water   (*Open Access*)

Accession number: 20175204590069
Authors: Lei, Gang (1); Dong, Zhenzhen (2); Li, Weirong (1); Wen, Qingzhi (1); Wang, Cai (1)
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Corresponding author: Dong, Zhenzhen(lg1987cup@126.com)

Abstract: The couple flow deformation behavior in porous media has drawn tremendous attention in various scientific and engineering fields. However, though the coupled flow deformation mechanism has been intensively investigated in the last decades, the essential controls on stress sensitivity are not determined. It is of practical significance to use analytic methods to study stress sensitivity of porous media. Unfortunately, because of the disordered and extremely complicated microstructures of porous media, the theoretical model for stress sensitivity is scarce. The goal of this work is to establish a novel and reasonable quantitative model to determine the essential controls on stress sensitivity. The predictions of the theoretical model, derived from the Hertzian contact theory and fractal geometry, agree well with the available experimental data. Compared with the previous models, our model takes into account more factors, including the influence of the water saturation and the microstructural parameters of the pore space. The proposed models can reveal more mechanisms that affect the coupled flow deformation behavior in fractal porous media. The results show that the irreducible water saturation increases with the increase of effective stress, and decreases with the increased rock elastic modulus (or increased power law index) at a given effective stress. The effect of stress variation on porosity is smaller than that on permeability. Under a given effective stress, the normalized permeability (or the normalized porosity) becomes smaller with the decrease of rock elastic modulus (or the decrease of power law index). And a lower capillary pressure will correspond to an increased rock elastic modulus (or an increased power law index) under a given water saturation. © 2018 World Scientific Publishing Company.

Number of references: 52
Main heading: Porous materials
Controlled terms: Porosity - Elastic moduli - Fractals - Deformation
Uncontrolled terms: Coupled flow deformation - Fractal porous media - Hertzian-contact theory - Irreducible water saturation - Microstructural parameters - Quantitative modeling - Stress sensitivity - Theoretical modeling
Classification code: 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1142/S0218348X18500044
Compendex references: YES

298. Study on seismic behaviour for high damping rubber bearings of continuous beam bridges   (*Open Access*)

Accession number: 20183105636430
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Author affiliation: (1) School of Mechanical Engineering, Xi'An ShiYou University, Xi'an; 710061, China; (2) School of Highways, Chang'An University, Xi'an; 710064, China
Corresponding author: Zhang, Yu-Min(zhangyumincorn@163.com)
Abstract: The seismic response of a viaduct has been analysed in order to investigate the seismic performance and influence of high damping rubber bearings. Nonlinear time-history method has been used to analyse the seismic behaviour of different bearings. The results show that the seismic behaviour of high damping rubber bearing was better than laminated rubber bearing under earthquakes of level E2. Laminated rubber bearing was not suitable to be used in high seismic intensity area as the oversize displacement and sliding resistance. © Published under licence by IOP Publishing Ltd.
Number of references: 7
Main heading: Earthquakes
Controlled terms: Bearings (structural) - Rubber - Seismic response - Bridges - Damping - Laminating - Nonmetallic bearings
Uncontrolled terms: Continuous beam bridges - High damping rubber bearings - High seismic intensities - Laminated rubber bearings - Nonlinear time history methods - Seismic behaviour - Seismic Performance - Sliding resistance
Classification code: 401.1 Bridges - 408.2 Structural Members and Shapes - 484 Seismology - 484.2 Secondary Earthquake Effects - 601.2 Machine Components - 816.1 Processing of Plastics and Other Polymers - 818.1 Natural Rubber - 931.1 Mechanics
DOI: 10.1088/1755-1315/153/5/052049
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

299. The method for single well operational cost prediction combining rbf neural network and improved pso algorithm

Accession number: 20193407338831
Authors: Hu, Hongtao (1); Feng, Jinrong (1); Zhai, Xiaojing (1); Guan, Xin (2)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'An, Shaanxi, China; (2) Research Institute of Petroleum Exploration Development, Beijing, China

Abstract: In order to meet the requirements of single well operation cost variation and high prediction accuracy, this paper proposed a single well operation cost prediction method based on RBF neural network and PSO algorithm, which takes the advantage of with the global search ability and search optimization of PSO, and the fast convergence and strong generalization ability of RBF. Firstly, to solve the shortcomings of the particle swarm algorithm's local search ability, the inertia factor and learning factor in the PSO algorithm are optimized. Then the improved new particle swarm optimization algorithm is applied to the parameter calculation of the RBF neural network to optimize the center value and width vector of the hidden layer Gaussian function, which helps to improve the accuracy of the RBF neural network. Experiment results demonstrated that the improved PSO optimized RBF neural network model has higher accuracy and generalization ability in operational cost prediction. © 2018 IEEE.

Number of references: 10
Main heading: Neural network models
Controlled terms: Multilayer neural networks - Oil wells - Operating costs - Forecasting - Particle swarm optimization (PSO) - Radial basis function networks
Uncontrolled terms: Generalization ability - Improved PSO - Improved pso algorithms - New particle swarm optimization - Optimized RBF - Parameter calculation - Particle swarm algorithm - Single well
Classification code: 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 911.1 Cost Accounting - 911.2 Industrial Economics - 921.5 Optimization Techniques
DOI: 10.1109/CompComm.2018.8780836
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

300. Liquid Level Sensor Based on In-Fiber Michelson Interferometer

Accession number: 20183105638294
Authors: Shao, Min (1); Han, Liang (1); Zhao, Xue (1); Fu, Haiwei (1); Qiao, Xueguang (2)
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Abstract: In order to simplify the design and fabrication of optical fiber liquid level sensor, we propose an in-fiber Michelson interferometer based on fiber-core mismatching intermodal interference, which consists of a single mode fiber (SMF) fusion-spliced with a section of thinned fiber (TF). The fusion point of the SMF-TF acts as a fiber coupler to excite the high-order cladding modes. The core mode and high-order cladding modes are reflected by the end face of the TF and transmitted to SMF to generate intermodal interference. The output interference fringes are clear and in high contrast, which are sensitive to the change of environment liquid level. The sensing characteristics of a sensor sample with 12-mm-long TF to liquid level and temperature are investigated. The experimental results show that the

reflection dip wavelength linearly changes for a liquid level variation of 0-9 mm, and the sensitivities to water and NaCl solution with mass faction of 4.7% are -0.116 and -0.129 nm/mm; the temperature sensitivity to water is 0.038 nm/ in the temperature range of 20-80. The sensor has advantages of simple structure, easy fabrication, and low cost, which offers the prospective application in petroleum industrial and chemical industry. © 2018, Chinese Lasers Press. All right reserved.

Number of references: 17
Main heading: Single mode fibers
Controlled terms: Sodium chloride - Sensitivity analysis - Costs - Liquids - Petroleum industry - Optical fiber fabrication - Chemical industry - Michelson interferometers
Uncontrolled terms: Change of environment - Interference fringe - Intermodal interferences - Liquid level sensors - Prospective applications - Sensing characteristics - Temperature range - Temperature sensitivity
Classification code: 741.1.2 Fiber Optics - 805 Chemical Engineering, General - 911 Cost and Value Engineering; Industrial Economics - 921 Mathematics - 941.3 Optical Instruments
Numerical data indexing: Percentage 4.70e+00%, Size 0.00e+00m to 9.00e-03m
DOI: 10.3788/AOS201838.0328021
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
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301. Steady-state Tribological Performance of Sliding Friction on Textured Surface

Accession number: 20190206356840
Title of translation:
Authors: Li, Wanzhong (1, 2); Xu, Yingqiang (1); Sun, Jian (1); Liu, Kai'an (1); Wu, Zhenghai (1)
Author affiliation: (1) School of Mechanical Engineering, Northwestern Polytechnical University, Xi'an; 710072, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
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Pages: 1141-1146
Language: Chinese
ISSN: 1004132X
CODEN: ZJGOE8
Document type: Journal article (JA)
Publisher: Chinese Mechanical Engineering Society
Abstract: Based on steady-state sliding frictional model,the influences of normal loading,sliding speed, initial surface texture and material on steady-state frictional coefficient were researched quantitatively with ball-disk friction pair. Rules of steady-state frictional coefficients under different operating condition were obtained. The results show that steady-state frictional coefficients of sliding friction are positively correlated with wear rates. Steady-state frictional coefficients of different surfaces in morphology descending order are circumferential texture, untextured and radial textures. Regardless of the initial surface, frictional coefficient decreases first and then increases with the increase of revolving speed. With the increase of normal loading, it presents an upward trend. Deeper or wider textured surfaces have higher frictional coefficients and larger instantaneous fluctuation. Moreover, frictional coefficients also associate with the selection of friction pair materials. © 2018, China Mechanical Engineering Magazine Office. All right reserved.
Number of references: 26
Main heading: Textures
Controlled terms: Friction - Morphology
Uncontrolled terms: Different operating conditions - Friction pair - Frictional coefficients - Normal loading - Sliding friction - Surface textures - Textured surface - Tribological performance
Classification code: 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.3969/j.issn.1004-132X.2018.10.002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

302. 3D gravity inversion of basement relief for a rift basin based on combined multinorm and normalized vertical derivative of the total horizontal derivative techniques

Accession number: 20183705807691
Authors: Feng, Xuliang (1, 2); Wang, Wanyin (2); Yuan, Bingqiang (1)
Author affiliation: (1) Xi'an Shiyou University, School of Earth Sciences and Engineering, Xi'an, China; (2) Chang'an University, College of Geology Engineering and Geomatics, Xi'an, China
Source title: Geophysics
Abbreviated source title: Geophysics
Volume: 83
Issue: 5
Issue date: September 1, 2018
Publication year: 2018
Pages: G107-G118
Language: English
ISSN: 00168033
E-ISSN: 19422156
CODEN: GPYSA7
Document type: Journal article (JA)
Publisher: Society of Exploration Geophysicists
Abstract: The basement of a rift sedimentary basin, often possessing smooth and nonsmooth shapes, is not easily recovered from gravity data by current inversion methods. We have developed a new 3D gravity inversion method to estimate the basement relief of a rift basin. In the inversion process, we have established the objective function by combining the gravity data misfit function, the known depth constraint function, and the model constraint function composed of the l1-norm and l2-norm, respectively. An edge recognition technology based on the normalized vertical derivative of the total horizontal derivative for gravity data is adopted to recognize the discontinuous and continuous parts of the basin and combine the two inputs to form the final model constraint function. The inversion is conducted by minimizing the objective function by the nonlinear conjugate gradient algorithm. We have developed two applications using synthetic gravity anomalies produced from two synthetic rift basins, one with a single graben and one with six differently sized grabens. The test results indicate that the inversion method is a feasible technique to delineate the basement relief of a rift basin. The inversion method is also tested on field data from the Xi'an depression in the middle of the Weihe Basin, Shaanxi Province, China, and the result illustrates its effectiveness. © 2018 Society of Exploration Geophysicists.
Number of references: 6
Main heading: Gravitation
Controlled terms: Buildings
Uncontrolled terms: Depth constraints - Derivative technique - Gravity anomalies - Inversion methods - Nonlinear conjugate gradient algorithms - Objective functions - Sedimentary basin - Vertical derivatives
Classification code: 402 Buildings and Towers - 931.5 Gravitation, Relativity and String Theory
DOI: 10.1190/geo2017-0678.1
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

303. Nano-indentation experiment for determining mechanical properties of typical cement phases at nano/micro-scale (*Open Access*)

Accession number: 20184906202743
Authors: Fu, Jia (1, 2)
Author affiliation: (1) LGCGM, National Institute of Applied Sciences, Rennes; 35708, France; (2) Material Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
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Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 439
Part number: 4 of 5
Issue: 4
Issue title: 2018 International Conference on Advanced Electronic Materials, Computers and Materials Engineering, AEMCME 2018 - Conference 4
Issue date: November 9, 2018

Publication year: 2018
Article number: 042019
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2018 International Conference on Advanced Electronic Materials, Computers and Materials Engineering, AEMCME 2018
Conference date: September 14, 2018 - September 16, 2018
Conference location: Singapore, Singapore
Conference code: 142322
Publisher: IOP Publishing Ltd

Abstract: Nano-indentation experiments are carried out on two cement pastes in order to get mechanical properties of cement pastes. For the comparison of initial cement paste, metakaolin as a valuable admixture for concrete/cement applications is added, considered to increase the reactivity of pozzolans. Statistical analysis on a number of indent points can be traced back to a medium modulus of elasticity. The averaged elastic moduli of typical phases in cement pastes are thus determined. Young's moduli of CH phases is about 44.7GPa by nano-indentation experiment, which are close to the previous simulation values and other references. Besides, Young's moduli of Calcite and clinker averaged by nano-indentation experiment are 86.695GPa and 102.230GPa, which are separately in relative good agreement with simulation values of 84.549GPa by Jia and 85.41-145.56GPa (porosity: 10%) by Arar. A systematic approach is developed to validate and to assess the elastic parameters associated with each phase. The P-h curves of the simulation and experiment are compared to conclude on the feasibility of the methodology. © Published under licence by IOP Publishing Ltd.
Number of references: 23
Main heading: Elastic moduli
Controlled terms: Cements - Calcite - Indentation
Uncontrolled terms: Cement paste - Cement phasis - Elastic parameters - Metakaolins
Classification code: 412.1 Cement - 482.2 Minerals - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Percentage 1.00e+01%, Pressure 1.02e+11Pa, Pressure 4.47e+10Pa, Pressure 8.45e+10Pa, Pressure 8.54e+10Pa to 1.46e+11Pa, Pressure 8.67e+10Pa
DOI: 10.1088/1757-899X/439/4/042019
Compendex references: YES
Open Access type(s): All Open Access, Bronze, Green
Database: Compendex
Data Provider: Engineering Village

304. Influence of defects on bending properties of 2D-T700/E44 composites prepared by improved compression molding process   (*Open Access*)

Accession number: 20184506032442
Authors: Ma, Yuqin (1); Li, Shuangshuang (1); Wang, Jie (1); Ju, Luyan (2); Liu, Xinmei (1)
Author affiliation: (1) School of Mechano-Electronic Engineering, Xidian University, Xi'an; 710071, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Ma, Yuqin(yqma@xidian.edu.cn)
Source title: Materials
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Volume: 11
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Issue date: October 30, 2018
Publication year: 2018
Article number: 2132
Language: English
E-ISSN: 19961944

Document type: Journal article (JA)
Publisher: MDPI AG

Abstract: 2D-T700/E44 composite materials were prepared by improved compression molding process (ICM) then microstructure and properties of the composites were analyzed and summarized by scanning electron microscope (SEM) and electronic universal testing machine. It is found that defects will occur when the process parameters are not controlled properly and the main defects of composite materials include inadequate resin impregnation, weak interlaminar binding force, fiber displacement warping, hole and brittle fracture. Moreover, there are significant differences in the infiltration microstructure, bending properties, and fracture morphology of the composite materials with different defects. When the defects of weak interlaminar binding force and brittle fracture occur, bending properties of composite materials are relatively low, and they are 220 MPa and 245 MPa, respectively, which reach 34.9% and 38.9% of the bending strength of composite material whose defects are effectively controlled. When the process parameters are reasonable and the defects of the composite materials are effectively eliminated, the bending strength can reach 630 MPa. This will lay a foundation for the preparation of 2D-T700/E44 composite materials with ideal microstructures and properties by ICM. © 2018 by the authors.

Number of references: 21
Main heading: Defects
Controlled terms: Scanning electron microscopy - Morphology - Glass ceramics - Brittle fracture - Bending strength - Compression molding - Microstructure - Process control - Sintering
Uncontrolled terms: Bending properties - Compression molding process - Fiber displacement - Fracture morphology - Microstructure and properties - Microstructures and properties - Resin impregnation - Universal testing machines
Classification code: 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 3.49e+01%, Percentage 3.89e+01%, Pressure 2.20e+08Pa, Pressure 2.45e+08Pa, Pressure 6.30e+08Pa
DOI: 10.3390/ma11112132

Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

305. A Novel Combination Co-Kriging Model Based on Gaussian Random Process   (*Open Access*)

Accession number: 20183905862008
Authors: Xie, Huan (1); Zeng, Wei (2, 3); Song, Hong (2); Sun, Wen (2); Ren, Tao (2)
Author affiliation: (1) School of Mechanical Engineering, Xijing University, China; (2) School of Mechanical Engineering, Xi'an Shiyou University, China; (3) RG Petro-Machinery(Group) Co., Ltd., China
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Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2018
Issue date: 2018
Publication year: 2018
Article number: 6372572
Language: English
ISSN: 1024123X
E-ISSN: 15635147
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States

Abstract: Co-Kriging (CK) modeling provides an efficient way to predict responses of complicated engineering problems based on a set of sample data obtained by methods with varying degree of accuracy and computation cost. In this work, the Gaussian random process (GRP) is introduced to construct a novel combination CK model (CK-GRP) to improve the prediction accuracy of the conventional CK model, in which all the sample information provided by different correlation models is well utilized. The features of the new model are demonstrated and evaluated for a numerical case and an engineering application. It is shown that the CK-GRP model proposed in this work is effective and can be used to improve the prediction accuracy and robustness of the CK model. © 2018 Huan Xie et al.

Number of references: 22
Main heading: Interpolation
Controlled terms: Random processes - Cost engineering - Forecasting - Gaussian distribution
Uncontrolled terms: Computation costs - Correlation models - Degree of accuracy - Engineering applications - Engineering problems - Gaussian random process - Prediction accuracy - Sample information
Classification code: 911 Cost and Value Engineering; Industrial Economics - 921.6 Numerical Methods - 922.1 Probability Theory - 922.2 Mathematical Statistics
DOI: 10.1155/2018/6372572
Funding Details:

Compendex references: YES
Open Access type(s): All Open Access, Bronze, Green
Database: Compendex
Data Provider: Engineering Village

306. Research on Mach-Zehnder interference sensors based on the fused tapered optical fiber technology

Accession number: 20185206315956
Authors: Luo, Mingshi (1); Xu, Shichao (2)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shanxi; 710065, China; (2) Monitoring Center, Shaanxi Earthquake Agency, Xi'an, Shanxi; 710068, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 10850
Part number: 1 of 1
Issue title: Ocean Optics and Information Technology
Issue date: 2018
Publication year: 2018
Article number: 1085007
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510623422
Document type: Conference article (CA)
Conference name: International Symposium on Optoelectronic Technology and Application 2018: Ocean Optics and Information Technology, OTA 2018
Conference date: May 22, 2018 - May 24, 2018
Conference location: Beijing, China

Conference code: 143226
Sponsor: Chinese Society for Optical Engineering (CSOE); Division of Information and Electronic Engineering of Chinese Academy of Engineering
Publisher: SPIE

Abstract: This study is based on the principle of inter-mode interference for single-mode optical fiber. Two Mach-Zehnder interference sensors were manufactured by the fused tapered techniques of forward direction with butane torch and reverse direction with fiber fusion splicer, respectively. The temperature sensing characteristic of reverse fused tapered Mach-Zehnder interference sensor is 0.067 nm/°C. And the interference trough moves towards the long wave direction with increasing temperature. However, the temperature sensing characteristic of forward fused tapered Mach-Zehnder interference sensor is 1.059 nm/°C. And the interference trough moves towards the short wave direction with increasing temperature. The results show that, the Mach-Zehnder interference sensors could be flexibly manufactured by the fused tapered technique for different needs such as sensitivity and size. And this study has a high reference value for the practical study of optical fiber sensing. © 2018 SPIE.
Number of references: 9
Main heading: Temperature
Controlled terms: Fiber optic sensors - Optical fibers - Temperature sensors
Uncontrolled terms: Fiber fusion splicers - Increasing temperatures - Mach-Zehnder - Optical fiber sensing - Single-mode optical fiber - Tapered optical fiber sensors - Tapered optical fibers - the fused tapered technique
Classification code: 641.1 Thermodynamics - 741.1.2 Fiber Optics - 944.5 Temperature Measuring Instruments
DOI: 10.1117/12.2504386
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

307. Optical remote sensing image retrieval based on convolutional neural networks

Accession number: 20181404978301
Authors: Li, Yu (1); Liu, Xue-Ying (1); Zhang, Hong-Qun (1); Li, Xiang-Juan (2); Sun, Xiao-Yao (1)
Author affiliation: (1) Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, Beijing; 100094, China; (2) Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Yu(liyu_0321@163.com)
Source title: Guangxue Jingmi Gongcheng/Optics and Precision Engineering
Abbreviated source title: Guangxue Jingmi Gongcheng
Volume: 26
Issue: 1
Issue date: January 1, 2018
Publication year: 2018
Pages: 200-207
Language: Chinese
ISSN: 1004924X
CODEN: GJGOF4
Document type: Journal article (JA)
Publisher: Chinese Academy of Sciences

Abstract: A method for remote sensing image retrieval based on convolutional neural networks was proposed. First, the convolution and pooling of remote sensing images were conducted by multi-layer convolutional neural networks. The feature maps of each image were obtained, and the high-level features were extracted to build the image feature database. In this process, the training of networks' parameters and the Softmax classifier were completed using feature maps. Then, in the image retrieval stage, classification was introduced by the softmax classifier which will improve the accuracy of image retrieval. Lastly, the remote sensing image retrieval was sorted based on the similarity between the query image and database. Retrieval experiments were performed on the high-resolution optical remote sensing images. The average retrieval precision on five kinds including water, plant, building, farmland and land is 98.4%, and the retrieval precision on seven types (adding plane and ship) is 95.9%. The introduction of class information improves the retrieval precision and speed, saving time by 17.6% approximately. The proposed method behaves better than the methods that based on color feature, texture feature and the bag of words model, and the results show that the high-level feature from deep convolutional neural networks can represent image content effectively. Experimeat indicates that retrieval speed and accuracy of optical remote-sensing images can be effectively increased in this method. © 2018, Science Press. All right reserved.
Number of references: 17
Main heading: Image classification

Controlled terms: Deep neural networks - Multilayer neural networks - Network layers - Query processing - Textures - Image retrieval - Image enhancement - Classification (of information) - Convolution - Optical remote sensing
Uncontrolled terms: Bag-of-words models - Class information - High-level features - Optical remote sensing - Remote sensing image retrieval - Remote sensing images - Retrieval speed - Texture features
Classification code: 461.4 Ergonomics and Human Factors Engineering - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 741.3 Optical Devices and Systems - 903.1 Information Sources and Analysis
Numerical data indexing: Percentage 1.76e+01%, Percentage 9.59e+01%, Percentage 9.84e+01%
DOI: 10.3788/OPE.20182601.0200
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

308. Simultaneous measurement of gas pressure and temperature with integrated optical fiber FPI sensor based on in-fiber micro-cavity and fiber-tip

Authors: Liu, Yinggang (1); Zhang, Ting (1); Wang, Yuxi (1); Yang, Danqing (1); Liu, Xin (1); Fu, Haiwei (1); Jia, Zhenan (1)
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
Corresponding author: Liu, Yinggang(ygliu@xsyu.edu.cn)
Abstract: In paper, an integrated optical fiber Fabry-Pérot interferometer (FPI) sensor is proposed and fabricated. The all-fiber sensor is composed of an in-fiber micro-cavity machined by 193 nm excimer laser and a tiny segment of single-mode fiber (SMF). Due to the production of reflection mirrors, the composite FPI structure with different interference cavity is formed between every two surfaces of micro-cavity and fiber-tip. Resulting from the influences of thermal expansion effect of fiber and the thermo-optic effect of in-cavity gas, the interference spectrum of FPI sensor can shift with the temperature and pressure change with different rules. Experimental researches indicate, the low-frequency interference fringe of air cavity is sensitive to pressure change and insensitive to temperature change, but the high-frequency interference fringe of micro-fiber cavity is sensitive to temperature change and insensitive to pressure change. Through analyzing with fast Fourier transform (FFT) and Fourier band-pass filtering (FBPF) methods, we obtain the temperature and pressure sensitivities of the two different cavities. Owning to the different responses to gas pressure and temperature change, the fiber sensor can be used in simultaneous measurement of them, and has excellent merits of miniature size, strong tip structure, simple manufacturing and low cost. © 2018
Number of references: 17
Main heading: Fabry-Perot interferometers
Controlled terms: Fast Fourier transforms - Single mode fibers - Bandpass filters - Excimer lasers - Fiber optic sensors - Optical fiber fabrication - Thermal expansion
Uncontrolled terms: 193 nm excimer lasers - Band pass filtering - Gas pressures - High frequency interference - Low-frequency interference - Simultaneous measurement - Temperature and pressures - Thermal expansion effect
Classification code: 641.1 Thermodynamics - 703.2 Electric Filters - 741.1.2 Fiber Optics - 921.3 Mathematical Transformations - 941.3 Optical Instruments - 951 Materials Science
Numerical data indexing: Size 1.93e-07m
DOI: 10.1016/j.yofte.2018.09.021

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

309. Suppression of lateral vibration in rectangular ultrasonic plastic welding tool based on phononic crystal structure   (*Open Access*)

Accession number: 20190706505221
Title of translation:
Authors: Zhao, Tian-Tian (1); Lin, Shu-Yu (1); Duan, Yi-Lin (2)
Author affiliation: (1) Shaanxi Key Laboratory of Ultrasonics, Shaanxi Normal University, Xi'an; 710119, China; (2) College of Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Lin, Shu-Yu(sylin@snnu.edu.cn)
Abstract: Ultrasonic welding is one of the main applications of high-power ultrasound and is used in the automotive industry and aerospace. Transducers and tool are important parts of the ultrasonic welding system. Different tools are required for different welding objects. For larger plastic welded parts, it is necessary to weld them with large-sized welding tools. Due to the large size of the welding tool, under the excitation of the transducer, the tool will produce a coupling effect of longitudinal vibration and lateral vibration. Lateral vibration will cause the radiation surface of the tool to be non-uniformly displaced, and the working efficiency and welding results of the welding system will also be affected. So, in this paper, the phononic crystal bandgap theory and coupling vibration theory are used to study the coupled vibration of large-sized rectangular plastic ultrasonic welding tools. In order to improve the work efficiency and radiation surface's displacement uniformity of the tool, the phononic crystal structure is used to suppress the lateral vibration of the large-sized plastic ultrasonic welding tool, and the lateral vibration band gap of the phononic crystal structure is calculated. The longitudinal resonance frequency of the system is designed in the band gap range of the lateral vibration of the tool. So the lateral vibration of the tool can be effectively suppressed. The longitudinal vibration displacements on the radiation surface of the rectangular tool before and after vibration suppression are analyzed and compared with each other. The vibration mode of the ultrasonic welding system is simulated by the Comsol Multiphysics finite element software. The large-scaled tool with phononic crystal structure has a radiation surface displacement compared with the tool without phononic crystal structure, and the results show that the radiation surface displacement with phononic crystal structure will increase and tend to be uniform, greatly optimize the welding effect, improve the working efficiency of the welding system, and meet the needs of practical engineering. It is concluded that the longitudinal resonance frequency of the ultrasonic plastic welding system within the lateral vibration bandgap on the phononic crystal structure can not only suppress the lateral vibration, but also make the longitudinal displacement of the radiation surface more uniform and larger. Therefore, the work efficiency is greatly improved. © 2018 Chinese Physical Society.
Number of references: 26
Main heading: Efficiency
Controlled terms: Welding - Energy gap - Natural frequencies - Surface measurement - Automotive industry - Crystal structure - Vibration analysis - Transducers - Phonons
Uncontrolled terms: Coupled vibrations - Finite element software - Longitudinal displacements - Longitudinal vibrations - Phononic Crystal - Practical engineering - Ultrasonic plastic welding - Vibration suppression
Classification code: 538.2 Welding - 913.1 Production Engineering - 933.1.1 Crystal Lattice - 943.2 Mechanical Variables Measurements
DOI: 10.7498/aps.67.20181150

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

310. Cooperative Game for the Roles Assignment of the Multi-agent Robot System

Accession number: 20190406426290
Authors: Wei, Na (1, 2); Liu, Mingyong (2)
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Marine Engineering, Northwestern Polytechnical University, Xi'an; 710072, China
Source title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Abbreviated source title: Proc. IEEE Adv. Inf. Technol., Electron. Autom. Control Conf., IAEAC
Part number: 1 of 1
Issue title: Proceedings of 2018 IEEE 3rd Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Issue date: December 14, 2018
Publication year: 2018
Pages: 954-957
Article number: 8577890
Language: English
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Document type: Conference article (CA)
Conference name: 3rd IEEE Advanced Information Technology, Electronic and Automation Control Conference, IAEAC 2018
Conference date: October 12, 2018 - October 14, 2018
Conference location: Chongqing, China
Conference code: 143703
Sponsor: 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., United States
Abstract: The cooperative problem of multi-agent robots is discussed in this paper. The methods of solving robot role assignments can be classified as static roles, dynamic roles and combination of static and dynamic roles. The combination of static and dynamic roles assignment is adapted in this paper. An optimal objective function model of the soccer robots competition is established to complete the role transformation of the robot. The coordinated problem of multi-agent robots is solved by cooperative game algorithm. The simulation results show that the proposed model is correct and effective. © 2018 IEEE.
Number of references: 10
Main heading: Multi agent systems
Controlled terms: Game theory - Robot applications
Uncontrolled terms: Cooperative game - finite game - Multi-agent robot system - Multi-agent robots systems - Objective functions - Role assignment - Role transformation - roles assignment
Classification code: 731.6 Robot Applications - 922.1 Probability Theory
DOI: 10.1109/IAEAC.2018.8577890
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

311. Anti-corrosion and Anti-bacteria Property of Modified Pomegranate Peel Extract   (*Open Access*)

Authors: Gu, Xue-Fan (1); Chang, Xiao-Feng (1); Cheng, Chao (1); Zhang, Li (1); Zhang, Yong-Ming (2); Zhang, Jie (1); Chen, Gang (1)
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Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)

Abstract: Using weight loss method, the pomegranate peel extract (PPE), that is a green corrosion inhibitors, have been studied in the corrosion inhibition of Q235A steel in 1M hydrochloric acid solution at 30°C, 45°C, 60°C, respectively. The inhibition rate of extract varies with the extraction concentration in the range of 10 ﹍ 1000mg / L, up to 92.7%. Extract inhibits corrosion through adsorption mechanisms. Besides polyphenols hydroxyl and ether groups can slow down corrosion by capturing H+. Polyphenols can remove the dissolved O2, and curb oxygen reducing corrosion. PPE is antifungal active against TGB and FB, but not so active against SRB. © Published under licence by IOP Publishing Ltd.

Number of references: 17
Main heading: Dissolved oxygen
Controlled terms: Corrosion inhibitors - Steel corrosion
Uncontrolled terms: Adsorption mechanism - Anti-bacteria - Anti-corrosion - Corrosion inhibition - Green corrosion inhibitors - Hydrochloric acid solution - Inhibition rate - Weight loss method
Classification code: 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 803 Chemical Agents and Basic Industrial Chemicals
Numerical data indexing: Mass_Density 1.00e+00kg/m3, Percentage 9.27e+01%, Temperature 3.03e+02K, Temperature 3.18e+02K, Temperature 3.33e+02K
DOI: 10.1088/1757-899X/322/2/022004

Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

312. Phospholipids Polysaccharide and Its Application as Inhibitive Drilling Fluid Additive (*Open Access*)

Accession number: 20181705111252
Authors: Gu, Xue-Fan (1); Hu, Wei-Min (1); Zhang, Fan (1); Du, Wei-Chao (1); Zhang, Qiang (1); Zhang, Jie (1); Zhang, Yong-Ming (2); Chen, Gang (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Science, Xijing University, Xi'an; 710123, China
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Volume: 322
Part number: 3 of 7
Issue: 3
Issue title: 2017 International Symposium on Application of Materials Science and Energy Materials, SAMSE 2017 - Chapter 2 Energy Materials
Issue date: March 29, 2018
Publication year: 2018
Article number: 032005
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2017 International Symposium on Application of Materials Science and Energy Materials, SAMSE 2017
Conference date: December 28, 2017 - December 29, 2017
Conference location: Shanghai, China
Conference code: 135775
Sponsor: China University of Petroleum; Sun Yat-sen University
Publisher: IOP Publishing Ltd
Abstract: For the improvement of solubility and the performance of the sample that derived plant polysaccharide(SJ) in drilling fluid based on water, which was improved by phosphoric esterification with phospholipids reagent. The conditions of the reaction were discussed by orthogonal ways in four factors and three levels, and the optimization of handling approaches were found out: With pH=12 at the temperature of 80°C, the mass ratio between phospholipids agent and SJ is 0.1g/1g. The viscosity about the system added by sulfonated SJ (SJP) was extremely increased and below 120°, rheological properties had a slight change. The inhibitive ability of SJP is assessed by the mud ball immersing tests and clay-swelling experiments, that is apparently better than SJ and even 4wt% KCl in free water. © Published under licence by IOP Publishing Ltd.
Number of references: 10
Main heading: Drilling fluids
Controlled terms: Swelling - Potassium compounds - Chlorine compounds - Infill drilling - Phospholipids
Uncontrolled terms: Clay swelling - Drilling fluid additives - Free water - ITS applications - Mass ratio - Plant polysaccharides - Rheological property
Classification code: 511.1 Oil Field Production Operations - 804.1 Organic Compounds - 951 Materials Science
Numerical data indexing: Temperature 3.53e+02K
DOI: 10.1088/1757-899X/322/3/032005
Funding Details: Number: 2016GY-218, Acronym: -, Sponsor: -; Number: 17JF025, Acronym: -, Sponsor: -; Number: 50874092, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

313. Temperature dependence of microhole-based fiber Fabry-Perot interferometric sensors fabricated by excimer laser

Authors: Liu, Yinggang (1); Liu, Xin (1); Fu, Haiwei (1); Jia, Zhenan (1); Zhang, Ting (1)
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Abstract: A miniature in-fiber Fabry-Perot interferometric (FPI) sensor is demonstrated. Through manufacturing microhole in a single-mode fiber with excimer laser, a single microhole FPI sensor and a dual microhole FPI sensor are fabricated, and the temperature sensing characteristics of them are investigated experimentally. The results show that the spectra of two sensors shift to short wavelength with an increase in the temperature, and the relationships between wavelength shift and temperature change have better linearity in temperature range of 30°C to 85°C. The temperature sensitivity of single microhole FPI sensor is 0.160 nm / ° C, and the dual microholes FPI sensor has two temperature sensitivities corresponding to different FP cavities. Furthermore, the temperature sensitivity can be adjusted by changing the distance between two microholes. When increasing the distance from 1 to 2 mm, the higher temperature sensitivity can be changed from 0.176 to 0.192 nm / ° C, and the temperature-dependent wavelength shift still keeps a good linearity. Compared with conventional fiber Bragg grating temperature sensor, this kind of FPI sensor has not only different dual temperature sensitivities but also higher sensitivity and stability, so that this kind of microhole FPI sensor can be used in many fields. © 2018 Society of Photo-Optical Instrumentation Engineers (SPIE).

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Main heading: Excimer lasers
Controlled terms: Temperature distribution - Fabry-Perot interferometers - Single mode fibers - Fiber Bragg gratings - Fabrication - Interferometry - Temperature sensors
Uncontrolled terms: Conventional fibers - Fiber Fabry-Perot - Short wavelengths - Temperature changes - Temperature dependence - Temperature sensing - Temperature sensitivity - Temperature-dependent wavelength shift
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Numerical data indexing: Size 1.00e-03m to 2.00e-03m, Temperature 3.03e+02K to 3.58e+02K
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