1. Transient pressure behaviour of multi-stage fractured horizontal well in stress-sensitive coal seam

Accession number: 20194207558962
Authors: Zongxiao, Ren (1); Zhan, Qu (1); Huayi, Jiang (1); Erbiao, Lou (2); Jiaming, Zhang (3); Ze, Yao (4); Hongbin, Yang (5)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Tarim Oilfield, Kuerle; 841000, China; (3) CNPC Economics and Technology Research Institute, Beijing; 100724, China; (4) CNOOC Research Institute, Beijing; 100028, China; (5) School of Petroleum Engineering, China University of Petroleum, East China, Qingdao; 266580, China
Corresponding author: Zhan, Qu(zhqu@xsyu.edu.cn)
Source title: International Journal of Oil, Gas and Coal Technology
Abbreviated source title: Int. J. Oil Gas Coal Technol.
Volume: 22
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Issue date: 2019
Publication year: 2019
Pages: 163-187
Language: English
ISSN: 17533309
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Document type: Journal article (JA)
Publisher: Inderscience Publishers
Abstract: As an alternative energy of conventional resources, coalbed methane (CBM) has been studied globally. So far, the pressure distribution model for multi-stage fractured horizontal well (MFW) in stress sensitive coal seam is almost solved by numerical method. In this paper, a transient pressure behaviour model of MFW was established. Using perturbation transformation, Laplace transform, image theory and superposition principle the mathematical model was solved. According to the result of calculation, the flow process of MFW can be identified as six regimes. Stress-sensibility primarily influences the latter five stages. The well bore dimensionless pressure drop is several times larger comparing with the situation that does not take the stress sensitive into account. Accordingly, the influences of some of the critical parameters on the transient pressure behaviour were studied, including the fracture number, permeability modulus, storage ratio, and so on.
Number of references: 33
Main heading: Coal bed methane
Controlled terms: Laplace transforms - Horizontal wells - Methane - Coal deposits - Fracture - Firedamp - Numerical methods
Uncontrolled terms: Alternative energy - Flow regimes - Fractured horizontal wells - Permeability modulus - Source functions - Stress sensitive - Superposition principle - Transient pressures
Classification code: 503 Mines and Mining, Coal - 512.1.1 Oil Fields - 512.2 Natural Gas Deposits - 522 Gas Fuels - 804.1 Organic Compounds - 921.3 Mathematical Transformations - 921.6 Numerical Methods - 951 Materials Science
DOI: 10.1504/IJOGCT.2019.102785
Funding Details: Number: 51674200, Acronym: -, Sponsor: -;
Funding text: This work is funded by National Science Foundation Project (No.51674200).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

2. Evaluation indexes of coalbed methane accumulation in the strong deformed strike-slip fault zone considering tectonics and fractures: A 3D geomechanical simulation study

Accession number: 20211910332212
Authors: Yin, Shuai (1, 2); Ding, Wenlong (3)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shandong Provincial Key Laboratory Ot Depositionat Mineralization Ana Sedimentary Mineral, Snanaong University Ot Science and Technology, Qingdao, Shandong; 266590, China; (3) School of Energy Resources, China University of Geosciences, Beijing; 100083, China
Corresponding author: Yin, Shuai(speedysys@163.com)
Source title: Geological Magazine
Abbreviated source title: Geol. Mag.
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Issue: 6
Issue date: June 1, 2019
Publication year: 2019
Pages: 1052-1068
Language: English
ISSN: 00167568
E-ISSN: 14695081
Document type: Journal article (JA)
Publisher: Cambridge University Press
Abstract: Both the deformation and rupture characteristics of rocks are related to geomechanics. In this paper, we identify the evaluation indexes related to coalbed methane (CBM) accumulation in strongly deformed strike-slip fault zones considering tectonics and fractures. We found that fault scale, the fault combination, the tectonic stress, the preservation conditions and fractures all have important effects on the CBM distribution. Areas near the large-scale opening faults are unfavourable to the preservation of coalbed methane. The distribution of gas wells with different capacities is influenced by tectonic extension and convergence. A 3D geomechanical method was used to analyse the influence of the 'ribbon effect' of strike-slip faults on the CBM distribution. Due to the influence of the 'ribbon effect', the tectonic stress presents a plane in situ stress heterogeneity, which in turn will affect the gas well productivity. We also calculated the integrated rupture rate (IF) to characterize the degree of tectonic fracture development in the target coal reservoir. The appropriate fracture development degree can improve the petrophysical properties of the coal reservoirs while maintaining good storage conditions, such that the gas wells can achieve a higher production capacity. This study is of great significance for the enrichment of the geomechanical theory of oil and gas exploration. © 2018 Cambridge University Press.
Number of references: 59
Main heading: Coal bed methane
Controlled terms: Coal deposits - Firedamp - Methane - Fault slips - Coal storage - Strike-slip faults - Coal - Fracture - Natural gas wells - Petroleum prospecting
Uncontrolled terms: Coal reservoirs - Gas well productivities - Geomechanical simulations - Methane accumulation - Oil and gas exploration - Petrophysical properties - Preservation condition - Qinshui basin
Classification code: 484.1 Earthquake Measurements and Analysis - 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 - 694.4 Storage - 804.1 Organic Compounds - 951 Materials Science
DOI: 10.1017/S0016756818000456
Funding Details: Number: 41772140, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: DMSM2017081, Acronym: SDUST, Sponsor: Shandong University of Science and Technology;
Funding text: This research was supported by the National Natural Science Foundation of China (Grant Nos 41772140) and the Open Foundation of Shandong Provincial Laboratory of Depositional Mineralization & Sedimentary Mineral, Shandong University of Science and Technology (Grant Nos DMSM2017081).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

3. Self-Assembled Fluorescent and Antibacterial GHK-Cu Nanoparticles for Wound Healing Applications

Accession number: 20191006590580
Authors: Sun, Leming (1); Li, Aipeng (1); Hu, Yanzi (2); Li, Yang (1); Shang, Li (3); Zhang, Lianbing (1)
Author affiliation: (1) School of Life Sciences, Key Laboratory of Space Bioscience & Biotechnology, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) School of Materials Science and Engineering, Center for Nano Energy Materials, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Zhang, Lianbing(lbzhang@nwpu.edu.cn)
Source title: Particle and Particle Systems Characterization
Abbreviated source title: Part. Part. Syst. Charact.
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Publication year: 2019
Article number: 1800420
Language: English

ISSN: 09340866
E-ISSN: 15214117
CODEN: PPCHEZ
Document type: Journal article (JA)
Publisher: Wiley-VCH Verlag
Abstract: GHK-Cu is demonstrated with the abilities to improve wound healing, accelerate anti-inflammatory activity, and repair DNA damage. However, the instability of the GHK-Cu in biological fluids is always a big challenge for its long-term and efficient function at the target site. Therefore, the self-assembled GHK-Cu nanoparticles (GHK-Cu NPs) are investigated in this work to solve the instability issue. The crystalline nanostructure within the GHK-Cu nanoparticles offers them visible and near-infrared fluorescent properties. With the excellent self-assembly performance, the antibacterial properties of GHK-Cu NPs are demonstrated using E. coli and S. aureus. The L929 dermal fibroblast cells are utilized to prove the good biocompatibility and enhanced wound healing applications of GHK-Cu NPs. This study could pave the way for the design and elaboration of a new class of fluorescent peptides with various biological functions in biomedical applications. © 2019 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim
Number of references: 51
Main heading: Self assembly
Controlled terms: Cell culture - Medical applications - Nanoparticles - Escherichia coli - Infrared devices - Biocompatibility - Fluorescence
Uncontrolled terms: Anti-inflammatory activity - antibacterial - Antibacterial properties - Crystalline nanostructure - fluorescent - Visible and near infrared - Wound healing - Wound healing applications
Classification code: 461.9.1 Immunology - 741.1 Light/Optics - 761 Nanotechnology - 933 Solid State Physics - 951 Materials Science
DOI: 10.1002/ppsc.201800420
Funding Details: Number: 2018JM3027, Acronym: -, Sponsor: -; Number: -, Acronym: AFM, Sponsor: Advanced Foods and Materials Canada; Number: 31700700,31771577, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: MEAE, Sponsor: The Ministry of Economic Affairs and Employment; Number: -, Acronym: NPU, Sponsor: Northwestern Polytechnical University; Number: 2017M623232,2018M631197, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 3102017OQD047,3102017OQD049,31020180QD063, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 201810699343, Acronym: -, Sponsor: National College Students Innovation and Entrepreneurship Training Program;
Funding text: This work was supported by the National Natural Science Foundation of China (31771577 and 31700700), the China Postdoctoral Science Foundation (2018M631197 and 2017M623232), the Natural Science Basic Research Plan in Shaanxi Province of China (2018JM3027), the Fundamental Research Funds for the Central Universities (3102017OQD047, 3102017OQD049, and 31020180QD063), and National Undergraduate Training Programs for Innovation and Entrepreneurship (201810699343). The authors would like to thank the Analytical & Testing Center of Northwestern Polytechnical University for the AFM, TEM, and XRD characterization.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

4. Hexanuclear 3d-4f complexes as efficient catalysts for converting CO2 into cyclic carbonates

Accession number: 20191206666966
Authors: Gao, Guoshu (1); Wang, Li (1, 2); Zhang, Ruilian (1); Xu, Cong (1); Yang, Huan (1); Liu, Weisheng (1)
Author affiliation: (1) Key Laboratory of Nonferrous Metals Chemistry and Resources Utilization of Gansu Province, State Key Laboratory of Applied Organic Chemistry, College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou; 730000, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Li(lw14@lzu.edu.cn)
Source title: Dalton Transactions
Abbreviated source title: Dalton Trans.
Volume: 48
Issue: 12
Issue date: 2019
Publication year: 2019
Pages: 3941-3945
Language: English

ISSN: 14779226
E-ISSN: 14779234
CODEN: DTARAF
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: A series of novel hexanuclear 3d-4f complexes formulated as {[Ln2Zn4(μ3-OH)2L4(AcO)2(NO3)2(DMF)2]·2(CH3OH), LnIII = Dy3+ (1), Nd3+ (2), Tb3+ (3)} have been synthesized and characterized. These complexes 1-3 show excellent catalytic performance for the cycloaddition of CO2 and epoxides to obtain cyclic carbonates. The catalytic system has a wide substrate scope with high turnover numbers (9700) and high turnover frequencies (808 h-1) under mild conditions. Additionally, the catalysts could be conveniently prepared on a large scale and recycled. © 2019 The Royal Society of Chemistry.
Number of references: 52
Main heading: Carbon dioxide
Controlled terms: Carbonates - Synthesis (chemical) - Catalysts
Uncontrolled terms: Catalytic performance - Catalytic system - Cyclic carbonates - Efficient catalysts - Turnover frequency - Turnover number
Classification code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds
DOI: 10.1039/c8dt05048a
Funding Details: Number: 21431002,21871122, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: lzujbky-2018-kb12, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant: 21431002 and 21871122) and the Fundamental Research Funds for the Central Universities (Grant: lzujbky-2018-kb12).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

5. Basement depth estimation based on gravity anomalies in Weihe Basin with 3D variable density contrast model

Accession number: 20191706835637
Title of translation:
Authors: Feng, Xuliang (1); Yuan, Bingqiang (1); Li, Yuhong (2); Zhang, Jin'ai (3); Zhang, Lin (3); Guo, Ruikun (4)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Xi'an Center, China Geological Survey, Xi'an; Shaanxi; 710054, China; (3) Shaanxi Geological Survey Center, Xi'an; Shaanxi; 710068, China; (4) The 12th Oil Production Plant, Changqing Oilfield Company, PetroChina, Qingyang; Gansu; 745400, China
Source title: Shiyou Diqiu Wuli Kantan/Oil Geophysical Prospecting
Abbreviated source title: Shiyou Diqiu Wuli Kantan
Volume: 54
Issue: 2
Issue date: April 15, 2019
Publication year: 2019
Pages: 461-471
Language: Chinese
ISSN: 10007210
CODEN: SDWKEP
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The depth estimation of the Precambrian basement of Weihe Basin is of great significance for the Paleozoic hydrocarbon exploration in the basin. Unfortunately, there is lack of understanding of the basement depth. The density of each sedimentary layer varies with depth, and it also changes in the horizontal direction. Therefore, the gravity inversion conducted with a constant density contrast cannot accurately delineate the basement depth. We fit the real density contrast of the sediments with 6 different density-depth functions according to 5 integrated geophysical sections and 3 boreholes' information, which contains the density of every sedimentary layer in different tectonic units. Fitting-error statistical results of different functions indicate that the exponential density contrast-depth function is more coincide with the real density variation in Weihe Basin. Then the decay factor λ and the density contrast $\Delta\rho 0$ at the surface are extracted from the fitted exponential density contrast-depth functions, and the λ and $\Delta\rho 0$ in the whole basin are acquired by gridding the discrete λ and $\Delta\rho 0$. Thus, the 3D variable density contrast model is obtained

by combination the gridded λ and $\Delta\rho 0$ in the whole area. Finally, this variable density contrast model is applied in Precambrian basement estimation of Weihe Basin, and the result indicates that the 3D density could be adopted to obtain a more accurate basement relief than the constant density contrast. This approach provides a strong basic data support for the hydrocarbon exploration in the basin and can also be very helpful for solving similar problems in other basins.
Number of references: 40
Main heading: Hydrocarbons
Controlled terms: Petroleum prospecting - Geological surveys - Gravitation - Sedimentology - Geophysical prospecting - 3D modeling - Buildings
Uncontrolled terms: Basement - Density interface - Different densities - Gravity exploration - Gravity inversions - Hydrocarbon exploration - Precambrian basement - Variable density
Classification code: 402 Buildings and Towers - 481.1 Geology - 481.4 Geophysical Prospecting - 512.1.2 Petroleum Deposits : Development Operations - 723.2 Data Processing and Image Processing - 804.1 Organic Compounds - 931.5 Gravitation, Relativity and String Theory
DOI: 10.13810/j.cnki.issn.1000-7210.2019.02.026
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

6. Prediction of Corrosion Rate of Submarine Oil and Gas Pipelines Based on IA-SVM Model (*Open Access*)

Accession number: 20191606808175
Authors: Wang, Chen (1); Ma, Gang (1); Li, Junfei (2); Dai, Zheng (1); Liu, Jinyuan (3)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Electronic Second Road, Xi'an, ShaanXi; 710065, China; (2) China Petroleum and Natural Gas Pipeline Bureau, No. 87, Guangyang Road, Langfang City, Hebei Province; 065000, China; (3) School of Petroleum and Natural Gas Engineering, Southwest Petroleum University, China
Corresponding author: Ma, Gang(mag.10@163.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 242
Part number: 2 of 6
Issue: 2
Issue title: 4th International Conference on Energy Equipment Science and Engineering - Energy Engineering Technology, Application and Management
Issue date: April 1, 2019
Publication year: 2019
Article number: 022023
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Energy Equipment Science and Engineering, ICEESE 2018
Conference date: December 28, 2018 - December 30, 2018
Conference location: Xi'an, China
Conference code: 147102
Publisher: IOP Publishing Ltd
Abstract: In view of the corrosion problem of submarine oil and gas pipelines, this paper proposes a predictive model based on support vector machine (SVM), according to the related factors affecting the corrosion of submarine oil and gas pipelines, and uses the immune algorithm based on the problem of relatively low corrosion rate and influencing factors. (IA) prefers the penalty parameters C and g of the SVM. The IA-SVM model is combined to form the IA-SVM model, and the number of hidden nodes and the kernel function of the SVM are optimized based on the absolute error. Finally, the model is verified according to the actual corrosion rate of the submarine pipeline in a certain sea area of China, and with the PSO-SVM, the GA-SVM and LS-SVM models are used to compare the prediction errors to verify the feasibility and advancement of the IA-SVM model. The research shows that the preferred results of IA for SVM penalty parameters C and are 43, 6213 and 0.0483, the preferred result of SVM hidden layer nodes is 260, and the kernel function preferred result is Sigmoidal function. At this time, the predicted mean absolute error and root mean square error of the combined model are 1.45% and 0.0159165, respectively, the error of the model is smaller than

other prediction models. The research results show that the prediction error of the corrosion rate of submarine oil and gas pipelines based on IA-SVM model is relatively small, and the data training time is short, which can be used to predict the corrosion rate of submarine oil and gas pipelines. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Support vector machines
Controlled terms: Mean square error - Submarines - Seawater corrosion - Corrosion rate - Gases - Errors - Forecasting
Uncontrolled terms: Corrosion problems - Error of the models - Mean absolute error - Oil-and-Gas pipelines - Penalty parameters - Predictive modeling - Root mean square errors - Sigmoidal functions
Classification code: 471.4 Seawater, Tides and Waves - 539.1 Metals Corrosion - 672.1 Combat Naval Vessels - 723 Computer Software, Data Handling and Applications - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 1.45e+00%
DOI: 10.1088/1755-1315/242/2/022023
Funding Details: Number: 221516001, Acronym: -, Sponsor: Shaanxi Key Science and Technology Innovation Team Project;
Funding text: Fund Project: Funded by Shaanxi Province Science and Technology Coordination Innovation Project (221516001)
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

7. Study on powder preparation of IGZO target and its effect on sintering

Accession number: 20192507062492
Authors: Chen, Jie (1, 2); Zhong, Jingming (2); Luo, Wen (2); Qi, Chao (1); Sun, Benshuang (1); Liu, Shuai (3); Liu, Bingning (2); Shu, Yongchun (1); He, Jilin (1)
Author affiliation: (1) Henan Province Industrial Technology Research Institute of Resources and Materials, Zhengzhou University, Zhengzhou; 450001, China; (2) State Key Laboratory of Special Rare Metal Materials, Northwest Rare Metal Materials Research Institute, Shizuishan; 753000, China; (3) College of Sciences, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Chen, Jie(jack113.gg@163.com)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
Volume: 800
Issue date: 5 September 2019
Publication year: 2019
Pages: 468-477
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this study, the powder preparation process of indium–gallium–zinc oxide (IGZO) and its effect on sintering were investigated to develop high-quality IGZO ceramic material as sputtering target. The effects of mechanical milling on the morphology, phase, size distribution and specific surface area of IGZO mixture particles were studied. Furthermore, the optimized powder states for sintered IGZO ceramics were analyzed. The results showed that the IGZO mixture particles were refined and the size difference between particles was significantly decreased after milling for 45 h. Moreover, the uniformity, size distribution and specific surface area of IGZO mixed powder were greatly improved. The pressed powders showed regular morphology, without any cracking or deformation. Three critical factors of powder treatment were identified which controlled the quality of the sintered IGZO target. Finally, using the optimized conditions, IGZO target was obtained with high density (relative density > 99%), regular shape, homogeneous microstructure (grain and element distribution) and controlled phases. © 2019 Elsevier B.V.
Number of references: 40
Main heading: Microstructure
Controlled terms: Morphology - Powders - II-VI semiconductors - Mixtures - Quality control - Specific surface area - Mechanical alloying - Zinc oxide - Milling (machining) - Sintering - Size distribution
Uncontrolled terms: Critical factors - Element distribution - Homogeneous microstructure - Mechanical milling - Optimized conditions - Oxide ceramics - Powder preparation - Sputtering target

Classification code: 531 Metallurgy and Metallography - 604.2 Machining Operations - 712.1 Semiconducting Materials - 804.2 Inorganic Compounds - 913.3 Quality Assurance and Control - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 9.90e+01%, Time 1.62e+05s
DOI: 10.1016/j.jallcom.2019.06.031
Funding Details: Number: 2018M632797, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 192102210014, Acronym: -, Sponsor: Science and Technology Department of Henan Province;
Funding text: This work was supported by the State Key Laboratory of Special Rare Metal Materials (Contract No. SKL2016K001), Northwest Rare Metal Materials Research Institute . Project funded by China Postdoctoral Science Foundation (2018M632797) and Science and Technology Project of Henan Province (Grant NO. 192102210014).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

8. Enhanced photocatalytic activity by tailoring the interface in TiO2–ZrTiO4 heterostructure in TiO2–ZrTiO4–SiO2 ternary system

Accession number: 20192407037768
Authors: Liu, Changqing (1); Li, Xu (1); Wu, Yuanting (1); Sun, Liang (2); Zhang, Luyue (1); Chang, Xiaojing (1); Zhang, Xinmeng (1); Wang, Xiufeng (1)
Author affiliation: (1) School of Material Science and Engineering, Shaanxi Key Laboratory of Green Preparation and Functionalization for Inorganic Materials, Shaanxi University of Science & Technology, Xi'an; 710021, China; (2) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Changqing(liu280097311@163.com)
Source title: Ceramics International
Abbreviated source title: Ceram Int
Volume: 45
Issue: 14
Issue date: 1 October 2019
Publication year: 2019
Pages: 17163-17172
Language: English
ISSN: 02728842
CODEN: CINNDH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: To clarify the interfacial structural of TiO2–ZrTiO4 heterostructure and their function in improving the catalytic behavior, TiO2–ZrTiO4–SiO2 photocatalyst with mesoporous structure, a large surface area (188.54 m2g-1) and an appropriate band gap energy (3.06 eV) was synthesized by in-situ reaction between TiO2 and ZrO2 at 800 °C in TiO2–ZrO2–SiO2 ternary system. The concomitant effects of loading amount of TiO2 and calcination temperatures on the interfacial interaction, and the corresponding interfacial effects on the photodegradation performance of the catalyst were investigated. Results show that an optimal amount of TiO2 is crucial in affecting the degree of interfacial interactions. Photocatalytic activity is significantly enhanced with the strong interfacial interaction between TiO2 and ZrTiO4 by forming heterojunction. A higher amount of TiO2 and calcination temperature will lead to the decrease in BET value, increase in pore size and band gap value, as well as the coarsening and aggregation of particles which exhibit negative influence on the interfacial interaction between TiO2 and ZrTiO4. In the photodegradation process, the prepared catalyst with a appropriate TiO2 molar ratio (Ti:Zr:Si, 5:1:6) exhibited a RhB-adsorption of 60.7% in dark reaction, and a degradation rate of 95% after visible light irradiation for 60 min. In addition, the probable degradation mechanism for the improvement in the degradation efficiency was discussed in detail. © 2019 Elsevier Ltd and Techna Group S.r.l.
Number of references: 65
Main heading: Titanium dioxide
Controlled terms: Degradation - Pore size - Heterojunctions - Optical properties - Catalysts - Molar ratio - Sol-gels - Photocatalytic activity - Calcination - Mesoporous materials - Silica - Energy gap - Zirconia - Sol-gel process
Uncontrolled terms: Calcination temperature - Concomitant effects - Degradation efficiency - Degradation mechanism - Functional applications - Interfacial interaction - Mesoporous structures - Visible-light irradiation

Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 812.3 Glass - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Electron_Volt 3.06e+00eV, Percentage 6.07e+01%, Percentage 9.50e+01%, Temperature 1.07e+03K, Time 3.60e+03s
DOI: 10.1016/j.ceramint.2019.05.271
Funding Details: Number: 51302161,51702194, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018GY-106,2018JQ5055, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2016GBJ-09, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology; Number: 17JK0088, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: This work was supported by the National Natural Science Foundation of China (grant numbers 51702194 , 51302161); the Natural Science Fund of Shaanxi Province (grant number 2018JQ5055); the Natural Science Foundation of Shaanxi Province (grant number 2018GY-106); the Special Scientific Research Plan Project of Shaanxi Provincial Education Department (grant number 17JK0088) and the Research Startup Fund of Shaanxi University of Science and Technology (grant number 2016GBJ-09).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

9. Numerical investigation of techno-economic multiobjective optimization of geothermal water reservoir development: A case study of China (*Open Access*)

Accession number: 20194807757187
Authors: Zhang, Luyi (1); Wang, Ruifei (2); Song, Hongqing (1); Xie, Hui (1); Fan, Huifang (1); Sun, Pengguang (3); Du, Li (3)
Author affiliation: (1) School of civil and resource engineering, University of Science and Technology Beijing, 30 Xueyuan Rd, Beijing; 100083, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Sinopec Star Petroleum Co., Ltd., 263 N 4th Ring Road Middle, Beijing; 100083, China
Corresponding author: Song, Hongqing(songhongqing@ustb.edu.cn)
Source title: Water (Switzerland)
Abbreviated source title: Water
Volume: 11
Issue: 11
Issue date: November 1, 2019
Publication year: 2019
Article number: 2323
Language: English
E-ISSN: 20734441
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: Renewable geothermal utilization is a significant approach for residential heating with two principal modes, direct geothermal district heating systems (DGDHSs) and indirect geothermal district heating systems (IGDHSs). The key principle of geothermal development design is to prevent premature thermal breakthrough, which could result in low efficiency of geothermal heating systems. In this paper, a new approach considering building heating demand, geothermal water resource protection, and optimal economic benefits is presented systematically. The results simulated by OGS software show that well spacing, reinjection temperature, and production rate are the most significant parameters affecting thermal breakthrough in geothermal reservoirs. In addition, production rate and reinjection temperature have a huge effect on the payback period of investment. Comparing IGDHS to DGDHS, the investment in construction of geothermal wells and the annual water consumption decrease by up to 10% and 50%, respectively. Additionally, electricity costs increase by 5% to 30%. The indirect geothermal district heating system with a well spacing of 300 m, a production rate of 100 m3/h, and a reinjection temperature of 301.15 K is much better for this case, both technically and economically. The systematic calculation approach can be reasonably applied to other regions with geothermal energy utilization. © 2019 by the authors.
Number of references: 40
Main heading: Multiobjective optimization
Controlled terms: District heating - Reservoirs (water) - Well spacing - Energy utilization - Economic analysis - Heating equipment - Costs - Geothermal fields - Geothermal wells - Investments

Uncontrolled terms: Annual water consumption - Economic evaluations - Geothermal district heating system - Geothermal heating systems - Geothermal water - Numerical investigations - Optimal economic benefits - Payback period of investments
Classification code: 441.2 Reservoirs - 481.3.1 Geothermal Phenomena - 525.3 Energy Utilization - 615.1 Geothermal Energy - 643.1 Space Heating - 911 Cost and Value Engineering; Industrial Economics - 911.2 Industrial Economics - 921.5 Optimization Techniques
Numerical data indexing: Percentage 1.00e+01%, Percentage 5.00e+00% to 3.00e+01%, Percentage 5.00e+01%, Size 3.00e+02m, Temperature 3.01e+02K
DOI: 10.3390/w11112323
Funding Details: Number: Z171100001117081, Acronym: -, Sponsor: Beijing Nova Program;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

10. Fiber-optic sensor implanted with seven-core helical structure for measurement of tensile strain and extrusion bending

Accession number: 20192006915878
Authors: Wang, Xiang Yu (1); Qiao, Xue Guang (2); Yu, Da Kuan (1, 3); Gao, Hong (3); Fan, Wei (2, 3)
Author affiliation: (1) Northwestern Polytechnical University, School of Science, Shanxi Key Laboratory of Optical Information Technology, Berlin District, Xi'an, China; (2) Northwest University, Department of Physics, Beilin District, Xi'an, China; (3) Ministry of Education Key Laboratory on Photoelectric Oil-Gas Logging and Detecting, Xi'An Shiyou University, Yanta District, Xi'an, China
Corresponding author: Qiao, Xue Guang(xgqiao@nwu.edu.cn)
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Language: English
ISSN: 00913286
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CODEN: OPEGAR
Document type: Journal article (JA)
Publisher: SPIE
Abstract: We proposed a fiber-optic sensor implanted with helical seven-core structure based on Mach-Zehnder interference, which can be used for the measurement of tensile strain and extrusion bending. The sensor consisted of a section of seven-core optical fiber with helical structure, which can be described as the SMF-Taper-HSCF-Taper-SMF (HSCF, helical seven-core fiber) sensor. When stretching or bending is applied, the sensor will undergo certain deformation, which will lead to the changes of interference modes in the optical fiber. The tensile strain and extrusion bending can be measured accurately according to the response of transmission spectrum to mode change. The helical seven-core structure can effectively stimulate higher order modes and induced deformation changes. In the experiment, three sensors with different helical periods were fabricated and their spectral characteristics were analyzed. Finally, we selected the sensor with a helical period of 190 μm to conduct a strain and bending test. The results show that the strain sensitivity of the sensor is -21.31 pm / μ in the range of 0 to 500 μ, and the curvature sensitivity of the sensor is -6.36 nm / m-1 in the range of 0.16 to 1.6 m-1. This sensor can detect strain and bending and has stable sensing performance and high sensitivity. © 2019 Society of Photo-Optical Instrumentation Engineers (SPIE).
Number of references: 13
Main heading: Fiber optic sensors
Controlled terms: Tensile strength - Extrusion - Fiber optics - Tensile strain - Optical fibers

Uncontrolled terms: Bend - Curvature sensitivities - Helical structures - Mach-Zehnder - Sensing performance - Spectral characteristics - Strain sensitivity - Transmission spectrums
Classification code: 741.1.2 Fiber Optics - 931.1 Mechanics
DOI: 10.1117/1.OE.58.4.046111
Funding Details: Number: 2016ZX05019007-01, Acronym: -, Sponsor: -; Number: 61327012,61605159,61735014, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 08JZ58, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2017YFB0405502, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: -, Acronym: -, Sponsor: Science and Technology Project of Nantong City;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant Nos. 61327012, 61735014, and 61605159), National Key Research and Development Plan, Key strategic advanced electronic materials (Grant No. 2017YFB0405502), National Science and Technology Project, Large Oil and Gas Field and Coal Bed Gas Development Project (Grant No. 2016ZX05019007-01), Scientific Research Program Funded by Shananxi Provincial Education Department(Program No. 08JZ58).
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Data Provider: Engineering Village

11. Effect of injection parameters on proppant transport in rough vertical fractures: An experimental analysis on visual models

Accession number: 20192206993178
Authors: Huang, Hai (1); Babadagli, Tayfun (2); Li, Huazhou Andy (2); Develi, Kayhan (3); Wei, Gongjue (2)
Author affiliation: (1) Xi'an Shiyou University and Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xian; 710065, China; (2) School of Mining and Petroleum Engineering, Faculty of Engineering, University of Alberta, Edmonton; T6G 1H9, Canada; (3) Department of Geological Engineering, Istanbul Technical University, Maslak; Istanbul, Turkey
Corresponding author: Li, Huazhou Andy(huazhou@ualberta.ca)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 180
Issue date: September 2019
Publication year: 2019
Pages: 380-395
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The understanding of proppant flow through fractures is critical in evaluating the performance of hydraulic fracturing operations. As a continuation of our experimental efforts devoted to understanding how proppant flows in rough vertical fractures, in this paper, we examine the effect of injection parameters on the proppant transport in rough vertical fractures. The effects of polymer concentration, injection rate, proppant concentration, and type of proppant were investigated in detail. Experimental results show that, in general, two types of settling patterns can be observed in the proppant transport in a rough fracture: sand-dune settling pattern and tree-like settling pattern. The following conditions tend to suppress the tree-like settling behavior of proppants in the rough fracture: a higher density of the proppants, a lower viscosity of the polymer solution, and a lower injection rate. This is attributed to a higher settling velocity of the proppants in the fracture under these conditions. A sufficiently high polymer concentration is needed to enable effective proppant flow in rough fractures. In general, the relative coverage of proppants increased dramatically as the polymer concentration increased, implying that the higher viscosity of fracturing fluid could enhance the slurry's ability to place more proppant vertically into the fracture and help to maintain a better conductivity after fracturing treatment. A sufficiently high injection rate of the slurry is also needed to enable effective proppant flow in rough fractures. At certain low injection rates, the proppants carried by a low polymer solution might not exhibit a tree-like settling pattern, diminishing the effect of roughness on the proppant transport. This means that even in rough fractures, the tree-like settling pattern of the proppants did not necessarily occur for sure; the injection rate should be properly selected to enable such phenomenon. With other conditions being kept constant, a higher proppant loading led to a higher final relative coverage of the proppants in the rough fractures. But if the injection rate used for delivering the proppants is not sufficiently high, we may encounter injectivity issues; in our lab experiments, this caused the choking of the pump. The heavier proppant (ceramic proppants) in the rough fracture models tended to suppress the tree-like settling pattern that was experienced by the lighter proppant (silica sands). This is attributed to the larger density of

the ceramic proppants, leading to a larger settling velocity. In order to maximize the spreading of a given proppant over a rough fracture model, we should determine the proper values of all the essential injection parameters (including polymer solution, injection rate, proppant concentration) by striking a good balance among them. The conclusions obtained in this study shed light on how to optimize slurry injection parameters to achieve an optimal proppant-filling ratio during hydraulic fracturing. © 2019 Elsevier B.V.
Number of references: 37
Main heading: Proppants
Controlled terms: Fracture - Silica sand - Silica - Viscosity - Forestry - Fracturing fluids
Uncontrolled terms: Experimental analysis - Fracturing operations - Polymer concentrations - Proppant concentrations - Proppant transports - Rough fractures - Roughness effects - Visual study
Classification code: 511.1 Oil Field Production Operations - 631.1 Fluid Flow, General - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2019.05.009
Funding Details: Number: 15JS086, Acronym: -, Sponsor: -; Number: 2015GY109, Acronym: -, Sponsor: -; Number: RES0011227,RGPIN 05394, Acronym: -, Sponsor: BASF; Number: -, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: -, Acronym: UofA, Sponsor: University of Alberta; Number: -, Acronym: TÜBITAK, Sponsor: Türkiye Bilimsel ve Teknolojik Araştirma Kurumu; Number: -, Acronym: -, Sponsor: Saudi Aramco; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2016ZX05047003-004, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This research was conducted under T. Babadagli's NSERC Industrial Research Chair in Unconventional Oil Recovery (industrial partners are APEX Eng., Devon, Husky Energy, Petroleum Development Oman, Saudi Aramco, SiGNa Oilfield Canada, Total E&P Recherché Développement, and BASF) and NSERC Discovery Grants (No: RES0011227 and NSERC RGPIN 05394) to T. Babadagli and H. Li, respectively. H. Huang is also grateful for the financial support provided by National Science and Technology Major Project (No. 2016ZX05047003-004), the Shaanxi Industrial Science and Technology Research Project (No. 2015GY109), the Key Laboratory Fund of Education Department of Shaanxi Province (No. 15JS086) as well as the Xi'an Shiyou University for supporting his stay at the University of Alberta . K. Develi is thankful to the Scientific and Technological Research Council of Turkey (TÜBTAK) for his postdoctoral scholarship at the University of Alberta through the BIDEP program. We gratefully acknowledge these supports. This paper is a revised version of the conference paper SPE 190041 that was presented at the SPE Western Regional Meeting, 22–26 April, Garden Grove, California, USA.
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Data Provider: Engineering Village

12. Organometallic titanocene complex as highly efficient bifunctional catalyst for intramolecular Mannich reaction

Accession number: 20191906867795
Authors: Wang, Yunyun (1, 2); Jian, Yajun (1); Wu, Ya (3); Sun, Huaming (1); Zhang, Guofang (1); Zhang, Weiqiang (1); Gao, Ziwei (1)
Author affiliation: (1) Key Laboratory of Applied Surface and Colloid Chemistry, MOE, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710062, China; (2) College of Chemistry and Chemical Engineering, Ningxia Normal University, Guyuan; 756000, China; (3) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Jian, Yajun(yajunjian@snnu.edu.cn)
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Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd

Abstract: Bifunctional catalysts bearing two catalytic sites, Lewis acidic organometallic titanocene and Brønsted acidic COOH, have been assembled in situ from Cp2TiCl2 with carboxylic acid ligands, showing high catalytic activity over an intramolecular Mannich reaction towards synthesis of 2-aryl-2,3-dihydroquinolin-4(1H)-ones. The determination of the bifunctional catalyst Cp2Ti(C8H4NO6)2 was elucidated by single X-ray HR-MS and investigation of catalytic behavior. In particular, masking the Brønsted acidic COOH catalytic site with dormant COOMe lowered the reaction yield greatly, indicating that two catalytic sites work together to maintain high catalytic efficiency. © 2019 John Wiley & Sons, Ltd.
Number of references: 32
Main heading: Organometallics
Controlled terms: Catalyst activity - Titanium compounds - Bromine compounds - Chelation
Uncontrolled terms: Bi-functional catalysts - Catalytic behavior - Catalytic efficiencies - Catalytic sites - Lewis acidic - Mannich reactions - Reaction yields - Titanocene complexes
Classification code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds
DOI: 10.1002/aoc.4925
Funding Details: Number: 2017JM2020, Acronym: -, Sponsor: -; Number: IRT_14R33, Acronym: -, Sponsor: -; Number: 21571121,21602129,21771122, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Project 985; Number: B14041, Acronym: -, Sponsor: Higher Education Discipline Innovation Project;
Funding text: National Natural Science Foundation of China, Grant/Award Number: 21571121, 21771122, 21602129; Natural Science Basic Research Plan in Shaanxi Province of China, Grant/Award Number: 2017JM2020; the 111 Project, Grant/ Award Number: B14041; the Program for Chang jiang Scholars and Innovative Research Team in University, Grant/ Award Number: IRT_14R33
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

13. Characterization of compositions in crude oil and the effect of inhibitor on the crystallization of paraffin (*Open Access*)

Accession number: 20200107973395
Authors: Peng, Sen (1); Tang, Xiaoben (1); Yang, Anguo (1); Chen, Shijun (2); Chen, Gang (2, 3); Dong, Sanbao (2, 3)
Author affiliation: (1) Henan Petroleum Exploration Bureau Co., Ltd., Nanyang, China; (2) Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'An Shiyou University, Xi'an, China; (3) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing, China
Corresponding author: Dong, Sanbao(dongsanbao@xsyu.edu.cn)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 384
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Issue title: 2019 International Conference on Oil and Gas Engineering and Geological Sciences
Issue date: December 2, 2019
Publication year: 2019
Article number: 012067
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 2019 International Conference on Oil and Gas Engineering and Geological Sciences, OGEGS 2019
Conference date: September 28, 2019 - September 29, 2019
Conference location: Dalian, China
Conference code: 156050
Publisher: IOP Publishing Ltd
Abstract: Flowability is one of the important characters of a crude oil in pipelines. The viscosity of one crude oil is affected by many factors (e.g., temperature, water cut, composition distribution, paraffin deposition, etc.). In this study, IR, thermogravimetry analysis (TGA) and UV measurement are employed to characterize the composition of the crude

oil (HN-1) provided by Henan Oilfield. The paraffin morphology analysis is employed to rate the property of a mixture of paraffin inhibitors and analysis the mechanism of the paraffin inhibition. © 2019 IOP Publishing Ltd.
Number of references: 12
Main heading: Crude oil
Controlled terms: Paraffins - Thermogravimetric analysis
Uncontrolled terms: Composition distributions - Flowability - Morphology analysis - Paraffin deposition - Paraffin inhibitors - Thermogravimetry analysis - UV measurements - Water cuts
Classification code: 512.1 Petroleum Deposits - 801 Chemistry
DOI: 10.1088/1755-1315/384/1/012067
Funding Details: Number: 2017JQ2041, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 18JC025, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was financially supported by the grants from Scientific Research Program Funded by Shaanxi Provincial Education Department (18JC025) and Natural Science Foundation of Shaanxi Province (2017JQ2041).
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Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

14. Structural Stability of Ni-Fe Supported Solid Oxide Fuel Cells Based on Stress Analysis (*Open Access*)

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Title of translation: Ni-Fe
Authors: Li, Kai (1); Li, Xiao (1); Li, Jian (2); Xie, Jia-Miao (3)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory for Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan; 430074, China; (3) Department of Engineering Mechanics, Northwestern Polytechnical University, Xi'an; 710065, China
Source title: Wuji Cailiao Xuebao/Journal of Inorganic Materials
Abbreviated source title: Wuji Cailiao Xuebao
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Language: Chinese
ISSN: 1000324X
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Document type: Journal article (JA)
Publisher: Science Press
Abstract: Metal supported solid oxide fuel cells (MS-SOFCs) were fabricated with NiO and Fe2O3 by tape casting, screen printing, sintering and in-situ reducing process with NiO and Fe2O3. The fraction effects of Fe on residual stress, bending strength and electrochemical stability of MS-SOFC were systematically investigated. The addition of 10at% Fe2O3 in characteristic support elevated densification starting temperature up to 937 , and reduced residual stress and buckling deformation to 70 MPa and 0.15 mm, respectively. After reduction, Ni0.9Fe0.1supported SOFC presented the maximum bending strength of 62.34 MPa due to the lowest porosity of 40.22% in metal scaffold. MS-SOFC steadily operated for 60 h in durability test with H2 as the fuel at a constant current density of 400 mA•cm-2 and 650 . This superior performance was attributed to the higher fracture strength of Ni0.9Fe0.1 alloy support SOFC, which effectively resisted the thermal stress in operation. This research provides a promising theoretical basis for structure design and optimization of MS-SOFC. © 2019, Science Press. All right reserved.
Number of references: 32
Main heading: Iron alloys
Controlled terms: Thermal stress - Structural optimization - Bending strength - Hematite - Solid oxide fuel cells (SOFC) - Binary alloys - Nickel oxide - Residual stresses - Durability - Nickel alloys - Sintering
Uncontrolled terms: Buckling deformation - Constant current density - Durability test - Electrochemical stabilities - Metal-supported solid oxide fuel cells - Reducing process - Structural stabilities - Structure design
Classification code: 482.2 Minerals - 545.2 Iron Alloys - 548.2 Nickel Alloys - 702.2 Fuel Cells - 804.2 Inorganic Compounds - 921.5 Optimization Techniques - 931.2 Physical Properties of Gases, Liquids and Solids

Numerical data indexing: Current_Density 4.00e+03A/m2 to 2.20e-01A/m2, Percentage 4.02e+01%, Pressure 6.23e+07Pa, Pressure 7.00e+07Pa, Size 1.50e-04m, Time 2.16e+05s
DOI: 10.15541/jim20180398
Funding Details: Number: 51702258, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: P2017-005, Acronym: HUST, Sponsor: Huazhong University of Science and Technology; Number: 17JK0598, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: : 2018-09-03; : 2018-11-12 : 51702258; (P2017-005); (17JK0598) National Natural Science Foundation of China (51702258); Open Fund of State Key Laboratory of Materials Process-ing and Die & Mould Technology, Huazhong University of Science and Technology (P2017-005); Scientific Research Plan Projects of Shaanxi Province Education Department (17JK0598) : (1985–), , . E-mail: likai3611897@126.comNational Natural Science Foundation of China (51702258); Open Fund of State Key Laboratory of Materials Processing and Die & Mould Technology, Huazhong University of Science and Technology (P2017-005); Scientific Research Plan Projects of Shaanxi Province Education Department (17JK0598).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

15. Synthesis and Interface Activity of a Series of Dicarboxylic Cationic Surfactants and a Structure–Efficiency Relationship Study

Accession number: 20191006605717
Authors: Chen, Gang (1, 2); Bai, Yun (1); Liu, Qiaona (1); Zhang, Jie (1); Gu, Xuefan (1); Li, Hong (1, 3); Qu, Chengtun (1, 2); Zhang, Yongming (4)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China; (2) Shaanxi Province Key Laboratory of Environmental Pollution Control and Reservoir Protection Technology of Oilfields, Xi'an, China; (3) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing, China; (4) School of Science, Xijing University, Xi'an, China
Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)
Source title: Journal of Surfactants and Detergents
Abbreviated source title: J. Surfactants Deterg.
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Pages: 691-698
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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: Quaternary ammonium cationic surfactants are widely used in many fields, but information about the effect of the anion on cationic surfactants is scarce. To study the effect of anions on the surface properties, six dicarboxylic cationic surfactants were prepared, (cetyltrimethylammonium oxalate, CTAO; cetyltrimethylammonium malonate, CTAM; cetyltrimethylammonium succinate, CTASU; cetyltrimethylammonium glutarate, CTAG; cetyltrimethylammonium adipate, CTAA; and cetyltrimethylammonium sebacate, CTASE), and their surface properties were studied, including surface tension, critical micelle concentration, foaming ability and stability, and corrosion inhibition. The results showed that the minimum surface tension followed the order of CTAOCTAM>CTASU>CTAG>CTAA>CTASE. The foaming stability followed the order of CTAM>CTAO>CTASU>CTAG>CTAA>CTASE. At a concentration of 1.0 g L-1, the order of emulsification power of these surfactants was CTASE-1, the order was CTASE © 2019 AOCS
Number of references: 31
Main heading: Cationic surfactants
Controlled terms: Dyes - Emulsification - Biophysics - Critical micelle concentration - Micelles - Negative ions - Surface tension - Corrosion inhibitors - Steel corrosion - Surface properties - Efficiency
Uncontrolled terms: Cetyltrimethylammonium - Corrosion inhibition - Corrosion inhibition efficiency - Efficiency relationship - Foaming ability - Foaming stabilities - Minimum surfaces - Quaternary ammonium

Classification code: 461.9 Biology - 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 801.3 Colloid Chemistry - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1002/jsde.12264
Funding Details: Number: XASY005, Acronym: -, Sponsor: Beijing Science and Technology Planning Project; Number: 18JC025, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department; Number: 21376189, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Acknowledgements This work was financially supported by the grants from National Science Foundation of China (21376189), Scientific Research Program of Shaanxi Provincial Education Department (18JC025), and Xi 'an Science and Technology Planning Project (2017081CGRC044(XASY005)).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

16. Locally private Jaccard similarity estimation

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Authors: Yan, Ziqi (1); Wu, Qiong (2); Ren, Meng (2); Liu, Jiqiang (1); Liu, Shaowu (3); Qiu, Shuo (4)
Author affiliation: (1) Beijing Key Laboratory of Security and Privacy in Intelligent Transportation, Beijing Jiaotong University, Beijing; 100044, China; (2) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China; (3) Advanced Analytics Institute, University of Technology Sydney, Ultimo; 2007, Australia; (4) School of Software Engineering, Jinling Institute of Technology, Nanjing; 211169, China
Corresponding author: Liu, Jiqiang(jqliu@bjtu.edu.cn)
Source title: Concurrency and Computation: Practice and Experience
Abbreviated source title: Concurr. Comput. Pract. Exper.
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Article number: e4889
Language: English
ISSN: 15320626
E-ISSN: 15320634
CODEN: CCPEBO
Document type: Conference article (CA)
Publisher: John Wiley and Sons Ltd
Abstract: Jaccard Similarity has been widely used to measure the distance between two sets (or preference profiles) owned by two different users. Yet, in the private data collection scenario, it requires the untrusted curator could only estimate an approximately accurate Jaccard similarity of the involved users but without being allowed to access their preference profiles. This paper aims to address the above requirements by considering the local differential privacy model. To achieve this, we initially focused on a particular hash technique, MinHash, which was originally invented to estimate the Jaccard similarity efficiently. We designed the PrivMin algorithm to achieve the perturbation of MinHash signature by adopting Exponential mechanism and build the Locally Differentially Private Jaccard Similarity Estimation (LDP-JSE) protocol for allowing the untrusted curator to approximately estimate Jaccard similarity. Theoretical and empirical results demonstrate that the proposed protocol can retain a highly acceptable utility of the estimated similarity as well as preserving privacy. © 2018 John Wiley & Sons, Ltd.
Number of references: 36
Uncontrolled terms: Differential privacies - Hash techniques - Jaccard similarity - MinHash - Private data - Protocol cans - Similarity estimation
DOI: 10.1002/cpe.4889
Funding Details: Number: 201707090026, Acronym: CSC, Sponsor: China Scholarship Council; Number: -, Acronym: -, Sponsor: Deakin University; Number: 61672092, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES

Database: Compendex
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17. Acidification characteristics and kinetics of multi-hydrogen acid

Accession number: 20192206992100
Title of translation:
Authors: Gao, Jiapei (1, 2); Peng, Chong (3); Niu, Menglong (4); Zheng, Jiangang (3); Li, Yazhou (3); Ouyang, Shikun (3); 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; Shaanxi; 710069, China; (3) The Twelfth Oil Extraction Plant of Petrochina Changqing Oilfield Company, Heshui; Gansu; 745400, China; (4) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Wenhong(liwenhong@nwu.edu.cn)
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Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
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Publisher: Science Press
Abstract: In this study, the self-made multi-hydrogen acid solution XS-1 is used for static rock powder dissolution and core flow experiment. Using SEM and ICP, the retarding property of multi-hydrogen acid and its performance in preventing secondary precipitation are investigated to study the kinetics characteristics of the reaction between multi-hydrogen acid and core. The results show that the multi-hydrogen acid solution XS-1 has a good performance in retardation and secondary precipitation prevention. After reaction, the limit concentration of residual acid is 0.296 1 mol/L and the effective acting time of acid is 6-7 h. The core permeability is increased to 4.15 times in the multi-hydrogen acid system. Under such condition, the kinetics parameter model of acid and rock reaction is applied to establish the kinetic equation; the reaction rate constant is smaller than that of common acid under the same condition, further proving that multi-hydrogen acid has a certain retarding property. © 2019, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 31
Main heading: Hydrogen
Controlled terms: Kinetic theory - Rate constants - Kinetic energy - Kinetics - Integral equations
Uncontrolled terms: Acid rocks - Acid solutions - Core permeability - Field test - Kinetic equations - Kinetics characteristics - Kinetics parameter - Secondary precipitations
Classification code: 631.1 Fluid Flow, General - 802.2 Chemical Reactions - 804 Chemical Products Generally - 921.2 Calculus - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Time 2.16e+04s to 2.52e+04s
DOI: 10.7623/syxb201902009
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

18. Influence of CO2 on the adsorption of CH4 on shale using low-field nuclear magnetic resonance technique

Accession number: 20184305983404
Authors: Zhao, Guang (1); Wang, Chen (2, 3)
Author affiliation: (1) School of Petroleum Engineering, China University of Petroleum (East China), Qingdao; Shandong; 266580, China; (2) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Engineering Research Center of Development and Management for Low to Ultra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an; 710065, China
Corresponding author: Wang, Chen(cwangxsyu@163.com)

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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Due to the higher adsorption capacity, CO2 can efficiently replace the adsorbed CH4 from shale surface. To understand the effect of CO2 on the adsorption of CH4 on shale is significant for comprehending the mechanisms of enhanced shale methane recovery using CO2 method in shale gas reservoirs. In this work, the low-field nuclear magnetic resonance (NMR) technique is employed to quantitatively investigate the influence of CO2 on the CH4 adsorption on typical shale samples. CH4 is first introduced to "saturate" the shale samples at given pressures; based on the measured T2 spectrum for the "CH4-saturated" shale samples, the states that CH4 exists in shale samples are identified. CO2 is then introduced into the "CH4-saturated" shale samples at higher pressures. By comparing the measured T2 spectrum before and after CO2 introduction, the change of CH4 adsorption of due to the presence of CO2 is comprehensively analyzed. According to the measured T2 spectrum, CH4 exists on shale samples in three different states, i.e., the adsorbed CH4 on pore surface, the free-state CH4 in pore center, and the free-state CH4 among shale particles. Compared to the free-state CH4, the "CH4-saturated" shale samples are dominated by the adsorbed CH4. As pressure increases, the adsorbed amount of CH4 first increases and then tends to level off. After introducing CO2 into the "CH4-saturated" shale samples, the adsorbed CH4 is firstly reduced, suggesting the more affinity of CO2 to the organic shale surface, and then tends to level off, achieving the adsorption/desorption equilibrium. CO2 can replace the adsorbed CH4 from pore surface, decreasing the adsorbed molar amount of CH4. However, the replaced CH4 seems to only become free-state CH4 in pore center and hardly escape from the organic pores. Thereby, other stimulating methods, such as secondary hydraulic fracturing, should be supplemented with the CO2 injection for further development of the shale gas reservoirs. © 2018 Elsevier Ltd
Number of references: 46
Main heading: Nuclear magnetic resonance
Controlled terms: Carbon dioxide - Adsorption - Magnetism - Petroleum reservoirs
Uncontrolled terms: Adsorbed CH4 - Adsorption capacities - Adsorption/desorption - Low field nuclear magnetic resonance - Methane recovery - Nuclear magnetic resonance(NMR) - Pressure increase - Shale gas reservoirs
Classification code: 512.1.1 Oil Fields - 701.2 Magnetism: Basic Concepts and Phenomena - 802.3 Chemical Operations - 804.2 Inorganic Compounds
DOI: 10.1016/j.fuel.2018.10.092
Funding Details: Number: ZR201702170502, Acronym: -, Sponsor: -; Number: 18CX02167A, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This study is financially supported by the Science Funds for Doctoral fund of Shandong Province (ZR201702170502), and Fundamental Research Funds for the Central Universities (18CX02167A).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

19. Identification of Light Oil in 2D NMR Spectra of Tight Sandstone Reservoirs by Using L1/L2 Two-Parameter Regularization

Accession number: 20194307579719
Authors: Meng, Xiangning (1, 2); Xie, Ranhong (3); Jia, Hui (1); Li, Huifeng (1)
Author affiliation: (1) Shannxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an; Shaanxi Province, China; (2) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Chengdu University of Technology, Chengdu; Sichuan Province, China; (3) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing, China
Corresponding author: Meng, Xiangning(mxn1680@xsyu.edu.cn)
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Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: This work presents L1/L2 two-parameter regularization as an efficient technique for the identification of light oil in the two-dimensional (2D) nuclear magnetic resonance (NMR) spectra of tight sandstone reservoirs. A 2D NMR T2-T1 distribution model containing light oil, natural gas, and formation water is constructed. 2D NMR echo trains are obtained by means of the multiwaiting time Carr, Purcell, Meiboom, and Gill pulse sequence. A detailed analysis of the ill-posed characteristics to obtain 2D NMR spectrum is given using a Picard curve. The identification abilities of L1/L2 two-parameter regularization and three other techniques are compared in detail. The paper demonstrates that even if the signal-to-noise ratio (SNR) is around 100, it is still very difficult to obtain the 2D NMR spectrum. Light oil cannot be distinguished using Tikhonov regularization and truncated singular value decomposition. Both L1/L2 two-parameter regularization and L1 norm regularization can identify light oil, while the identification ability of L1/L2 two-parameter regularization is higher than that of L1 norm regularization, especially when the SNR is very low. L1/L2 two-parameter regularization can be used as an effective technique to identify light oil from formation water in the 2D NMR spectra of tight sandstone reservoirs. Copyright © 2019 American Chemical Society.
Number of references: 47
Main heading: Signal to noise ratio
Controlled terms: Tight gas - Nuclear magnetic resonance spectroscopy - Parameter estimation - Petroleum reservoirs - Parameterization - Singular value decomposition - Petroleum reservoir engineering - Produced Water - Sandstone
Uncontrolled terms: 2D NMR spectra - Distribution models - Formation water - Nuclear magnetic resonance(NMR) - Tight sandstone reservoirs - Tikhonov regularization - Truncated singular value decomposition - Two Dimensional (2 D)
Classification code: 452.3 Industrial Wastes - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 716.1 Information Theory and Signal Processing - 921 Mathematics
DOI: 10.1021/acs.energyfuels.9b02114
Funding Details: Number: 2018JQ4002, Acronym: -, Sponsor: -; Number: 2019QNKYCXTD05, Acronym: -, Sponsor: -; Number: -, Acronym: CDUT, Sponsor: Chengdu University of Technology; Number: -, Acronym: -, Sponsor: State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation;
Funding text: This work is supported by Open Fund (PLC201705) of Stake Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), Natural Science Basic Research Plan in Shaanxi Province of China (2018JQ4002), and Xi'an shiyou University Youth Research & Innovation Group (2019QNKYCXTD05).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

20. Ordovician sequence stratigraphic framework in the Middle-Upper Yangtze area

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Title of translation: -
Authors: Xie, Huanyu (1); Zhao, Jingzhou (1); Wang, Peixi (2); Xie, Wuren (3); Yang, Yu (4)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Shannxi Key Laboratory of Petroleum Accumulation Geology, Xi'an; Shaanxi; 710065, China; (2) Chinese Petroleum Society, Beijing; 100724, China; (3) PetroChina Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (4) PetroChina Southwest Oil & Gas Field Company, Chengdu; Sichuan; 610051, China
Corresponding author: Zhao, Jingzhou(jzzhao@xsyu.edu.cn)
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Pages: 1202-1222
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Document type: Journal article (JA)
Publisher: Science Press
Abstract: Based on systematically analyzing the typical outcrop lithology and sedimentary sequence developing characteristics, further analyzing the conodonts (ancient animal fossils), carbon and oxygen isotopes of whole rocks, and rock thin sections, in combination with the comprehensive analyses of typical drilling, logging and seismic sequences, the Ordovician marine strata in the Middle-Upper Yangtze area are divided into 8 third-order sequences regionally correlated, i.e., OSQ1-OSQ8 sequences. In addition, this study establishes the mutual relationship between chronostratigraphy, conodont biostratigraphy, rock strata and sequence stratigraphy. The sequence boundaries of type and type (submerged unconformity type) have been identified. On a regional level, the type is dominant. Only the top of sequence OSQ7, i.e., the boundary between Linxiang Formation and Wufeng Formation, is typically show as the type . The Ordovician carbonate platform or ramp in the Middle-Upper Yangtze area underwent a gradual submerging process, lasting for more than 25 Ma from the late period of Early Ordovician to the Late Ordovician. Based on the comparison between the whole rock carbon isotope cycle and the sedimentary cycle reflecting the relative change of eustatic sea level and sedimentary paleo-water depth, respectively, the analysis results indicate that less affected by the paleoclimate and sedimentary filling rate, the development of the Lower Ordovician sequence OSQ1 in the Middle-Upper Yangtze area is mainly controlled by eustatic sea level change, while the OSQ2-OSQ8 sequences are mainly controlled by the regional tectonic movement, i.e., a compressive tectonic process produced by the subduction from Yangtze plate to Huaxia plate, so that they are belong to the typical foreland compressive sequences.
Number of references: 45
Main heading: Lithology
Controlled terms: Carbon - Isotopes - Sedimentary rocks - Sedimentology - Sea level - Stratigraphy - Tectonics
Uncontrolled terms: Carbonate rock - Ordovician - Sealevel change - Sequence stratigraphy - Upper Yangtze
Classification code: 471.1 Oceanography, General - 481.1 Geology - 482.2 Minerals - 804 Chemical Products Generally
Numerical data indexing: Age 2.50e+07yr
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

21. Combined effect of internal and external factors on sintering kinetics of plasma-sprayed thermal barrier coatings

Accession number: 20190206350080
Authors: Li, Guang-Rong (1, 2); Wang, Li-Shuang (3); Yang, Guan-Jun (1); Li, Cheng-Xin (1); Li, Chang-Jiu (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) State Key Laboratory for Manufacturing Systems Engineering, School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
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Publication year: 2019
Pages: 1860-1868
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Abstract: Understanding the sintering kinetics of plasma-sprayed thermal barrier coatings (PS-TBCs) is crucial to retard their performance degradation. However, under real service condition, the sintering kinetics is often affected by multiple factors. This study investigated the sintering kinetics, in a novel scale-progressive view, under the combined-effect of internal and external factors. Results show that the sintering kinetics of PS-TBCs was highly associated with their unique sintering process from nanoscale to microscale. Firstly, sintering leads to nanoscopic roughening of the pore surface. Subsequently, multiple contacts are formed between counter-surfaces. As a result, microscopic healing of pores can be finally observed. In terms of external factors, the temperature further affects the level and rate of nanoscopic roughening. This is responsible for the differences of the microscopic healing ratios, as well as the macroscopic elastic modulus. © 2018 Elsevier Ltd
Number of references: 47
Main heading: Plasma spraying
Controlled terms: Kinetics - Thermal barrier coatings - Sintering - Sprayed coatings - Plasma jets
Uncontrolled terms: Internal and external factors - Macroscopic elastic modulus - Multiple contacts - Performance degradation - Plasma-sprayed thermal barrier coating - Scale-progressive evolution - Service conditions - Sintering kinetics
Classification code: 631.1 Fluid Flow, General - 813.1 Coating Techniques - 813.2 Coating Materials - 931 Classical Physics; Quantum Theory; Relativity - 932.3 Plasma Physics
DOI: 10.1016/j.jeurceramsoc.2018.12.053
Funding Details: Number: 51801148, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M631151, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2013CB035701, Acronym: -, Sponsor: National Basic Research Program of China (973 Program); Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 61409220117, Acronym: -, Sponsor: Domain Foundation of Equipment Advance Research of 13th Five-year Plan;
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22. Influences of material types on the mechanisms of crystal growth in an aggregate scaling device

Accession number: 20193507370825
Authors: Sun, Nana (1); Jiang, Huayi (1); Liang, Aiguo (2); Zhang, Dingzhou (1, 3); Cai, Hanghang (1, 4); Zhang, Lanxin (1); Chong, Xinmin (5)
Author affiliation: (1) Xi'An Shiyou University, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reserviors, Xi'an; 710065, China; (2) Karamay Hongshan Oilfield Co., LTD, Karamay; 834000, China; (3) China West Aiport Group, Xianyang; 712000, China; (4) Yangchang Petroleum Group Exploration Company, Yanan; 716000, China; (5) Production Plant of Xinjiang Oilfield Branch Company, Karamay; 834000, China
Corresponding author: Sun, Nana(nnsun@xsyu.edu.cn)
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Article number: 104303
Language: English
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Oilfield fouling has been a persistent problem for many years. In view of this problem, the key idea that the crystallization fouling process is changed form preventing and controlling to accelerating was proposed in this research. The objective of this paper was thus to reveal the effects of the characteristics of material surfaces on the mechanisms of crystal growth for use in the design of an aggregated scaling device. Initially, the influence of the material type on the crystal growth was researched using dynamic simulation experiments. Second, based on the

correlations between the surface free energy/roughness/contact angle and the scaling tendency, the effects of these physicochemical parameters of the surface on the crystalline growth characteristics were essentially investigated. Third, it was determined that when the material surface was covered by a lamellar fouling layer, this material might facilitate the further aggregation and deposition of crystals. © 2019 Elsevier Ltd
Number of references: 20
Main heading: Crystal growth
Controlled terms: Free energy - Surface morphology - Surface properties - Morphology - Contact angle
Uncontrolled terms: Crystal morphologies - Crystalline growth - Crystallization fouling - Dynamic simulation experiment - Mass gain - Material types - Physicochemical parameters - Surface free energy
Classification code: 641.1 Thermodynamics - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.2 Crystal Growth - 951 Materials Science
DOI: 10.1016/j.icheatmasstransfer.2019.104303
Funding Details: Number: 2018JQ5206, Acronym: -, Sponsor: -; Number: 51904246, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

23. Covalently assembled dopamine nanoparticle as an intrinsic photosensitizer and pH-responsive nanocarrier for potential application in anticancer therapy

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Authors: Li, Hong (1); Zhao, Yuanyuan (1); Jia, Yi (2); Qu, Chengtun (1); Li, Junbai (2, 3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Beijing National Laboratory for Molecular Sciences, CAS Key Lab of Colloid, Interface and Chemical Thermodynamics, Institute of Chemistry, Chinese Academy of Sciences, Beijing; 100190, China; (3) University of Chinese Academy of Sciences, Beijing; 100049, China
Corresponding author: Jia, Yi(jiayi@iccas.ac.cn)
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Language: English
ISSN: 13597345
E-ISSN: 1364548X
CODEN: CHCOFS
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: We report a novel nanophotosensitizer via one-step covalent assembly of dopamine and genipin. This is the first report unveiling the photodynamic effect of dopamine-based materials. These nanophotosensitizers can also act as pH-responsive drug nanocarriers via a catechol-boronate linkage, thus achieving combined PDT and chemotherapy for highly efficient cancer treatment. © The Royal Society of Chemistry 2019.
Number of references: 25
Main heading: Chemotherapy
Controlled terms: Amines - Drug delivery - Neurophysiology - Photodynamic therapy - Photosensitizers
Uncontrolled terms: Anti-cancer therapies - Boronates - Covalent assemblies - Dopamine - Genipin - Nanocarriers - PH-responsive - Photodynamic effect - Photosensitiser
Classification code: 461.6 Medicine and Pharmacology - 741.1 Light/Optics - 804.1 Organic Compounds
DOI: 10.1039/c9cc08294h
Funding Details: Number: 20190605, Acronym: -, Sponsor: -; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JQ2047, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

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Database: Compendex
Data Provider: Engineering Village

24. Competitive growth of Al2O3/YAG/ZrO2 eutectic ceramics during directional solidification: Effect of interfacial energy

Accession number: 20183905864076
Authors: Wang, Xu (1); Zhong, Yujie (2); Sun, Qian (3); Qi, Dongqing (4); Yan, Fuxue (1); Xian, Quangang (4); Wang, Dong (4); Du, Kui (4); Wang, Jingyang (4)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Technology, Xi'an, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, China; (3) Hubei Key Laboratory of Advanced Technology of Automobile Parts, Wuhan University of Technology, Wuhan, China; (4) Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China
Corresponding author: Wang, Xu(xwang@alum.imr.ac.cn)
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ISSN: 00027820
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CODEN: JACTAW
Document type: Journal article (JA)
Publisher: Blackwell Publishing Inc.
Abstract: The microstructure evolution and growth behavior of the Al2O3/Y3Al5O12(YAG)/ZrO2 ternary eutectic ceramics during directional solidification were well investigated. During directional solidification of the Al2O3/YAG/ZrO2 ternary eutectic ceramics, { (Formula presented.) } Al2O3 paralleled with {001}ZrO2 while they did not parallel with {001}YAG at the same time in the competitive growth stage. All of the interfaces parallel to each other finally. The area percentage of the Al2O3/ZrO2 and YAG/ZrO2 interfaces are 40.4 ± 0.2% and 30.8 ± 0.1%, respectively, higher than that of the Al2O3/YAG (28.8 ± 0.2%). The content of Al2O3 and YAG phases are 39.9% and 41.1%, respectively, almost double of that of ZrO2. The interfaces of Al2O3/ZrO2 and YAG/ZrO2 are shorter and more dispersed than that of the Al2O3/YAG. It was found that the interfacial energy of Al2O3/ZrO2 and YAG/ZrO2 interfaces are lower than that of Al2O3/YAG. It can be concluded that interfacial energy plays a decisive role in affecting the crystallographic orientation and interfaces distribution in the Al2O3/YAG/ZrO2 eutectic since the interfaces of Al2O3/ZrO2 and YAG/ZrO2 with lower interfacial energy can be formed more easily during directional solidification. Therefore, the contents of Al2O3/ZrO2 and YAG/ZrO2 interfaces are higher. This study can provide theoretical guidance for interface design of multi-phase materials. © 2018 The American Ceramic Society
Number of references: 39
Main heading: Yttrium aluminum garnet
Controlled terms: Interfacial energy - Solidification - Zirconia - Ceramic materials - Eutectics - Alumina - Aluminum oxide - Microstructure
Uncontrolled terms: Competitive growth - Crystallographic orientations - Eutectic ceramics - Growth behavior - Interface designs - Micro-structure evolutions - Multiphase materials - Ternary eutectics
Classification code: 531.2 Metallography - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 812.1 Ceramics - 951 Materials Science
Numerical data indexing: Percentage 3.99e+01%, Percentage 4.11e+01%
DOI: 10.1111/jace.16057
Funding Details: Number: 101#451116013, Acronym: XUT, Sponsor: Xi'an University of Technology; Number: 6140923040203, Acronym: -, Sponsor: -; Number: 51804252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

25. Abnormal oxidation behavior of Fe in Ti(C,N)-304ss cermet during early oxidation stage

Accession number: 20191206657788
Authors: He, Lin (1, 2); Liu, Qingkun (3); Gao, Yimin (1); Li, Yefei (1); Liu, Zhiwei (1); Zhai, Wenyan (4); Zhou, Changmeng (3); Yuan, Wei (1); Chen, Wenqing (1); Yan, Wentao (2)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Department of Mechanical Engineering, National University of Singapore, 117575, Singapore; (3) Shandong Huifeng Casting Technology CO., LTD, Jinan; 250000, China; (4) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China
Corresponding author: Gao, Yimin(ymgao@xjtu.edu.cn)
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this work, the oxidation experiments of Ti(C,N)- 304 stainless steel (304ss) cermet were carried out at 650 °C in the air. Abnormal oxidation behavior of Fe in the Ti(C,N)- 304ss cermet was observed for the first time, and it was investigated by field emission scanning electron microscope (FESEM) and 3D laser scanning confocal microscope (LSCM). A gap was generated in the TiO2/304ss interface due to the volume shrinkage led by the oxidation of Ti(C,N). When the tip of the gap propagated to the Cr-depleted region in 304ss, Fe atoms in this area reacted with O atoms and formed iron-contain oxides. Cations (Fe3+ and Ti4+) in oxidation products interdiffused to each other and formed Fe2TiO5 in the gap at high temperature. The gap is a rapid diffusion path for atoms, and Fe atoms outward diffused along the gap to the oxidation surface and formed Fe2O3 covering the oxidation surface. © 2019 Elsevier B.V.
Number of references: 52
Main heading: Oxidation
Controlled terms: Atoms - Cermets - Hematite - Scanning electron microscopy - Austenitic stainless steel - Titanium dioxide
Uncontrolled terms: 304 stainless steel - 3D Laser scanning - Abnormal oxidation - Field emission scanning electron microscopes - High temperature - Oxidation products - Ti (C ,N) - Volume shrinkage
Classification code: 482.2 Minerals - 531 Metallurgy and Metallography - 545.3 Steel - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.1 Ceramics - 931.3 Atomic and Molecular Physics
Numerical data indexing: Temperature 9.23e+02K
DOI: 10.1016/j.jallcom.2019.03.008
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Funding text: The authors thank Guangchan Zhou for his work on grammar correct. This work was supported by the Guangxi Innovation Driven Development Project (GUIKEAA18242001), the Science and Technology Project of Guangdong Province in China (2015B01012203 , 2015B090926009), the Science and Technology Project of Guangzhou City in China (201604046009), the Natural Science Foundation of Shaanxi Province of China (2018JM5002).The authors thank Guangchan Zhou for his work on grammar correct. This work was supported by the Guangxi Innovation Driven Development Project (GUIKEAA18242001), the Science and Technology Project of Guangdong Province in China (2015B01012203, 2015B090926009), the Science and Technology Project of Guangzhou City in China (201604046009), the Natural Science Foundation of Shaanxi Province of China (2018JM5002).
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

26. Transient flow in wellbores and phase transition of CO2 during formation supercritical CO2 invasion (*Open Access*)

Accession number: 20184706123165
Authors: Dou, Liangbin (1, 2, 3); Zhang, Ming (1, 3); Bi, Gang (1, 3); Li, Tiantai (1, 3)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China; (2) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing, China; (3) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Shaanxi, China
Corresponding author: Dou, Liangbin(77129dou@163.com)
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Language: English
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Document type: Journal article (JA)
Publisher: John Wiley and Sons Ltd
Abstract: CO2 reservoirs and high CO2 content gas reservoirs in marine sediments generally have complex pressure system, which usually encounters supercritical CO2(SC-CO2) invasion into the wellbore during drilling process. The wellbore transient flow and phase transition along the wellbore during the drilling process has not been thoroughly investigated, because the CO2 physical properties and the reservoirs petrophysical properties could affect the transient flow of mixed fluid and phase transition of CO2 along the well. A numerical model is presented in this research to analyze the transient flow in wellbores and to predict phase transition of CO2 during formation SC-CO2 invasion in the drilling process. The main considerations were the following: multiphase transient flow in wellbores was coupled with the non-Darcy flow through the formation; wellbore temperature, pressure and the mixture of drilling fluid and SC-CO2 were calculated in the method of coupling; the invaded SC-CO2 could affect the mixed fluid physical properties in the annulus; the change of physical properties of CO2 (eg, solubility, phase transition) was considered and integrated. The research results indicate that as the mixture of drilling fluid and SC-CO2 flows from the bottom to the surface, the invaded CO2 is difficult to be detected at the early invasion stage because of high CO2 density and solubility; the CO2 would change from supercritical to gas phase and the dissolved quantity and density of CO2 rapidly decrease near the wellhead, and further cause well-control issues. Furthermore, the bottom-hole pressure (BHP) would decrease and could not provide sufficient balance to the formation pressure, which could significantly increase the risk of well blowout. Sensitivity analysis was utilized to evaluate the effects of the choke pressure, drilling fluid pumping rate, initial pressure difference, reservoir permeability, and drilled reservoir thickness on the BHP and the depth of phase transition of CO2. © 2018 The Authors. Energy Science & Engineering published by the Society of Chemical Industry and John Wiley & Sons Ltd.
Number of references: 20
Main heading: Carbon dioxide
Controlled terms: Bottom hole pressure - Heat transfer - Petroleum reservoirs - Solubility - Boreholes - Gases - Sensitivity analysis - Drilling fluids - Petroleum reservoir engineering - Physical properties - Infill drilling - Oil field equipment
Uncontrolled terms: Formation pressure - Marine sediments - Petrophysical properties - Reservoir permeability - Reservoir thickness - Supercritical CO2 - Transient flow - Wellbore temperature
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512 Petroleum and Related Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 641.2 Heat Transfer - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1002/ese3.256
Funding Details: Number: 51604224,51704237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CUPB, Sponsor: China University of Petroleum, Beijing; Number: 2018JM5017, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

Funding text: This research was financially supported by the National Natural Science Foundation of China (No. 51604224, 51704237), the Natural Science Foundation of Shaanxi Province (2018JM5017) and the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing (No. PRP/open-1703).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

27. Characterizing the Outlying Feature Set of Groups (*Open Access*)

Accession number: 20201308335596
Authors: Xia, Haiyang (1, 2); Vu, Huy Quen (3); Tan, Jianlong (4); Li, Xiao (5); Li, Gang (3, 5)
Author affiliation: (1) Xi'An Shiyou University, Shaanxi; 710065, China; (2) Guangxi Key Laboratory of Trusted Software, Guilin University of Electronic Technology, Guilin, China; (3) Deakin University, Geelong; VIC; 3216, Australia; (4) Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China; (5) Xinjiang Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, China
Source title: Procedia Computer Science
Abbreviated source title: Procedia Comput. Sci.
Volume: 165
Part number: 1 of 1
Issue title: 2nd International Conference on Recent Trends in Advanced Computing, ICRTAC 2019
Issue date: 2019
Publication year: 2019
Pages: 119-125
Language: English
E-ISSN: 18770509
Document type: Conference article (CA)
Conference name: 2nd International Conference on Recent Trends in Advanced Computing, ICRTAC 2019
Conference date: November 11, 2019 - November 12, 2019
Conference location: Chennai, India
Conference code: 141988
Publisher: Elsevier B.V., Netherlands
Abstract: Outlying feature set of groups is useful in many applicationscenarios.However, most of existing literatures focusedoncharacterizing outlying feature set of individuals rather than group level. A method that can identify outlying feature setof groups effectively from large scale dataset is not yet available. This paper aims to tackle this challenge by proposing a novelgroup outlying feature set identification algorithm, named GOFSI, which can identify the outlying feature set at the group level automatically. The Experiments on both synthetic and real-world data sets confirmed the effectiveness of ourmethod. © 2019 Procedia Computer Science. All rights reserved.
Number of references: 13
Main heading: Large dataset
Controlled terms: Artificial intelligence - Computers
Uncontrolled terms: distribution similarity - Earth Mover's distance - Feature sets - Group level - Identification algorithms - Large-scale dataset - Real-world
Classification code: 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence
DOI: 10.1016/j.procs.2020.01.086
Funding Details: Number: KX201528, Acronym: -, Sponsor: -;
Funding text: This work was supported by Xinjiang research fund for Laboratory of Trusted Software (No KX201528).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

28. Quantitative study on the stress sensitivity of pores in tight sandstone reservoirs of Ordos basin using NMR technique

Accession number: 20184005905172
Authors: Gao, Hui (1, 2); Wang, Chen (1, 2); Cao, Jie (1, 2); He, Mengqing (1, 2); Dou, Liangbin (1, 2, 3)

Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Engineering Research Center of Development and Management for Low to Ultra- Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an; 710065, China; (3) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China
Corresponding author: Gao, Hui(ghtopsun1@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 172
Issue date: January 2019
Publication year: 2019
Pages: 401-410
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: For tight sandstone reservoirs, the pore structure is sensitive to the stress variations during the production process. The alternation of pore structure influences the petrophysical properties and therefore the dynamic flow of tight sandstone reservoirs. In this research, Nuclear Magnetic Resonance (NMR) technique is employed to quantitatively study the pore volume variation under different confining pressures. Not only during the compression process, this research also investigated the sandstone pore sensitivity to stress during the recovery process of rock samples, which is equally important and happens during the production process when the formation pressure is building up due to the temporary well shut-in or water injection. The core samples selected from Ordos basin are first tested routinely for basic parameters like porosity, permeability and detrital components, and then through both compression and recovery processes where the pressure decreases and increases, respectively. It is found that the core samples with high permeability show stronger stress sensitivity of pores than those with low permeability due to the higher content of large pores. Besides permeability, detrital components and interstitial material can also affect the stress sensitivity of pores. During the recovery process, the low recovery degree of pore volume is related to the recoverable pore size (mainly smaller size pores) and the narrow distribution range of recovered pores. Furthermore, the power function relationship and the exponential relationship are suggested to evaluate the variation of pore volume in compression and recovery process, respectively. The results demonstrated that the compressibility of larger pores is bigger than that of smaller pores. During the compression process, the higher permeability rocks, containing a higher content of larger pores, are easier to be compressed, and has a greater decrease in permeability. Besides, the recoverability of the total pore volume after compression is mainly controlled by smaller pores, which results in the lower recoverability of the total pore volume and the permeability for the higher permeability core samples. © 2018
Number of references: 39
Main heading: Nuclear magnetic resonance
Controlled terms: Core samples - Pore structure - Reservoirs (water) - Recovery - Petrophysics - Tight gas - Metamorphic rocks - Petroleum reservoirs - Pore size - Sandstone
Uncontrolled terms: Different confining pressures - Nuclear magnetic resonance techniques - Petrophysical properties - Pore volume - Quantitative evaluation - Stress sensitivity - Tight sandstone reservoirs - Tight sandstones
Classification code: 441.2 Reservoirs - 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 512.1.1 Oil Fields - 512.2 Natural Gas Deposits - 522 Gas Fuels - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2018.09.083
Funding Details: Number: -, Acronym: CUPB, Sponsor: China University of Petroleum, Beijing; Number: 51604224, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017D–5007-0104, Acronym: -, Sponsor: PetroChina Innovation Foundation;
Funding text: This research was financially supported by the National Natural Science Foundation of China (No. 51604224), PetroChina Innovation Foundation (No. 2017D–5007-0104) and the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing (No. PRP/open-1703). Appendix A
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

29. Experimental Study on Wax Deposition of Gas Emulsion during Intermittent Flow (*Open Access*)

Accession number: 20191606808173

Authors: Quan, Qing (1); Ran, Wen (2); Ruan, Chaoyu (3); Wang, Shouxi (1); Ren, Liang (4); Gong, Jing (4)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, Shaanxi Province; 710065, China; (2) Shaanxi Application of Physical and Chemistry Institute, Xi'an Shaanxi Province; 710065, China; (3) China Waterborne Transport Research Institute, Beijing; 100088, China; (4) Beijing Key Laboratory of Urban Oil and Gas Distribution Technology, China University of Petroleum, Beijing; 102249, China
Corresponding author: Quan, Qing(qingqing.lf@163.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 242
Part number: 2 of 6
Issue: 2
Issue title: 4th International Conference on Energy Equipment Science and Engineering - Energy Engineering Technology, Application and Management
Issue date: April 1, 2019
Publication year: 2019
Article number: 022021
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Energy Equipment Science and Engineering, ICEESE 2018
Conference date: December 28, 2018 - December 30, 2018
Conference location: Xi'an, China
Conference code: 147102
Publisher: IOP Publishing Ltd
Abstract: Wax deposition of the gas-emulsion in intermittent flow with different water cuts and gas/emulsion superficial velocity in a flow-loop was investigated by crude oil, simulated oil, gas, and water as the experimental medium. In both the crude oil and simulated oil systems, the deposit was distributed around the pipe wall, and the deposit thickness decreased initially and then increased. These changes were induced by the increasing water cut resulting from the increasing viscosity and gelation point of the emulsions. The experimental results revealed that increasing gas and emulsion superficial velocity both have a negative effect on deposit formation. © Published under licence by IOP Publishing Ltd.
Number of references: 3
Main heading: Gases
Controlled terms: Deposits - Emulsions - Gelation - Petroleum deposits - Crude oil - Emulsification
Uncontrolled terms: Deposit formation - Deposit thickness - Flow loops - Gelation point - Increasing viscosity - Intermittent flows - Superficial velocity - Wax deposition
Classification code: 512.1 Petroleum Deposits - 802.3 Chemical Operations - 804 Chemical Products Generally
DOI: 10.1088/1755-1315/242/2/022021
Funding Details: Number: 010-124010013, Acronym: -, Sponsor: -; Number: 51704236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Authors wishing to acknowledge the financial support of the Program for Youth to Innovate on Science and Technology in Xi’an Shiyou University (010-124010013) and the National Natural Science Foundation of China (51704236).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

30. Realizing the Interface Tuned Thermoelectric Transport Performance in Bi2Te3-Based Hierarchical Nanostructures

Accession number: 20194207539527
Authors: Liu, Shuai (1, 2); Li, Hanxiao (1); Han, Wenjing (3); Sun, Jun (2); Chen, Guanjun (2); Chen, Jie (4); Yang, Xu (1); Chen, Guoxiang (1); Ma, Fei (2)
Author affiliation: (1) College of Sciences, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) State-Key Laboratory for Mechanical Behavior of Materials, Xi'An Jiaotong University, Xi'an; 710049, China; (3) AVIC, Xi'An Aviation Brake Technology Co. LTD, Xi'an; 710075, China; (4) Henan Province Industrial Technology Research Institute of Resources and Materials, Zhengzhou University, Zhengzhou; 450001, China

Corresponding author: Ma, Fei(mafei@mail.xjtu.edu.cn)
Source title: Journal of Physical Chemistry C
Abbreviated source title: J. Phys. Chem. C
Volume: 123
Issue: 39
Issue date: October 3, 2019
Publication year: 2019
Language: English
ISSN: 19327447
E-ISSN: 19327455
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Hierarchical Te/Bi2Te3 and Bi2Te3 nanostructures are synthesized by using a one-pot solvothermal method and sintered into pellets by spark plasma sintering (SPS), individually. The thermoelectric properties measurement indicates the electrons/phonon transport is directly influenced by interface state of the hierarchical nanostructures. As compared to Te/Bi2Te3 heterostructures, the higher energy barrier at the interface of homostructured Bi2Te3 (71 meV) leads to the energy filtering effect on the electronic transport and the optimized power factor in the Bi2Te3 pellet. The thermal conductivity is remarkably reduced because of the strong scattering between phonons and high-density defects in both samples. As a result, an enhanced ZT value (0.58) of the Bi2Te3 nanowires was obtained at 353 K. Importantly, the average ZT (0.56), which is comparable to the peak ZT of both samples, is dramatically improved in these hierarchical nanostructures in the temperature range of 313-433 K. © 2019 American Chemical Society.
Number of references: 36
Main heading: Spark plasma sintering
Controlled terms: Bismuth compounds - Thermal conductivity - Interface states - Tellurium compounds - Pelletizing - Nanostructures
Uncontrolled terms: Electronic transport - Hierarchical Nanostructures - High-density defects - Higher-energy barriers - Solvothermal method - Strong scatterings - Thermoelectric properties - Thermoelectric transport
Classification code: 641.1 Thermodynamics - 761 Nanotechnology - 931 Classical Physics; Quantum Theory; Relativity - 932 High Energy Physics; Nuclear Physics; Plasma Physics - 933 Solid State Physics
Numerical data indexing: Electron_Volt 7.10e-02eV, Temperature 3.13e+02K to 4.33e+02K, Temperature 3.53e+02K
DOI: 10.1021/acs.jpcc.9b05530
Funding Details: Number: 19JK0656, Acronym: -, Sponsor: -; Number: 51771144, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JZ015,2019TD-020, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was jointly supported by the National Natural Science Foundation of China (Grant No. 51771144), the Natural Science Foundation of Shaanxi Province (No. 2019TD-020, 2017JZ015), and the Special Program for Scientific Research of Shaanxi Educational Committee (19JK0656).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

31. Direct numerical simulation of pore scale particle-water-oil transport in porous media

Accession number: 20192106959755
Authors: Su, Junwei (1); Chai, Guoliang (1); Wang, Le (2); Cao, Weidong (3); Yu, Jinbiao (3); Gu, Zhaolin (1); Chen, Chungang (4)
Author affiliation: (1) School of Human Settlement and Civil Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710049, China; (3) Research Institute of Exploration and Development, Shengli Oilfield Company, Sinopec Group, Dongying; 257015, China; (4) School of Aerospace & State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Chen, Chungang(cgchen@mail.xjtu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 180
Issue date: September 2019
Publication year: 2019
Pages: 159-175
Language: English
ISSN: 09204105

Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: In this work, a direct numerical simulation method, for pore scale particle-water-oil transport in porous media is proposed in hybrid Eulerian-Lagrangian framework. In this method, Navier-Stokes equation in Eulerian framework is coupled with discrete element method (DEM)in Lagrangian framework through direct numerical evaluation of fluid-particle interaction using fictitious domain method (FDM). In Eulerian framework, volume of fluid (VOF)method is employed to capture immiscible two-phase interface; Ghost fluid method and balanced-force scheme are used to treat the surface tension to lower interface spurious currents. In Lagrangian framework, RIGID algorithm is employed to detect the contact states between spherical particles with arbitrarily topological pore walls, making the method adapt to arbitrary pore space; Injection of particles with arbitrary size distribution at a specific mass flow rate makes the method adapt to open system. After validating the new method using two benchmark test cases, a numerical simulation of particle flooding process in a real rock is performed. Numerical results show that in the particle flooding process, three different stages, i.e. drainage period, analogy water flooding period and effective period of particle flooding, are involved. Distinct macroscopic flow characteristics are observed in different periods. Particle size is an important factor influencing the pore scale behaviors (such as, particle space translation and diffusion, remaining oil distribution, degree of fluid diversion)and macroscopic flow phenomena (such as, average oil fraction, average water or oil migration velocity in mainstream direction and transverse direction, sweeping efficiency). © 2019
Number of references: 44
Main heading: Porous materials
Controlled terms: Floods - Lagrange multipliers - Open systems - Numerical models - Finite difference method - Petroleum transportation - Phase interfaces - Diffusion in liquids - Direct numerical simulation - Navier Stokes equations - Benchmarking - Numerical methods - Particle size - Two phase flow
Uncontrolled terms: Eulerian-Lagrangian framework - Fictitious domain method - Fluid-particle interaction - OpenFOAM - Pore scale - Remaining oil distribution - RIGID - Volume of fluid method
Classification code: 631.1 Fluid Flow, General - 723.5 Computer Applications - 801.4 Physical Chemistry - 921 Mathematics - 921.2 Calculus - 921.6 Numerical Methods - 951 Materials Science
DOI: 10.1016/j.petrol.2019.04.078
Funding Details: Number: 21306145, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016ZX05011003, Acronym: -, Sponsor: Science and Technology Major Project of Guangxi;
Funding text: This work is supported by National Science and Technology Major Project (No. 2016ZX05011003) and National Natural Science Foundation of China (No. 21306145).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

32. A prediction model for continuous liquid-carrying in gas wells considering droplet entrainment

Accession number: 20192507062868
Title of translation:
Authors: Pan, Jie (1, 2); Wang, Wujie (1); Wang, Liangliang (3); Zhang, Li (1); Chen, Junbin (1); Pu, Xuelei (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University(Post-doctoral Innovation Base of Shaanxi Province), 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
Corresponding author: Chen, Junbin(chenjbxu@126.com)
Source title: Shiyou Xuebao/Acta Petrolei Sinica
Abbreviated source title: Shiyou Xuebao
Volume: 40
Issue: 3
Issue date: March 1, 2019
Publication year: 2019
Pages: 332-336
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press

Abstract: In the development of water-bearing gas reservoir, with the reduction of reservoir pressure and the increase of water content, the natural gas is no longer capable of lifting liquid to surface which triggers gradual accumulation of liquid in the bottom of wellbore. Liquid loading can reduce gas production, even completely kill gas wells and stop production. Accurate prediction of critical liquid-carrying velocity has an important significance for liquid loading judgment and optimization allocation in gas well production. Through analyzing the force balance of gas-liquid two-phase flow, we established a new liquid film model which take into account the impacts of liquid entrainment, to predict the minimum gas velocity for continuous liquid-carrying in gas wells. A droplet entrainment onset criterion based on critical liquid film flow rate and critical gas velocity, and a droplet entrainment rate correlation considering the influences of liquid film atomization and droplet deposition at gas-liquid interface were employed in the model. The present and existing liquid film-based critical gas velocity models are validated and compared with the actual gas wells data. The results show that the present model agrees well with the actual state of gas wells, implying it can be used to judge the liquid loading in gas wells.
Number of references: 27
Main heading: Velocity
Controlled terms: Gases - Liquid films - Drops - Horizontal wells - Loading - Natural gas wells - Phase interfaces - Two phase flow - Natural gas well production
Uncontrolled terms: Droplet entrainment - Liquid hold ups - Liquid loading - Liquid-film flow - Water- bearing gas reservoirs
Classification code: 512.1.1 Oil Fields - 512.2.1 Natural Gas Fields - 631.1 Fluid Flow, General - 691.2 Materials Handling Methods - 801.4 Physical Chemistry
DOI: 10.7623/syxb201903007
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

33. Subgroup perfect codes in cayley graphs

Accession number: 20200237201
Authors: Ma, Xuanlong (1); Walls, Gary L. (2); Wang, Kaishun (3); Zhou, Sanming (4)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department of Mathematics, Southeastern Louisiana University, Hammond; LA; 70402, United States; (3) School of Mathematical Sciences, Laboratory for Mathematics and Complex Systems, Beijing Normal University, Beijing; 100875, China; (4) School of Mathematics and Statistics, University of Melbourne, Parkville; VIC; 3010, Australia
Source title: arXiv
Abbreviated source title: arXiv
Issue date: April 3, 2019
Publication year: 2019
Language: English
E-ISSN: 23318422
Document type: Preprint (PP)
Publisher: arXiv
Abstract: Let Γ be a graph with vertex set V (Γ). A subset C of V (Γ) is called a perfect code in Γ if C is an independent set of Γ and every vertex in V (#)nC is adjacent to exactly one vertex in C. A subset C of a group G is called a perfect code of G if there exists a Cayley graph of G which admits C as a perfect code. A group G is said to be code-perfect if every proper subgroup of G is a perfect code of G. In this paper we prove that a group is code-perfect if and only if it has no elements of order 4. We also prove that a proper subgroup H of an abelian group G is a perfect code of G if and only if the Sylow 2-subgroup of H is a perfect code of the Sylow 2-subgroup of G. This reduces the problem of determining when a given subgroup of an abelian group is a perfect code to the case of abelian 2-groups. Finally, we determine all subgroup perfect codes in any generalized quaternion group.MSC Codes 05C25, 05C69, 94B25
Number of references: 26
Main heading: Group theory
Controlled terms: C (programming language) - Codes (symbols) - Graph Databases
Uncontrolled terms: 2-group - Abelian group - Cayley-graphs - Finite groups - Independent set - Perfect codes - Subgroup perfect code - Sylow 2-subgroups - Vertex set
Classification code: 723.1.1 Computer Programming Languages - 723.2 Data Processing and Image Processing - 723.3 Database Systems - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
Compendex references: YES
Preprint ID: 1904.01858
Preprint source website: https://arxiv.org

Preprint ID type: ARXIV
Database: Compendex
Data Provider: Engineering Village

34. Comprehensive characterization of pore and throat system for tight sandstone reservoirs and associated permeability determination method using SEM, rate-controlled mercury and high pressure mercury

Accession number: 20184806159776
Authors: Gao, Hui (1, 2); Cao, Jie (1, 2); Wang, Chen (1, 2); He, Mengqing (1, 2); Dou, Liangbin (1, 3); Huang, Xing (1, 2); Li, Tiantai (1, 2)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, China; (3) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China
Corresponding author: Gao, Hui(ghtopsun1@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 174
Issue date: March 2019
Publication year: 2019
Pages: 514-524
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Unconventional resource formations like tight sandstone reservoirs have complex pore and throat structure that are hard to characterize in micro scale. In this research, the pore and throat system of tight sandstones was characterized comprehensively, analysed qualitatively using scanning electron microscopy (SEM) techniques and quantitatively through combined high pressure mercury (HPM) and rate-controlled mercury (RCM) methods. First, the throat, distinguished from the pore, was divided in several types for tight sandstones and visualized through SEM imaging. Then, an integrated approach was proposed to combine the results from both HPM and RCM measurements, resulting in overall size distributions of the pore and the throat with scales from nanometer to micrometer. Both overall size distribution using the new combining method represented the pore and the throat more accurately in wider ranges. The results also showed that for tight sandstone core samples with different permeability, the difference of pore size distribution was less obvious than that of the throat. Therefore, the quantitative characterization of the throat size distribution was ultimately employed in developing a new permeability model together with physical considerations. The results demonstrated that the permeability of tight sandstones was in general depend on the size distribution of relatively larger throat, denoted as the macrothroat. However, for extreme low permeability (© 2018
Number of references: 52
Main heading: Pore size
Controlled terms: Mercury (metal) - Size distribution - Tight gas - Low permeability reservoirs - Resource valuation - Scanning electron microscopy - Petroleum reservoir engineering - Sandstone
Uncontrolled terms: High pressure mercury - Integrated approach - Micropores - Permeability determinations - Quantitative characterization - Tight sandstone reservoirs - Tight sandstones - Unconventional resources
Classification code: 482.2 Minerals - 512.1 Petroleum Deposits - 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 - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2018.11.043
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Funding text: This research was financially supported by the National Natural Science Foundation of China (No. 51774236 , No. 51604224), PetroChina Innovation Foundation (No. 2017D-5007-0104) and the Foundation of State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum , Beijing (No. PRP/open-1703).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

35. Synthesis and performance of AM/SSS/THDAB as clay hydration dispersion inhibitor (*Open Access*)

Accession number: 20204309398787
Authors: Du, Wei-Chao (1, 2); Wang, Xiang-Yun (1); Liu, Man (3); Bi, Tai-Fei (4); Song, Shun-Xi (2); Zhang, Jie (1); Chen, Gang (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China; (2) Key Laboratory of Auxiliary Chemistry and Technology for Chemical Industry, Shaanxi University of Science and Technology, Ministry of Education, Xi'an, China; (3) Changqing Oilfield Company, Oil Production No.11, Qingyang, China; (4) Changqing Oilfield Company, Oil Production No.1, Yan'an, China
Corresponding author: Du, Wei-Chao(duweichao@xsyu.edu.cn)
Source title: Polimeros
Abbreviated source title: Polimeros
Volume: 29
Issue: 4
Issue date: 2019
Publication year: 2019
Article number: e2019053
Language: English
ISSN: 01041428
E-ISSN: 16785169
Document type: Journal article (JA)
Publisher: Associacao Brasileira de Polimeros
Abstract: In this paper, a novel zwitterionic copolymer AM/SSS/THDAB clay hydration dispersion inhibitor was synthesized by copolymerization of tris hydroxyethyl diallyl ammonium bromide (THDAB), sodium p-styrene sulfonate (SSS) and acrylamide (AM) initiated in an aqueous solution. The copolymer was characterized by FT-IR, GPC, TGA-DSC and SEM. Results demonstrated that molecular weight of AM/SSS/THDAB was 43674 g/mol and its temperature resistance ability was up to 225 C. Evaluation experiments showed that AM/SSS/THDAB has an excellent clay hydration inhibitive performance. Methods including particle size analysis and SEM were utilized to study its dispersion inhibition mechanism by using sodium montmorillonite (Na-MMT). Results indicated that the micro-structure of Na-MMT has been successfully changed by AM/SSS/THDAB. In a word, the superior inhibition property makes the novel clay hydration dispersion inhibitor promised in water-based drilling fluids.
Number of references: 24
Main heading: Styrene
Controlled terms: Acrylic monomers - Molecular weight - Particle size - Hydration - Particle size analysis - Amides - Dispersions - Drilling fluids - Sodium
Uncontrolled terms: Ammonium bromides - Evaluation experiments - Inhibition mechanisms - Inhibition property - Sodium montmorillonite - Temperature resistances - Water based drilling fluids - Zwitterionic copolymers
Classification code: 549.1 Alkali Metals - 804.1 Organic Compounds - 931.3 Atomic and Molecular Physics - 951 Materials Science
Numerical data indexing: Molar_Mass 4.37e+04g/mol
DOI: 10.1590/0104-1428.06519
Funding Details:
Funding text: The authors would like to thank the Open Fund (KFKT2019-13) of the Key Laboratory of Auxiliary Chemistry and Technology for Chemical Industry, Ministry of Education Shaanxi University of Science and Technology for financial support.
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

36. Microstructure and mechanical properties of dissimilar friction stir welded type 304 austenitic stainless steel to Q235 low carbon steel

Accession number: 20192807162726

Authors: Wang, Hongduo (1, 3); Wang, Kuaishe (1, 2); Wang, Wen (1, 2); Huang, Liying (1, 2); Peng, Pai (1, 2); Yu, Hailiang (4)
Author affiliation: (1) School of Metallurgical Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China; (2) National and Local Joint Engineering Research Center for Functional Materials Processing, Xi'an; 710055, China; (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) College of Mechanical and Electrical Engineering, Central South University, Changsha; 410083, China
Corresponding author: Wang, Kuaishe(wangkuaishe888@126.com)
Source title: Materials Characterization
Abbreviated source title: Mater Charact
Volume: 155
Issue date: September 2019
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Article number: 109803
Language: English
ISSN: 10445803
CODEN: MACHEX
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: In this work, friction stir welding (FSW) was used to weld dissimilar metals (Type 304 stainless steel (SS304) and Q235 low carbon steel). The microstructure, interfacial characteristics, residual stress distribution and mechanical properties of the joint were investigated. The results show that FSW results in grain refinement in the stir zone (SZ) and thermal-mechanical affected zone (TMAZ) in SS304 side. Discontinuous dynamic recrystallization and twinning-induced dynamic recrystallization are the main grain refinement mechanisms. Dynamic recovery occurs in the heat-affected zone (HAZ). On the Q235 steel side, the acicular ferrite and pearlite are generated in the SZ, which is due to its peak temperature of up to Ac3. Additionally, the amount of acicular ferrite decreases in the TMAZ. Continuous and discontinuous dynamic recrystallization is the main recrystallization mechanism in the two regions. The interfacial bonding mechanism of FSW joint consists of both mechanical and metallurgical bonding. In addition, the difference in expansion coefficient and microstructure between the two steels results in the formation of residual compressive stress in the SZ. Grain refinement and acicular ferrite are responsible for the microhardness distribution in the whole joint. The tensile strength of FSW joint is 493 MPa, which is more than that of Q235 steel by around 4%. However, the elongation is 17%, which shows a decrease of around 50%. Furthermore, the fracture surface shows ductile fracture with dimples.

Number of references: 53
Main heading: Friction stir welding
Controlled terms: Ferrite - Low carbon steel - Friction - Ductile fracture - Grain size and shape - Heat affected zone - Austenitic stainless steel - Grain refinement - Microstructure - Research laboratories - Tensile strength
Uncontrolled terms: 304 austenitic stainless steels - Discontinuous dynamic recrystallization - Friction stir welding(FSW) - Grain refinement mechanism - Interfacial characteristics - Microstructure and mechanical properties - Recrystallization mechanisms - Residual compressive stress
Classification code: 531.2 Metallography - 538.2 Welding - 538.2.1 Welding Processes - 545.3 Steel - 901.3 Engineering Research - 951 Materials Science
Numerical data indexing: Percentage 1.70e+01%, Percentage 4.00e+00%, Percentage 5.00e+01%, Pressure 4.93e+08Pa
DOI: 10.1016/j.matchar.2019.109803
Funding Details: Number: 2017ZDXM-GY-037, Acronym: -, Sponsor: -; Number: 51404180,51574192,U1760201, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: Z20180407, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: The authors gratefully acknowledge the sponsorship from the National Natural Science Foundation of China (No. 51404180 , 51574192 and U1760201); National Key Research and Development Program of China (No. Z20180407); Key Industrial Research Program of Shaanxi Province , China (No. 2017ZDXM-GY-037).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

37. Performance study on fiber Bragg grating accelerometer packaged by carbon fiber-reinforced plastic

Accession number: 20200908219115
Authors: Luo, Xiaodong (1, 2); Liu, Yinggang (1); Feng, Dequan (1, 3); Yu, Dakuan (1); He, Jianbin (1)

Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Xian Shiyou University, No.18, DianZiEr Road Yan-Ta Zone, Xi'an; 710065, China; (2) Shaanxi Normal University, School of Physics and Information Technology, No. 620, XiChangAn Street, Chang-An Zone, Xi'an; 710119, China; (3) School of Physics, Northwest University, GuoDu Educational Science and Technology Industrial Zone, No. 1 XueFu Avenue, Chang-An Zone, Xi'an; 710127, China
Source title: Asia Communications and Photonics Conference, ACP
Abbreviated source title: Asia Commun. Photonics Conf.
Volume: 2019-November
Part number: 1 of 1
Issue title: 2019 Asia Communications and Photonics Conference, ACP 2019 - Proceedings
Issue date: November 2019
Publication year: 2019
Language: English
ISSN: 2162108X
ISBN-13: 9781943580705
Document type: Conference article (CA)
Conference name: 2019 Asia Communications and Photonics Conference, ACP 2019
Conference date: November 2, 2019 - November 5, 2019
Conference location: No. 1736 Tianfu Avenue North, Chengdu, China
Conference code: 157674
Sponsor: CIC; COS; IEEE Photonics Society; OSA; SPIE
Publisher: OSA - The Optical Society
Abstract: Considering advantages of the carbon fiber-reinforced plastic (CFRP), a fiber Bragg grating (FBG) accelerometer packaged by CFRP is proposed. The accelerometer measures acceleration at vibration frequency of 10~40Hz with a sensitivity of 2.21 pm/m/s2,. Asia Communications and Photonics Conference (ACP) © OSA 2019
Number of references: 6
Main heading: Carbon fiber reinforced plastics
Controlled terms: Photonics - Accelerometers - Fiber Bragg gratings - Diseases
Uncontrolled terms: Carbon fiber reinforced plastics (CFRP) - Fiber bragg grating accelerometer - Performance study - Vibration frequency
Classification code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 817.1 Polymer Products - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 1.00e+01Hz to 4.00e+01Hz
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

38. Performance study on fiber Bragg grating accelerometer packaged by carbon fiber-reinforced plastic

Accession number: 20202008653142
Authors: Luo, Xiaodong (1, 2); Liu, Yinggang (1); Feng, Dequan (1, 3); Yu, Dakuan (1); He, Jianbin (1)
Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Xian Shiyou University, No.18, DianZiEr Road, Yan-Ta Zone, Xi'an; 710065, China; (2) Shaanxi Normal University, School of Physics and Information Technology, No. 620, XiChangAn Street, Chang-An Zone, Xi'an; 710119, China; (3) School of Physics, Northwest University, GuoDu Educational Science and Technology Industrial Zone, Chang-An Zone, No. 1 XueFu Avenue, Xi'an; 710127, China
Corresponding author: Luo, Xiaodong(xdluo@xsyu.edu.cn)
Source title: Optics InfoBase Conference Papers
Abbreviated source title: Opt. InfoBase Conf. Pap
Volume: Part F138-ACPC 2019
Part number: 1 of 1
Issue title: Asia Communications and Photonics Conference, ACPC_2019
Issue date: 2019
Publication year: 2019
Report number: ACPC-2019-M4A.141
Language: English
ISBN-13: 9781943580705
Document type: Conference article (CA)

Conference name: Asia Communications and Photonics Conference, ACPC_2019
Conference date: November 2, 2019 - November 5, 2019
Conference location: Chengdu, Hong kong
Conference code: 142078
Publisher: OSA - The Optical Society
Abstract: Considering advantages of the carbon fiber-reinforced plastic (CFRP), a fiber Bragg grating (FBG) accelerometer packaged by CFRP is proposed. The accelerometer measures acceleration at vibration frequency of 10~40Hz with a sensitivity of 2.21 pm/m/s2. Asia Communications and Photonics Conference (ACP) © OSA 2019 © 2019 The Author(s)
Number of references: 6
Main heading: Carbon fiber reinforced plastics
Controlled terms: Photonics - Accelerometers - Fiber Bragg gratings
Uncontrolled terms: Carbon fiber reinforced plastics (CFRP) - Fiber bragg grating accelerometer - Performance study - Vibration frequency
Classification code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 817.1 Polymer Products - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 1.00e+01Hz to 4.00e+01Hz
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

39. Pressure transient performance for a horizontal well intercepted by multiple reorientation fractures in a tight reservoir (*Open Access*)

Accession number: 20195007817201
Authors: Xing, Guoqiang (1, 2); Wu, Shuhong (1, 2); Wang, Jiahang (3); Wang, Mingxian (1, 4); Wang, Baohua (1, 2); Cao, Jinjian (1)
Author affiliation: (1) Research Institute of Petroleum Exploration and Development, China National Petroleum Corporation, Beijing; 100083, China; (2) State Key Laboratory of Enhanced Oil Recovery, Ministry of Science and Technology, Beijing; 100083, China; (3) Engineer Institute of SINOPEC Shanghai Offshore Oil and Gas Company, Shanghai; 200120, China; (4) School of Earth Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Mingxian(wmx1012683002@163.com)
Source title: Energies
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Volume: 12
Issue: 22
Issue date: November 6, 2019
Publication year: 2019
Article number: 4232
Language: English
E-ISSN: 19961073
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: A fractured horizontal well is an effective technology to obtain hydrocarbons from tight reservoirs. In this study, a new semi-analytical model for a horizontal well intercepted by multiple finite-conductivity reorientation fractures was developed in an anisotropic rectangular tight reservoir. Firstly, to establish the flow equation of the reorientation fracture, all reorientation fractures were discretized by combining the nodal analysis technique and the fracture-wing method. Secondly, through coupling the reservoir solution and reorientation fracture solution, a semi-analytical solution for multiple reorientation fractures along a horizontal well was derived in the Laplace domain, and its accuracy was also verified. Thirdly, typical flow regimes were identified on the transient-pressure curves. Finally, dimensionless pressure and pressure derivative curves were obtained to analyze the effect of key parameters on the flow behavior, including fracture angle, permeability anisotropy, fracture conductivity, fracture spacing, fracture number, and fracture configuration. Results show that, for an anisotropic rectangular tight reservoir, horizontal wells should be deployed parallel to the direction of principal permeability and fracture reorientation should be controlled to extend along the direction of minimum permeability. Meanwhile, the optimal fracture number should be considered for economic production and the fracture spacing should be optimized to reduce the flow interferences between reorientation fractures. © 2019 by the authors.
Number of references: 25
Main heading: Fracture

Controlled terms: Petroleum reservoir engineering - Analytical models - Anisotropy - Horizontal wells
Uncontrolled terms: Flow behaviors - Fracture conductivities - Fractured horizontal wells - Permeability anisotropy - Principal permeability - Semi-analytical model - Semi-analytical solution - Tigh treservoirs
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.3390/en12224232
Funding Details: Number: 2017A-0906, Acronym: PetroChina, Sponsor: PetroChina Company Limited; Number: 2016ZX05046-003, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: Funding: This research was funded by the PetroChina Scientific Study and Technical Development Project (2017A-0906) and National Science and Technology Major Project of China (no. 2016ZX05046-003).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

40. Feasibility analysis of a droppable igniter for in-situ combustion

Accession number: 20190706494588
Authors: Jiang, Haiyan (1, 2, 3); Zatcepin, Vladislav (4); Liu, Wenqiang (1); Yuan, Shibao (1, 2, 3); Zhao, Liming (1); Wang, Boyi (1)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shanxi; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an; Shanxi; 710065, China; (3) Engineering Research Center of Development and Management for Low to Ultra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an; Shanxi; 710065, China; (4) Russian Innovation Fuel Energy Company, Moscow, Russia
Corresponding author: Liu, Wenqiang(434497116@qq.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 176
Issue date: May 2019
Publication year: 2019
Pages: 887-892
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The ignition technology is the key of in-situ combustion, which determines the start of in-situ combustion. This paper proposes a droppable solid fuel igniter for in-situ combustion based on the principle of traditional igniter, which aims to design a droppable solid fuel igniter and demonstrate the feasibility of the igniter. The droppable solid fuel igniter can not only guarantee ignition efficiency, but also avoid the pressure fluctuation caused by lifting artificial igniter in recovery process. Firstly, the structure and fuel of the igniter are designed. Industrial solid fuel with hexamethylenetetramine and multipurpose solid fuel with gangue can both meet the ignition requirements of heat and structure. Then, the feasibility of the igniter is studied by oxidation kinetics and thermodynamics formulas. Finally, the applicable conditions of the igniter are obtained by sensitivity analysis. The results show that the reservoir thickness is the key factor if the igniter length is no more than 20 m. This igniter has strong feasibility if the reservoir thickness is less than 12.8 m, but ignition temperature and initial layer temperature should be considered if reservoir thickness is larger than 12.8 m. In theory, the droppable solid fuel igniter can be used in artificial ignition under certain conditions. © 2019 Elsevier B.V.
Number of references: 33
Main heading: Ignition
Controlled terms: Sensitivity analysis - Fuels - Thermodynamics
Uncontrolled terms: Applicable conditions - Droppable - Feasibility analysis - Igniter - Ignition temperatures - Pressure fluctuation - Reservoir thickness - Solid fuels
Classification code: 521.1 Fuel Combustion - 641.1 Thermodynamics - 921 Mathematics
Numerical data indexing: Size 1.28e+01m, Size 2.00e+01m
DOI: 10.1016/j.petrol.2019.01.108
Funding Details: Number: 51674198, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Thanks for the Project supported by the National Natural Science Foundation of China .Project supported by the National Natural Science Foundation of China (Grant No. 51674198). Investigations on Fuel Transformation and Deposition Mechanism in the Process of In-Situ Combustion.

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

41. Simulation Research on Exploiting Electrostatic Potential Difference Sensing for Shaft Centerline Orbit Reconstruction (*Open Access*)

Accession number: 20192907199911
Authors: Tang, Kaihao (1); Hu, Hongli (1); Li, Lin (1); Qin, Yong (2); Wang, Xiaoxin (3)
Author affiliation: (1) State Key Laboratory of Electrical Insulation and Power Equipment, Xi'An Jiaotong University, Xi'an; 710049, China; (2) State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, Beijing; 100044, China; (3) Key Laboratory of Education Ministry for Photoelectric Logging and Detecting of Oil and Gas, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Hu, Hongli(hlhu@mail.xjtu.edu.cn)
Source title: IEEE Access
Abbreviated source title: IEEE Access
Volume: 7
Issue date: 2019
Publication year: 2019
Pages: 79455-79462
Article number: 8725598
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: To realize the non-contact measurement of the rotational shaft centerline orbit, a shaft centerline orbit reconstruction method using a specifically designed electrostatic sensor in conjunction with the neural network approximator is proposed in this paper. The sensing principle of the designed electrostatic sensor is based on the partial capacitance theory. The proposed sensor consists of one electrostatic field excitation electrode, two sensing electrodes, and a cylindrical metal shield covering the three electrodes. It directly establishes the map from the sensor output (voltages between sensing electrodes and shield) to shaft center position through the neural network approximator so that the shaft centerline orbit can be reconstructed. The CAE software COMSOL Multiphysics is used for sensor modeling and simulation analysis. The simulation reconstruction experiment is carried out to test the performance of the proposed sensor and to obtain training data for the neural network. The experiment result shows that the RMS error of the proposed sensor is within $0.4~\mu \text{m}$, which has proved the feasibility of the novel sensor combined with the neural network fitting algorithm for industrial applications. © 2013 IEEE.
Number of references: 13
Main heading: Machinery
Controlled terms: Electrostatic devices - Capacitance - Electric discharges - Electrodes - Computer software - Multiphysics - Neural networks
Uncontrolled terms: Centerlines - Comsol multiphysics - Electrostatic potentials - Electrostatic sensor - Noncontact measurements - Orbit reconstruction - Partial capacitance - Simulation research
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 723 Computer Software, Data Handling and Applications
DOI: 10.1109/ACCESS.2019.2919750
Funding Details: Number: RCS2017K006, Acronym: -, Sponsor: -; Number: 2016GY-001, Acronym: -, Sponsor: -; Number: 51777151, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JK0606, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2016YFB0901200, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: xzy022019046, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported in part by the National Natural Science Foundation of China under Grant 51777151, in part by the National Key R&D Program of China under Grant 2016YFB0901200, in part by the Open Research Fund of State Key Laboratory of Rail Traffic Control and Safety under Grant RCS2017K006, in part by the Shaanxi Provincial Key Technologies R&D Programme under Grant 2016GY-001, in part by the Scientific Research Program Funded by Shaanxi Provincial Education Department under Grant 18JK0606, and in part by the Fundamental Research Funds for the Central Universities under Grant xzy022019046.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex

Data Provider: Engineering Village

42. Metric-based L-fuzzy rough sets: Approximation operators and definable sets

Accession number: 20183705803454
Authors: Yao, Wei (1); She, Yanhong (2); Lu, Ling-Xia (3, 4)
Author affiliation: (1) School of Sciences, Hebei University of Science and Technology, Shijiazhuang; 050018, China; (2) College of Science, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) Department of Mathematics, College of Natural Science, Chonbuk National University, Jeonju-City, Jeonbuk; 561-756, Korea, Republic of; (4) School of Mathematics and Science, Hebei GEO University, Shijiazhuang; 050031, China
Corresponding author: She, Yanhong(yanhongshe@xsyu.edu.cn)
Source title: Knowledge-Based Systems
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ISSN: 09507051
CODEN: KNSYET
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Binary relations, coverings and neighborhood systems/operators are useful tools to study rough set theory. In this paper, we use the notion of $\oplus$-hemimetric, a weak version of the standard metric in topology and analysis, as the basic structure to study L-fuzzy rough set theory, where L is a complete residuated lattice. We define a pair of L-fuzzy upper and lower approximation operators and then investigate their properties and relations. It is shown that both operators are monotone with respect to the L-fuzzy order of fuzzy inclusion relation between L-fuzzy subsets. The L-fuzzy upper approximation operator has more nice properties than the lower one, and if L is regular and the hemimetric is symmetric, then they are dual to each other. We then study the upper and lower definable sets in this model. The family of upper definable sets forms an Alexandrov stratified L-topology while that of lower definable ones does not necessarily. If L is regular (even if the hemimetric is not symmetric), the upper definability coincides with the lower definability. We finally present an application of metric-based L-fuzzy set theory to fuzzy clustering for weighted graphs. © 2018 Elsevier B.V.
Number of references: 59
Main heading: Rough set theory
Controlled terms: Approximation algorithms - Fuzzy clustering - Fuzzy set theory - Lattice theory - Topology
Uncontrolled terms: Approximation operators - Complete residuated lattices - Fuzzy rough set theory - L-fuzzy (pre)order - Neighborhood systems - Rough approximations - Upper and lower approximation - Upper/lower definable set
Classification code: 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics
DOI: 10.1016/j.knosys.2018.08.023
Funding Details: Number: 2017M610173, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2017KJXX-60, Acronym: -, Sponsor: -; Number: 61472471, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This paper is supported by the NNSF of China (1187010528 , 61472471), the Innovation Talent Promotion Plan of ShaanxiProvince for Young Sci-Tech New Star (2017KJXX-60) and Postdoctoral Science Foundation of China (2017M610173).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

43. Synergistic effect of surfactant and alkali on the treatment of oil sludge

Accession number: 20193507378539
Authors: Chen, Gang (1); Cheng, Chao (1); Zhang, Jie (1); Sun, Yan (1); Hu, Qi (3); Qu, Chengtun (1, 2); Dong, Sanbao (1)
Author affiliation: (1) Shaanxi Province Key Laboratory of Environmental Pollution Control and Reservoir Protection Technology of Oilfields, School 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; (3) China-Sasol Co., Ltd., Nanjing; 210047, China
Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 183
Issue date: December 2019
Publication year: 2019
Article number: 106420
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The oil sludge is considered as a hazardous waste, the improper disposal or insufficient treatment can pose a major problem to the oil production, transportation and processing processes, and may result in serious environmental concerns and human health risks. In the present study, washing treatment with a cleaning solution containing surfactant and alkali was investigated to remove the residual oil from the oil sludge obtained from Tahe Oilfield. The effects of the dosage of surfactant, cleaning temperature, stirring rate, stirring time and liquid-solid ratio on the performance in residual oil removing were analyzed. Sodium nonylphenol polyoxyethylene ether sulfate (AEOS) and alkali were used as the cleaning agents. The results show that the content of the residual oil in the sludge could be lowered from 14.3 wt% to 0.9 wt% after being washed twice under the optimum operation conditions with a 0.6 wt% AEOS and 3 wt% KOH solution for 30 min at 80 °C, a stirring rate of 210 rpm and a liquid-solid ratio of 3:1. Thermogravimetric (TGA) and infrared analyses confirmed that the oil components in the oil sludge can be mostly removed. © 2019 Elsevier B.V.
Number of references: 43
Main heading: Surface active agents
Controlled terms: Sulfur compounds - Polyethylene oxides - Potassium hydroxide - Waste treatment - Health risks - Petroleum transportation - Sodium compounds - Washing
Uncontrolled terms: Alkali - Environmental concerns - Oily sludges - Optimum operation conditions - Polyoxyethylene ether - Residual oil - Synergistic effect - Thermo-gravimetric
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 461.7 Health Care - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers
Numerical data indexing: Rotational_Speed 2.10e+02RPM, Temperature 3.53e+02K, Time 1.80e+03s
DOI: 10.1016/j.petrol.2019.106420
Funding Details: Number: 18JC025, Acronym: -, Sponsor: -; Number: 2019ZDLGY06-03, Acronym: -, Sponsor: -; Number: 51974252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was financially supported by the grants from National Natural Science Foundation of China (51974252), China; Shaanxi Provincial Key Research and Development Program (2019ZDLGY06-03), China; and Scientific Research Program of Shaanxi Provincial Education Department (18JC025), China.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

44. Tritium-permeation-barrier properties of erbium oxide (TPB) coating on CLAM steel

Accession number: 20185106264584
Authors: Liu, Shuai (1, 2); Ju, Xin (2); Qiu, Jie (2); Chen, Guoxiang (1); Sun, Jun (3); Xin, Yong (2, 4); Ma, Fei (3)
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Department of Physics, University of Science and Technology Beijing, Beijing; 100083, China; (3) State-Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; 710049, China; (4) Science and Technology on Reactor System Design Technology Laboratory, Nuclear Power Institute China, Chengdu; 610213, China
Corresponding author: Ju, Xin(jux@ustb.edu.cn)
Source title: Fusion Engineering and Design
Abbreviated source title: Fusion Eng Des
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Issue date: January 2019
Publication year: 2019
Pages: 347-351
Language: English
ISSN: 09203796

CODEN: FEDEEE
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Erbium oxide (Er2O3) coatings are considered as the candidate for tritium permeation barrier (TPB) because of its low permeation reduced ratio. The enhanced adhesion between TPB layer and metal substrate is one of the key issues for the high reliability. In this work, erbium coatings were firstly prepared by radio frequency (RF) magnetron sputtering and then annealed to generate Er2O3 TPB coatings, accompanied with Er2Fe17 due to inter-diffusion between Er and steel substrates. The coatings are compact and smooth if the annealing temperature is above 873 K. The samples are insulator at room temperature, and meet the requirement of TPB in blanket. The adhesion of coatings could be improved with elevating annealing temperature. According to the AES profile, a thickness controllable TPB multi-layered model of Er2O3/Er2O3+Er/Er/Er2Fe17/Fe is proposed. © 2018
Number of references: 32
Main heading: Annealing
Controlled terms: Erbium compounds - Adhesion - Tritium - Binary alloys - Magnetron sputtering - Substrates - Diffusion coatings
Uncontrolled terms: Annealing temperatures - Enhanced adhesions - Erbium oxide - High reliability - Metal substrate - Multi-layer-coating - Radio frequency magnetron sputtering - Tritium permeation
Classification code: 537.1 Heat Treatment Processes - 622.1.1 Radioisotopes - 813.2 Coating Materials - 951 Materials Science
Numerical data indexing: Temperature 8.73e+02K
DOI: 10.1016/j.fusengdes.2018.12.022
Funding Details: Number: 51471130,51771144, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JZ015, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was jointly supported by Youth Talent Promotion Program of Xi’an Shiyou University , National Natural Science Foundation of China (Grant NO. 51771144 , 51471130), Natural Science Foundation of Shaanxi Province (NO. 2017JZ015)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

45. Syngas Conversion to C2 Oxygenates over the Cu/β_Mo2C Catalyst: Probing into the Effect of the Interface between Cu and β_Mo2C on Catalytic Performance

Accession number: 20193707428220
Authors: Zhang, Riguang (1); Wei, Cong (1); Guo, Weisheng (1); Li, Zhiqin (2); Wang, Baojun (1); Ling, Lixia (1); Li, Debao (3)
Author affiliation: (1) Key Laboratory of Coal Science and Technology, Ministry of Education and Shanxi Province, Taiyuan University of Technology, Taiyuan, Shanxi; 030024, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (3) State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan, Shanxi; 030001, China
Corresponding author: Wang, Baojun(wangbaojun@tyut.edu.cn)
Source title: Journal of Physical Chemistry C
Abbreviated source title: J. Phys. Chem. C
Volume: 123
Issue: 34
Issue date: August 29, 2019
Publication year: 2019
Pages: 21022-21030
Language: English
ISSN: 19327447
E-ISSN: 19327455
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Aiming at probing into the role of the interface between Cu and Mo2C for syngas conversion to C2 oxygenates over the Cu/β_Mo2C catalyst, the formation mechanism of C2 oxygenates from syngas over the Cu/β_Mo2C catalyst has been systematically investigated using density functional theory calculations. The results show that the CH monomer is the most preferred CHx species formed via the route of CO direct dissociation into C, followed by C hydrogenation to CH; moreover, the Cu/β_Mo2C(001) catalyst presents higher activity and selectivity toward CH

formation instead of CH3OH formation. For C2 oxygenate formation, CHO insertion into CH to form the C2 oxygenate CHCHO is the most preferred. Compared to the pure Cu(111) and β_Mo2C(001), Cu/β_Mo2C(001) exhibits better selectivity toward CH formation, and has the strong ability of C-C chain growth for C2 oxygenate formation. On the other hand, the analysis of electronic and structural properties indicates that there is a strong charge transfer between Cu and Mo2C to form a charge-rich region at the interface of the Cu/β_Mo2C(001) catalyst, which promotes the C-O bond cleavage of CO and CHO to form the CH monomer adsorbed at the interface, and favors the subsequent CHO insertion into CH to form the C2 oxygenate CHCHO at the interface. As a result, the synergistic effect including the electronic and geometric effect that occurred at the interface between Cu and β_Mo2C(001) leads to high productivity toward C2 oxygenates in syngas conversion over the Cu/β_Mo2C(001) catalyst. © 2019 American Chemical Society.
Number of references: 66
Main heading: Charge transfer
Controlled terms: Catalyst selectivity - Copper - Monomers - Chemical bonds - Synthesis gas - Catalyst activity - Density functional theory
Uncontrolled terms: C-O bond cleavage - Catalytic performance - Electronic and structural properties - Formation mechanism - Geometric effects - High productivity - Synergistic effect - Syngas conversion
Classification code: 544.1 Copper - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

46. Chemometric differentiation of crude oil families in the southern Dongying Depression, Bohai Bay Basin, China

Accession number: 20184806141374
Authors: Zhan, Zhao-Wen (1); Lin, Xiao-Hui (1, 2); Zou, Yan-Rong (1); Li, Zheng (3); Wang, Dayang (3); Liu, Chao (4); Peng, Ping'an (1)
Author affiliation: (1) State Key Laboratory of Organic Geochemistry, Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, Guangzhou; 510640, China; (2) University of Chinese Academy of Sciences, Beijing; 10039, China; (3) Petroleum Exploration and Production Research Institute of Shengli Oilfield Company, Sinopec, Dongying; 257015, China; (4) College of Geosciences and Engineering, Xi'an Shiyou University, Xi'an; Shanxi; 710065, China
Corresponding author: Zou, Yan-Rong(zouyr@gig.ac.cn)
Source title: Organic Geochemistry
Abbreviated source title: Org. Geochem.
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Pages: 37-49
Language: English
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CODEN: ORGEDE
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Fifty-seven crude oil samples from the southern Dongying Depression were selected for detailed geochemical analysis. High C26/C25 tricyclic terpanes (0.81–1.26) and low C31 homohopane (R)/C30 hopane (0.15–0.26) ratios indicate that the oils are from lacustrine source rocks. The presence of C30 4α_methyl-24-ethylcholestanes and C30 tetracyclic polyprenoids imply the contribution of microalgal organic matter. Large variations of depositional environment-related biomarker parameters suggest differences in organofacies and water environment. Four genetically distinct oil families were differentiated by chemometrics of hierarchical cluster and principal component analyses using the parameter dataset of three isotope ratios and 15 molecular parameters, all related to source and depositional environment. Family I is mature and does not match any available source rocks. The inferred source rock contains microalgal material that could produce large quantities of wax, C29 steranes and tricyclic terpenoids in a reducing, salinity stratified water column. Family II is characterized by a strong phytane dominance, relatively

high gammacerane and C35 homohopanes, and low diasterane and 4-methyl sterane contents. It has high values of sterane/hopane (S/H = 1.67–4.14), C35/C34 homohopane (C35H/C34H = 0.81–1.66) and gammacerane/C30 hopane (G/C30H = 0.57–1.13) and low pristane/phytane (Pr/Ph = 0.30–0.59), suggesting that the inferred source rock is the upper Es4 interval. Family III has characteristics distinct from families I and II: low S/H (0.15–0.27), C35H/C34H (0.39–0.49) and G/C30H (0.03–0.12) ratios and high Pr/Ph (0.48–1.90), C30-4M/C29 $\alpha\alpha\alpha 20\#$ (0.54–1.18) and C30 tetracyclic polyprenoid (0.54–0.66) ratios, suggesting that the source rock is the lower Es3 interval. The family IV oils are compositionally in-between the ranges of families II and III oils, and in line with them in plots of geochemical parameters. We suggest that family IV consists of mixed oils derived from the upper Es4 and lower Es3 intervals. Family II has a relatively low thermal maturity and the inferred source rock may be located in the Niuzhuang Sag and/or the southern gentle slope zone. Family III is mature and its inferred source rock may be situated in the Lijin and Boxing sags. The upper Es4 and lower Es3 source rocks in the three sags contribute the crude oils of family IV that occurs in the middle and eastern parts of the southern Dongying Depression. © 2018
Number of references: 33
Main heading: Biomarkers
Controlled terms: Hierarchical systems - Isotopes - Rocks - Crude oil - Lipids - Pristane - Principal component analysis - Analytical geochemistry - Deposition - Petroleum geology
Uncontrolled terms: Chemometrics - Depositional environment - Dongying depression - Geochemical parameters - Lacustrine source rocks - Molecular parameters - Oil family - Source input
Classification code: 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 801 Chemistry - 802.3 Chemical Operations - 804.1 Organic Compounds - 922.2 Mathematical Statistics - 961 Systems Science
DOI: 10.1016/j.orggeochem.2018.11.004
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Funding text: We appreciate Dr. Joseph A. Curiale, Dr. Kenneth E. Peters, Dr. Albert Holba and Dr. John K. Volkman for their critical comments that significantly improved the quality of the manuscript. We thank Dr. Yankuan Tian, Dr. Wenbing Zhang, and Tian Liang of Guangzhou Institute of Geochemistry, Chinese Academy of Sciences. This research was supported by the Strategic Priority Research Program of the Chinese Academy of Sciences (XDA14010102) and the SKLOG Project (sklogc201604). This is contribution No. IS-2607 from GIGCAS.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

47. Design and Modeling of a High Sensitivity Fiber Bragg Grating-Based Accelerometer (*Open Access*)

Accession number: 20192607117238
Authors: Liu, Qinpeng (1); He, Xue (1); Qiao, Xueguang (1); Sun, Tong (2); Grattan, Kenneth T. V. (3)
Author affiliation: (1) Key Laboratory on Photoelectric Oil-gas Logging and Detecting, Ministry of Education, School of Science, Xi'An Shiyou University, Xi'an; 710072, China; (2) School of Mathematics, Computer Science and Engineering, City University of London, London; EC1V 0HB, United Kingdom; (3) City Graduate School and the School of Mathematics, Computer Science and Engineering, City University of London, London; EC1V 0HB, United Kingdom
Corresponding author: Sun, Tong(t.sun@city.ac.uk)
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Article number: 8664484
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Use of a detailed theoretical model has allowed the optimization of the design of a high sensitivity accelerometer, based on a fiber Bragg grating (FBG) and an accelerometer based on this design has been demonstrated experimentally. With a universal model based on double-point encapsulation established, the performance of the device in terms of its optimal sensitivity and frequency distribution has been analyzed, with an optimization 'figure of merit' using the product of the sensitivity and the resonant frequency being presented.

The experimental results obtained indicate that the FBG-based accelerometer thus developed shows a broad, flat frequency band, a corresponding flat range sensitivity of 152.0pm/G, a resonant frequency of 441.0Hz, and a cross-axis sensitivity of less than 3.6% of the main-axis sensitivity. An accelerometer of this type and with this performance thus has the potential for the important field of low frequency oil-gas seismic exploration. © 2001-2012 IEEE.
Number of references: 30
Main heading: Natural frequencies
Controlled terms: Petroleum prospecting - Accelerometers - Fiber Bragg gratings
Uncontrolled terms: Cross-axis sensitivity - Design and modeling - Figure of merits - Frequency distributions - Optimal sensitivity - Seismic exploration - sensitivity - Theoretical modeling
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 4.41e+02Hz, Percentage 3.60e+00%
DOI: 10.1109/JSEN.2019.2904218
Funding Details: Number: 61735014, Acronym: NSF, Sponsor: National Science Foundation; Number: EP/J500781/1, Acronym: EPSRC, Sponsor: Engineering and Physical Sciences Research Council; Number: -, Acronym: NSF, Sponsor: National Science Foundation; Number: 18JS093, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported in part by the National Science Foundation under Grant 61735014, and in part by the Shaanxi Provincial Education Department under Program 18JS093.Manuscript received January 15, 2019; revised March 1, 2019; accepted March 4, 2019. Date of publication March 11, 2019; date of current version June 19, 2019. This work was supported in part by the National Science Foundation under Grant 61735014, and in part by the Shaanxi Provincial Education Department under Program 18JS093. The associate editor coordinating the review of this paper and approving it for publication was Prof. Gijs J. M. Krijnen. (Corresponding author: Tong Sun.) Q. Liu, X. He, and X. Qiao are with the Key Laboratory on Photoelectric Oil-gas Logging and Detecting, Ministry of Education, School of Science, Xi'an Shiyou University, Xi'an 710072, China (e-mail: lqp1977@163.com; hx_zealot@foxmail.com; xueguangqiao@xsyu.edu.cn).
Compendex references: YES
Open Access type(s): All Open Access, Bronze, Green
Database: Compendex
Data Provider: Engineering Village

48. Rapid quantitative analysis of the acidity of iron ore by the laser-induced breakdown spectroscopy (LIBS) technique coupled with variable importance measures-random forests (VIM-RF)

Accession number: 20192907207356
Authors: Wang, Ping (1); Li, Nan (1); Yan, Chunhua (1); Feng, Yaozhou (1); Ding, Yu (3); Zhang, Tianlong (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; 710127, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an 710065, China; (3) Jiangsu Key Laboratory of Big Data Analysis Technology, Nanjing University of Information Science and Technology, Nanjing; 210044, China
Corresponding author: Li, Hua(huali@nwu.edu.cn)
Source title: Analytical Methods
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Pages: 3419-3428
Language: English
ISSN: 17599660
E-ISSN: 17599679
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Rapid and online analysis of the acidity of iron ore is extremely important for reasonable and efficient utilization of mineral resources. In this study, the laser-induced breakdown spectroscopy (LIBS) technique coupled with variable importance measures-random forests (VIM-RF) was proposed and applied for rapid and effective analysis of acidity in iron ore. LIBS spectra of 50 iron ore samples were collected, and the characteristic spectral lines of major elements (Ca, Mg, Si and Al) in iron ore samples were identified based on the National Institute of Standards and

Technology (NIST) database. Different pre-processing methods, input variables and RF calibration model parameters were investigated and optimized by 5-fold cross validation (CV), and variable importance measurement (VIM) was used to optimize the input variables of the RF calibration model. In order to further verify the predictive ability and robustness of the VIM-RF calibration model, three calibration models of VIM-RF, partial least squares (PLS) and least squares support vector machine (LS-SVM) were applied for the quantitative analysis of acidity in iron ore, and the correlation coefficient (R2) and root mean squared error (RMSE) were evaluation indices. The results show that the VIM-RF model exhibits an excellent predictive performance compared with the other two calibration models both for the calibration set and prediction set. Therefore, the LIBS technique combined with VIM-RF can achieve a rapid acidity analysis of iron ores, and it will provide a new method and technology for selection and quality control of iron ore in the metallurgical industry. © 2019 The Royal Society of Chemistry.
Number of references: 36
Main heading: Iron ores
Controlled terms: Decision trees - Quality control - Laser induced breakdown spectroscopy - Least squares approximations - Mineral resources - Support vector machines - Atomic emission spectroscopy - Mean square error
Uncontrolled terms: Characteristic spectral lines - Correlation coefficient - Laserinduced breakdown spectroscopy (LIBS) - Least squares support vector machines - National Institute of Standards and Technology - Partial least square (PLS) - Predictive performance - Root mean squared errors
Classification code: 504.3 Heavy Metal Mines - 545.1 Iron - 723 Computer Software, Data Handling and Applications - 913.3 Quality Assurance and Control - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 931.1 Mechanics - 961 Systems Science
DOI: 10.1039/c9ay00926d
Funding Details: Number: 2018JQ2013, Acronym: -, Sponsor: -; Number: 21605123,21675123,21873076, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YZZ17126, Acronym: NWU, Sponsor: Northwest University; Number: 17KJB535002, Acronym: -, Sponsor: Natural Science Research of Jiangsu Higher Education Institutions of China; Number: 17JK0780, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

49. α–CsPbI3 Colloidal Quantum Dots: Synthesis, Photodynamics, and Photovoltaic Applications

Accession number: 20192407032031
Authors: Gan, Jiantuo (1); He, Jingxuan (1); Hoye, Robert L. Z. (2); Mavlonov, Abdurashid (1); Raziq, Fazal (1); MacManus-Driscoll, Judith L. (2); Wu, Xiaoqiang (1); Li, Sean (3); Zu, Xiaotao (1); Zhan, Yiqiang (4); Zhang, Xiaoyong (5); Qiao, Liang (1, 3)
Author affiliation: (1) School of Physics, University of Electronic Science and Technology of China, Chengdu; 610054, China; (2) Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge; CB30FS, United Kingdom; (3) School of Materials Science and Engineering, University of New South Wales, Sydney; NSW; 2052, Australia; (4) Center of Micro-Nano System, SIST, Fudan University, Shanghai; 200433, China; (5) School of Materials Science and Engineering, Xian Shiyou University, Xian; 710065, China
Corresponding author: Gan, Jiantuo(jiantuo.gan@uestc.edu.cn)
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Language: English
E-ISSN: 23808195
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Publisher: American Chemical Society
Abstract: Owing to their defect tolerance and phase stability, α–CsPbI3 colloidal quantum dots (CQDs) with high mobility and 80-95% photoluminescence quantum yield (PLQY) are promising candidates for next-generation photovoltaics (PVs). Recently, α–CsPbI3 CQD PVs have begun to show promising power conversion efficiencies of 13.4%, with the open-circuit voltage approaching the Shockley-Queisser limit. These devices are stable in ambient conditions for several months. However, the short-circuit current density (JSC) of a12 mA/cm2 is low, and the limiting mechanisms are unclear. In this work, we review the strategies for improving the JSC and the effect of interfaces and mobility of the charge transport layers on carrier extraction. We also evaluate strategies to enhance the stability of CsPbI3 CQDs under illumination, as well as methods to elucidate the recombination losses in the CQD PVs and methods to reduce these losses. This work provides routes to achieve efficient and stable α–CsPbI3 CQD PVs. © 2019 American Chemical Society.
Number of references: 90
Main heading: Lead compounds
Controlled terms: Nanocrystals - Sols - Carrier mobility - Semiconductor quantum dots - Open circuit voltage
Uncontrolled terms: Ambient conditions - Carrier extraction - Colloidal quantum dots - Photoluminescence quantum yields - Photovoltaic applications - Power conversion efficiencies - Recombination loss - Shockley-queisser limits
Classification code: 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 804 Chemical Products Generally - 933.1 Crystalline Solids
Numerical data indexing: Percentage 1.34e+01%, Percentage 8.00e+01% to 9.50e+01%
DOI: 10.1021/acsenergylett.9b00634
Funding Details: Number: -, Acronym: -, Sponsor: Royal Academy of Engineering; Number: -, Acronym: ARC, Sponsor: Australian Research Council; Number: 11774044, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M640906, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: CNPC, Sponsor: China National Petroleum Corporation; Number: -, Acronym: CNOOC, Sponsor: China National Offshore Oil Corporation;
Funding text: Professor Sean Li is the director of UNSW Materials and Manufacturing Futures Institute at The University of New South Wales, Sydney, Australia. His research interests focus on energy and multifunctional materials, with financial support from the Australian Research Council and industries.Professor Xiaoyong Zhang is a Professor at Xi’an Shiyou University and also the head of the School of Materials Science and Engineering. His research work is financially supported by the Chinese government funding foundation and oil corporation funding bodies (NSFC, NSF Shaanxi, CNPC, China Sinopec, CNOOC, etc).Jingxuan He joined Prof. L. Qiao’s group while pursuing his M.Sc. at UESTC, after completing his B.Sc. from the same University in 2017. His current research topic is engineering of low-dimensional photoelectric materials using pulsed laser deposition for applications in PVs and photocatalysis, financially supported by the University through scholarship schemes.Research funding from the China Postdoctoral Science Foundation through Project No. 2018M640906 is acknowledged by the authors. R.L.Z.H. acknowledges funding from the Royal Academy of Engineering through the Research Fellowships scheme No. RF \201718\17101, as well as from the Isaac Newton Trust (Minute 19.07(d)). L.Q. was supported by the National Natural Science Foundation of China (Grant No.: 11774044).
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Database: Compendex
Data Provider: Engineering Village

50. Pore structure and multi-fractal analysis of tight sandstone using MIP, NMR and NMRC methods: A case study from the Kuqa depression, China

Accession number: 20191406725345
Authors: Guo, Xiaobo (1); Huang, Zhilong (2); Zhao, Libin (3); Han, Wei (4); Ding, Chao (1); Sun, Xiongwei (3); Yan, Ruitao (1); Zhang, Tonghui (3); Yang, Xuejun (3); Wang, Ruomei (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petroleum Resource and Prospecting, China University of Petroleum, Beijing; 102249, China; (3) Research Institute of Exploration and Development, Tarim Oilfield Company, CNPC, Korla; 841000, China; (4) Sinopec Chongqing Fuling Shale Gas Exploration and Development Co Ltd, Chongqing; 408014, China
Corresponding author: Guo, Xiaobo(gxb9876@163.com)
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Abbreviated source title: J. Pet. Sci. Eng.
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Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The pore structure and fractal characteristic of tight gas sandstone from Cretaceous Bashijiqike Formation in Kuqa depression were investigated, using thin section, scanning electronic microscope (SEM), mercury intrusion porosimetry (MIP), nuclear magnetic resonance (NMR) and NMR cryoporometry (NMRC) measurements. The pores of tight sandstone samples mainly contain residual primary intergranular pores, intergranular and intragranular dissolved pores, micropores related to clay aggregates and microfractures. The MIP, NMR and NMRC analyses show that the pore structure of tight sandstone is complex and heterogeneous at different pore scales, displaying as a multi-fractal feature. Fractal dimension Dg-s (with respect to small pore throats) from MIP and Dn-l (long T2 relaxation time, representing large pores and fractures or movable-fluid pores) are negatively correlated with porosity, permeability, median pore throat radius and skewness, and have inverse relationships with bound water saturation (Sbnd). Fractal dimension Dg-b (>3.0, with respect to larger pore throats) and Dn-s (2 relaxation time, representing small pores or bound-water pores) from NMR don't present clear relationships with most of pore structure parameters. Fractal dimension Dc-1 and Dc-2 from NMRC show more complex or inconspicuous relationships with pore structure parameters, in the pore diameter size 3.0) and Dn-s (© 2019 Elsevier B.V.
Number of references: 61
Main heading: Pore structure
Controlled terms: Nuclear magnetic resonance - Fractal dimension - Sandstone - Textures - Tight gas - Relaxation time
Uncontrolled terms: Fractal characteristics - Inverse relationship - Kuqa depression - Mercury intrusion porosimetry - Nuclear magnetic resonance(NMR) - Scanning electronic microscopes - Tight gas sandstones - Tight sandstones
Classification code: 482.2 Minerals - 512.2 Natural Gas Deposits - 522 Gas Fuels - 921 Mathematics - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.petrol.2019.03.069
Funding Details: Number: 41702127, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JQ4004,2017JQ4013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 17JK0596, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: 2017ZX05039001, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: We would like to thank PetroChina Tarim Oilfield Company for providing tight sandstone samples. This work was sponsored by the Natural Science Foundation of Shaanxi Province (No. 2017JQ4004 , No. 2017JQ4013), the Special Foundation of the Shaanxi Provincial Education Department (No. 17JK0596), the National Natural Science Foundation of China (No. 41702127) and the National Science and Technology Major Project of China (No. 2017ZX05039001). The authors are grateful to executive editor Dr. Tahar AIFA and anonymous journal reviewers for their helpful comments and suggestions on revisions of this paper, and to A. Achuthan for his time editing the manuscript.We would like to thank PetroChina Tarim Oilfield Company for providing tight sandstone samples. This work was sponsored by the Natural Science Foundation of Shaanxi Province (No. 2017JQ4004, No. 2017JQ4013), the Special Foundation of the Shaanxi Provincial Education Department (No. 17JK0596), the National Natural Science Foundation of China (No. 41702127) and the National Science and Technology Major Project of China (No. 2017ZX05039001). The authors are grateful to executive editor Dr. Tahar AIFA and anonymous journal reviewers for their helpful comments and suggestions on revisions of this paper, and to A. Achuthan for his time editing the manuscript.
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Data Provider: Engineering Village

51. Formation mechanism of the Upper Triassic Yanchang Formation tight sandstone reservoir in Ordos Basin—Take Chang 6 reservoir in Jiyuan oil field as an example

Accession number: 20191406722600
Authors: Ren, Dazhong (1, 2); Zhou, Desheng (1); Liu, Dengke (2, 3); Dong, Fengjuan (1); Ma, Shuwei (2); Huang, Hai (1)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) State Key Laboratory of

Continental Dynamics, Northwest University, Xi'an; 710069, China; (3) School of Mining and Petroleum Engineering, Department of Civil and Environmental Engineering, University of Alberta, Edmonton; AB T6G 1H9, Canada
Corresponding author: Ren, Dazhong(petro_gas@163.com)
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Volume: 178
Issue date: July 2019
Publication year: 2019
Pages: 497-505
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The Upper Triassic Yanchang Formation Chang 6 Member (C6 Member) in the Ordos Basin is the typical crude oil-rich sandstone in China, and its density restrict the exploration and development potential of hydrocarbon as well as their evaluation accuracy. Reservoir characteristics was studied using thin section (TS) associated with particle and pore size image analysis, X-ray diffractions, scanning electron microscopy (SEM) and mercury intrusion porosimetry (MIP). Time was taken as the main axle combined with diagenetic history, burial history, thermal history and structure. Thus, formation mechanism of tight reservoir was discussed by building the porosity evolution model and calculation method using "diagenesis simulation" and "geological effect simulation". Results show that after strong evolution and reconstruction, micro-nano pore throat system has developed and ultralow-low porosity-super low permeability tight sandstone reservoir has formed. Porosity evolution of Well H53 of C6 Member has revealed the correlations between the hydrocarbon charging and the porosity. Tight sandstone reservoir quality is affected by the maximum intergranular point-counted porosity, maximum compaction rate, maximum cementation rate, pore evolution of sample and the oil saturation, reasons for the formation of tight sandstone reservoir as well as its quality have been found out. © 2019 Elsevier B.V.
Number of references: 34
Main heading: Hydrocarbons
Controlled terms: Low permeability reservoirs - Sedimentology - Petroleum prospecting - Petroleum reservoir engineering - Pore size - Tight gas - Textures - Oil fields - Scanning electron microscopy - Metamorphic rocks - Particle size analysis - Sandstone
Uncontrolled terms: Chang 6 member - Diagenesis - Geological effect - Ordos bain - Porosity evolutions
Classification code: 481.1 Geology - 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2019.03.021
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Funding text: This research was financially supported by the National Natural Science Foundation of China (41702146 , 41802166 and 51874242); Innovation Project of Science and Technology of Shaanxi Province, China (2015KTCL01-09); China Postdoctoral Science Foundation (2018M643554); Natural Science Foundation Research Project of Shaanxi Province, China (2016JQ4022 and 2017JQ4005); Open Fund of State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology) (PLC20190502); Project (2016ZX05047) supported by the National Science and Technology Major Project of China : Key Technology of the Tight Gas Enrichment Law and the Exploration and Development.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

52. Fully coupled fluid-solid numerical simulation of stimulated reservoir volume (SRV)-fractured horizontal well with multi-porosity media in tight oil reservoirs

Accession number: 20184906215410
Authors: Ren, Long (1, 2); Su, Yuliang (3); Zhan, Shiyuan (3); Meng, Fankun (4); Zhao, Guangyuan (5)

Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an; 710065, China; (3) School of Petroleum Engineering, China University of Petroleum (East China), Qingdao; 266580, China; (4) PetroChina Research Institute of Petroleum Exploration & Development, Beijing; 100083, China; (5) Production Optimization Division, China Oilfield Services Limited, Tianjin; 300450, China
Corresponding author: Ren, Long(renlong@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
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Issue date: March 2019
Publication year: 2019
Pages: 757-775
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: A mutual coupling effect exists between the flow and stress fields in tight oil reservoir development. In terms of the characteristics of multi-porosity media (the matrix, natural fractures and network fractures) for stimulated reservoir volume (SRV)-fractured horizontal wells in tight oil reservoirs, considering the dual porosities of matrix and natural fractures, and based on the flowing feature of a discrete-fracture mode (DFM) fracture network stimulated system, a numerical simulation method based on fully coupled fluid-solid is introduced. According to the effective stress principle and regional flow characteristics, the fully coupled fluid-solid mathematical model considering the multi-porosity media characteristics of complex fracture networks is presented. The fully coupling numerical solution for the stress and flow fields is solved by the finite element method. The accuracy of this model is verified by comparing the finite differential model, non-coupled model and actual production data, respectively. And analyzing the computational time needed to solve the model under different solution methods and complexity levels. The variation of stress-strain and reservoir physical property parameters is revealed. For the non-coupled and fully coupled model, the productivity and formation pressure differences are compared and analysed. The results show that when considering the stress field, the initial production rate of an SRV-fractured horizontal well is large but declines quickly, and it has fundamentally different characteristics from the traditional flow model. Our research provides theoretical and technical guidance for the efficient development of unconventional resources. © 2018 Elsevier B.V.
Number of references: 30
Main heading: Natural fractures
Controlled terms: Horizontal wells - Numerical models - Petroleum reservoir engineering - Numerical methods - Resource valuation - Complex networks - Stresses - Porosity - Petroleum reservoirs
Uncontrolled terms: Fluid solids - Fractured horizontal wells - Numerical simulation method - Oil reservoirs - Oil-reservoir development - Porosity media - Reservoir physical property - Stimulated reservoir volumes
Classification code: 421 Strength of Building Materials; Mechanical Properties - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 722 Computer Systems and Equipment - 921 Mathematics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.petrol.2018.11.080
Funding Details: Number: 2018JQ5208, Acronym: -, Sponsor: -; Number: 20180417, Acronym: -, Sponsor: -; Number: 51704235,51874242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2014CB239103, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: This research was supported by the National Natural Science Foundation of China (NSFC) (No. 51704235 , 51874242), Young Talent fund of University Association for Science and Technology in Shaanxi, China (No. 20180417), Natural Science Basic Research Plan in Shaanxi Province of China (No. 2018JQ5208) and National Basic Research Program of China (No. 2014CB239103).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

53. Combining Isotopic Geochemical Data and Logging Data to Predict the Range of the Total Gas Content in Shale: A Case Study from the Wufeng and Longmaxi Shales in the Middle Yangtze Area, South China

Accession number: 20194307583718
Authors: Liu, Ziyi (1, 2); Chen, Dongxia (1, 2); Zhang, Jinchuan (3); Lv, Xiuxiang (1, 2); Dang, Wei (4); Liu, Yang (3); Liao, Wenhao (1, 2); Li, Jinheng (1, 2); Wang, Ziyi (1, 2); Wang, Fuwei (1, 2)

Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102200, China; (2) College of Geosciences, China University of Petroleum, Beijing; 102200, China; (3) Key Laboratory of Shale Gas Exploration and Evaluation (Ministry of Land and Resources), China University of Geosciences (Beijing), Beijing; 100083, China; (4) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Chen, Dongxia(lindachen@cup.edu.cn)
Source title: Energy and Fuels
Abbreviated source title: Energy Fuels
Volume: 33
Issue: 11
Issue date: November 21, 2019
Publication year: 2019
Pages: 10487-10498
Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: The marine shales of the lower Silurian Longmaxi formation (S1l) and the upper Ordovician Wufeng formation (O3w) in the middle Yangtze area of southern China have been recognized as effective gas shales with an enormous potential. To estimate the total gas content in the shales, shale gas samples were collected at 20 °C, 48 °C/65 °C, and 90 °C in the gas release process of each core sample during desorption experiments. Based on the isotope fractionation data during the desorption of gas in shale, an adsorbed gas content(mixture gas)/free gas content(mixture gas) to #13C1(mixture gas) model was established to estimate the proportions of free and adsorbed gas in shale by using the #13C1 data of shale gas. The proportion of adsorbed gas(mixture gas) in the Wufeng shales is higher than that in the Longmaxi gas shales. The adsorption capacity of the Wufeng shales with relatively high total organic carbon (TOC) is greater than that of the Longmaxi shales with a relatively low TOC. Subsequently, the free gas content and the adsorbed gas content could be calculated during the desorption experiments. Combining the free gas and adsorbed gas estimated from the logging data, we calculated the minimum and maximum total gas contents of each core sample from well LY1. The total gas content in the Wufeng shales, ranging from 1.654 to 3.371 m3/t, is higher than that of the Longmaxi shales, ranging from 0.398 to 1.769 m3/t. Compared with the minimum and maximum total gas contents predicted by the isotopic geochemical data and logging data, the value of the total gas content estimated by using the United States Bureau of Mines method is not always located within the range of the total gas content, which is influenced by the relationship between free gas(logging data) (m3/t) and free gas(measured gas) (m3/t). Copyright © 2019 American Chemical Society.
Number of references: 72
Main heading: Gases
Controlled terms: Organic carbon - Isotopes - Desorption - Geochemistry - Shale - Mixtures
Uncontrolled terms: Adsorbed gas - Adsorption capacities - Geochemical data - Isotope fractionation - Logging data - Marine shales - Southern China - Total Organic Carbon
Classification code: 481.2 Geochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds
Numerical data indexing: Temperature 2.93e+02K, Temperature 3.63e+02K
DOI: 10.1021/acs.energyfuels.9b01879
Funding Details: Number: 2019JQ-367, Acronym: -, Sponsor: -; Number: 41472110, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 12120115007201, Acronym: CGS, Sponsor: China Geological Survey; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 2016ZX05034-001-05, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This work was supported by the Key Program of National Natural Science Foundation of China (41472110), The National Major Science and Technology Projects of China (2016ZX05034-001-05), Natural Science Basic Research Plan in Shaanxi Province of China (Program no. 2019JQ-367) and China Geological Survey (12120115007201).This work was supported by the Key Program of National Natural Science Foundation of China (41472110), The National Major Science and Technology Projects of China (2016ZX05034-001-05), Natural Science Basic Research Plan in Shaanxi Province of China (Program no. 2019JQ-367) and China Geological Survey (12120115007201).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

54. Wax Inhibitor Screening by Differential Scanning Calorimeter for High Wax Content Crude Oil (*Open Access*)

Accession number: 20193507383193
Authors: Zhang, Zhifang (1); Gao, Wenwen (1); Yun, Bo (2); Lu, Xiao (2); Chen, Shijun (3, 4); Gu, Xuefan (3, 4)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Yulin University, Yulin, China; (2) Oil Production Plant No. 11, PetroChina Changqing Oilfield Company, Xi'an, China; (3) Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'An Shiyou University, Xi'an, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing, China
Corresponding author: Zhang, Zhifang(zhifang889@sohu.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 300
Part number: 3 of 5
Issue: 3
Issue title: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019 - Environmental Engineering and Sustainable Development
Issue date: August 9, 2019
Publication year: 2019
Article number: 032004
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019
Conference date: April 27, 2019 - April 28, 2019
Conference location: Ordos, China
Conference code: 150851
Publisher: IOP Publishing Ltd
Abstract: In order to investigate the wax inhibition performance of various inhibitors different scanning calorimetric (DSC), a powerful and quickly technique having no request of sample pretreatment, has been used for investigation the thermal characteristics of the wax remover. According to the parameters such as wax appearance temperature (WAT), content of wax and rheology, it is found that the best wax removing rate can be reached to 457mg/L•h under 40 C with 150mg/L surfactant combination (fatty alcohol polyoxyethylene ether + calcium petroleum sulfonate + mixed alcohol).
Number of references: 11
Main heading: Surface active agents
Controlled terms: Differential scanning calorimetry - Crude oil - Polyethylene oxides - Alcohols
Uncontrolled terms: Differential scanning calorimeters - Inhibition performance - Petroleum sulfonate - Polyoxyethylene ether - Sample pretreatment - Thermal characteristics - Wax appearance temperature - Waxy crude
Classification code: 512.1 Petroleum Deposits - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 944.6 Temperature Measurements
Numerical data indexing: Mass_Density 1.50e-01kg/m3
DOI: 10.1088/1755-1315/300/3/032004
Funding Details: Number: 18JC025, Acronym: -, Sponsor: -; Number: 101, Acronym: -, Sponsor: -; Number: 21763030, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

55. Potential to enhance CO2 flooding in low permeability reservoirs by alcohol and surfactant as co-solvents

Accession number: 20193107247256

Authors: Ding, Mingchen (1, 2, 3); Wang, Y. (1, 2, 3); Wang, Wei (4); Zhao, Hailong (1, 3); Liu, D. (1, 3); Gao, Miao (1, 3)
Author affiliation: (1) Key Laboratory of Unconventional Oil & Gas Development (China University of Petroleum (East China)), Ministry of Education, Qingdao; 266580, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an Shiyou University, Xian; 710043, China; (3) Shandong Key Laboratory of Oilfield Chemistry, School of Petroleum Engineering, China, University of Petroleum (East China), Qingdao; 266580, China; (4) Yanchang Oilfield Research Institute, Xian; 710075, China
Corresponding author: Wang, Y.(Wangyf@upc.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 182
Issue date: November 2019
Publication year: 2019
Article number: 106305
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Six gas-soluble chemical modifiers were dissolved in pure CO2 to improve the ability to extract, and displace, crude oil from low-permeability reservoirs. It was found that the ability of the modifiers to enhance crude oil extraction using CO2 increased in the order: water, ethanol, TX100, TX100/ethanol, TX45, and TX45/ethanol. As to oil displacements, the best performing system was CO2/TX45/ethanol which generated a significantly greater oil-recovery factor (by 13.8%) than pure CO2, making it a good candidate to replace pure CO2, however, when displacing bypassed oil, the enhancement in oil recovery gained by using CO2/TX45/ethanol was reduced to 6.0% (during the primary soaking stage) and it also failed to remove the majority of the bypassed oil (with a low oil-recovery factor of 23.3%). The secondary huff-n-puff using CO2/TX45/ethanol was more effective than the previous soaking process (increasing the oil-recovery factor to 88.1%), while also generally outperforming the recovery achieved using pure CO2 (depending on pressure depletion). © 2019 Elsevier B.V.
Number of references: 39
Main heading: Carbon dioxide
Controlled terms: Floods - Petroleum reservoir engineering - Crude oil - Extraction - Oil well flooding - Reservoirs (water) - Low permeability reservoirs
Uncontrolled terms: Bypassed oil - Chemical modifiers - Cosolvents - Crude oil extraction - Oil displacement - Oil recoveries - Pressure depletion
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 1.38e+01%, Percentage 2.33e+01%, Percentage 6.00e+00%, Percentage 8.81e+01%
DOI: 10.1016/j.petrol.2019.106305
Funding Details: Number: 51504275, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 17CX02076,18CX02027A, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: The authors thank the financial support from the Open Fund of Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs , the National Natural Science Foundation of China (Grant Nos. 51504275), and the Fundamental Research Funds for the Central Universities (Grant Nos. 17CX02076 and 18CX02027A).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

56. Research of the remaining oil displacement in Chang 8 low permeability reservoir in Fanxue area of Ordos Basin (*Open Access*)

Accession number: 20193507385273
Authors: Wang, Yanglong (1, 2); Yan, Qibin (1); Yan, Jiao (1, 3); Deng, Qiang (3, 4)
Author affiliation: (1) School of Geoscience and Technology, Southwest Petroleum University, Chengdu; 610500, China; (2) Dingbian Oilfield, Yanchang Oilfield Company, Yulin; 718600, China; (3) Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'An Shiyou University, Xi'an; 710065, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102200, China

Corresponding author: Yan, Qibin(yqb2640@sina.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 300
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Issue: 2
Issue title: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019 - Resource Exploration and Utilization, Geography and Geological Engineering
Issue date: August 9, 2019
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Document type: Conference article (CA)
Conference name: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019
Conference date: April 27, 2019 - April 28, 2019
Conference location: Ordos, China
Conference code: 150851
Publisher: IOP Publishing Ltd
Abstract: In Fanxue area of Ordos Basin, Chang 8 Oil Group has been in the development stage, the current development of more difficult and costly. In this paper, Chang 8 layers in this area are studied by using reservoir sedimentology, logging geology, petroleum geology, petrophysics, 3D reservoir modeling and numerical simulation and laboratory analysis techniques. The reservoir distribution pattern, remaining oil distribution pattern and well pattern optimization provide relevant technical results for the later development and provide guarantee for increasing reserves and production. © Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Petroleum reservoir engineering
Controlled terms: Metamorphic rocks - Proven reserves - Oil field development - 3D modeling - Low permeability reservoirs - Oil well logging - Petrophysics - Petroleum geology - Gasoline
Uncontrolled terms: Development stages - Laboratory analysis - Ordos Basin - Remaining oil - Remaining oil distribution - Reservoir distribution - Reservoir modeling - Well patterns
Classification code: 481.1 Geology - 481.1.2 Petrology (Before 1993, use code 482) - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 723.2 Data Processing and Image Processing
DOI: 10.1088/1755-1315/300/2/022089
Funding Details: Number: 18JS089,21808182, Acronym: -, Sponsor: -;
Funding text: This work is financially supported by the grants from Scientific Research Program Funded by Shaanxi ProvincialEducationDepartment(18JS089)andNationalScienceFoundationofChina(21808182).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

57. A "time-frozen" technique in microchannel used for the thermodynamic studies of DNA origami

Accession number: 20191006588041
Authors: Huang, Peng (1, 2); Wang, Jingwen (1); Jiao, Long (3); Gu, Dandan (1); Jiang, Shusen (1); Li, Mingpo (1); lv, Wenlong (1); Chen, Hong (1); Pei, Hao (4)
Author affiliation: (1) Pen-Tung Sah Institute of Micro-Nano Science and Technology, Xiamen University, Xiamen; 361005, China; (2) College of Chemisty and Chemical Engineering, Xiamen University, Xiamen; 361005, China; (3) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Shanghai Key Laboratory of Green Chemistry and Chemical Processes, School of Chemistry and Molecular Engineering, East China Normal University, Shanghai; 200241, China
Corresponding author: Chen, Hong(hongc@xmu.edu.cn)
Source title: Biosensors and Bioelectronics
Abbreviated source title: Biosens. Bioelectron.
Volume: 131

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Publication year: 2019
Pages: 224-231
Language: English
ISSN: 09565663
E-ISSN: 18734235
CODEN: BBIOE4
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The emergence of DNA origami greatly accelerated the development of DNA nanotechnology. A thorough understanding of origami thermodynamics is very important for both fundamental studies and practical applications. These thermodynamic transitions usually take place in several seconds or even less, and are very difficult to monitor by conventional methods. Numerous tests are required to characterize the origami molecule's behaviors at different temperatures, which is very labor-intensive and time-consuming. In this paper, an axially distributed temperature gradient along a capillary was formed in a spatially varying temperature field. In such a temperature gradient, the origami molecule's thermodynamic processes occur and remain stable at every position along the capillary's microchannel. It looks like the time of the thermodynamic process is frozen along the microchannel. With this method, the origami molecule's thermodynamic characteristics at different temperatures can be obtained in a single experiment, and rapid processes can be monitored with ease by conventional methods for an adequate time period at low cost. In order to show its potential abilities, this method has been demonstrated in applications which the origami's assembly, denaturation and strand displacement are carry out in a flowing or stationary solution. © 2019 Elsevier B.V.
Number of references: 49
Main heading: Microchannels
Controlled terms: Nanotechnology - DNA - Thermal gradients
Uncontrolled terms: Conventional methods - DNA nanotechnology - Fundamental studies - Origami - Stationary solutions - Thermodynamic characteristics - Thermodynamic process - Thermodynamic studies
Classification code: 461.2 Biological Materials and Tissue Engineering - 641.1 Thermodynamics - 761 Nanotechnology
DOI: 10.1016/j.bios.2019.02.012
Funding Details: Number: 2016H0036, Acronym: -, Sponsor: -; Number: JZ160404, Acronym: -, Sponsor: -; Number: 2017-ZJ-750, Acronym: -, Sponsor: -; Number: U1505243, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 14GHS016NF16, Acronym: -, Sponsor: Xiamen Southern Oceanographic Center;
Funding text: This research was supported by the National Natural Science Foundation of China (No. U1505243), the Key Project of College Youth Natural Fund of Fujian Province (No. JZ160404), the guiding project of Fujian Province of China (No. 2016H0036), the funding from Xiamen Southern Oceanographic Center (Grant 14GHS016NF16) and the funding from Qinghai Province of China (2017-ZJ-750). Thank to Yange Wang for his help in AFM scanning.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

58. Enhancing Energetic Performance of Multinuclear Ag(I)-Cluster MOF-Based High-Energy-Density Materials by Thermal Dehydration

Accession number: 20191106619649
Authors: Ma, Xiaohui (1); Cai, Chao (1); Sun, Wujuan (3); Song, Weiming (1); Ma, Yulong (1); Liu, Xiangyu (1); Xie, Gang (2); Chen, Sanping (2); Gao, Shengli (2)
Author affiliation: (1) State Key Laboratory of High-efficiency Coal Utilization and Green Chemical Engineering, College of Chemistry and Chemical Engineering, Ningxia University, Yinchuan; 750021, China; (2) Key Laboratory of Synthetic and Natural Functional Molecule Chemistry, Ministry of Education, College of Chemistry and Materials Science, Northwest University, Xi'an; 710069, China; (3) College of Chemistry and Chemical Engineering, Xi'An ShiYou University, Xi'an; 710065, China
Corresponding author: Liu, Xiangyu(xiangyuliu432@126.com)
Source title: ACS Applied Materials and Interfaces
Abbreviated source title: ACS Appl. Mater. Interfaces
Volume: 11
Issue: 9
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Publication year: 2019
Pages: 9233-9238

Language: English
ISSN: 19448244
E-ISSN: 19448252
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: It is an enormous challenge to construct high-energy-density materials meeting simultaneously requirements of high energy and excellent stability. In this work, the reaction of a Ag(I) ion with a nitrogen-rich ligand, 1H-tetrazole-5-acetic acid (H2tza), leads to a novel Ag7-cluster metal-organic framework, [Ag7(tza)3(Htza)2(H2tza)(H2O)] (1), with remarkable high-energy content, stability, and insensitivity. Dramatically, the heating-dehydrated process of 1 produces a new stable energetic material, [Ag7(tza)3(Htza)2(H2tza)] (1a), which features superior energy and undiminished safety performance compared to those of 1. © 2019 American Chemical Society.
Number of references: 27
Main heading: Silver compounds
Controlled terms: Dehydration - Organometallics - Crystalline materials
Uncontrolled terms: Ag clusters - Energetic properties - Energy content - High energy density materials - High energy materials - Safety performance - Tetrazoles - Thermal dehydration
Classification code: 802.2 Chemical Reactions - 804.1 Organic Compounds - 933.1 Crystalline Solids
DOI: 10.1021/acsami.9b00834
Funding Details: Number: NXYLXK2017A04, Acronym: -, Sponsor: -; Number: 21463020,21673180,21727805,21863009,GIP2018040,TJGC2018038, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by NSFC (21863009, 21463020, 21673180 and 21727805), the Third Batch of Ningxia Youth Talents Supporting Program (TJGC2018038), the Graduate Innovative Experiment (GIP2018040), and the National First-rate Discipline Construction Project of Ningxia (Chemical Engineering and Technology) (NXYLXK2017A04).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

59. A finite element approach for predicting the full resistance profile of a spudcan deeply penetrating in dense sand overlying clay

Accession number: 20191406732223
Authors: Zhao, Jun (1); Jang, Beom-Seon (2); Duan, Menglan (3); Liang, Congfu (4)
Author affiliation: (1) Department of Offshore Oil and Gas Engineering, College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China; (2) Research Institute of Marine Systems Engineering, Department of Naval Architecture and Ocean Engineering, Collage of Engineering, Seoul National University, Seoul, Korea, Republic of; (3) Institute for Ocean Engineering, China University of Petroleum, Beijing, China; (4) Natural Gas Department, Tarim Oilfield Company, PetroChina, Xinjiang, China
Corresponding author: Jang, Beom-Seon(seanjang@snu.ac.kr)
Source title: Applied Ocean Research
Abbreviated source title: Appl. Ocean Res.
Volume: 87
Issue date: June 2019
Publication year: 2019
Pages: 155-164
Language: English
ISSN: 01411187
CODEN: AOCRDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: This paper presents a finite element approach to calculate the full resistance profile of a spudcan deeply penetrating in dense sand overlying clay, in which a potential for an installing spudcan to experience a sudden uncontrolled punch-through failure exists. A modified Mohr-Coulomb model characterized by incorporating a four-phase variation of the mobilized strength and dilation parameters with an equivalent accumulated plastic strain is developed and tested for the overlying dense silica sand. An extended Tresca model is used for the strain softening of the underlying clay. A series of large deformation finite-element (LDFE) analyses are carried out, varying the strength and dilation parameters as well as the spudcan geometries. A fairly good performance of the present approach is verified by validating against groups of centrifuge tests data, allowing the numerical study to be extended

parametrically. The four-phase variation of the mobilized strength and dilation parameters involved in the progressive failure of the upper dense sand is parametrically studied and extended to cover the range of sand relative densities that are of practical interest. Additionally, comparisons with the typical existing LDFE analyses using both simple and sophisticated constitutive models are carried out. It shows that the present approach performs fairly well to calculate the full resistance profile of a spudcan deeply penetration in both thin and thick dense sand overlying clay, especially the peak and post-peak resistance, within around 5% of the corresponding centrifuge tests results. © 2019 Elsevier Ltd
Number of references: 29
Main heading: Failure (mechanical)
Controlled terms: Finite element method - Silica sand - Centrifuges - Silica
Uncontrolled terms: Dense sands - Finite-element approach - Large deformation finite elements - Mohr Coulomb model - Progressive failure - Punch-through - Resistance profiles - Spudcans
Classification code: 802.1 Chemical Plants and Equipment - 921.6 Numerical Methods
Numerical data indexing: Percentage 5.00e+00%
DOI: 10.1016/j.apor.2019.03.026
Funding Details: Number: 2/3,2016YFC0303708, Acronym: -, Sponsor: -; Number: 51609201, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: PES9470, Acronym: KRISO, Sponsor: Korea Research Institute of Ships and Ocean Engineering;
Funding text: The authors gratefully acknowledge the financial support provided by the National Natural Science Foundation of China (Grant No. 51609201) and the National Key Research and Development Plan (Grant No. 2016YFC0303708). This research was also supported by a grant from Endowment Project of "Study on the Core Technology of Structural Design, Engineering and Test for Establishment of Structural Evaluation System for Offshore Structure(2/3)" funded by Korea Research Institute of Ships and Ocean engineering (PES9470).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

60. Isothermal diffusion behavior and surface performance of Cu/Ni coating on TC4 alloy

Accession number: 20194907790469
Authors: Wang, Nan (1); Chen, Yong-Nan (1); Zhang, Long (1); Li, Yao (1); Liu, Shuang-Shuang (1); Zhan, Hai-Fei (2); Zhu, Li-Xia (3); Zhu, Shi-Dong (4); Zhao, Yong-Qing (5)
Author affiliation: (1) School of Materials Science and Engineering, Chang'an University, Xi'an; 710064, China; (2) School of Chemistry, Physics and Mechanical Engineering, Queensland University of Technology (QUT), Brisbane; QLD; 4001, Australia; (3) CNPC Tubular Goods Research Institute, Xi'an; 710017, China; (4) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (5) Northwest Institute for Nonferrous Metal Research, Xi'an; 710016, China
Corresponding author: Chen, Yong-Nan(frank_cyn@163.com)
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Abbreviated source title: Mater.
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Issue: 23
Issue date: December 1, 2019
Publication year: 2019
Article number: 3884
Language: English
E-ISSN: 19961944
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: The poor surface performance of titanium alloys substantially limits their application in many fields, such as the petrochemical industry. To overcome this weakness, the Cu and Ni double layers were deposited on the surface of TC4 alloy by the electroplating method, and the isothermal diffusion process was performed at 700 °C to enhance the binding ability between Cu and Ni layers. The isothermal diffusion behavior and microstructure of the coating were systematically analyzed, and tribological property and corrosion resistance of the coating were also evaluated to reveal the influence of isothermal diffusion on the surface performance. It was shown that multiple diffusion layers appeared on the Cu/Ni and Ni/Ti interface, and that NixTiy and CuxTiy phases were formed in the coating with the increase of diffusion time. More importantly, Kirkendall diffusion occurred when the diffusion time increased, which led to the formation of continuous microvoids and cracks in the diffusion layer, weakening the surface performance of the Cu/Ni coatings. This paper unveils the relationship between the microstructure of the Cu/Ni coatings and isothermal diffusion behavior, providing guidelines in preparing high performance surface coatings. © 2019 by the authors.
Number of references: 34

Main heading: Intermetallics
Controlled terms: Corrosion resistance - Corrosion resistant alloys - Copper alloys - Diffusion - Titanium alloys - Microstructure - Diffusion coatings - Corrosion resistant coatings - Isotherms - Binary alloys
Uncontrolled terms: Binding abilities - Diffusion layers - High performance surfaces - Isothermal diffusion - Micro voids - Petrochemical industry - Surface performance - Tribological properties
Classification code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 542.3 Titanium and Alloys - 544.2 Copper Alloys - 813.2 Coating Materials - 951 Materials Science
DOI: 10.3390/ma122333884
Funding Details: Number: 2019JLM-47, Acronym: -, Sponsor: -; Number: 2019JZ-27, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 300102319304, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported by Key projects of Shaanxi Natural Science Foundation (2019JZ-27) and Shaanxi Natural Science Basic Research Program-Shaanxi Coal (2019JLM-47), Fundamental Research Funds for the Central Universities CHD (300102319304).Funding: This work was supported by Key projects of Shaanxi Natural Science Foundation (2019JZ-27) and Shaanxi Natural Science Basic Research Program—Shaanxi Coal (2019JLM-47), Fundamental Research Funds for the Central Universities CHD (300102319304).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

61. Construction of homochiral alkaline-lanthanide heteronuclear helicates with Na+-selective bonding in the self-assembly process

Accession number: 20194207529337
Authors: Li, Ge (1); Wang, Li (2); Han, Qingxin (3); Liu, Weisheng (1)
Author affiliation: (1) Key Laboratory of Nonferrous Metals Chemistry and Resources Utilization of Gansu Province, State Key Laboratory of Applied Organic Chemistry, College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou; 730000, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) College of Bioresources Chemistry and Materials Engineering, Shaanxi University of Science and Technology, Xi'an; 710021, China
Corresponding author: Liu, Weisheng(liuws@lzu.edu.cn)
Source title: Dalton Transactions
Abbreviated source title: Dalton Trans.
Volume: 48
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Publication year: 2019
Pages: 14595-14599
Language: English
ISSN: 14779226
E-ISSN: 14779234
CODEN: DTARAF
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: A supramolecular approach to distinguish Na+ from other biologically important metal ions was demonstrated. By designing ligands reasonably, Na+-selective bonding was achieved in the construction of homochiral alkaline-lanthanide heteronuclear helicates, which was further confirmed by mixed-metal self-assembly experiments and 1H-NMR spectra. © 2019 The Royal Society of Chemistry.
Number of references: 30
Main heading: Rare earth elements
Controlled terms: Self assembly - Metal ions - Nuclear magnetic resonance spectroscopy
Uncontrolled terms: 1H-NMR spectra - Helicates - Heteronuclear - Homochiral - Mixed-metals - Self assembly process
Classification code: 531.1 Metallurgy - 547.2 Rare Earth Metals - 951 Materials Science
DOI: 10.1039/c9dt02483b
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

62. Corrosion fatigue crack propagation behavior of S135 high–strength drill pipe steel in H2S environment

Accession number: 20190306378843
Authors: Liu, Ming (1, 2); Luo, Sheji (3); Shen, Yi (3); lin, Xiuzhou (4)
Author affiliation: (1) State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (2) MOE Key Laboratory for Multifunctional Materials and Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Material Corrosion and Protection Key Laboratory of Sichuan Province, Sichuan University of Science and Engineering, Zigong; 643000, China
Corresponding author: Liu, Ming(liuming0313@xjtu.edu.cn)
Source title: Engineering Failure Analysis
Abbreviated source title: Eng. Fail. Anal.
Volume: 97
Issue date: March 2019
Publication year: 2019
Pages: 493-505
Language: English
ISSN: 13506307
CODEN: EFANEM
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Corrosion fatigue crack propagation (CFCP) tests were employed to investigate the behavior of S135 low carbon high-strength drill pipe steel under different strain rates in a simulated H2S containing drilling environment. Results revealed that the CFCP rate curve of the S135 steel has the characteristics of stress corrosion and corrosion fatigue (CF), which can be divided into near threshold, platform and rapid propagation zone. H2S has an obvious acceleration effect on the CFCP rate of S135 steel, the propagation rate of S135 steel in H2S solution is about 10 times more than that of in air. The stress ratio R has different effects on rapid propagation and near threshold zone. In the rapid propagation zone, the order of CFCP rate from high to low is R = 0.1 > R = 0.3 > R = 0.5, while the order of near threshold zone just shows the opposite. In the near threshold zone, the CFCP rate increases with the increasing of the stress ratio R. Based on the proposed Corrosion–Passivation–Fracture model and elastic fracture mechanics, the CFCP rate expression of S135 steel in H2S solution is [Formula presented]cf=1.927×109#K-6.151-R0.592, which can be used to predict the CFCP life in practical engineering. Fracture analysis results shows that the CFCP of S135 steel in H2S solution is mainly controlled by anodic dissolution and hydrogen embrittlement. © 2019 Elsevier Ltd
Number of references: 39
Main heading: Strain rate
Controlled terms: Hydrogen sulfide - Low carbon steel - Drills - Fatigue crack propagation - Pipeline corrosion - Corrosion fatigue - Drill pipe - Infill drilling - Steel corrosion
Uncontrolled terms: Acceleration effects - Anodic dissolution - Different effects - Drilling environment - Elastic fracture mechanics - Fracture analysis - Practical engineering - Stress corrosion
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 539.1 Metals Corrosion - 545.3 Steel - 603.2 Machine Tool Accessories - 804.2 Inorganic Compounds
DOI: 10.1016/j.engfailanal.2019.01.026
Funding Details: Number: 2015QN014, Acronym: -, Sponsor: -; Number: 51801149, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017 M620448, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2018CL16, Acronym: -, Sponsor: Material Corrosion and Protection Key Laboratory of Sichuan Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was supported by the National Natural Science Foundation of China (No. 51801149), the China Postdoctoral Science Foundation (No. 2017 M620448), the Opening Project of Material Corrosion and Protection Key Laboratory of Sichuan Province (No. 2018CL16) and Youth Science and Technology Innovation Fund of Xi'an Shiyou University (No. 2015QN014).This work was supported by the National Natural Science Foundation of China (No. 51801149), the China Postdoctoral Science Foundation (No. 2017 M620448), the Opening Project of Material Corrosion and Protection Key Laboratory of Sichuan Province (No. 2018CL16) and Youth Science and Technology Innovation Fund of Xi'an Shiyou University (No. 2015QN014).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

63. Analysis of the causes of tube and pipeline blocking in sulige gas field

Accession number: 20193607403184
Authors: Hangjuan, Huang (1); Cui, Xi (1); Zhang, Yuan (1); Xu, Jian (1); Ma, Yun (2, 3)
Author affiliation: (1) 6th Gas Production Plant of Changqing Oilfield Company, Xi'an, Shaanxi; 710003, China; (2) College of Petroleum Engineering, Shaanxi Province Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) Engineering Research Center of Development and Management for Low to Ultra-Low Permeability Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an, Shaanxi; 710065, China
Source title: Defect and Diffusion Forum
Abbreviated source title: Defect Diffus. Forum
Volume: 394 DDF
Part number: 1 of 1
Issue title: Materials Science: Properties and Technologies
Issue date: 2019
Publication year: 2019
Pages: 97-102
Language: English
ISSN: 10120386
E-ISSN: 16629507
CODEN: DDAFE7
Document type: Conference article (CA)
Conference name: 3rd International Conference on Material Science and Engineering Technology, ICMSET 2019
Conference date: March 15, 2019 - March 17, 2019
Conference location: Saipan, United states
Conference code: 230579
Publisher: Trans Tech Publications Ltd
Abstract: A large number of blockage appeared in gas wells and pipeline appeared, which caused plugging, corrosion and the increasing of wellbore pressure difference, and seriously affect the normal production of gas well of problems. In this paper, the water quality of produced water from the severe cases of single wells or pipeline water were analyzed, also include the composition of blockage and core with the chemical volumetric method (CVM), X-Ray Diffraction (XRD) and x-ray fluorescence (XFS) method. Meanwhile, the core powder was leached in simulated acid work solution, and then the leaching solution was analyzed with CVM. The experimental results show that The produced water has high salinity, high contents of Ca2+, Ba2+ and Sr2+, low pH value, which lead to corrosion and scaling. The main components of the blockage are acid insoluble strontium sulfate (barium) scale or corrosion product or mixture of corrosion and CaCO3 scaling product. Ca2+, Ba2+ and Sr2+ were easy to scale in wellbore or pipeline when they encountered other produced water from different formation. The Ca2+, Mg2+, Ba2+, Sr2+ and Fe 2+/3+ mainly derived from the dissolution of formation debris in formation water and working fluid (especially acidic working fluid) to reservoir rock, so the salinity of the produced water increased, and the trend of scaling and corrosion also increased with the gas field development. © 2019 Trans Tech Publications Ltd, Switzerland
Number of references: 7
Main heading: Pipelines
Controlled terms: Strontium compounds - Gas industry - Leaching - Produced Water - Calcium carbonate - Calcite - Chemical analysis - Oil field equipment - Sulfur compounds - Water quality - Pipeline corrosion
Uncontrolled terms: Blockage - Corrosion products - Gas field development - Scaling - Strontium sulfate - Volumetric methods - Wellbore pressure - X ray fluorescence
Classification code: 445.2 Water Analysis - 452.3 Industrial Wastes - 482.2 Minerals - 511.2 Oil Field Equipment - 522 Gas Fuels - 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds
DOI: 10.4028/www.scientific.net/DDF.394.97
Funding Details: Number: 51504193, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 15JS090, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: The authors are grateful for financial support from National Natural Science Foundation of China (51504193) and Key laboratory Research Project of Shaanxi Education Department (15JS090) .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

64. Application of Acidizing and Plugging Removal Technology in Chang 2 Reservoir of CH Oilfield (*Open Access*)

Accession number: 20193207287910
Authors: Song, Shaofu (1); Deng, Fang (2); Yun, Bo (3); Li, Jinling (1, 4); Chen, Gang (1, 4)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Shaanxi Prov. Key Lab. of Environ. Poll. Control and Reservoir Protection Technology of Oilfields, Xi'An Shiyou University, Xi'an, China; (2) Linan Middle School, Hangzhou, China; (3) Oil Production Plant No. 11, PetroChina Changqing Oilfield Company, Xi'an, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing, China
Corresponding author: Chen, Gang
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 252
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Issue: 4
Issue title: 2018 4th International Conference on Environmental Science and Material Application - Environmental Engineering and Technology
Issue date: July 9, 2019
Publication year: 2019
Article number: 042101
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Environmental Science and Material Application, ESMA 2018
Conference date: December 15, 2018 - December 16, 2018
Conference location: Xi'an, China
Conference code: 149894
Publisher: IOP Publishing Ltd
Abstract: In view of the serious scale and blockage in Chang 2 reservoir of a certain oil production plant, in recent years, based on the scientific and technological project "Acidification technology test of Chang 2 reservoir in XX-YY District" completed in 2013, a series of blockage removal workers suited to different blockage characteristics in this area have been formed by studying and analyzing a large number of indoor data, optimizing the acidification formula. The dosage of additives is increased, thus protecting oil pipes, rods and pumps, and preventing new pollution caused by precipitation of Ca2+, Mg2+. In view of the specific situation of reservoir blockage, 222 wells have been carried out with various blockage removal measures, such as compound acidification, blockage removal and so on. The cumulative oil increase is 7894.8 tons, with an average of 38.7 tons per well, which has made a positive contribution to the stable production of oil production plants. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Acidification
Controlled terms: Petroleum reservoir engineering - Additives
Uncontrolled terms: Acidizing - Oil pipes - Oil production - Technological projects
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals - 822.2 Food Processing Operations
Numerical data indexing: Mass 3.51e+04kg, Mass 7.16e+06kg
DOI: 10.1088/1755-1315/252/4/042101
Funding Details: Number: 18JC025, Acronym: -, Sponsor: -; Number: 21808182, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The work was supported financially by National Science Foundation of China (21808182) and Scientific Research Program of Shaanxi Provincial Education Department (18JC025).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

65. Reservoir characteristics and forming controls of intrusive-metamorphic reservoir complex: A case study on the diabase-metamudstone rocks in the Gaoyou sag, eastern China

Accession number: 20184406011776
Authors: Liu, Chao (1, 2, 3, 4); Gu, Liang (5); Wang, Jian (3); si, Shanghua (1)
Author affiliation: (1) College of Geosciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Key Laboratory of Sedimentary Basin and Oil and Gas Resources, Ministry of Land and Resources, Chengdu; 610081, China; (3) Chengdu Center, China Geological Survey, Chengdu; 610081, China; (4) Key Laboratory of Tectonics and Petroleum Resources (China University of Geosciences), Ministry of Education, Wuhan; 430074, China; (5) Changqing Industrial Group, Changqing Oilfield Company, PetroChina, Xi'an; Shaanxi; 710065, China
Corresponding author: Liu, Chao(liuchao_xsyu@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 173
Issue date: February 2019
Publication year: 2019
Pages: 705-714
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Hydrocarbon reservoirs associated with magmatic intrusion have significance in expanding hydrocarbon exploration. However, this type of reservoir is rarely documented in previous studies. Taking the diabases and their contact metamudstones from the Funing Formation, northern slope of the Gaoyou sag, as study objectives, the current work mainly investigated lithofacies, reservoir porosities and properties, and C, O isotopes of intrusive diabases and/or contact metamudstones, aiming to unravel reservoir characteristics and forming controls of diabase and metamudstones. After diabase intrusion, four lithofacies, i.e., diabase center, diabase margins, slates, and hornfels, were formed. Meanwhile, various porosity types were developed, including primary vesicles, grain-dissolved micropores, contractive micropores, cooling fractures, and structural fractures in the diabases, and recrystallizational and matrix-dissolved micropores, hydrothermal and contractive microfractures, and structural fractures in the contact metamudstones. Controls on diabase reservoir development include uneven cooling, dissolution, authigenic minerals filling, and structural movements. For contact metamudstone reservoirs, the forming controls include physical fracturing, hydrothermal baking, and authigenic carbonate dissolution. The controlling factors exerted diverse influences on reservoir properties with respect to different parts in contact metamudstones or diabase, thus causing obvious heterogeneity regarding to reservoir quality, i.e., hornfelses and diabase margins exhibiting preferable reservoir properties than slates and diabase center, respectively. Finally, an evolutional model depicting the forming process of diabase-metamudstone reservoir complex was tentatively proposed. © 2018 Elsevier B.V.
Number of references: 37
Main heading: Dissolution
Controlled terms: Fracture - Quality control - Hydrocarbons - Microporosity - Petroleum prospecting - Metamorphic rocks
Uncontrolled terms: Authigenic carbonates - Diabase intrusion - Funing formation - Hydrocarbon exploration - Hydrocarbon reservoir - Reservoir characteristic - Reservoir development - Structural movements
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations - 804.1 Organic Compounds - 913.3 Quality Assurance and Control - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.petrol.2018.10.063
Funding Details: Number: TPR-2018-05, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China; Number: cdcgs2018004, Acronym: MLR, Sponsor: Ministry of Land and Resources of the People's Republic of China; Number: -, Acronym: KLTPR MEPRC, Sponsor: Key Laboratory of Tectonics and Petroleum Resources, Ministry of Education, China;
Funding text: This study is supported by Open Funding Projects of Key Laboratory of Sedimentary Basin and Oil and Gas Resources , Ministry of Land and Resources, China (Grant No.: cdcgs2018004) and Key Laboratory of Tectonics and Petroleum Resources, Ministry of Education (Grant No.: TPR-2018-05), China. The authors are grateful to Dr. Patricia Sruoga for her valuable advice in improving our manuscript.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

66. Robotic slag offloading and process improvement of magnesium smelting in pidgeon process with faster region-based convolutional neural network (*Open Access*)

Accession number: 20192607123109
Authors: Hua, Jin (1, 2); He, Lile (1); Yan, Keding (2); Wang, Min (3)
Author affiliation: (1) College of Mechanical Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China; (2) College of Electronic Information Engineering, Xi'an Technological University, Xi'an; 710021, China; (3) College of Electronic Engineering, Xi'an Petroleum University, Xi'an; 710065, China
Corresponding author: Hua, Jin(huahua_dz@aliyun.com)
Source title: International Journal of Heat and Technology
Abbreviated source title: Int. J. Heat Technol.
Volume: 37
Issue: 1
Issue date: March 2019
Publication year: 2019
Pages: 345-350
Language: English
ISSN: 03928764
CODEN: HETEEE
Document type: Journal article (JA)
Publisher: International Information and Engineering Technology Association
Abstract: This paper attempts to replace the traditional manual slag offloading of magnesium smelting in Pidgeon process with robotic slag removal. Specifically, the high-temperature infrared dot matrix was used to measure the slag positions indirectly; the faster region-based convolutional neural network (Faster R-CNN) was trained with thermal image of the reduction jar as the dataset; the isothermal image of the reduction jar was plotted based on the slag centers, and adopted to detect the opening direction of the jar and the slag positions. The indirect measurement results show that the actual internal temperature of the jar can be detected accurately through repeated experiments, with an error of less than 10°C. Finally, the proposed method was verified through a case study on 1,000 images. The results show that our model can correctly identify more than 90% of crude magnesium in the actual jar.
Number of references: 20
Main heading: Slags
Controlled terms: Convolution - Neural networks - Robotics
Uncontrolled terms: High temperature - Indirect measurements - Internal temperature - Magnesium smelting - Pidgeon process - positioning - Process Improvement - Region-based
Classification code: 716.1 Information Theory and Signal Processing - 731.5 Robotics
Numerical data indexing: Temperature 2.83e+02K, Percentage 9.00e+01%
DOI: 10.18280/ijht.370141
Funding Details: Number: GY2017-027, Acronym: -, Sponsor: Shaanxi Provincial Science and Technology Department; Number: 11804263, Acronym: -, Sponsor: National Social Science Fund Youth Project; Number: 6142109KF2018, Acronym: -, Sponsor: Open Fund of Key Laboratory of Sediment Research;
Funding text: This paper was supported by Shaanxi provincial science and Technology Department's industrial field funding (GY2017-027); National sonar Key Laboratory Open Fund (6142109KF2018) National Fund Youth Project (11804263).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

67. Automatic events extraction in pre-stack seismic data based on edge detection in slant-stacked peak amplitude profiles (*Open Access*)

Accession number: 20191306699615
Authors: Zhao, Jing (1); Ren, Jinchang (2, 5); Gao, Jinghuai (3); Tschannerl, Julius (2); Murray, Paul (2); Wang, Daxing (4)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an, China; (2) Department of Electronic and Electrical Engineering, University of Strathclyde, Glasgow, United Kingdom; (3) Institute of Wave and Information, School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China; (4)

Research Institute of E & D, Changqing Oil-Field Company of CNPC, Xi'an, China; (5) College of Electrical and Power Engineering, Taiyuan University of Technology, Taiyuan, China
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: 178
Issue date: July 2019
Publication year: 2019
Pages: 459-466
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: — Events picking is one of the fundamental tasks in interpreting seismic data. To extract the correct travel-time of reflected waves, picking events in a wide range of source-receiver offsets is needed. Compared to post-stack seismic data, pre-stack seismic data has an accurate horizon and abundant travel-time, amplitude, and frequency while the waveform of post-stack data is damaged by normal move-out (NMO) applications. In this paper, we focus on automatic event extraction from pre-stack reflection seismic data. With the deep development of oil-gas exploration, the difficulty of petroleum exploration is being increased. Auto recognition and picking of seismic horizon is presented as the basis for oil-gas detection. There is a correspondence between the real geology horizon and events of seismic profiles. As a result, firstly, recognizing and tracing continuous events from real seismic records are needed to acquire significant horizon locations. Picking events is in this context the recognition and tracing of waves reflected from the same interfaces according to kinematics and dynamic characteristics of seismic waves. Current extraction algorithms are well able to trace these events of the seismic profile and are undergoing great development and utilization. In this paper, a method is proposed to pick travel-time and local continuous events based on edges obtained by slant-stacked peak amplitude section (SSPA). How to calculate the SSPA section is discussed in detail. The new method can improve the efficiency and accuracy without windowing and manual picking of seed points. The event curves obtained from both the synthetic layered model and field record have validated the high accuracy and efficiency of the proposed methodology. © 2019 Elsevier B.V.
Number of references: 28
Main heading: Seismic waves
Controlled terms: Efficiency - Extraction - Metadata - Petroleum prospecting - Seismic prospecting - Radon - Seismic response - Edge detection
Uncontrolled terms: Current extraction - Development and utilizations - Event extraction - Kinematics and dynamics - Petroleum exploration - Pre-stack seismic data - Radon transformations - Reflection data
Classification code: 481.4 Geophysical Prospecting - 484 Seismology - 484.1 Earthquake Measurements and Analysis - 484.2 Secondary Earthquake Effects - 512.1.2 Petroleum Deposits : Development Operations - 622.1 Radioactive Materials, General - 802.3 Chemical Operations - 804 Chemical Products Generally - 913.1 Production Engineering
DOI: 10.1016/j.petrol.2019.03.062
Funding Details: Number: 41604113, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 41711530128, Acronym: -, Sponsor: Natural Science Foundation of Hubei Province;
Funding text: This work is partially supported by the National Natural Science Foundation of China (41604113), National Nature Science Foundation Project of International Cooperation (41711530128), National Innovation and Entrepreneurship Training Program for College Students (201810705050), and Shanxi Hundred Talent Plan Project. We also thank Changqing oilfield for their field data.
Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

68. Mechanism of pluggings removal by hydraulic pulse wave assisted with desorption reagent in asphaltene plugged formation

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Title of translation:
Authors: He, Yanlong (1, 2); Dong, Qiaoling (3); Jing, Cheng (1, 2); Gu, Xiaoyu (1, 2); Dong, Hao (4); Ren, Long (1, 2); Yang, Jianxuan (5)

Author affiliation: (1) School of Petroleum Engineering in Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an; 710065, China; (3) Oil Production Engineering Institute of PetroChina Daqing Oilfield Company Limited, Daqing; 163453, China; (4) College of Chemistry and Environmental Engineering in Yangtze University, Jingzhou; 434023, China; (5) No.3 Oil Production Company of PetroChina Qinghai Oilfield Company Limited, Haixi; 816400, 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)
Volume: 43
Issue: 4
Issue date: August 20, 2019
Publication year: 2019
Pages: 106-118
Language: Chinese
ISSN: 16735005
Document type: Journal article (JA)
Publisher: University of Petroleum, China
Abstract: The adsorption model of asphaltene adsorbed on different kinds of minerals was investigated. And the technical parameters of the hydraulic pulse wave assisted with the desorption reagent were optimized by the orthogonal test (desorption reagent concentration, magnitude of the hydraulic pulse wave, action time, desorption time and pulse frequency). Based on the optimum technical parameters, the adsorption behavior and the kinetics of asphaltene adsorbed on different kinds of minerals, and the desorption behavior and the kinetics of the hydraulic pulse wave assisted with the desorption reagent were studied. The results show that the montmorillonite, chlorite and kaolinite control the adsorption-desorption process of asphaltene. The double constant rate equation and Elovich equation reflect the process of hydraulic pulse wave assisted with desorption reagent well. Compared with the higher concentration of the desorption reagent, the anxo-action of the hydraulic pulse wave are significant under the lower concentration of the desorption reagent. During the early period of the synergistic action by the hydraulic pulse wave and the desorption reagent, desorption effects are promoted by the hydraulic pulse wave, however, the overall effects are dominated by the chemical desorption agent.
Number of references: 36
Main heading: Desorption
Controlled terms: Asphaltenes - Kaolinite - Adsorption - Kinetics
Uncontrolled terms: Adsorption behavior - Adsorption kinetics - Adsorption-desorption process - Chemical desorption - Desorption behavior - Desorption kinetics - Hydraulic pulse - Reagent concentration
Classification code: 482.2 Minerals - 513 Petroleum Refining - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 931 Classical Physics; Quantum Theory; Relativity
DOI: 10.3969/j.issn.1673-5005.2019.04.013
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

69. Vibration sensing based on macrobending loss in a standard single mode fiber loop structure

Accession number: 20185206316833
Authors: Wang, XiangYu (1, 3); Qiao, XueGuang (2); Yu, DaKuan (1, 3); Gao, Hong (3)
Author affiliation: (1) Northwestern Polytechnical University, The School of Science, Shanxi Key Laboratory of Optical Information Technology, 127 West Youyi Road, Berlin District, Xi'an; 710072, China; (2) Northwest University, Department of Physics, No. 229, Taibai Road, Beilin District, Xi'an; 710069, China; (3) Xi'an Shiyou University, Ministry of Education Key Laboratory on Photoelectric Oil-gas Logging and Detecting, Dianzi 2nd Road, Yanta District, Xi'an; 710065, China
Corresponding author: Qiao, XueGuang(xgqiao@nwu.edu.cn)
Source title: Optical Fiber Technology
Abbreviated source title: Opt. Fiber Technol.
Volume: 48
Issue date: March 2019
Publication year: 2019
Pages: 95-98

Language: English
ISSN: 10685200
CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A new optical fiber sensor for vibration measurement has been proposed and demonstrated. This paper realizes vibration sensing based on the macrobending loss in a standard single-mode fiber loop. The experiments shows the suggested sensor enable us to measure multi-frequency vibrations with the resolution as high as 0.04 Hz. The crosstalk between temperature and vibration can be ignored because the macrobending loss is insensitive to the ambient temperature. © 2018 Elsevier Inc.
Number of references: 24
Main heading: Fiber optic sensors
Controlled terms: Vibration measurement - Single mode fibers - Ventilation exhausts
Uncontrolled terms: Bend loss - Macro-bending loss - Multi-frequency vibrations - Standard single mode fibers - Vibration sensing - Vibration sensors
Classification code: 619.1 Pipe, Piping and Pipelines - 643.5 Ventilation - 741.1.2 Fiber Optics - 943.2 Mechanical Variables Measurements
Numerical data indexing: Frequency 4.00e-02Hz
DOI: 10.1016/j.yofte.2018.12.024
Funding Details: Number: 2016ZX05019007-01, Acronym: -, Sponsor: -; Number: 61327012,61605159,61735014, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 08JZ58, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2017YFB0405502, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China; Number: -, Acronym: -, Sponsor: Science and Technology Project of Nantong City;
Funding text: This work is supported by the National Natural Science Foundation of China (Nos. 61327012 , 61735014 , 61605159), National Key Research and Development Plan of China , Key strategic advanced electronic materials (No. 2017YFB0405502), National Science and Technology Project, Large Oil and Gas Field and Coal Bed Gas Development Project (No. 2016ZX05019007-01), Scientific Research Program Funded by Shananxi Provincial Education Department (Program No. 08JZ58).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

70. Investigations on the mechanical properties and three-body wear behavior of pure Fe2B intermetallic with different chromium additions

Accession number: 20184305987726
Authors: Jian, Yongxin (1, 2); Huang, Zhifu (1); Xing, Jiandong (1); Sun, Liang (3); Gao, Yimin (1); Zheng, Qiaoling (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, No. 28, Xianning West Road, Xi'an; Shaanxi Province; 710049, China; (2) School of Engineering Technology, Purdue University, 401 North Grant Street, West Lafayette; IN; 47907, United States; (3) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Jian, Yongxin(yxjianxjtu@163.com)
Source title: Wear
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Issue date: 15 January 2019
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Language: English
ISSN: 00431648
CODEN: WEARAH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The effects of chromium on the mechanical properties and three-body abrasive wear behavior of pure Fe2B intermetallic are investigated in this work. The results show that, with chromium addition from 0 to 4.88 wt %, the fracture toughness of pure Fe2B sample initially increases to the highest value of 7.06 MPa m1/2, and then decreases. The fracture toughness was improved by approximately 161.4% with chromium addition of 4.07 wt%. Simultaneously, with the increment of chromium addition, the wear mass loss decreases and then increases in case of

both SiC and SiO2 abrasives. Through systematical analysis of the wear surface and subsurface, it can be found that fracture toughness plays a dominant role in reducing the wear mass loss. Specific wear mechanisms are also explicitly discussed. © 2018 Elsevier B.V.
Number of references: 46
Main heading: Fracture toughness
Controlled terms: Abrasives - Chromium - Iron compounds - Silica - Intermetallics - Silicon carbide - Abrasion - Iron alloys - Silicon alloys
Uncontrolled terms: Chromium additions - Intermetallic alloys - Systematical analysis - Three body wear - Three-body abrasive wear behaviors - Wear behaviors - Wear mechanisms - Wear surface
Classification code: 531.1 Metallurgy - 543.1 Chromium and Alloys - 545.2 Iron Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 606.1 Abrasive Materials - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Percentage 1.61e+02%
DOI: 10.1016/j.wear.2018.10.011
Funding Details: Number: -, Acronym: CSC, Sponsor: China Scholarship Council; Number: 2015B090926009, Acronym: -, Sponsor: Science and Technology Planning Project of Guangdong Province; Number: 201604046009, Acronym: -, Sponsor: -; Number: 51371138, Acronym: -, Sponsor: -;
Funding text: This work was supported by the National Natural Science Foundations of China (Grant No: 51571159 and 51371138), China Scholarship Council , the Science and Technology Project of Guangdong Province in China (2015B090926009) and the Science and Technology Project of Guangzhou City in China (201604046009).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

71. Pore-scale direct numerical simulation of particle transport in porous media (*Open Access*)

Accession number: 20190806521855
Authors: Su, Junwei (1); Chai, Guoliang (1); Wang, Le (2); Cao, Weidong (3); Gu, Zhaolin (1); Chen, Chungang (4); Xu, Xiao Yun (5)
Author affiliation: (1) School of Human Settlement and Civil Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710049, China; (3) Research Institute of Exploration and Development, Shengli Oilfield Company, Sinopec Group, Dongying; 257015, China; (4) School of Aerospace & State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (5) Department of Chemical Engineering, Imperial College London, London; SW7 2AZ, United Kingdom
Corresponding author: Chen, Chungang(cgchen@mail.xjtu.edu.cn)
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Abbreviated source title: Chem. Eng. Sci.
Volume: 199
Issue date: 18 May 2019
Publication year: 2019
Pages: 613-627
Language: English
ISSN: 00092509
CODEN: CESCAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: A computational platform for direct numerical simulation of fluid-particle two-phase flow in porous media is presented in this study. In the proposed platform, the Navier-Stokes equations are used to describe the motion of the continuous phase, while the discrete element method (DEM) is employed to evaluate particle-particle and particle-wall interactions, with a fictitious domain method being adopted to evaluate particle-fluid interactions. Particle-wall contact states are detected by the ERIGID scheme. Moreover, a new scheme, namely, base point-increment method is developed to improve the accuracy of particle tracking in porous media. In order to improve computationally efficiency, a time splitting strategy is applied to couple the fluid and DEM solvers, allowing different time steps to be used which are adaptively determined according to the stability conditions of each solver. The proposed platform is applied to particle transport in a porous medium with its pore structure being reconstructed from micro-CT scans from a real rock. By incorporating the effect of pore structure which has a comparable size to the particles, numerical results reveal a number of distinct microscopic flow mechanisms and the corresponding macroscopic characteristics. The

time evolution of the inlet to outlet pressure-difference consists of large-scale spikes and small-scale fluctuations. Apart from the influence through direct contacts between particles, the motion of a particle can also be affected by particles without contact through blocking a nearby passage for fluid flow. Particle size has a profound influence on the macroscopic motion behavior of particles. Small particles are easier to move along the main stream and less dispersive in the direction perpendicular to the flow than large particles. © 2019 Elsevier Ltd
Number of references: 49
Main heading: Finite difference method
Controlled terms: Pore structure - Numerical methods - Particle size - Computerized tomography - Direct numerical simulation - Navier Stokes equations - Two phase flow - Particle separators - Numerical models - Simulation platform - Transport properties
Uncontrolled terms: Computational platforms - Different time steps - Fictitious domain method - Fluid particles - Particle-fluid interaction - Particle-wall contacts - Particle-wall interactions - Pore scale
Classification code: 631.1 Fluid Flow, General - 723.5 Computer Applications - 921 Mathematics - 921.2 Calculus - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.ces.2019.01.033
Funding Details: Number: 2016ZX05011003, Acronym: -, Sponsor: -; Number: 21306145, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

72. Simulation of InP/In0.53Ga0.47As/InP infrared photocathode with high quantum yield

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Title of translation: InP/In0.53Ga0.47As/InP
Authors: Zhou, Zhenhui (1, 2, 3); Xu, Xiangyan (1, 3); Liu, Hulin (1, 3); Li, Yan (4); Lu, Yu (1, 3); Qian, Sen (5, 6); Wei, Yonglin (1, 3); He, Kai (1, 3); Sai, Xiaofeng (1, 3); Tian, Jinshou (1, 3); Chen, Ping (1, 3)
Author affiliation: (1) Xi'an Institute of Optics and Precision Mechanics of Chinese Academy of Sciences, Xi'an; 710119, China; (2) University of Chinese Academy of Sciences, Beijing; 100049, China; (3) Key Laboratory of Ultra-fast Photoelectric Diagnostics Technology of Chinese Academy of Sciences, Xi'an; 710119, China; (4) Shool of Science, Xi'an Shiyou University, Xi'an; 710065, China; (5) Institute of High Energy Physics, Chinese Academy of Sciences, Beijing; 100049, China; (6) State Key Laboratory of Particle Detection and Electronics, Beijing; 100049, China
Source title: Hongwai yu Jiguang Gongcheng/Infrared and Laser Engineering
Abbreviated source title: Hongwai yu Jiguang Gongcheng Infrared Laser Eng.
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Publication year: 2019
Article number: 0221002
Language: Chinese
ISSN: 10072276
Document type: Journal article (JA)
Publisher: Chinese Society of Astronautics
Abstract: An InP/In0.53Ga0.47As/InP infrared photocathode model was established. The In0.53Ga0.47As absorber layer was designed as a multi-layer structure, the impurities of it were exponentially distributed by doping with different concentrations of the thin layers. The one-dimensional continuity equations and boundary conditions of the photoelectron in the absorber layer and the emissive layer were given and the probability that photoelectrons overcome the launch of the active layer barrier into the vacuum was calculated. The effects of absorber layer thickness, doping concentration and cathode bias voltage on the internal quantum efficiency of the cathode was simulated under the condition of picosecond response time, and then the law of the external quantum yield of the cathode was obtained with the above three factors. The results show that, when the doping concentration of the absorber layer changes within the range of 1015-1018 cm-3, The internal quantum efficiency change is very small; as the thickness of the absorber layer increases within 0.09-0.81 μm, the internal quantum efficiency increases. As the external bias voltage increases, the internal quantum efficiency increases first and then tends to be stable. A set of cathode design parameters that could achieve both high quantum efficiency and fast time response were presented. Theoretically, an

external quantum yield of 8.4% can be obtained for 1.55 μm incident light, and the response time is 49 ps.
Number of references: 23
Main heading: Indium phosphide
Controlled terms: III-V semiconductors - Bias voltage - Gallium alloys - Infrared devices - Photocathodes - Photons - Semiconducting indium phosphide - Incident light - Photoelectrons - Semiconductor alloys - Quantum efficiency - Quantum yield
Uncontrolled terms: Absorber layers - Continuity equations - Doping concentration - High quantum efficiency - Internal quantum efficiency - Multilayer structures - Picosecond response - Voltage increase
Classification code: 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 711 Electromagnetic Waves - 712.1 Semiconducting Materials - 712.1.2 Compound Semiconducting Materials - 713 Electronic Circuits - 714.1 Electron Tubes - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
Numerical data indexing: Percentage 8.40e+00%, Size 1.55e-06m, Size 9.00e-08m to 8.10e-07m, Time 4.90e-11s
DOI: 10.3788/IRLA201948.0221002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

73. Study on the thermal conductivity characteristics for ultra-thin body FD SOI MOSFETs based on phonon scattering mechanisms (*Open Access*)

Accession number: 20193407357525
Authors: Zhang, Guohe (1); Lai, Junhua (1); Su, Yali (2); Li, Binhong (3, 4); Li, Bo (3, 4); Bu, Jianhui (3, 4); Yang, Cheng-Fu (5)
Author affiliation: (1) School of Microelectronics, Xi'an Jiaotong University, Xi'an, Shaanxi; 710049, China; (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) Institute of Microelectronics of Chinese Academy of Sciences, Beijing; 100029, China; (4) Key Laboratory of Silicon Device Technology, Chinese Academy of Sciences, Beijing; 100029, China; (5) Department of Chemical and Materials Engineering, National University of Kaohsiung, No. 700, Kaohsiung University Rd., Nan-Tzu District, Kaohsiung; 811, Taiwan
Corresponding author: Bu, Jianhui(bujianhui@ime.ac.cn)
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Issue date: August 1, 2019
Publication year: 2019
Article number: 2601
Language: English
E-ISSN: 19961944
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: The silicon-on-insulator (SOI) metal-oxide-semiconductor field-effect transistors (MOSFETs) suffer intensive self-heating effects due to the reduced thermal conductivity of the silicon layer while the feature sizes of devices scale down to the nanometer regime. In this work, analytical models of thermal conductivity considering the self-heating effect (SHE) in ultra-thin body fully depleted (UTB-FD) SOI MOSFETs are presented to investigate the influences of impurity, free and bound electrons, and boundary reflection effects on heat diffusion mechanisms. The thermal conductivities of thin silicon films with different parameters, including temperature, depth, thickness and doping concentration, are discussed in detail. The results show that the thermal dissipation associated with the impurity, the free and bound electrons, and especially the boundary reflection effects varying with position due to phonon scattering, greatly suppressed the heat loss ability of the nanoscale ultra-thin silicon film. The predictive power of the thermal conductivity model is enhanced for devices with sub-10-nm thickness and a heavily doped silicon layer while considering the boundary scattering contribution. The absence of the impurity, the electron or the boundary scattering leads to the unreliability in the model prediction with a small coefficient of determination. © 2019 by the authors.
Number of references: 36
Main heading: Phonons

Controlled terms: Metals - Electron scattering - Finite difference method - Thermal conductivity - Electrons - MOS devices - Metallic films - Oxide semiconductors - MOSFET devices - Phonon scattering - Semiconductor doping - Silicon on insulator technology
Uncontrolled terms: Coefficient of determination - Heat diffusions - Phonon-scattering mechanisms - Self-heating effect - Silicon-on- insulators (SOI) - SOI-MOSFETs - Thermal conductivity model - Ultra-thin body FD SOI MOSFETs
Classification code: 641.1 Thermodynamics - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 921.6 Numerical Methods
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Open Access type(s): All Open Access, Gold, Green
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Data Provider: Engineering Village

74. Machine learning allows calibration models to predict trace element concentration in soil with generalized LIBS spectra

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Authors: Sun, Chen (1); Tian, Ye (2); Gao, Liang (1); Niu, Yishuai (3, 4); Zhang, Tianlong (5); Li, Hua (5, 6); Zhang, Yuqing (1); Yue, Zengqi (1); Delepine-Gilon, Nicole (4); Yu, Jin (1)
Author affiliation: (1) School of Physics and Astronomy, Shanghai Jiao Tong University, Shanghai; 200240, China; (2) Optics and Optoelectronics Laboratory, Ocean University of China, Qingdao; 266100, China; (3) School of Mathematics, Shanghai Jiao Tong University, Shanghai; 200240, China; (4) SJTU-Paristech Elite Institute of Technology, Shanghai Jiao Tong University, Shanghai; 200240, China; (5) College of Chemistry & Material Science, Northwest University, Xi'an; 710069, China; (6) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yu, Jin(jin.yu@sjtu.edu.cn)
Source title: arXiv
Abbreviated source title: arXiv
Issue date: February 13, 2019
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Language: English
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Publisher: arXiv
Abstract: Calibration models have been developed for determination of trace elements, silver for instance, in soil using laser-induced breakdown spectroscopy (LIBS). The major concern is the matrix effect. Although it affects the accuracy of LIBS measurements in a general way, the effect appears accentuated for soil because of large variation of chemical and physical properties among different soils. The purpose is to reduce its influence in such way an accurate and soil-independent calibration model can be constructed. At the same time, the developed model should efficiently reduce experimental fluctuations affecting measurement precision. A univariate model first reveals obvious influence of matrix effect and important experimental fluctuation. A multivariate model has been then developed. A key point is the introduction of generalized spectrum where variables representing the soil type are explicitly included. Machine learning has been used to develop the model. After a necessary pretreatment where a feature selection process reduces the dimension of raw spectrum accordingly to the number of available spectra, the data have been fed in to a back-propagation neuronal networks (BPNN) to train and validate the model. The resulted soil-independent calibration model allows average relative error of calibration (REC) and average relative error of prediction (REP) within the range of 5-6%.
Number of references: 44
Main heading: Soils
Controlled terms: Atomic emission spectroscopy - Backpropagation - Laser induced breakdown spectroscopy - Matrix algebra - Neurons - Trace elements
Uncontrolled terms: Average relative error - Calibration model - Chemical and physical properties - Developed model - Different soils - Matrices effect - Measurement precision - Spectra's - Trace elements concentration - Traces elements

Classification code: 461.9 Biology - 483.1 Soils and Soil Mechanics - 723.4 Artificial Intelligence - 921.1 Algebra - 931.1 Mechanics
Numerical data indexing: Percentage 5.00E+00% to 6.00E+00%
Compendex references: YES
Preprint ID: 1906.08597
Preprint source website: https://arxiv.org
Preprint ID type: ARXIV
Database: Compendex
Data Provider: Engineering Village

75. Composite plugging removal technology and application in low permeability oilfield

Accession number: 20193607403170
Authors: Deng, Qiang (1); Liu, Man (2); Lu, Xiao (2); Xuangang, Meng (3); Li, Jinling (1, 4); Chen, Shijun (1); Chen, Gang (1, 4)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Shaanxi Province Key Laboratory of Environmental Pollution Control and Reservoir Protection Technology of Oilfields, Xi'an Shiyou University, Xi'an, China; (2) Oil Production Plant No. 11, PetroChina Changqing Oilfield Company, Xi'an, China; (3) Qilicun Oil Production Plant, Yanchang Oilfield Company, Yan'an, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing, China
Corresponding author: Chen, Gang(gangchen@xsyu.edu.cn)
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Abbreviated source title: Defect Diffus. Forum
Volume: 394 DDF
Part number: 1 of 1
Issue title: Materials Science: Properties and Technologies
Issue date: 2019
Publication year: 2019
Pages: 9-13
Language: English
ISSN: 10120386
E-ISSN: 16629507
CODEN: DDAFE7
Document type: Conference article (CA)
Conference name: 3rd International Conference on Material Science and Engineering Technology, ICMSET 2019
Conference date: March 15, 2019 - March 17, 2019
Conference location: Saipan, United states
Conference code: 230579
Publisher: Trans Tech Publications Ltd
Abstract: In an oilfield factory, the blocking and jam in Chang 2 reservoir is very serious. In recent years, according to analysizing different plugging mechanism and optimizing acidizing formula, the optimal plugging removal technology was formed suitable for the solution for the Chang 2 reservoir of oilfield factory. This plugging removal formula increases the efficiency radius, and increases the dosage of additives to protect the pipe, rod and pump from the precipitation such as Ca2+and Mg2+, which causes new pollution. Reasonable multiple technologies were designed, and low displacement method was used in the injection process, aiming at the characteristics of Chang 2 reservoir. This method extends the time of plugging removal fluid staying around the well bore, which can eliminate plugging near well bore area effectively, and improve the permeability. DQ-1 composite plugging removal and other kinds of plugging removal methods have been used more than 50 times, and the effect is remarkable, which made a positive contribution to stable production of the oilfield. © 2019 Trans Tech Publications Ltd, Switzerland
Number of references: 5
Main heading: Additives
Controlled terms: Boreholes - Oil wells - Petroleum reservoir engineering - Oil field equipment
Uncontrolled terms: Acidizing - Displacement method - Injection process - Low permeability - Multiple technology - Removal method - Well bore
Classification code: 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals
DOI: 10.4028/www.scientific.net/DDF.394.9
Funding Details: Number: 2017JQ2041, Acronym: -, Sponsor: -; Number: 18JC025, Acronym: -, Sponsor: -; Number: 21808182, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

76. Differences of characteristics and genetic of reservoirs in Chang 91 of Yanchang Formation in Jiyuan area, Ordons Basin

Accession number: 20194607689698
Title of translation: 91
Authors: Shi, Baohong (1, 2); Li, Rongkun (1); Tian, Wen (3, 4); Jing, Xianghui (5); Cai, Zhenghong (5)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an; 710065, China; (3) Postdoctoral Scientific Research Workstation of Shengli Petroleum Administration, Dongying; 257000, China; (4) Institute of Exploration and Development, Shengli Oil and Gas Branch Company, SINOPEC, Dongying; 257015, China; (5) Institute of Exploration and Development, Changqing Oil and Gas Branch Company, PetroChina, Xi'an; 710018, China
Corresponding author: Li, Rongkun(1308745376@qq.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: 43
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Issue date: August 20, 2019
Publication year: 2019
Pages: 1-10
Language: Chinese
ISSN: 16735005
Document type: Journal article (JA)
Publisher: University of Petroleum, China
Abstract: Based on a large number of well data and core observations, the reservoir difference characteristics and genesis of Chang 91 in the Jiyuan area of Ordos Basin were analyzed using comparative analysis. The results show that the sand bodies of Chang 91 in the east of the study area have the characteristics of small thickness of single layer, poor longitudinal continuity, and medium-low structural maturity.The sand bodies of Chang 91 in the west of the study area are thick, good pore throat connectivity, with good physical characteristics, especially the permeability, and the oil layers are thicker than the eastern ones. The dual superposition effects of sedimentation and diagenesis result in the different reservoir characteristics between the east and the west. In the east, there are mainly two types of sand bodies, namely, underwater distributary channel and estuarine bar at the leading edge of meandering river delta, while braided river delta leading edge underwater distributary channel sands deposited are the main sands in the west. During the diagenetic evolution, the reduced porosity of the reservoir in the west with relatively coarse grain size sandstone and better pore throat structure was lower than that in the east due to compaction. The cementation has a great influence on reservoir physical properties. Early cementation has little influence on reservoir porosity in west, late cementation has a great influence on reservoirs in west, and the reservoirs became dense after late cementation. However, the early cementation has a great influence on the porosity of the eastern reservoir, and the reservoir becomes denser eventually after the early cementation. © 2019, Periodical Office of China University of Petroleum. All right reserved.
Number of references: 24
Main heading: Porosity
Controlled terms: Metamorphic rocks - Cementing (shafts) - Sand
Uncontrolled terms: Jiyuan area - Ordos Basin - Physical characteristics - Pore throat structures - Reservoir characteristic - Reservoir physical property - Sand body - Underwater distributary channels
Classification code: 483.1 Soils and Soil Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.3969/j.issn.1673-5005.2019.04.001
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

77. Investigating mechanical properties of purplish-red siltstones and mudstones (*Open Access*)

Accession number: 20194607685961
Authors: Wen, T. (1, 2); Huang, L. (3, 4)
Author affiliation: (1) Key Lab. of Well Stability and Fluid Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Geosciences, Yangtze University, Wuhan, Hubei; 430100, China; (3) Three Gorges Research Center for Geohazards, Ministry of Education, China University of Geosciences, Wuhan, Hubei; 430074, China; (4) Department of Civil Engineering, Clemson University, Clemson; SC; 29634, United States
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 657
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Issue: 1
Issue title: 2nd International Conference on Numerical Modelling in Engineering
Issue date: October 25, 2019
Publication year: 2019
Article number: 012010
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2nd International Conference on Numerical Modelling in Engineering, NME 2019
Conference date: August 19, 2019 - August 22, 2019
Conference location: Beijing, China
Conference code: 153583
Publisher: IOP Publishing Ltd
Abstract: We investigate mechanical properties and energy conversion patterns of special rock types (purplish-red siltstones and mudstones) broadly distributed in the Three Gorges Reservoir (TGR) area, China. The mechanical properties deteriorate under unloading conditions. For loading conditions, the cumulative dissipation energy is slightly lower than elastic strain energy before crack propagation stage, while after crack propagation stage the elastic strain energy converts into cumulative dissipation energy. Similar energy conversion patterns are found for unloading conditions. This work offers a new perspective into the failure mechanism of the two special rock types. © Published under licence by IOP Publishing Ltd.
Number of references: 22
Main heading: Unloading
Controlled terms: Energy conversion - Sedimentary rocks - Strain energy - Failure (mechanical) - Crack propagation
Uncontrolled terms: Dissipation energy - Elastic strain energy - Failure mechanism - Loading condition - Rock types - Siltstones - Three gorges reservoir
Classification code: 482.2 Minerals - 525.5 Energy Conversion Issues - 691.2 Materials Handling Methods - 931.1 Mechanics - 951 Materials Science
DOI: 10.1088/1757-899X/657/1/012010
Funding Details: Number: 2018M642799, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: WSFRM20190101001, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 2017YFC1501305, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: This work was supported by the Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'an Shiyou University (Grant number WSFRM20190101001), the China Postdoctoral Science Foundation (Grant number 2018M642799) and the National Key Research and Development Program of China (Grant number 2017YFC1501305).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

78. Earth stress and reservoir quality evaluation in high and steep structure: The Lower Cretaceous in the Kuqa Depression, Tarim Basin, China

Accession number: 20184806166798

Authors: Lai, Jin (1, 2); Li, Dong (1); Wang, Guiwen (1, 2); Xiao, Chengwen (3); Hao, Xiaolong (4); Luo, Qingyong (1); Lai, Lingbin (5); Qin, Ziqiang (6)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) College of Geosciences, China University of Petroleum, Beijing; 102249, China; (3) Research Institute of Petroleum Exploration and Development, Tarim Oilfield Company, CNPC, Korla; Xinjiang; 841000, China; (4) Xi'an Shiyou University, Xi'an Shanxi, China; (5) PetroChina Research Institute of Petroleum Exploration & Development, Beijing; 100083, China; (6) Department of Petroleum Engineering, University of Wyoming, Laramie; WY; 82071-2000, United States
Corresponding author: Lai, Jin(sisylaijin@163.com)
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Abbreviated source title: Mar. Pet. Geol.
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Publication year: 2019
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Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Knowledge of the state of the in-situ stress field provides important insights into the petroleum engineering and geology. The in-situ stress orientation and magnitudes in the high and steep structure of Lower Cretaceous Bashijiqike Formation in Kuqa Depression were analyzed based on well log calculations, and the impacts of in-situ stress field on reservoir quality (macroscopic reservoir properties and microscopic pore structure as well as fracture aperture) were investigated. The maximum horizontal stress (SHmax) orientation was determined as nearly north-south according to the image log derived drilling induced fractures and borehole breakouts. The vertical stress (Sv), SHmax, and minimum horizontal stress (Shmin) magnitudes were calculated via well logs. The result reveals a dominant strike-slip stress regime (SHmax > Sv > Shmin) in the Bashijiqike Formation in the Kuqa Depression. The Sv at the depth ranging from 5000 to 7100 m is 150–180 MPa, and horizontal stresses (SHmax and Shmin) vary significantly from 130 to 210 MPa. The horizontal stress difference $(\Delta\sigma)$ is in the range from 40 to 70 MPa, and fluid overpressures are commonly encountered. The effective stress (#e) has a positive relationship with the $\Delta\sigma$ when the $\Delta\sigma$ is less than 50 MPa. Intergranular pores can be preserved in layers with low $\Delta\sigma$ values. The microscopic pore structure will be complex, and macroscopic reservoir quality will be poor with the increasing $\Delta\sigma$ values. In addition, fractures are mainly corresponding with the layers where the $\Delta\sigma$ value is low, and the fracture aperture and porosity decreased significantly with the effective stress #e. By determining the magnitude and orientation of in-situ stresses around the wellbore, insights can be provided into the wellbore instability, optimum drilling trajectories and reservoir quality evaluation. © 2018 Elsevier Ltd
Number of references: 89
Main heading: Fracture
Controlled terms: Oil wells - Pore structure - Boreholes - Infill drilling - Oil field equipment - Quality control - Stresses - Textures - Well logging
Uncontrolled terms: High and steep structure - Insitu stress - Kuqa depression - Reservoir quality - Well logs
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 913.3 Quality Assurance and Control - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 1.30e+08Pa to 2.10e+08Pa, Pressure 4.00e+07Pa to 7.00e+07Pa, Pressure 5.00e+07Pa, Size 5.00e+03m to 7.10e+03m
DOI: 10.1016/j.marpetgeo.2018.11.036
Funding Details: Number: 41472115, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2462017YJRC023, Acronym: -, Sponsor: Science Foundation of China University of Petroleum, Beijing;
Funding text: This work is financially supported by National Natural Science Foundation of China (No. 41472115) and Science Foundation of China University of Petroleum , Beijing (No. 2462017YJRC023). The authors would like to express their sincere thanks to the PetroChina Tarim Oilfield Company for their assistance in providing the information, and for their technical input to this work. This study is based on work carried out by a large group of participants. The software Geoframe and Techlog were used to produce the borehole images. We thank the works made by the Prof. Hongquan Xia (Southwest Petroleum University), and Dr. Yi Xin, Dr. Jun Tang, Mr. Guoliang Liu and staff of the research insistute of petroleum exploration and development of PetroChina Tarim oilfield company and thank Hangzhou Institute of Geology, Research Institute of Petroleum Exploration and Development of PetroChina for their work. We are also grateful to the two reviewers, whose comments improved the quality of this manuscript. We also benefited from comments and suggestions made by Dr. Adam Bumby, associate editor of Marine and Petroleum Geology.
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

79. A review of analytical and semi-analytical fluid flow models for ultra-tight hydrocarbon reservoirs

Accession number: 20193207289347
Authors: Wang, Wendong (1, 2, 3); Fan, Dian (4); Sheng, Guanglong (1, 3); Chen, Zhiming (5); Su, Yuliang (1, 3)
Author affiliation: (1) Key Laboratory of Unconventional Oil & Gas Development (China University of Petroleum (East China)), Ministry of Education, Qingdao, China; (2) Shaanxi Cooperative Innovation Center of Unconventional Oil and Gas Exploration, and Development (Xi'an Shiyou University), China; (3) School of Petroleum Engineering, China University of Petroleum (East China), Qingdao, China; (4) Department of Chemical Engineering, University College London, London, United Kingdom; (5) School of Petroleum Engineering, China University of Petroleum (Beijing), Beijing, China
Corresponding author: Fan, Dian(dian.fan@hotmail.com)
Source title: Fuel
Abbreviated source title: Fuel
Volume: 256
Issue date: 15 November 2019
Publication year: 2019
Article number: 115737
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In the last decade, numerous approaches, e.g., analytical and semi-analytical pressure solutions, production decline curve, reservoir-scale numerical models, have been used to increase our understanding of fluid transport in hydraulically fractured ultra-tight reservoirs and to improve predictions of well production. Among these approaches, analytical and semi-analytical methods have proved useful to petroleum engineers, because of the balance between the reliability of theoretical model outputs and the computational cost. Analytical or semi-analytical solutions can be used to analyze pressure-transient responses, to estimate hydraulic and induced fracture properties, to forecast production, and to optimize well spacing and multi-stage hydraulic fracking. This work reviews the development of analytical/semi-analytical multi-linear and radial flow models for hydraulically-fractured horizontal wells over the past decade. In particular, the review summarizes and compares the fundamental physics and mathematics of the gas transport mechanisms that are important in unconventional reservoirs. We highlight the analytical approaches that have successfully coupled 1) reservoir spatial heterogeneity, e.g., subdivision of the stimulated reservoir volume (SRV) and fractal SRV, 2) non-continuum flow mechanisms, e.g., Knudsen diffusion, surface diffusion, and gas slip, into diffusivity equations, and 3) the impact of pressure depletion on gas desorption, and pore size change in propped and unpropped fractures. We also discuss the gas permeability models that have been proposed in the past decade and the challenges that remain to the development of oil flow models. Our knowledge of fluid transport, especially for confined fluid at multiple reservoir scales, remains incomplete, and our understanding of flow contributions from different flow regions, and mass transfer between them remains limited. © 2019 Elsevier Ltd
Number of references: 217
Main heading: Radial flow
Controlled terms: Fracture - Pore size - Transient analysis - Diffusion in liquids - Well spacing - Oil wells - Gases - Horizontal wells - Gas permeability - Analytical models
Uncontrolled terms: Fractured horizontal wells - Gas transport mechanisms - Hydrocarbon reservoir - Semi-analytical methods - Semi-analytical solution - Spatial heterogeneity - Stimulated reservoir volumes - Unconventional reservoirs
Classification code: 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.fuel.2019.115737
Funding Details: Number: 2018GSF116004, Acronym: -, Sponsor: Key Technology Research and Development Program of Shandong; Number: 51804328, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: ZR2018BEE008,ZR2019PEE039, Acronym: -, Sponsor: Natural Science Foundation of Shandong Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: 18CX02168A,SXCU-201902, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;

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

80. Identification of organic matter components and organic pore characteristics of marine shale: A case study of Wufeng-Longmaxi shale in southern Sichuan Basin, China

Accession number: 20192507057950
Authors: Chen, Zhiyuan (1, 2, 3); Song, Yan (1, 2, 3); Jiang, Zhenxue (1, 2, 3); Liu, Shaobo (5); Li, Zhuo (1, 2, 3); Shi, Dishi (4); Yang, Wei (1, 2, 3); Yang, Youdong (1, 2, 3); Song, Jianan (1, 2, 3); Gao, Fenglin (1, 2, 3); Zhang, Kun (1, 2, 3); Guo, Xiaobo (6)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) Unconventional Natural Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Cooperative Innovation Center of Unconventional Oil and Gas, China University of Petroleum, Beijing; 102249, China; (4) Oil and Gas Survey, China Geological Survey, Beijing; 100083, China; (5) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (6) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Song, Yan(ysongpetrochina@163.com)
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Abbreviated source title: Mar. Pet. Geol.
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Issue date: November 2019
Publication year: 2019
Pages: 56-69
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: With the global success of the commercial exploration and development of shale oil and gas, research interest in the structure of shale pore, the gas and oil storage carrier, is increasing. However, current studies on shale organic pore are insufficient. Based on this, the basic parameters of Wufeng-Longmaxi shale in Sichuan Basin were tested and shale samples were observed using optical and electron microscopes. In the Changning and Weiyuan areas, CO2, N2 adsorption and mercury intrusion porosimetry (MIP) experiments were conducted on shale samples with different total organic carbon (TOC) content. In this study, we termed the organic matter (OM) with fixed form as formed OM, and the OM without fixed form as amorphous OM, rather than the amorphous OM in the conventional context, which only exists when the maturity of shale is less than 1.0%. The results showed that: (1) formed and amorphous OM can be distinguished under optical and electron microscopes. The formed OM was mainly graptolite, while the amorphous OM could be subdivided into bitumen and micrinite. Under reflected light, bitumen appeared gray-black, while micrinite exhibited certain fluorescence. Under the electron microscope, bitumen showed larger particles than micrinite; (2) there were abundant organic pores in graptolite and bitumen. The organic pores in graptolites were significantly smaller than those in bitumen. Due to the limitation associated with the scanning electron microscope (SEM) resolution, we did not observe organic pores in micrinite, which indicated that the organic pore size in micrinite is smaller than that in bitumen; (3) there were obvious differences in the development of organic pore. In different areas, the relationship between shale porosity and TOC content varied greatly, which was related to the shale gas preservation conditions. Microscopically, there were also several reasons for the developmental differences of organic pore. Among them, inorganic minerals contribute to the preservation of organic pore by filling these pores or forming rigid spatial skeletons, which is an important reason for the micro-difference of organic pore development; (4) The SEM image processing results showed that the organic pore of Wufeng-Longmaxi shale in the Sichuan Basin mainly occurs in the range of mesopore. By comparing the pore size distribution curves of shale samples in the Changning

and Weiyuan areas, it is concluded that the organic pore size of shale in the Changning area is primarily 4–10 nm and that in the Weiyuan area it is primarily 2–20 nm. © 2019 Elsevier Ltd
Number of references: 62
Main heading: Pore size
Controlled terms: Biogeochemistry - Organic carbon - Minerals - Electrons - Petroleum prospecting - Scanning electron microscopy - Biological materials - Optical data processing
Uncontrolled terms: Exploration and development - Formed OM - Mercury intrusion porosimetry - Mesopore - Organic pore - Preservation condition - SEM image processing - The scanning electron microscopes (SEM)
Classification code: 461.2 Biological Materials and Tissue Engineering - 481.2 Geochemistry - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 723.2 Data Processing and Image Processing - 801.2 Biochemistry - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 1.00e+00%
DOI: 10.1016/j.marpetgeo.2019.06.002
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Data Provider: Engineering Village

81. Quartz cement origins and impact on storage performance in Permian Upper Shihezi Formation tight sandstone reservoirs in the northern Ordos Basin, China

Accession number: 20191406718441
Authors: Liu, Dengke (1, 2); Sun, Wei (1); Ren, Dazhong (3); Li, Changzheng (4)
Author affiliation: (1) Department of Geology, State Key Laboratory of Continental Dynamics, Northwest University, Xi'an; 710069, China; (2) School of Mining and Petroleum Engineering, Department of Civil and Environmental Engineering, University of Alberta, Edmonton; AB; T6G 1H9, Canada; (3) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) No.8 Oil Production Plant, Changqing Oilfield Company, PetroChina, Xi'an; 710021, China
Corresponding author: Liu, Dengke(liudengke02@126.com)
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Volume: 178
Issue date: July 2019
Publication year: 2019
Pages: 485-496
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Authigenic quartz is an important cementing material that can degrade storage capacity, whereas the effect of quartz cement on microscale pores and throats in tight sandstone is controversial. Therefore, it is crucial to verify the sources of quartz cement as well as the controls on microscopic storage. Toward this end, a variety of tests were performed on Permian Upper Shihezi Formation sandstones, and they are the vital exploration and development interval for gas in the northern Ordos basin. We found that quartz cement is the most abundant interstitial mineral in the Upper Shihezi Formation tight sandstones, which forms at approximately 55 °C to 188 °C with a continuous process. All the samples can be divided into pore dominated and throat dominated types, and there is an increase in micropores and a decrease in macropores as the quartz cement content decreases. Chemical compaction and transformation of clay minerals were the main sources of silica. This work shows that although quartz cement would occupy the void space and lead to a loss of porosity, it could retard the compaction and preserve the pores, which is attributed to the limited compressibility of quartz cement supported rocks. Thus, the difference in the pore radius and throat radius is diminished, resulting in the decrease in pore-throat size heterogeneity in tight sandstones. © 2019 Elsevier B.V.
Number of references: 65

Main heading: Compaction
Controlled terms: Storage (materials) - Cements - Sandstone - Sedimentology - Quartz - Metamorphic rocks - Petroleum prospecting - Tight gas
Uncontrolled terms: Cementing material - Exploration and development - Northern Ordos Basin - Ordos Basin - Quartz cements - Storage performance - Tight sandstone reservoirs - Upper Shihezi formation
Classification code: 412.1 Cement - 481.1 Geology - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 694.4 Storage
Numerical data indexing: Temperature 3.28e+02K to 4.61e+02K
DOI: 10.1016/j.petrol.2019.03.061
Funding Details: Number: 41702146,51874242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

82. Origin and distribution of formation water in tight sandstone reservoirs in the northeastern Ordos Basin

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Title of translation:
Authors: Chen, Zhaobing (1); Yang, Youyun (1); Shao, Jinhui (2); Zhu, Yushuang (3); Chen, Xinjing (4); Shi, Lei (5); Meng, Di (3)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Research Institute of Petroleum Exploration and Development of Changqing Oilfield Branch Company, PetroChina, Xi'an; Shaanxi; 710021, China; (3) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an; Shaanxi; 710069, China; (4) No.6 Oil Production Plant, Changqing Oilfield Company, PetroChina, Xi'an; Shaanxi; 710200, China; (5) No.2 Gas Production Plant, Changqing Oilfield Company, PetroChina, Xi'an; Shaanxi; 710200, China
Corresponding author: Zhu, Yushuang(642617295@qq.com)
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Language: Chinese
ISSN: 02539985
Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: The chemical features, genesis, spatial distribution characteristics and controlling factors of the formation water in Shenmu gas field, northeastern Ordos Basin, were studied by the analysis of seismic, drilling and logging, as well as performance data combined with test analysis of mercury injection, gas-water relative permeability, physical and hydrochemical properties. Since the studied area is located in the transitional area from water to gas, the formation water herein is of "V-shaped" CaCl2 type, with low salinity "acid water" and high salinity conventional formation water being dominant. Vertically, the differential distribution of formation water are mainly caused by the differences of deposition, lithofacies and distance from gas source for various formations. Multiple tight limestones distributed in the Benxi and Taiyuan Formations have blocked the entry of hydrocarbons into reservoirs, leading to a low degree of gas charging for the original reservoirs and relatively high enrichment of formation water. The Shiqianfeng Formation, located far away from gas source, is in short of hydrocarbon supply with incomplete gas displacement of water. The Shanxi Formation is a self-sourced indigenous play, which has a high degree of gas charging and low quantity of water produced. Horizontally, influenced by the "west-dipping" structural movement of the basin in the Late Cretaceous, the northeastern Ordos Basin uplifted as a whole along with the secondary adjustment of water/gas contact, producing more gas-bearing horizons and continuously increasing the height of gas columns; meanwhile, the pressure in the gas reservoir decreased, and the formation water at the basin margin invaded into bed laterally, leading to the pattern of

"multiple gas layers, low gas yield and water-gas co-production", characterized by the ever-increasing formation water scale and water production from west to east with a gradual increase of salinity. The results provide some basis for prediction of the spatial distribution and genesis of gas and water at the margin of the Ordos Basin.
Number of references: 29
Main heading: Gases
Controlled terms: Chlorine compounds - Metamorphic rocks - Tight gas - Water supply systems - Spatial distribution - Chemical analysis - Natural gas fields - Petroleum reservoirs - Gas industry - Hydrocarbons - Lime - Gas permeability - Petroleum reservoir engineering
Uncontrolled terms: Acid waters - Formation water - Gas-water distributions - Ordos Basin - Tight sand gas
Classification code: 405.3 Surveying - 446.1 Water Supply Systems - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 902.1 Engineering Graphics - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.11743/ogg20190210
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

83. Experimental and Modeling Study on the Effect of Shale Composition and Pressure on Methane Diffusivity

Accession number: 20191006603038
Authors: Dang, Wei (1, 2, 7); Jiang, Shu (2, 3); Zhang, Jinchuan (4, 5); Wang, Fengqin (1); Tao, Jia (4, 5); Wei, Xiaoliang (4, 5); Tang, Xuan (4, 5); Wang, Chenghu (6); Chen, Qian (7)
Author affiliation: (1) School of Earth Sciences and Engineering, Xian Shiyou University, Xian; 710065, China; (2) Energy and Geoscience Institute, University of Utah, Salt Lake City; 84112, United States; (3) Key Laboratory of Tectonics and Petroleum Resources of Ministry of Education, Faculty of Earth Resources, China University of Geosciences, Wuhan; 430074, China; (4) School of Energy Resources, China; (5) Key Laboratory of Shale Gas Exploration and Evaluation, Ministry of Land and Resources, China University of Geosciences, Beijing; 100083, China; (6) Key Laboratory of Crustal Dynamics, Institute of Crustal Dynamics, China Earthquake Administration, Beijing; 100085, China; (7) Petroleum Exploration and Production Research Institute, SINOPEC, Beijing; 100083, China
Corresponding author: Dang, Wei(dangw@xsyu.edu.cn)
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Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: In this study, we present a comprehensive experimental and modeling study on six shale samples to investigate the effect of shale composition and pressure on methane diffusivity. By correlating shale composition, pressure, and methane diffusivity, it was found that both macro- A nd micropore diffusivity decreased with increasing pressure, while total organic carbon content had little effect on macropore diffusivity and negatively affected micropore diffusivity. This phenomenon may be a result of nonporous organic matter (OM) in transitional shale acting as solid material instead of porous media, occupying micropore volume, prolonging gas diffusion length, and increasing diffusion resistance. Clay minerals with connected microstructures positively affect micropore diffusivity while negatively affecting macropore diffusivity, which may be a result of the filling of macropores with clay particles, blocking gas diffusion pathways, and increasing gas diffusion resistance. Brittle minerals have a positive effect on macropore diffusivity and a negative effect on micropore diffusivity, which is similar to their effects on macro- A nd micropore volume, respectively. Moreover, the effect degree of shale composition and pressure on methane diffusivity changed over methane absorbing and diffusing, which may be related to the fact that methane diffusion occurs in different pores associated with brittle minerals, clay, or OM at different pressure steps. © 2019 American Chemical Society.

Number of references: 65
Main heading: Methane
Controlled terms: Shale gas - Diffusion in gases - Organic carbon - Porous materials - Clay minerals - Microporosity
Uncontrolled terms: Clay particles - Different pressures - Diffusion resistance - Effect degrees - Methane diffusion - Micropore diffusivity - Micropore volumes - Total organic carbon content
Classification code: 482.2 Minerals - 512.2 Natural Gas Deposits - 522 Gas Fuels - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1021/acs.energyfuels.8b03349
Funding Details: Number: 2016ZX05034-002-001, Acronym: -, Sponsor: -; Number: 41574088,41728004, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

84. Molecularly Imprinted Materials for Selective Biological Recognition

Accession number: 20192206986736
Authors: Zhang, Nan (1, 2); Zhang, Nan (1); Xu, Yarong (1); Li, Zhiling (1); Yan, Chaoren (1); Mei, Kun (1); Ding, Minling (1); Ding, Shichao (3); Guan, Ping (1); Qian, Liwei (4); Du, Chunbao (5); Hu, Xiaoling (1)
Author affiliation: (1) School of Natural and Applied Science, Northwestern Polytechnical University, Xi'an; 710072, China; (2) Department of Mechanical Engineering, National University of Singapore 9 Engineering Drive 1, Singapore; 117575, Singapore; (3) School of Mechanical and Materials Engineering, Washington State University, Pullman; WA; 99164, United States; (4) College of Bioresources Chemical and Materials Engineering, Shaanxi University of Science and Technology, Xi'an; 710021, China; (5) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Nan(zhangn1123@126.com)
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Language: English
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Publisher: Wiley-VCH Verlag
Abstract: Molecular imprinting is an approach of generating imprinting cavities in polymer structures that are compatible with the target molecules. The cavities have memory for shape and chemical recognition, similar to the recognition mechanism of antigen–antibody in organisms. Their structures are also called biomimetic receptors or synthetic receptors. Owing to the excellent selectivity and unique structural predictability of molecularly imprinted materials (MIMs), practical MIMs have become a rapidly evolving research area providing key factors for understanding separation, recognition, and regenerative properties toward biological small molecules to biomacromolecules, even cell and microorganism. In this review, the characteristics, morphologies, and applicability of currently popular carrier materials for molecular imprinting, especially the fundamental role of hydrogels, porous materials, hierarchical nanoparticles, and 2D materials in the separation and recognition of biological templates are discussed. Moreover, through a series of case studies, emphasis is given on introducing imprinting strategies for biological templates with different molecular scales. In particular, the differences and connections between small molecular imprinting (bulk imprinting, "dummy" template imprinting, etc.), large molecular imprinting (surface imprinting, interfacial imprinting, etc.), and cell imprinting strategies are demonstrated in detail. Finally, future research directions are provided. © 2019 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim
Number of references: 231
Main heading: Biomimetics

Controlled terms: Molecules - Biosynthesis - Polymerization - Molecular modeling - Porous materials
Uncontrolled terms: Biological recognition - Biological templates - Future research directions - Hierarchical nanoparticles - Molecular imprinting - Molecularly imprinted - Recognition mechanism - Selective recognition
Classification code: 461.8 Biotechnology - 461.9 Biology - 801.2 Biochemistry - 802.2 Chemical Reactions - 815.2 Polymerization - 931.3 Atomic and Molecular Physics - 951 Materials Science
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

85. Supercritical CO2-water-shale interactions and their effects on element mobilization and shale pore structure during stimulation

Accession number: 20185206304856
Authors: Luo, Xiangrong (1); Ren, Xiaojuan (1); Wang, Shuzhong (2)
Author affiliation: (1) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & 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(xiangrong_luo@163.com)
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Abbreviated source title: Int. J. Coal Geol.
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Language: English
ISSN: 01665162
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Publisher: Elsevier B.V., Netherlands
Abstract: There are many advantages to using supercritical carbon dioxide (ScCO2) fracturing technology to exploit shale gas reservoirs in China, including minimal damage to the environment or formation, and displacing methane (CH4) in the adsorbed state. When ScCO2 enters fractures in the formation, ScCO2-water-shale interactions may affect the physicochemical properties of shale. In this study, a high-pressure reaction system was adopted to simulate ScCO2-water-shale interactions under ScCO2 stimulation conditions. The element mobilization and pore structure before and after the reaction were measured using ICP-MS, XRF. The results show that the major elements, including Ca, Mg, Na, K, and Al, exhibit varying degrees of mobilization after the interactions because of dissolution of carbonate and silicate minerals in shale samples. Compared with the major elements, trace elements have a lower mobility, quantified as © 2018 Elsevier B.V.
Number of references: 66
Main heading: Pore structure
Controlled terms: Petroleum reservoir engineering - Shale gas - Trace elements - Fractal dimension - Supercritical fluid extraction - Carbon dioxide - Physicochemical properties - Silicate minerals - Surface roughness - Morphology - Gases
Uncontrolled terms: Adsorbed state - Element mobilization - Fractal feature - Major elements - Minimal damage - Shale gas reservoirs - Supercritical carbon dioxides - Supercritical CO2
Classification code: 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 801.4 Physical Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.coal.2018.12.007
Funding Details: Number: 2016ZX05050006, Acronym: -, Sponsor: -; Number: 2015KTCL01-08, Acronym: -, Sponsor: -; Number: 51741407, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

86. Prediction of hydrate deposition in pipelines to improve gas transportation efficiency and safety

Accession number: 20192907205428
Authors: Zhang, Jianbo (1); Wang, Zhiyuan (1); Liu, Shun (2); Zhang, Weiguo (3); Yu, Jing (1); Sun, Baojiang (1)
Author affiliation: (1) Offshore Oil & Gas and Hydrates Institute, School of Petroleum Engineering, China University of Petroleum (East China), Qingdao; 266580, China; (2) 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 (Ministry of Education), Xi'an Shiyou University, Xi'an; 710065, China; (3) Technical Center of Deepwater Engineering, Shenzhen Branch of CNOOC (China), Shenzhen; 518067, China
Corresponding author: Wang, Zhiyuan(wangzy1209@126.com)
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Abstract: The significant amounts of hydrocarbon resources (oil, natural gas, and gas hydrates) present in subsea and cold regions represent one of the most pre-dominant resources in the future. However, the deposition of gas hydrates in the transportation pipeline significantly decreases the efficiency and the safety of energy recovery. In this study, a novel model for forecasting hydrate deposition in gas transportation pipelines was established by considering the hydrates generated from the condensate water on the cold wall and the condensate drops in the gas core. By using the proposed model, the location and severity of hydrate deposition in pipelines can be quantitatively forecasted and analyzed. Compared with the existing methods, the average relative error between the calculated pressure drop and the experimental data was reduced from 34.98% to 7.43%, and the mean relative error between the calculated thickness of deposited hydrates and the experimental results was within 9.17%. The calculated results indicate that the deposited hydrates are unevenly distributed along the pipeline, and the deposition of hydrates formed from the condensate drops in the gas core is essential during the calculation of hydrate deposition in gas pipelines. The proposed model exhibits its good reliability for the water-saturated gas flow systems, but its applicability for the flow pattern with the existence of free water remains to be analyzed. Thus, the proposed model provides an effective support for the high-efficiency and high-safety development of hydrocarbon energy in subsea and cold regions. © 2019 Elsevier Ltd
Number of references: 56
Main heading: Deposition
Controlled terms: Flow of gases - Petroleum transportation - Pipelines - Drops - Petroleum deposits - Flow patterns - Gas condensates - Hydration - Forecasting - Gas hydrates - Gases - Natural gas transportation
Uncontrolled terms: Average relative error - Condensate waters - FORECAST model - Gas transportation - Hydrocarbon resources - Mean relative error - Transportation pipelines - Water condensation
Classification code: 512.1 Petroleum Deposits - 512.2 Natural Gas Deposits - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 631.1.2 Gas Dynamics - 802.3 Chemical Operations
Numerical data indexing: Percentage 3.50e+01% to 7.43e+00%, Percentage 9.17e+00%
DOI: 10.1016/j.apenergy.2019.113521
Funding Details: Number: Q2016135, Acronym: -, Sponsor: -; Number: 2016YFC0303408, Acronym: -, Sponsor: -; Number: 51622405, Acronym: -, Sponsor: -; Number: IRT_14R58, Acronym: -, Sponsor: -; Number: JQ201716, Acronym: -, Sponsor: -;

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

87. Phase stability, mechanical properties and electronic structures of Ti–Al binary compounds by first principles calculations

Accession number: 20184105938905
Authors: Jian, Yongxin (1, 2); Huang, Zhifu (1); Xing, Jiandong (1); Sun, Liang (3); Liu, Yangzhen (1); Gao, Pengyue (4)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Engineering Technology, Purdue University, 401 North Grant Street, West Lafayette; IN; 47907, United States; (3) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, China; (4) School of Materials Science and Engineering, Shanghai University, 99 Shangda Road, BaoShan District, Shanghai; 200444, China
Corresponding author: Jian, Yongxin(yxjianxjtu@163.com)
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Publisher: Elsevier Ltd
Abstract: The stability, mechanical properties and electronic structures of Ti3Al, TiAl, TiAl2 and TiAl3 have been systematically investigated by the first-principles calculation. The four Ti–Al binary compounds are thermodynamically stable intermetallics depending on their negative formation enthalpy and cohesive energy. The bulk modulus (B), shear modulus (G), Young's modulus (E), Vicker's hardness (HV) and Poisson's ratio $_{(\nu)}$ are calculated. With the increment of Al content, the bulk modulus and Poisson's ratio decrease while the shear modulus, Young's modulus and hardness gradually increase. The ratio of B/G decreases with Al increment, implying the weakening of ductility. In addition, the mechanical anisotropy of Ti–Al compound has been revealed by the analysis of the anisotropy index, three-dimensional surface contours of the Young's modulus and the planar projections on the low index planes (including (100), (010), (100) and (110)). TiAl shows the most anisotropic structure while Ti3Al has the least anisotropy. The density of states (DOS) and electron density distribution map are discussed to analyze the electronic structures and chemical bonding characters. The Ti–Al binary compounds are composed of both metallic and covalent bonds, and the covalent bonding character can be strengthened with the increase of Al content. © 2018 Elsevier B.V.
Number of references: 58
Main heading: Elastic moduli
Controlled terms: Aluminum compounds - Shear strain - Chemical bonds - Aluminum alloys - Electronic structure - Calculations - Hardness - Poisson ratio - Titanium alloys - Binary alloys - Chemical analysis - Phase stability - Anisotropy
Uncontrolled terms: Anisotropic structure - Anisotropy indices - First-principles calculation - Formation enthalpy - Mechanical anisotropy - Planar projection - Thermodynamically stable - Three-dimensional surface
Classification code: 541.2 Aluminum Alloys - 542.3 Titanium and Alloys - 801.4 Physical Chemistry - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.matchemphys.2018.09.055
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Technology and Innovation Commission; Number: 2015B090926009, Acronym: -, Sponsor: Science and Technology Planning Project of Guangdong Province;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

88. Near-field 3D imaging approach combining MJSR and FGG-NUFFT (*Open Access*)

Accession number: 20200408066425
Authors: Wang, Shuzhen (1); Fang, Yang (2); Zhang, Jin'gang (3, 4); Luo, Mingshi (5); Li, Qing (6)
Author affiliation: (1) School of Computer Science and Technology, Xidian University, Xi'an; 710071, China; (2) School of Electronics and Information, Northwestern Polytechnical University, Xi'an; 710072, China; (3) Institute of Optics and Electronics, Chinese Academy of Sciences, Chengdu; 610209, China; (4) College of Materials Sciences and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing; 100049, China; (5) College of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China; (6) Fourth Research Institute of Telecommunications Technology Co. Ltd, Xi'an; 710061, China
Corresponding author: Zhang, Jin'gang(zhangjg@ucas.ac.cn)
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Language: English
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Document type: Journal article (JA)
Publisher: Beijing Institute of Aerospace Information
Abstract: A near-field three-dimensional (3D) imaging method combining multichannel joint sparse recovery (MJSR) and fast Gaussian gridding nonuniform fast Fourier transform (FGG-NUFFT) is proposed, based on a perfect combination of the compressed sensing (CS) theory and the matched filtering (MF) technique. The approach has the advantages of high precision and high efficiency: multichannel joint sparse constraint is adopted to improve the problem that the images recovered by the single channel imaging algorithms do not necessarily share the same positions of the scattering centers; the CS dictionary is constructed by combining MF and FGG-NUFFT, so as to improve the imaging efficiency and memory requirement. Firstly, a near-field 3D imaging model of joint sparse recovery is constructed by combining the MF-based imaging method. Secondly, FGG-NUFFT and reverse FGG-NUFFT are used to replace the interpolation and Fourier transform in MF-based imaging methods, and a sensing matrix with high precision and high efficiency is constructed according to the traditional imaging process. Thirdly, a fast imaging recovery is performed by using the improved separable surrogate functionals (SSF) optimization algorithm, only with matrix and vector multiplication. Finally, a 3D imagery of the near-field target is obtained by using both the horizontal and the pitching interferometric phase information. This paper contains two imaging models, the only difference is the sub-aperture method used in inverse synthetic aperture radar (ISAR) imaging. Compared to traditional CS-based imaging methods, the proposed method includes both forward transform and inverse transform in each iteration, which improves the quality of reconstruction. The experimental results show that, the proposed method improves the imaging accuracy by about O(10), accelerates the imaging speed by five times and reduces the memory usage by about O(102). © 1990-2011 Beijing Institute of Aerospace Information.
Number of references: 28
Main heading: Compressed sensing
Controlled terms: Fast Fourier transforms - Inverse problems - Efficiency - Iterative methods - Matrix algebra - Recovery - Image enhancement - Radar imaging - Inverse synthetic aperture radar - Inverse transforms
Uncontrolled terms: 3D imaging - Compressive sensing - Gridding - Interference imaging - Matching filtering - Non-uniform fast Fourier transforms - Sparse recovery

Classification code: 716.1 Information Theory and Signal Processing - 716.2 Radar Systems and Equipment - 913.1 Production Engineering - 921.1 Algebra - 921.3 Mathematical Transformations - 921.6 Numerical Methods
DOI: 10.21629/JSEE.2019.06.06
Funding Details: Number: 2018SF-409,2018ZDXM-SF-027, Acronym: -, Sponsor: -; Number: 61640422,61771369,61775219, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YJKYYQ20180039, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: JB180310, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
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Data Provider: Engineering Village

89. A Simplified and Efficient Method for Water Flooding Production Index Calculations in Low Permeable Fractured Reservoir

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Authors: Liu, Shun (1); Zhang, Liming (2); Zhang, Kai (2); Zhou, Jianren (2); He, Heng (3); Hou, Zhiwei (2)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Eng. Res. Ctr. of Devmt. and Mgmt. for Low to Ultra-Low Permeability Oil and Gas Reservoirs in W. China (Min. of Educ.), Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Petroleum Engineering, China University of Petroleum, 66 Changjiang West Road, Qingdao, Shandong; 266555, China; (3) Research Institute of Oil and Gas Technology, Changqing Oilfield Company, PetroChina, Xi'an, Shaanxi; 710021, China
Corresponding author: Liu, Shun(liushun631@163.com)
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Publisher: American Society of Mechanical Engineers (ASME), United States
Abstract: Presently, predicting the production performance of fractured reservoirs is often challenging because of the following two factors: one factor such as complicatedly connected and random distribution nature of the fractures and the other factor includes the limitations of the understanding of reservoir geology, deficient fracture-related research, and defective simulators. To overcome the difficulties of simulating and predicting fractured reservoir under complex circumstances of cross flow, a simplified model, which assumes cross flow only exists in the oil phase segment, is constructed. In the model, the pressure distribution of a single fracture can be described by solving an analytical mathematical model. In addition, due to research and field experience which indicate that cross flow also exists in the mixed-phase segment after water injection, the simplified model is modified to consider cross flow in the whole phase. The model constructed here is applicable for fractured reservoirs especially for a low-permeability fracture reservoir, and it moderately predicts future production index. By using iterative methods, the solution to the model can be feasibly obtained and related production performance index formulas can be derived explicitly. A case study was performed to test the model, and the results prove that it is good. © 2019 by ASME.
Number of references: 33
Main heading: Two phase flow
Controlled terms: Petroleum reservoir engineering - Reservoirs (water) - Fracture - Iterative methods - Low permeability reservoirs
Uncontrolled terms: Complicatedly connected - Fracture reservoirs - Fractured reservoir - Production index - Production performance - Random distribution - Reservoir geology - simulation

Classification code: 441.2 Reservoirs - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 921.6 Numerical Methods - 951 Materials Science
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Database: Compendex
Data Provider: Engineering Village

90. Rapid pitting corrosion failure analysis of 13Cr stainless steel as thermocouple protecting material in dry gas pipeline

Accession number: 20193607403183
Authors: Ma, Yun (1, 2); Li, Yao (3); He, Yanjun (3); Wang, Xuan (3); Bai, Haitao (4)
Author affiliation: (1) College of Petroleum Engineering, Shaanxi Province Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Engineering Research Center of Development and Management for Low to Ultra-Low Permea -bility Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an, Shaanxi; 710065, China; (3) No.2 Gas Production Plant, Changqing Oilfield Company, Yulin, Shaanxi; 710200, China; (4) Institute of Petroleum and Gas Engineering, Southwest Petroleum University, Chengdu; 610500, China
Corresponding author: Ma, Yun(mayun9401@xsyu.edu.cn)
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Publisher: Trans Tech Publications Ltd
Abstract: This paper presents corrosion failure analysis of 13Cr stainless steel (SS) in gas pipeline in gas pipeline, which was used as thermocouple protecting material (TPM). A portion of TMP failed due to pitting corrosion under unknown circumstances. Scanning electron microscopy (SEM) and X-ray diffraction (XRD) are employed to characterize the scales and/or corrosion products near the failed portion. Based on visual and microscopic analyses, reviewing the background information and the thermodynamic calculation, the following rapid pitting corrosion failure sequences were identified: Once the pitting appeared, in addition to the gas leakage and expansion, the temperature drop should lead a small amount of water in dry gas to condense on the surface of TPM. On one hand, the high salinity produced water will corrode the thermocouple. On the other hand, the high salinity produced water will pass into the annular space of TPM through the pitting because of the pressure drop, and the water will stay on inner surface for more time than that of external surface, which accelerated pitting of TPM. More and more pitting appeared, and the

surface roughness increased. The film-forming property of condensation water will also increase. So, the TPM will be scrapped soon. © 2019 Trans Tech Publications Ltd, Switzerland
Number of references: 15
Main heading: Pitting
Controlled terms: Failure analysis - Scanning electron microscopy - Austenitic stainless steel - Pipelines - Failure (mechanical) - Surface roughness - Corrosion protection - Drops - Steel corrosion - Chromium alloys - Gases - Pipeline corrosion
Uncontrolled terms: Background information - Condensation water - Corrosion failure analysis - Corrosion products - Film-forming properties - Microscopic analysis - Thermodynamic calculations - Unknown circumstances
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 543.1 Chromium and Alloys - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 931.2 Physical Properties of Gases, Liquids and Solids
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91. A comparative discussion of the evidence for biogenic silica in Wufeng-Longmaxi siliceous shale reservoir in the Sichuan basin, China

Accession number: 20192507059643
Authors: Liu, Guoheng (1, 2); Zhai, Gangyi (1); Zou, Caineng (3); Cheng, Lijuan (4); Guo, Xiaobo (5); Xia, Xianghua (1); Shi, Dishi (1); Yang, Yuru (1, 2); Zhang, Cong (1, 2); Zhou, Zhi (1)
Author affiliation: (1) Oil and Gas Survey, China Geological Survey, Beijing; 100083, China; (2) Key Laboratory of Unconventional Oil and Gas Geology, China Geological Survey, Beijing; 100029, China; (3) Research Institute of Petroleum Exploration and Development, PetroChina, Beijing; 100083, China; (4) Accumulation and Development of Unconventional Oil and Gas, State Key Laboratory Cultivation Base Jointly-constructed by Heilongjiang Province and Ministry of Science and Technology, Northeast Petroleum University, Daqing; 163318, China; (5) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cheng, Lijuan(lucas_ucas@sina.cn)
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Language: English
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Publisher: Elsevier Ltd
Abstract: The siliceous Wufeng-Longmaxi Formation is the main shale gas play in China. It contains a large amount of silica, which has been reported to be of biogenic origin. The previous evidences for a biogenic origin include the presence of siliceous skeletal debris resembling organisms, such as sponge spicules, various parameters, such as the ratios of Al/(Al + Fe + Mn) and Si/(Si + Fe + Al + Ca), and a number of different correlations, such as a positive relationship of silica content with total organic matter (TOC). However, these evidences, especially various parameters and correlations, become unpersuasive when comparing Wufeng-Longmaxi Formation siliceous shale with other shale in these parameters and correlations. A series of petrographic thin section and scanning electron microscope (SEM) observations, elemental analysis, TOC analysis and mineral composition analysis were conducted to verify the unpersuasiveness of the existing evidences, and then propose new evidences to demonstrate the abundance of biogenic silica in Wufeng-Longmaxi siliceous shale. It is shown that siliceous ellipsoids are a better mark of biogenic silica in Wufeng-Longmaxi siliceous shale than sponge spicule, radiolarian and foraminifera. Except for the Barium (Ba) concentration, most elemental composition data cannot be used to distinguish biogenic silica from silica with an airborne volcanic ash origin. Furthermore, the poor crystal morphology of the silica in Wufeng-Longmaxi siliceous shale was a clear difference from the airborne volcanic ash-derived silica in Lucaogou Formation and hydrothermal silica in Nutitang and Doushantuo formations. Hence, the crystal morphology can be considered as a distinguishing feature for biogenic silica. © 2019 Elsevier Ltd

Number of references: 60
Main heading: Silica
Controlled terms: Scanning electron microscopy - Volcanoes - Morphology
Uncontrolled terms: Biogenic silica - Crystal morphologies - Doushantuo Formation - Elemental compositions - Lucaogou formation - Siliceous shales - Total organic matter - Volcanic ash
Classification code: 484 Seismology - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1016/j.marpetgeo.2019.06.016
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92. Chemical Design Principles for Cache-Type Sc-Sb-Te Phase-Change Memory Materials (*Open Access*)

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Authors: Zewdie, Getasew M. (1); Zhou, Yuxing (1); Sun, Liang (2); Rao, Feng (3); Deringer, Volker L. (4); Mazzarello, Riccardo (5); Zhang, Wei (1)
Author affiliation: (1) Center for Advancing Materials Performance from the Nanoscale, State Key Laboratory for Mechanical Behavior of Materials, Xi'An Jiaotong University, Xi'an; 710049, China; (2) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) College of Materials Science and Engineering, Shenzhen University, Shenzhen; 518060, China; (4) Department of Engineering, University of Cambridge, Cambridge; CB2 1PZ, United Kingdom; (5) Institute for Theoretical Solid-State Physics, JARA-FIT, JARA-HPC, RWTH Aachen University, Aachen; 52056, Germany
Corresponding author: Zhang, Wei(wzhang0@mail.xjtu.edu.cn)
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Abbreviated source title: Chem. Mater.
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Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Enhanced crystal nucleation in a Sc-Sb-Te phase-change material has enabled subnanosecond switching in phase-change memory devices, making cache-type nonvolatile memory feasible. However, the microscopic mechanisms remain to be further explored. In this work, we present a systematic ab initio study of the relevant parent compounds, namely, Sc2Te3 and Sb2Te3. Despite similar bond lengths and angles in the amorphous phases of the two compounds, Sc2Te3 displays a much more ordered amorphous network without homopolar bonds. As a result, the local structural order in amorphous Sc2Te3 is dominated by square motifs, remarkably similar to those of the

metastable rocksalt-like phase. Chemical bonding analysis indicates more robust Sc-Te bonds compared with Sb-Te bonds in the amorphous phase, as well as a substantial role of electrostatic interactions in Sc2Te3 but not in Sb2Te3. The robustness of Sc-Te bonds explains the enhanced nucleation in Sc-Sb-Te compounds. Finally, we discuss an alloying strategy of Sc2Te3 and Sb2Te3 for cache-type Sc-Sb-Te-based phase-change memory. © 2019 American Chemical Society.
Number of references: 58
Main heading: Chemical analysis
Controlled terms: Cache memory - Phase change materials - Antimony compounds - Nucleation - Phase change memory - Chemical bonds
Uncontrolled terms: Amorphous networks - Bond lengths and angles - Chemical bondings - Crystal nucleation - Microscopic mechanisms - Non-volatile memory - Parent compounds - Structural ordering
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93. Dominant effect of oriented 2D pores on heat flux in lamellar structured thermal barrier coatings

Accession number: 20192206981397
Authors: Wei, Zhi-Yuan (1); Wang, Li-Shuang (2); Cai, Hong-Neng (1); Li, Guang-Rong (1, 3); Chen, Xue-Feng (4); Zhang, Wei-Xu (5)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Forschungszentrum Jülich, Institute of Energy and Climate Research IEK-1: Materials and Processing, Jülich, D-52425, Germany; (4) State Key Laboratory for Manufacturing Systems Engineering, School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (5) State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Wang, Li-Shuang(lswang@xsyu.edu.cn)
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Publisher: Elsevier Ltd
Abstract: Thermal barrier coatings (TBCs) provide thermal insulation to metallic components served at high temperatures. The oriented 2D pores are primarily responsible for the efficient prevention of heat flux. Thus, structural design of TBCs with higher thermal insulation requires clear understanding on the thermal conduction inside coatings. Up to now, previous analytical models to investigate the heat conduction were mainly based on the concept of thermal contact resistance. However, the related assumption was far away from the real coating microstructure. In this study, the intrinsic structural characteristics of plasma sprayed TBCs were firstly investigated. Subsequently, an analytical model based on the structural features was developed to understand the dominant effect of oriented 2D pores on heat flux inside the coatings. Results showed that the insulative ratio of 2D pores dominantly determine the effective prevention of heat flux. Moreover, effects of the microstructural parameters, including splat thickness, bonding ratio and unit size, on the total thermal resistance was discussed. Overall, the understanding of the dominant effect of 2D pores would make it possible to design new TBCs with high performance in future applications. © 2019 Elsevier Ltd and Techna Group S.r.l.
Number of references: 81
Main heading: Analytical models
Controlled terms: Plasma spraying - Structural design - Thermal insulation - Heat conduction - Thermal barrier coatings - Heat resistance - Heat flux - Lamellar structures
Uncontrolled terms: Coating microstructures - Functional 2D pores - Future applications - Microstructural parameters - Structural characteristics - Structural tailoring - Thermal barrier coating (TBCs) - Thermal contact resistance
Classification code: 408.1 Structural Design, General - 413.2 Heat Insulating Materials - 641.2 Heat Transfer - 801.4 Physical Chemistry - 813.1 Coating Techniques - 921 Mathematics - 932.3 Plasma Physics
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Funding text: This work was supported by the National Natural Science Foundation of China (grant number 51801148); the China Postdoctoral Science Foundation (grant number 2018M631151); the Domain Foundation of Equipment Advance Research of 13th Five-year Plan (grant number JZX7Y20190262062001); the Natural Science Foundation of Shaanxi Province (grant number 2019JQ-165). In addition, the financial support from China Scholarship Council (CSC) to be a postdoctoral researcher in Forschungszentrum Jülich would be greatly appreciated by Dr. G.-R. Li (grant number 201806285079).
Compendex references: YES
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94. In situ stress heterogeneity in a highly developed strike-slip fault zone and its effect on the distribution of tight gases: A 3D finite element simulation study

Accession number: 20184105931663
Authors: Yin, Shuai (1, 2); Xie, Runcheng (3); Wu, Zhonghu (4); Liu, Jian (5); Ding, Wenlong (6)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Minerals, Shandong University of Science and Technology, Qingdao; Shandong; 266590, China; (3) College of Energy Resource, Chengdu University of Technology, Chengdu; Sichuan; 610059, China; (4) College of Civil Engineering, Guizhou University, Guiyang; 550025, China; (5) Exploration & Development Research Institute of Petrol China Changqing Oil Field Company, Xi'an; 710018, China; (6) School of Energy Resources, China University of Geosciences, Beijing; 100083, China
Corresponding author: Yin, Shuai(speedysys@163.com)
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Publisher: Elsevier Ltd
Abstract: Strike-slip fault zones are an important type of structure formed during continental orogenic events. Exploring the influence of strike-slip faults on the distribution of natural gas by using the 3D finite element method (FEM) is a frontier in the field of geoscience. In this paper, the effects of strike-slip faults on the heterogeneity of in situ stress and reservoir quality were systematically studied in a shallow commercial coalbed methane reservoir in the Shanxi Formation in the southern Qinshui Basin. Systematic 3D FEM modeling and in situ stress evaluation of a highly developed strike-slip fault zone were conducted. The results indicate that the simulated in situ stress distributions of #H, #h and #v in the target layer present ranges of 10–55 MPa, 3–23 MPa and 5–30 MPa, respectively, which are consistent with acoustic emission and hydraulic fracturing measurements. Along the strike-slip faults, the distribution of horizontal in situ stress is mainly affected by the fault length and vertical throw. The stress magnitude differs greatly between the two sides of a given strike-slip fault, affecting the compaction degree and petrophysical properties of the gas-bearing reservoir on both sides of the fault. Along the strike of a given strike-slip fault, the minimum horizontal in situ stress exhibits distinct segmentation characteristics, which affect the distribution of wells with a higher and lower yields. For the 2 s-order faults (the Sitou and Houchengyao faults), wells with a higher gas production capacity are typically located on the northwestern side of the faults. In the middle and southern sections of the Sitou-Houchengyao strike-slip fault zone, both highly concentrated faults and large-scale opening faults (basement and surface faults) produce greater stress concentrations, and the gas production capacity of the gas wells in these areas is poor. When the main strike direction of the faults is consistent with the loading direction of the boundary stress, the stress concentration is relatively low; whereas, the stress concentration increases as the angle between the main fault strike and the loading direction increases. The shear stress of the target layer is characterized by clockwise rotation, which is an important control on the stress heterogeneity of the strike-slip faults in the study area. © 2018 Elsevier Ltd
Number of references: 55
Main heading: Shear stress
Controlled terms: Acoustic emission testing - Horizontal wells - Stress analysis - Natural gas wells - Tight gas - Finite element method - Fault slips - 3D modeling - Gases - Stress concentration - Fracture - Methane - Coal bed methane - Coal deposits - Strike-slip faults - Hydraulic fracturing
Uncontrolled terms: 3D Finite Element Method (FEM) - 3D finite-element simulation - Clockwise rotation - Coalbed methane reservoir - Finite element simulations - Loading direction - Petrophysical properties - Southern qinshui basins
Classification code: 484.1 Earthquake Measurements and Analysis - 503 Mines and Mining, Coal - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 723.2 Data Processing and Image Processing - 751.2 Acoustic Properties of Materials - 804.1 Organic Compounds - 921.6 Numerical Methods - 951 Materials Science
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

95. Field application of epoxy Nano powder coating and corrosion inhibitor technology

Accession number: 20200508104709
Authors: Li, Jin-Ling (1, 2); Cai, Rui (3, 4); Fu, An-Qing (3); Yin, Cheng-Xian (3); Zhu, Shi-Dong (1, 3); Song, Shao-Hua (1, 3)
Author affiliation: (1) Shaanxi Key Laboratory of Environmental Pollution Control Technology and Reservoir Protection of Oil Field School of Chemistry & Chemical Engineering, School of Materials Science and 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; (3) State Key Laboratory for Performance and Structure Safety of Petroleum Tubular Goods and Equipment Materials, CNPC Tubular Goods Research Institute, Xi'an; 710077, China; (4) Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Zhu, Shi-Dong(zhusdxt@126.com)
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Article number: 1001-3660(2019)12-0312-08
Language: Chinese
E-ISSN: 10013660
Document type: Journal article (JA)
Publisher: Chongqing Wujiu Periodicals Press
Abstract: The work aims to study the applicability of an epoxy Nano powder coating in an oilfield of Xinjiang and corrosion inhibitor technology. Three typical working conditions of coating in an oil field in Xinjiang were simulated by high temperature and high pressure autoclave, along with corrosion weight loss method, bonding force test, cathode stripping, scanning electron microscope, and AC impedance, etc. The morphology of epoxy nano-powder coating and its binding degree to the matrix were analyzed. The service life of the coating was predicted; and the effects of corrosion inhibitor on corrosion behavior of samples with uncoated, damaged and intact coatings were studied. The results showed that the bubbling and cracking did not present on the epoxy nano powder coating after corroded in three typical environments; and the coating was well combined with the substrate. The cathode stripping radius of epoxy nano powder coating was less than 5 mm; and the lifetime predicted by the cathode stripping radius and impedance values was 883 d and 740 d, respectively. The uniform corrosion and pitting rates of the damaged coating was 0.6172 mm/a and 1.5720 mm/a, respectively; while the corrosion rate of the complete coating was only 0.0029 mm/a; and the impedance value of the damaged coating was 103 times than that of the intact coating. And the corrosion rate of uncoated and damaged coating samples were reduced by one order of magnitude owing to the addition of the small amount of corrosion inhibitor; and their corrosion inhibition efficiency was 91.05% and 92.75%, respectively. Therefore, this epoxy nano powder coating has good corrosion resistance in three typical corrosion environments. Its anti-stripping ability is also good. The prediction life of stripping radius and impedance is basically consistent; while once the coating is damaged, the corrosion is more serious, especially pitting corrosion. The complementary advantages of different protective technologies can be achieved owing to the addition of small amount of corrosion inhibitor.
Number of references: 40
Main heading: Scanning electron microscopy
Controlled terms: Corrosion inhibitors - Corrosion rate - Corrosion resistance - Corrosion resistant coatings - Corrosive effects - Electrochemical corrosion - High temperature corrosion - Morphology - Oil fields - Pitting - Powder coatings
Uncontrolled terms: Condition - EIS - Epoxy - Epoxy nanometer powder - Field application - Life expectancies - Nano powders - Nanometer powder - Powder coatings and corrosions - Xinjiang
Classification code: 512.1.1 Oil Fields - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 539.2.1 Protection Methods - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 813.2 Coating Materials - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Percentage 9.105E+01%, Percentage 9.275E+01%, Size 1.572E-03m, Size 2.90E-06m, Size 5.00E-03m, Size 6.172E-04m
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96. Fatigue and corrosion fatigue behaviors of G105 and S135 high-strength drill pipe steels in air and H2S environment

Accession number: 20190706500614
Authors: Han, Lihong (1); Liu, Ming (2, 3); Luo, Sheji (4); Lu, Tian Jian (2, 3, 5)
Author affiliation: (1) State Key Laboratory of Service Behavior and Structure Safety for Petroleum Tubular Goods and Equipment Material, CNPC Tubular Goods Research Institute, Xi'an; 710077, China; (2) State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (3) MOE Key Laboratory for Multifunctional Materials and Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (4) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (5) State Key Laboratory of

Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics and Astronautics, Nanjing; 210016, China
Corresponding author: Han, Lihong(hanlihong@cnpc.com.cn)
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Document type: Journal article (JA)
Publisher: Institution of Chemical Engineers
Abstract: Fatigue and corrosion fatigue (CF) tests were carried out to investigate the behaviors of G105 and S135 low carbon high-strength drill pipe steels under different stress amplitudes in air as well as simulated H2S contained drilling environment. The regression analysis method was applied to obtain empirical equations governing the fatigue and CF lives of drill pipe steels in different environmental conditions. Results revealed that there exist fatigue limits for G105 and S135 drill pipe steels in air, and the fatigue life equations for G105 and S135 are Nf=3.28×108(Seqv -406.1)-2 and Nf=3.81×108(Seqv-472.5)-2 respectively. For both types of pipe steels, quasi-cleavage and cleavage fracture was identified as the main feature in the fatigue source zone of the two steels, while fatigue striations were the main feature in the stable crack growth zone. However, in H2S solution, no obvious fatigue limits were found for G105 and S135, and the corresponding CF life equations are Nf=3.58×108(Seqv-143.7)-2 and Nf=2.91×108(Seqv -119.6)-2. The CF sensitivity levels of G105 and S135 in H2S solution are high (64.6% and 74.7%, respectively), but S135 displays a higher sensitivity (74.7%) than G105 (64.6%). Further, no apparent plastic deformation appeared on the fracture surface in H2S solution, and the fatigue cracks sprout from the surface and expand into the specimen with radiation pattern. © 2019 Institution of Chemical Engineers
Number of references: 45
Main heading: Sulfur compounds
Controlled terms: Infill drilling - Low carbon steel - Pipeline corrosion - Drill pipe - Fatigue of materials - Regression analysis - Steel corrosion - Drills - Cracks - Steel pipe
Uncontrolled terms: Drilling environment - Elastic fracture mechanics - Empirical equations - Environmental conditions - Fatigue striations - Fracture surfaces - Regression analysis methods - Stable crack growth
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 539.1 Metals Corrosion - 545.3 Steel - 603.2 Machine Tool Accessories - 619.1 Pipe, Piping and Pipelines - 922.2 Mathematical Statistics - 951 Materials Science
Numerical data indexing: Percentage 6.46e+01%, Percentage 7.47e+01%
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

97. Impact of heavy oil sewage components on the performance of coagulated particles

Accession number: 20193607403179
Authors: Yang, Bo (1, 4); Zhang, Jian (2); Huang, Xuefei (3); Yu, Tao (4); Qu, Chengtun (1, 4)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Shaanxi Key Laboratory of Environmental Pollution Control and Reservoir Protection in Oil and Gas Field, Xi'an Shiyou University, Xi'an, Shaaxi; 710065, China; (2) Engineering Project Management Office of 2nd Oil Production Plant of Changqing Oilfield Branch of Petro China, Qingyang, Qansu; 745100, China; (3) 2nd Oil Production Plant of Henan Oilfield Branch of Sinopec, Nanyang, Henan; 473400, China; (4) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China
Corresponding author: Yang, Bo(yangbo@xsyu.edu.cn)
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Conference code: 230579
Publisher: Trans Tech Publications Ltd
Abstract: In this paper, the relationship between the components of heavy oil wastewater and the surface wettability of coagulation particles were studied. The effects of cations (Ca2+, Mg2+, Fe2+, Fe3+), oil content and pH on wettability of coagulated particles surface in heavy oil wastewater were studied by measuring the contact Angle, and the possible mechanism was discussed. It was found that the contact Angle decreased with the increase of pH value. The change of oil content is negatively correlated with the contact Angle. Surface wettability of coagulated particles are correlated with cationic concentration in sewage and standard electrode potential. When cationic concentration is less than 500 mg/L, surface wettability is positively correlated with standard electrode potential. When cationic concentration is more than 1000 mg/L, surface wettability is mainly related to the total amount of cationic ions in sewage. © 2019 Trans Tech Publications Ltd, Switzerland
Number of references: 8
Main heading: Crude oil
Controlled terms: Contact angle - Electrodes - Heavy oil production - Sewage - Positive ions - Wetting
Uncontrolled terms: Cationic concentration - Heavy oil wastewaters - Oil contents - pH value - Possible mechanisms - Standard electrode potential - Surface wettability - Wettablility
Classification code: 452.1 Sewage - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Mass_Density 1.00e+00kg/m3, Mass_Density 5.00e-01kg/m3
DOI: 10.4028/www.scientific.net/DDF.394.69
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98. Structural Strength Deterioration Characteristics and a Model of Undisturbed Loess under the Action of Wetting and Freeze-Thaw Cycles (*Open Access*)

Accession number: 20200308053749
Authors: She, Haicheng (1, 2, 3); Hu, Zaiqiang (1); Qu, Zhan (4); Li, Hongru (1); Guo, Hu (5, 6); Ma, Xiaoli (3)
Author affiliation: (1) Institute of Geotechnical Engineering, Xi'An University of Technology, Xi'an; 710048, China; (2) Key Lab. of Failure Mechanism and Safety Contr. Techniques of Earth-rock Dam of the Min. of Water Rsrc., Nanjing; 210024, China; (3) YuLin Key Laboratory of Special Soil Mechanics and Engineering, Yulin University, Yulin; 719000, China; (4) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (5) School of Petroleum Engineering and Environment Engineering, Yan'An University, Yan'an; 716000, China; (6) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China
Corresponding author: Hu, Zaiqiang(huzq@xaut.edu.cn)
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Abstract: Undisturbed loess is affected by external environmental disturbances, such as wetting and freeze-thaw cycles, which cause microstructural changes that have an important impact on the structural strength of the loess. These changes in turn affect the stability of structures such as embankments, slopes, and guards. This article takes the Q3 undisturbed loess in Lintong District, Xi'an, as an example. The effects of wetting and freeze-thaw cycles on the loess expansion ratio and pore structure were studied by wetting tests, freeze-thaw cycle tests, and scanning electron microscopy (SEM). The changes in the compression index and compression modulus were studied by a confined compression test. The loess e-lgp compression curve was obtained according to the confined compression test, and the newly defined concepts of the loess structural strength, residual structural strength, and structural strength damage variable, in addition to the e-lgp compression curve, were combined with the experimental data to calculate the damage value generated by the disturbance during the sampling and preparation of loess. The deterioration of the structural strength and damage variable of loess was analyzed. Based on the microscopic statistical damage theory and Weibull distribution, the model used the volume expansion ratio as a variable to establish a statistical damage model under wetting and freeze-thaw cycles. Finally, on the basis of the test, the model parameters were determined. The models were verified by taking loess from a foundation pit in the northern suburbs of Xi'an and were in good agreement with the results of the test. Ultimately, the models have good practicability and can provide guidance for engineering design and construction. © 2019 Haicheng She et al.
Number of references: 64
Main heading: Wetting
Controlled terms: Deterioration - Freezing - Sediments - Scanning electron microscopy - Compression testing - Compressive strength - Pore structure - Thawing - Weibull distribution - Expansion
Uncontrolled terms: Compression modulus - Confined compression tests - Environmental disturbances - Microstructural changes - Stability of structures - Statistical damage theory - Structural strength - Volume expansion ratio
Classification code: 483 Soil Mechanics and Foundations - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
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99. Chemical understanding of resistance drift suppression in Ge-Sn-Te phase-change memory materials (*Open Access*)

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Authors: Chen, Yuhan (1); Sun, Liang (2); Zhou, Yuxing (1); Zewdie, Getasew M. (1); Deringer, Volker L. (3, 6); Mazzarello, Riccardo (4); Zhang, Wei (1, 5)
Author affiliation: (1) Center for Advancing Materials Performance from the Nanoscale, State Key Laboratory for Mechanical Behavior of Materials, Xi'An Jiaotong University, Xi'an; 710049, China; (2) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) Department of Engineering, University of Cambridge, Cambridge; CB2 1PZ, United Kingdom; (4) Institute for Theoretical Solid-State Physics, JARA-FIT, JARA-HPC, RWTH Aachen University, Aachen; 52056, Germany; (5) Xi'An

Jiaotong University, Suzhou Institute, Suzhou; 215123, China; (6) Department of Chemistry, University of Oxford, Oxford; OX1 3QR, United Kingdom
Corresponding author: Sun, Liang(lsun@xsyu.edu.cn)
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Publisher: Royal Society of Chemistry
Abstract: The resistance drift phenomenon observed in amorphous chalcogenide phase-change materials (PCMs) hinders the development of PCM-based neuro-inspired computing devices. It has been observed that the drift in electrical resistance can be effectively reduced by substituting Ge with Sn in the prototype PCM GeTe, forming amorphous (Ge1-xSnx)Te solids. However, the atomistic and chemical origin of such drift suppression phenomenon remains unclear. In this work, we carry out thorough ab initio simulations and chemical bonding analyses of amorphous Ge-Sn-Te materials. We show that the two critical driving forces for glass relaxation in PCMs, i.e. the amount of tetrahedral motifs and the degree of Peierls distortion, are gradually reduced as Sn content increases. Such trend can be explained by the increased ionicity brought about by the Ge $_{\rightarrow}$ Sn substitution. Our work suggests that an optimal Sn-rich GeSnTe composition could be reached for PCM-based neuro-inspired computing with ultralow resistance drift.

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Main heading: Phase change materials
Controlled terms: Germanium alloys - Tin - Germanium compounds - Tin compounds - Chemical bonds - Chemical analysis - Tellurium compounds - Germanium - Phase change memory
Uncontrolled terms: Ab initio simulations - Amorphous chalcogenide - Chemical bondings - Computing devices - Critical driving force - Electrical resistances - Glass relaxations - Peierls distortion
Classification code: 546.2 Tin and Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 722.1 Data Storage, Equipment and Techniques - 801.4 Physical Chemistry
DOI: 10.1039/c9tc04810c
Funding Details: Number: BP2018008, Acronym: -, Sponsor: -; Number: -, Acronym: -, Sponsor: Leverhulme Trust; Number: SFB 917, Acronym: DFG, Sponsor: Deutsche Forschungsgemeinschaft; Number: 51621063,61774123, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XJTU, Sponsor: Xi’an Jiaotong University; Number: -, Acronym: -, Sponsor: Isaac Newton Trust; Number: BK20170414, Acronym: -, Sponsor: Jiangsu Science and Technology Department; Number: -, Acronym: IJL-MMMT, Sponsor: International Joint Laboratory for MicroNano Manufacturing and Measurement Technologies;
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100. High-temperature dielectrics based on (1-y)[(1-x)Bi0.5Na0.5TiO3-xBiAlO3]-yCaZrO3 ternary system with stable permittivity and low dielectric loss in a wide temperature range

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Authors: Ren, Pengrong (1); He, Jiaojiao (1); Sun, L. (2); Frömling, Till (3); Wan, Y. (1); Yang, Shu (1); Cao, Xingzhong (4); Wang, B. (4); Yang, Jing (5); Zhao, Gaoyang (1)
Author affiliation: (1) Shaanxi Province Key Laboratory for Electrical Materials and Infiltration Technology, School of Materials Science and Engineering, Xi'an University of Technology, Xi'an; 710048, China; (2) Key Laboratory of Materials Processing Engineering, College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Institute of Materials Science, Technische Universität Darmstadt, FB Nichtmetallisch-Anorganische Werkstoffe, Alarich-Weiss-Straße 2, Darmstadt; D-64287, Germany; (4) Institute of High Energy Physics, Chinese Academy of Sciences, No. 19 Yuquan Lu, Beijing; 100049, China; (5) Department of applied physics, Xi'an University of Sciences and technology, Xi'an; 710054, China
Corresponding author: Ren, Pengrong(renpengrongxaut@126.com)
Source title: Journal of the European Ceramic Society
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Language: English
ISSN: 09552219
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: High temperature dielectrics based on (1-y)[(1-x)Bi0.5Na0.5TiO3-xBiAlO3]-yCaZrO3 (BNT-100xBA-100yCZ) ternary system were designed and prepared. The introduction of BiAlO3 is verified to create defect dipoles (AlTi'-VO••)•, which leads to the increase of the resistivity and decrease of dielectric loss in BNT-100xBA-100yCZ at high temperature. And the introduction of CaZrO3 is helpful to increase the temperature stability of permittivity, which is probably due to an inhomogeneous domain structure. The composition of x=0.09 and y=0.05 has a good overall dielectric properties, with permittivity value of 765 at 25 °C and 1263 at 200 °C, small variance of permittivity $(\Delta E\#/\#'200\ °C \leq \pm 15\%)$ between 133 °C and 500 °C and low dielectric loss $(\tan \leq 0.02)$ in the temperature range of 160 °C ˜425 °C. Therefore, this system will be one of promising candidates of dielectrics used for high-temperature capacitors. © 2019 Elsevier Ltd
Number of references: 45
Main heading: Permittivity
Controlled terms: Bismuth compounds - Calcium compounds - Titanium compounds - Zirconium compounds - Ternary systems - Aluminum compounds - Dielectric devices - Dielectric losses - Dielectric materials
Uncontrolled terms: Bi0.5Na0.5TiO3 - Domain structure - High temperature capacitors - Low dielectric loss - Permittivity values - Temperature range - Temperature stability - Wide temperature ranges
Classification code: 708.1 Dielectric Materials
Numerical data indexing: Temperature 2.98e+02K, Temperature 4.06e+02K, Temperature 4.73e+02K, Temperature 7.73e+02K
DOI: 10.1016/j.jeurceramsoc.2019.05.042
Funding Details: Number: 2016-16-6, Acronym: -, Sponsor: -; Number: 51802246, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 03XP0146, Acronym: BMBF, Sponsor: Bundesministerium für Bildung und Forschung; Number: 2018JQ5110, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: SKLSP201839, Acronym: SKLSP, Sponsor: State Key Laboratory of Solidification Processing; Number: 17JK0382, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: This work was financially supported by National Natural Science Foundation of China (51802246), Natural Science Basic Research Plan in Shaanxi Province of China (2018JQ5110), State Key Laboratory of Solidification Processing in NWPU (SKLSP201839), Fund Program of the Scientific Activities of Selected Returned Overseas Professionals in Shaanxi Province, Special Scientic Research Plan Projects of Shaanxi Education Department (17JK0382) and Scientific and Technological Project of Yulin City (2016-16-6). Till Frömling would like to thank the German Ministry of Education and Research (BMBF) for funding of the Young Investigator Group HTL-NBT within the program "NanoMatFutur" (Grant No. 03XP0146).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

101. Influence of interface with mismatch dislocations on mechanical properties of Ti/Al nanolaminate

Accession number: 20191906894409
Authors: An, M.R. (1); Song, H.Y. (1); Deng, Q. (2); Su, M.J. (2); Liu, Y.M. (1)
Author affiliation: (1) College of Materials Science and Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Fundamental Science on Aircraft Structural Mechanics and Strength Laboratory, Northwestern Polytechnical University, Xi'an, Shaanxi; 710072, China
Source title: Journal of Applied Physics
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Volume: 125
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Article number: 165307
Language: English
ISSN: 00218979
E-ISSN: 10897550
CODEN: JAPIAU
Document type: Journal article (JA)
Publisher: American Institute of Physics Inc.
Abstract: As a representative boundary, interphase-interface may affect the strength or ductility of multilayered composites dramatically. However, the effect of the interface with mismatch dislocations on the mechanical behavior of multilayered composites is still not clear. In the present work, we performed molecular dynamics simulations to investigate the effect of interface structures and layer spacing on the mechanical properties of the Ti/Al nanolaminate. The results indicate that there are two transitions of the plastic deformation mechanism in the Ti layer with the increase of layer spacing in the sample with a coherent interface. The plastic deformation mechanism evolves from one that is dominated by dislocation to the phase transformation from the hcp-Ti to the fcc-Ti mode, which transfers to the dislocation slip deformation again. For the samples with an incoherent interface, the plastic deformation is dominated by the transformation from hcp-Ti to fcc-Ti, regardless of the variation of layer spacing, while the plastic deformations in the Al layers are mainly dislocations confined in the layer slip in the samples with both coherent and incoherent interfaces. When the layer spacing is larger than 6.6 nm, an obvious second hardening is observed due to the superior dislocation storage ability of the Ti/Al laminate with the incoherent interface. Meanwhile, extraordinary ductility is obtained when optimal layer spacing is employed in the Ti/Al laminate. Moreover, the phase transformation mechanism of hcp-Ti to bcc-Ti has also been explicated in the present work. The general conclusions derived from this work may provide a guideline for the design of high-performance Ti/Al multilayer and alloy devices. © 2019 Author(s).
Number of references: 47
Main heading: Ductility
Controlled terms: Titanium alloys - Phase transitions - Molecular dynamics - Plastic deformation
Uncontrolled terms: Incoherent interfaces - Interface structures - Interphase interfaces - Mismatch dislocations - Molecular dynamics simulations - Multi-layered composites - Phase transformation mechanisms - Plastic deformation mechanisms
Classification code: 542.3 Titanium and Alloys - 801.4 Physical Chemistry - 951 Materials Science
Numerical data indexing: Size 6.60e-09m
DOI: 10.1063/1.5085455
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JQ5031,2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (NSFC) (Contract No. 11572259) and the Natural Science Foundation of Shaanxi Province (Nos. 2018JM1013 and 2017JQ5031).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

102. Optimizing Underwater Game Strategy Based on Cooperative Confrontation (*Open Access*)

Accession number: 20191606810448
Title of translation:
Authors: Wei, Na (1, 2); Liu, Mingyong (1); Zhang, Shuai (1); Zhang, Xiaojian (1)
Author affiliation: (1) School of Marine Engineering, Northwestern Polytechnical University, Xi'an; 710072, China; (2) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Well, Xi'an Shiyou University, Xi'an; 710065, China

Source title: Xibei Gongye Daxue Xuebao/Journal of Northwestern Polytechnical University
Abbreviated source title: Xibei Gongye Daxue Xuebao
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Publication year: 2019
Pages: 63-69
Language: Chinese
ISSN: 10002758
CODEN: XGDUE2
Document type: Journal article (JA)
Publisher: Northwestern Polytechnical University
Abstract: Based on the multi-round confrontation of multiple Autonomous Underwater Vehicles (AUVS), the concept of Nash equilibrium is used to solve the problem of underwater dynamic cooperative confrontation of multiple AUVs. From the perspective of confrontation strategies of both sides of an AUV and considering the influence of survival probability index function and the uncertain factors of underwater environment, the unit target allocation model of multiple AUVs based on dynamic game and game matrix are established. By solving the Nash equilibrium solution of the game model, the particle swarm optimization algorithm is applied to solve the Nash equilibrium point for obtaining the optimal attack and defense strategies of both sides. The feasibility and effectiveness of the method was verified by simulation. © 2019 Journal of Northwestern Polytechnical University.
Number of references: 10
Main heading: Autonomous underwater vehicles
Controlled terms: Autonomous vehicles - Computation theory - Game theory - Particle swarm optimization (PSO)
Uncontrolled terms: Cooperative confrontation - Dynamic game - Multiple autonomous underwater vehicles - Nash equilibria - Particle swarm optimization algorithm - Survival probabilities - Target allocations - Underwater environments
Classification code: 432 Highway Transportation - 674.1 Small Marine Craft - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723 Computer Software, Data Handling and Applications - 731.6 Robot Applications - 921.5 Optimization Techniques - 922.1 Probability Theory
DOI: 10.1051/jnwpu/20193710063
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

103. Multi-color Space Features Analysis from Rock Shin-section Image for Rock-type classification (*Open Access*)

Accession number: 20193307300261
Authors: Liu, Ye (1, 3); Guo, Chao (2); Li, Fan (1); Lv, Lintao (1); Gao, Dongchen (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Research Institute of Yanchang Petroleum (Group) CO.LTD, Xi'an, Shaanxi; 710075, China; (3) Northwestern Polytechnical University, Xi'an, Shaanxi; 710072, China
Source title: Journal of Physics: Conference Series
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Volume: 1237
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Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
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Article number: 032037
Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019

Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: To fully analyze the features extracting from multi-color space for rock classification, each feature will be evaluated in this paper. And, to enhance correlation between features and reduce dimensionality of feature space, a PCA approach will be used and the result of PCA will also be fully analyzed. A C-SVM model is chosen to test analysis result. Data set consist of 500 images from Ordos basin. The classification result between single color space and multi-color space will be compared, and the cooperation result shows that features from multi-color space can support classifier like C-SVM to take higher accuracy and higher reliability. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 8
Main heading: Color
Controlled terms: Image classification - Support vector machines - Classification (of information)
Uncontrolled terms: Classification results - Color space - Correlation between features - Feature space - Multi-colors - Rock classification - Section image - Test analysis
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1237/3/032037
Funding Details: Number: 2018JM4004,2018JM4005, Acronym: -, Sponsor: -; Number: 17JK0603, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by Shaanxi Provincial Natural Science Basis Research 2018 with the Project No.2018JM4004 and 2018JM4005, Special scientific research project of Education Department of Shaanxi Province of China undergrant 17JK0603.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

104. Strain rate and temperature effects on tensile behavior of Ti/Al multilayered nanowire: A molecular dynamics study

Accession number: 20193807456388
Authors: Liu, Lanting (1); Deng, Qiong (1); Su, Mengjia (1); An, Minrong (2); Wang, Ruifeng (1)
Author affiliation: (1) Fundamental Science on Aircraft Structural Mechanics and Strength Laboratory, Northwestern Polytechnical University, Xi'an; Shaanxi; 710072, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Deng, Qiong(dengqiong24@nwpu.edu.cn)
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Volume: 135
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Article number: 106272
Language: English
ISSN: 07496036
E-ISSN: 10963677
CODEN: SUMIEK
Document type: Journal article (JA)
Publisher: Academic Press
Abstract: In this paper, the tensile behavior of Ti/Al multilayered nanowire was investigated by molecular dynamics simulation under a large range of strain rates and temperatures. The results show that strain rate and temperature significantly affect the tensile properties of Ti/Al multilayered nanowire. The value of strain rate sensitivity (m) changes at the critical strain rate of 1 × 109 s-1 above which the strength increases rapidly. Amorphization appears and dominates the plastic deformation of the nanowire above 1 × 109 s-1, and a superplasticity of the nanowire is observed. A linear relationship between the strength of the nanowire and the square root of temperature (T1/2) is founded. The surface nucleation plays a crucial role in the effects of strain rate and temperature on the microstructure evolution of the nanowire. The results in this study will enrich the exploration of Ti-based multilayered materials. © 2019 Elsevier Ltd
Number of references: 55

Main heading: Strain rate
Controlled terms: Nanowires - Molecular dynamics - Temperature
Uncontrolled terms: Effects of strain rates - Linear relationships - Micro-structure evolutions - Molecular dynamics simulations - Multilayered materials - Multilayered nanowires - Strain rate effect - Strain rate sensitivity
Classification code: 641.1 Thermodynamics - 761 Nanotechnology - 801.4 Physical Chemistry - 933 Solid State Physics
DOI: 10.1016/j.spmi.2019.106272
Funding Details: Number: 2016KW-049, Acronym: -, Sponsor: -; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The financial supports of this work are supplied by the National Natural Science Foundation of China (Grant No. 11572259) and the Program for International Cooperation and Exchanges of Shaanxi Province (Grant No. 2016KW-049), China.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

105. Controls of facies-potential coupling on oil accumulation in the Mesozoic Ordos Basin

Accession number: 20193607409790
Title of translation: -
Authors: Qu, Hongjun (1, 2); Pu, Renhai (1, 2); Chen, Shuo (1, 2); Gao, Shengli (3); Zheng, Yanrong (1, 2)
Author affiliation: (1) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an; Shaanxi; 710069, China; (2) Department of Geology, Northwest University, Xi'an; Shaanxi; 710069, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Source title: Oil and Gas Geology
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Publication year: 2019
Pages: 752-762 and 874
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ISSN: 02539985
Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: Oil in Ordos Basin mainly accumulates in the Mesozoic, so it is of great significance to study the oil accumulation patterns of the Mesozoic basin. This study provided an overview of the history of hydrocarbon exploration theories and discussed the oil accumulation patterns in the Mesozoic Ordos Basin based on the systematic analysis of the relationships between the Mesozoic source rocks, sedimentary facies belts, hydrocarbon migration and accumulation, and the oil reservoirs. The results show that the sedimentary facies control the distribution and development characteristics of hydrocarbon source rocks and reservoirs, whereas the diagenetic facies control the distribution and reservoir space of quality reservoirs. Pressure or fluid potentials determine the migration directions and pathways of oil and gas, thereby the coupling of facies and potentials controls the locations of hydrocarbon accumulations and traps. The Ordos Basin was a large inland down-warped basin during the deposition of the Yanchang and Yan'an Formations as the main oil-bearing layer series, featuring relatively simple structures, relatively flat-lying strata, and poorly developed fractures. Therefore, among the six major requirements for hydrocarbon accumulation, risks associated with cap rocks, traps and preservation are almost negligible. When the source rocks are ascertained in the Mesozoic Ordos Basin, the main risks are related with reservoirs, as well as hydrocarbon migration and accumulation. Thus, facies-potential coupling controls oil accumulation in the Mesozoic Ordos Basin, revealing the accumulation pattern as follows:"source rocks control the distribution of play, sedimentary facies control the occurrence of play fairways, and potentials control the location of oil reservoirs". To be specific, the source rocks in Chang 7 and Chang 9 in the Mesozoic basin control the distribution of play, and the 11 fluvial-delta systems around the basin control the distribution of play fairways. For shallow reservoirs controlled by buoyancy, the nose structural uplift plays a significant role in controlling the formation and distribution of oil reservoirs, while for the lower assemblage reservoirs controlled by abnormal pressures, the migration directions and accumulation locations are determined by the differential pressures or fluid potentials between source rock and reservoir. In addition, facies-potential coupling controls the diversity of hydrocarbon accumulation in the Mesozoic Ordos Basin seen from both planar and vertical directions, which is embodied by the "compensatory accumulation" in the shallow layers of the eastern Ordos Basin, "vertical bead-like accumulation" in the western Ordos Basin, and "abnormal pressure-controlled accumulation" in the deep

Yanchang Formation. This understanding is also applicable to the exploration targets in other large down-warped petroliferous basins with higher exploration maturity.
Number of references: 54
Main heading: Location
Controlled terms: Petroleum reservoirs - Quality control - Petroleum prospecting - Petroleum reservoir engineering - Oil bearing formations - Metamorphic rocks - Sedimentology - Hydrocarbons - Sedimentary rocks
Uncontrolled terms: Mesozoic - Oil accumulation - Ordos Basin - Potential controlled - Sedimentary facies - Source rocks - Yan'an formation - Yanchang Formation
Classification code: 481.1 Geology - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds - 913.3 Quality Assurance and Control
DOI: 10.11743/ogg20190406
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

106. Theoretical investigation on SiC(1 1 1)/Al4C3(0 0 0 1) interface using density functional theory calculations

Accession number: 20194807740714
Authors: Li, Jian (1); Cui, Youming (1); Chen, Yuanbo (1); Lv, Xianghong (1); Luo, Xian (2, 3)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Solidification processing, Northwestern Polytechnical University, Xi'an; 710072, China; (3) School of Materials, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Li, Jian(lijian@xsyu.edu.cn)
Source title: Materials Today Communications
Abbreviated source title: Mater. Today Commun.
Volume: 21
Issue date: December 2019
Publication year: 2019
Article number: 100743
Language: English
E-ISSN: 23524928
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Al4C3 is likely to generate on the interface of SiC reinforced aluminum- and magnesium-matrix composites. In order to clarify the interfacial properties and heterogeneous nucleation of Al4C3 on SiC(1 1 1) substrate, the interfacial adhesion, electronic structure, and bonding nature of SiC(1 1 1)/Al4C3(0 0 0 1) are investigated by using density functional theory (DFT) calculations. Considering different stacking sites (top, center, and hollow sites) and different surface terminations (Si- and C-terminated SiC(1 1 1); Al- and C-terminated Al4C3(0 0 0 1)), totally twelve different interface models are examined in the present work. The calculated interfacial adhesion work suggests top-site stacked Si/C- and C/Al-terminated models are more stable. By comparing different cleaving planes, the interfacial weak point is confirmed on the Al4C3(0 0 0 1) side for the both cases. The valence electron density and partial density of states (PDOS) are also analyzed. The interfacial bonding mainly comes from p orbital hybridizations of C-Si and Al-C atom pairs on shallow energy level (-6 eV to Fermi level), and on the deeper energy level (less than -6 eV), the s electrons will partly contribute to the bonding. The epitaxial stacking style is confirmed on the both interfaces, and epitaxial nucleation and growth of Al4C3 on SiC(1 1 1) substrate could also be identified.
Number of references: 51
Main heading: Silicon carbide
Controlled terms: Adhesion - Interfaces (materials) - Aluminum compounds - Electronic structure - Substrates - Chemical bonds - Epitaxial growth - Nucleation - Density functional theory
Uncontrolled terms: DFT calculation - Heterogeneous nucleation - Interfacial bonding - Magnesium matrix composite - Orbital hybridization - Partial density of state - Theoretical investigations - Valence electron density
Classification code: 801.4 Physical Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1.2 Crystal Growth - 951 Materials Science
DOI: 10.1016/j.mtcomm.2019.100743
Funding Details: Number: 2019JM-388, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: XUST, Sponsor: Xi'an University of Science and Technology; Number: 15JK1570, Acronym: -,

Sponsor: Education Department of Shaanxi Province; Number: 1484, Acronym: -, Sponsor: National College Students Innovation and Entrepreneurship Training Program;
Funding text: The authors acknowledge the financial support for the research from the Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2019JM-388), Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 15JK1570), Shaanxi Provincial College Students Innovation and Entrepreneurship Training Program (Program No. 1484), and Science and Technology Innovation Fund of Xi'an Shiyou University. Contributions to this work from Xiaohan Dang, Xianhao Zhang and Songhong Ji of School of Materials Science and Engineering, Xi'an Shiyou University are also acknowledged.The authors acknowledge the financial support for the research from the Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2019JM-388), Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 15JK1570), Shaanxi Provincial College Students Innovation and Entrepreneurship Training Program (Program No. 1484), and Science and Technology Innovation Fund of Xi'an Shiyou University . Contributions to this work from Xiaohan Dang, Xianhao Zhang and Songhong Ji of School of Materials Science and Engineering, Xi'an Shiyou University are also acknowledged.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

107. Theoretical and experimental study of the resonance frequency of fiber Bragg grating accelerometer based on equal strength cantilever beam

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Authors: Gao, Hong (1); Qiao, Xueguang (2); Liu, Qinpeng (1); Shao, Min (1)
Author affiliation: (1) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department of Physics, Northwest University, Xi'an; 710069, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 11209
Part number: 1 of 1
Issue title: Eleventh International Conference on Information Optics and Photonics, CIOP 2019
Issue date: 2019
Publication year: 2019
Article number: 112094U
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CODEN: PSISDG
ISBN-13: 9781510631731
Document type: Conference article (CA)
Conference name: 11th International Conference on Information Optics and Photonics, CIOP 2019
Conference date: August 6, 2019 - August 9, 2019
Conference location: Xi'an, China
Conference code: 156655
Publisher: SPIE
Abstract: Resonance frequency calculation of accelerometer based on equal strength cantilever beam by Rayleigh method has been proposed and experimentally demonstrated. The accelerometer is with a compact structure in which a short section of fiber stubs containing a fiber Bragg grating (FBG) is attached on the bisector of a equal strength cantilever beam. By comprehensive considering the mass of beam and the mass of the block together, resonance frequency of different accelerometer can be calculated more precisely, compared with the experimental results the maximum relative error is 7.2% over the low frequency range from 20 to 45 Hz. © 2019 SPIE.
Number of references: 12
Main heading: Accelerometers
Controlled terms: Nanocantilevers - Fiber Bragg gratings - Natural frequencies - Cantilever beams
Uncontrolled terms: Compact structures - Equal strengths - Fiber bragg grating accelerometer - Low frequency range - Maximum relative errors - Rayleigh method - Resonance frequencies
Classification code: 408.2 Structural Members and Shapes - 761 Nanotechnology - 933 Solid State Physics - 943.1 Mechanical Instruments
Numerical data indexing: Frequency 2.00e+01Hz to 4.50e+01Hz, Percentage 7.20e+00%

DOI: 10.1117/12.2549963
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

108. The control effect of low-amplitude structure on oil-gas-water enrichment and development performance of ultra-low permeability reservoirs

Accession number: 20194407604873
Title of translation:
Authors: Wang, Jianmin (1, 2); Zhang, San (1); Du, Wei (1); Li, Le (1); Qiao, Zhen (1); Zhang, Jun (1); Duan, Mengyue (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), Chengdu; 610000, China
Source title: Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development
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Issue date: August 23, 2019
Publication year: 2019
Pages: 728-738
Language: Chinese
ISSN: 10000747
CODEN: SKYKEG
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Based on drilling, logging, test production and dynamic monitoring data, the control effects of low-amplitude structure on hydrocarbon accumulation and development performance of ultra-low permeability reservoirs were discussed by using the methods of dense well pattern, multi-factor geological modeling, macro and micro analysis and static and dynamic analysis. The results show that the low-amplitude structure always had a significant control and influence on the distribution and accumulation of original hydrocarbon and water and the evolution trend of water flooding performance in ultra-low permeability reservoirs, and it was not only the direction of oil and gas migration, but also a favorable place for relative accumulation of oil and gas. The controlling effect of low-amplitude structure on ultra-low permeability reservoir mainly depended on its tectonic amplitude and scale; the larger the tectonic amplitude and scale, and the higher the tectonic position of the low amplitude structure, the better the reservoir characteristic parameters, oil and gas enrichment degree and development effect, and the larger the spatial scope it controlled and influenced; water cut and oil well output always fluctuated orderly with the height of the low-amplitude structure; the dynamic response of waterflooding was closely related to the relative structural position of the injection and production wells; the injected water always advanced to the low-lying area of the structure first and then moved up to the high-lying area of the structure gradually; with the continuous expansion of the flooded area, part of the oil and gas in the low-lying part of the structure was forced to be distributed to the high part of the structure, resulting in a new oil and gas enrichment, so that the dynamic reserves of oil wells in the high part increased, and the production capacity remained stable.
Number of references: 38
Main heading: Floods
Controlled terms: Gas permeability - Oil field development - Low permeability reservoirs - Oil well flooding - Petroleum reservoir engineering - Proven reserves - Gases - Tectonics - Hydrocarbons - Injection (oil wells)
Uncontrolled terms: Development dynamics - Development performance - Hydrocarbon accumulation - Low-amplitude - Oil gas water - Reservoir characteristic - Static and dynamic analysis - Ultra-low permeability reservoirs
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.11698/PED.2019.04.11

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

109. Genetic mechanism of overpressures in the west slope of central Xihu sag

Accession number: 20195007815533
Title of translation:
Authors: Hou, Zhiqiang (1); Zhang, Shuping (1); Li, Jun (2); Zhao, Jingzhou (2); Liu, Yun (1); Tian, Lianhui (2); Zhong, Xiao (2); Chen, Mengna (2); Xu, Zeyang (2)
Author affiliation: (1) Shanghai Branch, CNOOC China Limited, Shanghai; 200030, China; (2) School of Earth Sciences and Engineering, Xi'an Shiyou University, Key Laboratory of Shaanxi Province for Petroleum Accumulation Geology, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Jun(lijun@xsyu.edu.cn)
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Language: Chinese
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Document type: Journal article (JA)
Publisher: Science Press
Abstract: Many important progresses have been made in studying the genesis of overpressure in sedimentary basins, and there are significant changes in the understanding of major causes for overpressure. The general conclusion that some overpressure is caused by typical unbalanced compaction has been completely or partially negated. It has been increasingly demonstrated that the overpressure generally results from hydrocarbon generation. Overpressure is formed in different layers of several structural belts in Xihu sag. It is believed that unbalanced compaction (under-compaction) is still essential for the formation of overpressure According to the basic geological conditions formed by abnormal pressure and the geological and geophysical effects generated by abnormal pressure, the causes of different lithologic abnormal pressure in the Pinghu Formation in the west slope of central Xihu sag are systematically analyzed using the logging curves combination method, Bowers method (loading-unloading curve method), the acoustic velocity-density crossplot method, porosity comparison method, pressure calculation inverse method and comprehensive analysis method. The results show that the overpressure in source rocks in mudstones from the west slope of central Xihu sag is mainly generated by self-sourced hydrocarbon generation, and the overpressure in non-source rocks is caused by pressure transfer between adjacent sources. There are at least two types of pressure structures in the reservoir: atmospheric pressure-overpressure and atmospheric pressure-overpressure-atmospheric pressure. The top surface of abnormal pressure gradually declines from south to north, which is mainly caused by the pressure transfer during the hydrocarbon migration and transport towards reservoirs under the drive of hydrocarbon generation. © 2019, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 34
Main heading: Atmospheric pressure
Controlled terms: Inverse problems - Acoustic wave velocity - Compaction - Unloading - Hydrocarbons
Uncontrolled terms: Abnormal pressure - Over-pressures - Overpressure - Pressure transfer - West slope of central Xihu sag
Classification code: 443.1 Atmospheric Properties - 691.2 Materials Handling Methods - 751.1 Acoustic Waves - 804.1 Organic Compounds
DOI: 10.7623/syxb201909004
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

110. Photo-electrocatalytic water oxidation based on an earth-abundant metallic semiconductor-molecule hybrid photoanode

Accession number: 20194807739233

Authors: Hu, Gui-Lin (1); Lei, You-Jia (1); Hu, Rong (1); Sun, Hua-Ming (1); Gu, Quan (1); Ren, Da-Zhong (2); Wang, Hong-Yan (1)
Author affiliation: (1) Key Laboratory for Macromolecular Science of Shaanxi Province, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710119, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Hong-Yan(hongyan-wang@snnu.edu.cn)
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Language: English
ISSN: 03603199
CODEN: IJHEDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: A molecular catalyst containing earth-abundant, low-cost cobalt was integrated with α–Fe2O3 film electrode for photoelectrochemical water oxidation. Under illumination of LED (λ = 420 nm), the hybrid photoanode exhibits a 7-fold enhancement in photocurrent density relative to bare α–Fe2O3 in 0.1 M Na2SO4 at pH 7. Accompanied by the highly stable photocurrent, stoichiometric oxygen and hydrogen are generated with a faraday efficiency over 85% respectively for 4 h photolysis. With hydrogen peroxide (H2O2) serving as the hole scavenger, it demonstrated that integration with molecular catalyst can greatly prompt hole diffusion length of α–Fe2O3 and improve its charge transfer properties. Mechanistic study and stability test supports that highly efficient and stable molecular catalyst plays the crucial role in charge separation, which successfully inhibits electron-hole recombination, achieving great enhancement in photocurrent. Therefore, to assemble into a highly active semiconductor-molecule heterojunction for solar fuel generation, the core relies on an available strategy to design the robust, stable and practical catalytic center. © 2019 Hydrogen Energy Publications LLC
Number of references: 38
Main heading: Electrodes
Controlled terms: Hematite - Heterojunctions - Charge transfer - Molecules - Catalysts - Photocurrents - Photolysis - Sodium sulfate - Electrochemistry - Solar fuels
Uncontrolled terms: Charge transfer properties - Electron hole - Electron-hole recombination - Hole diffusion length - Mechanistic studies - Photo-electrochemical device - Photoelectrochemical water oxidation - Semiconductor molecules
Classification code: 482.2 Minerals - 657.1 Solar Energy and Phenomena - 701.1 Electricity: Basic Concepts and Phenomena - 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics
Numerical data indexing: Percentage 8.50e+01%, Size 4.20e-07m, Time 1.44e+04s
DOI: 10.1016/j.ijhydene.2019.10.075
Funding Details: Number: 21402113, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-175, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: GK201903041, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work is supported by the National Natural Science Foundation of China (21402113), National Natural Science Foundation of Shaanxi Province (2019JQ-175), the Fundamental Research Funds for the Central Universities (GK201903041). Appendix A
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

111. Selectivity and in-band impedance enhancement of a compact slot antenna with defected ground structures

Accession number: 20192307015989
Authors: Yang, Hailong (1); Xi, Xiaoli (1); Wang, Lili (1); Zhao, Yuchen (1); Shi, Xiaomin (2)

Author affiliation: (1) Faculty of Automation and Information Engineering, Shaanxi Key Laboratory of Complex System Control and Intelligent, Xian University of Technology, Xian; 710048, China; (2) Communication Engineering Department, Xi'an Shiyou University, Xi'an, China
Corresponding author: Xi, Xiaoli(xixiaoli@xaut.edu.cn)
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Language: English
ISSN: 17590787
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Document type: Journal article (JA)
Publisher: Cambridge University Press
Abstract: In this study, a new ultra-wideband (UWB) band-edge selectivity antenna with a modified radiation slot using defected ground structure (DGS) is presented to obtain bandpass filtering reflection coefficient and gain performance. The well-designed DGS is designed on backside metallic of the substrate and can be seen as a low-pass filter that provides a good roll-off at a higher frequency. By connecting the DGS and the stepped slot and making them merge with each other, good cut-off property in the upper passband and better in-band impedance characteristics are obtained. Measured results show that the proposed design not only shows good band-edge selectivity in reflection coefficient and gain performance but also has a good impedance matching of -13.5 dB reflection coefficients and a good radiation efficiency of 90% in the operating frequencies. The measured bandwidth defined with the reflection coefficient less than -10 dB is from 3.1-11.2 GHz. Furthermore, the size of the filtering UWB antenna is 22 mm × 12 mm, which is smaller than many individual UWB antennas and UWB filters. © Copyright Cambridge University Press and the European Microwave Association 2019.
Number of references: 20
Main heading: Defected ground structures
Controlled terms: Bandwidth - Low pass filters - Microwave antennas - Reflection - Radiation efficiency - Slot antennas - Defects - Ultra-wideband (UWB)
Uncontrolled terms: Band edge - Band pass filtering - Higher frequencies - Impedance characteristics - Measured results - Operating frequency - Radiation efficiency - Ultra-wideband antennas
Classification code: 461.2 Biological Materials and Tissue Engineering - 703.2 Electric Filters - 716 Telecommunication; Radar, Radio and Television - 716.1 Information Theory and Signal Processing - 716.3 Radio Systems and Equipment - 951 Materials Science
Numerical data indexing: Decibel -1.00e+01dB, Decibel -1.35e+01dB, Frequency 3.10e+09Hz to 1.12e+10Hz, Percentage 9.00e+01%, Size 1.20e-02m
DOI: 10.1017/S1759078719000734
Funding Details: Number: 2017ZDXM-GY-117, Acronym: -, Sponsor: -; Number: 61701398, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 6140450010302, Acronym: -, Sponsor: National Defense Pre-Research Foundation of China;
Funding text: This work was supported in part by the National Defense Pre-Research Foundation of China (6140450010302), the National Natural Science Foundation of China under Grant 61701398, the Key Research and Development Plan of Shaanxi Province (2017ZDXM-GY-117), and the Doctoral Innovation Fund of Xi'an University of Technology. Hailong Yang received his B.S. in communicating engineering from Heze University, Heze, China, in 2012 and his M.S. degree in communicating engineering from the Xi'an University of Technology, Xi'an, China, in 2015. He is currently working toward his Ph.D. degree at the Xi'an University of Technology, Xi'an, China. His recent research interests include ultra-wideband antennas, reconfigurable antennas, and ultra-wideband filters. Xiaoli Xi (M'2010) received her B.S. degree in Applied Physics from the University of Defense Technology, Changsha, China, in 1990 and her M.S. degree in Biomedical Engineering from Fourth Military Medical University, Xi'an, China, in 1998, and her Ph.D. degree in electrical engineering from Xi'an Jiaotong University, Xi'an, China, in 2004. She is currently a Professor at the Department of Electric Engineering, Xi'an University of Technology, Xi'an, China. Her recent research interests include wave propagation, antenna design, and communication signal processing. Lili Wang received her B.S. in electromagnetic field and microwave technology from the Beijing University of Post and Telecommunications, Beijing, China, in 1990 and her M.S. degree in electrical engineering from the Xi'an University of Technology, Xi'an, China, in 2004. She is now an Adjunct Professor at the Department of Electric Engineering, Xi'an University of Technology, Xi'an, China. Her recent research interests include wave propagation and antenna design. Yuchen Zhao received his B.S., M.S., and Ph.D. degrees in electronic science and technology from Northwestern Polytechnical University, Xi'an, China, in 2007, 2010, and 2014, respectively. He joined the faculty of Electronic

Engineering Department, Xi'an University of Technology in 2014. His research interests include wave propagation and effective medium theories. Xiao-Min Shi received her B.S., M.S., and Ph.D. degrees from the Xi'an University of Technology, Xi'an, China, in 2010, 2013, and 2017, respectively. She joined the Communication Engineering Department, Xi'an Shiyou University, Xi'an in 2017. Her research interests include analysis and design of microwave filters and RF passive circuits.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

112. Electronic structure and optical properties of phosphate bis-guanidinoacetate crystal containing guanidine phosphate interaction (*Open Access*)

Accession number: 20192307019549
Title of translation:
Authors: Wang, Lei (1); Tu, Bing-Tian (2)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan; 430070, China
Corresponding author: Wang, Lei(leiw@xsyu.edu.cn)
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Article number: 064210
Language: Chinese
ISSN: 10003290
CODEN: WLHPAR
Document type: Journal article (JA)
Publisher: Institute of Physics, Chinese Academy of Sciences
Abstract: L-arginine phosphate monohydrate (LAP) crystal is an excellent nonlinear optical material, its effective nonlinear optical coefficient is about 2-3.5 times that of potassium dideuterium phosphate (KDP) crystal, and its conversion efficiency can achieve up to 90%. The deuterated crystal of LAP has a very high laser damage threshold. Thus, once it was considered as a preferred material to replace KDP crystal for laser inertial confinement fusion and other fields. In addition, the LAP crystal has a much higher stimulated Brillouin scattering (SBS) reflectivity than quartz crystal and also has a lower SBS threshold. Moreover, it exhibits a special reversible phase-change in the variable temperature process, and shows an ultra-long spin-lattice relaxation time at solid-state NMR. In a word, the LAP crystal has shown its uniqueness under the action of energy such as light, heat and magnetic field. However, for these special phenomena, there is no reasonable explanation. Phosphate arginine is responsible for the biological energy storage and transfer in invertebrates as an important phosphorus source, which has a similar chemical composition to that of LAP crystal. The special electrostatic or hydrogen bonding interaction between guanidine and phosphate plays an important role in protein molecule interaction and their biochemical functions. Moreover, the conformational transitions of L-arginine molecule in phosphoric acid solution at different energies have been reported, and the fluorescence emission of L-arginine molecule aggregates can be changed by the interaction between phosphoate and guanidine group. The interaction between phosphoate and guanidine group in crystal structure is also studied as a model of biomolecular interaction. In order to further study the mechanism of interaction between phosphoate and guanidine group and the crystal macroscopic properties, phosphate bis-guanidinoacetate (PBGA) crystal containing the similar phosphoate and guanidine groups has been synthesized and reported. In this paper, the geometry parameters, band structure, electronic density of states, and optical properties of PBGA crystal are investigated by first-principles based the density functional theory. The energy gap of PBGA crystal is 4.77 eV, much smaller than 5.96 eV of KDP crystal. Therefore, the photon transition becomes easier and the corresponding photon absorption is relatively large in PBGA crystal. The top states of crystal valence band are mainly composed of the N-2p of guanidine and the O-2p of carboxyl and phosphate groups. There exists the electron interaction among guanidine, carboxyl and phosphate groups. The optical properties of PBGA crystal are similar in the [100] and [010] orientation, whose linear optical properties are better than those of [001] when the incident photon energy is less than 10 eV. The strong energy loss peak at 9.46 eV in the [001] orientation is due to the electronic transition of N-2p on guanidine group in the valence band, and its distribution is narrow. Thus the optical properties of [001] orientation are limited. The present research establishes

a good foundation for further understanding and studying the intergroup interactions and optical properties in PBGA crystal. © 2019 Chinese Physical Society.
Number of references: 23
Main heading: Optical properties
Controlled terms: Potassium compounds - Laser damage - Density functional theory - Electronic structure - Hydrogen bonds - Molecules - Photons - Positive ions - Arginine - Nuclear magnetic resonance spectroscopy - Crystal structure - Nonlinear optics - Optical materials - Nuclear magnetic resonance
Uncontrolled terms: Biomolecular interactions - Conformational transitions - Electronic structure and optical properties - First principles - Hydrogen bonding interactions - Non-linear optical coefficients - Non-linear optical material - Stimulated Brillouin Scattering (SBS)
Classification code: 741.1 Light/Optics - 741.1.1 Nonlinear Optics - 741.3 Optical Devices and Systems - 744.8 Laser Beam Interactions - 801.4 Physical Chemistry - 804.1 Organic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1.1 Crystal Lattice
Numerical data indexing: Electron_Volt 1.00e+01eV, Electron_Volt 4.77e+00eV, Electron_Volt 5.96e+00eV, Electron_Volt 9.46e+00eV, Percentage 9.00e+01%
DOI: 10.7498/aps.68.20181627
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Funding text: * Project supported by the Young Scientists Fund of the National Natural Science Foundation of China (Grant No. 51702257), the Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2018JQ5123), and the Provincial Superiority Discipline of Materials Science and Engineering of Xi'an Shiyou University, China (Grant No. ys37020203). † Corresponding author. E-mail: leiw@xsyu.edu.cn
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

113. Matching Knowledge Suppliers and Demanders on a Digital Platform: A Novel Method (*Open Access*)

Accession number: 20191206671954
Authors: Chang, Jing (1, 2); Li, Hua (1, 3); Sun, Bingzhen (1, 3)
Author affiliation: (1) School of Economics and Management, Xidian University, Xi'an; 710071, China; (2) School of Economics and Management, Xi'an Shiyou University, Xi'an; 710065, China; (3) Shaanxi Soft Science Institute of Informatization and Digital Economy, Xi'an; 710071, China
Corresponding author: Li, Hua(lihua@xidian.edu.cn)
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Publication year: 2019
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Article number: 8628950
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: More knowledge service providers are using digital platforms to provide services, which operate under a different set of operating rules than the traditional service model. This paper presents a novel method to match knowledge suppliers and demanders on a digital platform that considers the differences between the two service models. In addition, this paper proposes an innovative approach to assess the network value to the platform provider by fuzzy multi-attribute decision making. A case study is used to show that the novel method is valid and practical. The matching method proposed in this paper extends the application of the knowledge matching method and provides a theoretical basis to improve the efficiency and profits of knowledge service platforms. © 2013 IEEE.
Number of references: 45
Main heading: Decision making
Controlled terms: Knowledge management
Uncontrolled terms: Digital platforms - FMADM - Knowledge transfer - Network effects - Two sided matching
Classification code: 723.5 Computer Applications - 903.3 Information Retrieval and Use - 912.2 Management

DOI: 10.1109/ACCESS.2019.2895871
Funding Details: Number: 2013ZZ121939, Acronym: -, Sponsor: -; Number: 2018XWJXGG-24, Acronym: -, Sponsor: -; Number: 81603572, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XWYY201709, Acronym: CCMU, Sponsor: Capital Medical University; Number: LQ15H270002, Acronym: ZJNSF, Sponsor: Natural Science Foundation of Zhejiang Province;
Funding text: This work was supported by grants from Intramural Research Program of Basic and Clinical Medical Sciences, Xuanwu Hospital, Capital Medical University (Dr Qi, XWYY201709), Educational and Teaching Reform Project of Capital Medical University Xuanwu Hospital (Dr Qi, 2018XWJXGG-24), Beijing Municipal Human Resources and Social Security Bureau (Dr Qi, 2013ZZ121939), National Natural Science Foundation of China (Dr Zhang, 81603572) and Zhejiang Provincial Natural Science Foundation (Dr Zhang, LQ15H270002). The sponsors had no role in the design or conduct of this research.
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Database: Compendex
Data Provider: Engineering Village

114. Effect of temperature on the friction and wear behaviors of Cr3C2-20 wt% Ni cermets

Accession number: 20194007484018
Authors: Zhai, Wenyan (1); Sun, Liang (1); Dong, Hui (1); Wang, Yiran (2); Lin, He (2)
Author affiliation: (1) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi Province; 710065, China; (2) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an , Shaanxi Province; 710049, China
Corresponding author: Zhai, Wenyan(zhaiwy0427@163.com)
Source title: Materials Research Express
Abbreviated source title: Mater. Res. Express
Volume: 6
Issue: 10
Issue date: September 11, 2019
Publication year: 2019
Article number: 1065C3
Language: English
E-ISSN: 20531591
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: Friction and wear behaviors of Cr3C2-20 wt % Ni cermets against Al2O3 under dry sliding conditions in air were investigated at temperatures ranging from room temperature to 800 C. The friction coefficient, wear rate, microstructure and wear mechanism of Cr3C2-20 wt % Ni cermets were researched using SEM, XPS and TEM in this study. Results indicated that the friction coefficient increased firstly with the increase of temperature from room temperature to 400 C and then decreased rapidly with further increasing the temperature to 800 C. The oxide products of Cr2O3 and NiO effectively decreased the friction coefficient at high temperatures. However, the oxide products were easily cracked and degenerated under the high compressive stress and shear stress, which aggravated the weight loss during the wear process. © 2019 IOP Publishing Ltd.
Number of references: 22
Main heading: Microstructure
Controlled terms: Tribology - Wear of materials - Alumina - Shear stress - Friction - Nickel oxide - Chromium compounds - Nickel - Cermets - Aluminum oxide
Uncontrolled terms: Dry sliding - Effect of temperature - Friction and wear behaviors - Friction coefficients - High temperature - Wear mechanisms - Wear process - Weight loss
Classification code: 531 Metallurgy and Metallography - 548.1 Nickel - 804.2 Inorganic Compounds - 812.1 Ceramics - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/2053-1591/ab3ff7
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

115. Utilization of bifunctional catalyst for upgrading petroleum residue via cracking and gasification: Effect of catalysts

Accession number: 20190206367579
Authors: Tang, Ruiyuan (1); Yuan, Meng (2); Liu, Kai (1); Li, Huafeng (1); Zhang, Juntao (1); Tian, Yuanyu (2)
Author affiliation: (1) Research Center of Petroleum Processing & Petrochemicals, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) State Key Laboratory of Heavy Oil Processing, China University of Petroleum (East China), Qingdao; Shandong; 266580, China
Corresponding author: Tian, Yuanyu(tianyy1008@126.com)
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Abbreviated source title: J. Energy Inst.
Volume: 92
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Issue date: December 2019
Publication year: 2019
Pages: 1936-1943
Language: English
ISSN: 17439671
E-ISSN: 17460220
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Vacuum residue is stepwise and high-efficient converted by the base cracking and coke gasification process. Cracking effect of vacuum residue was carried out with different bifunctional catalysts in a fluidized bed reactor, respectively. Calcium aluminate catalyst specialized for cracking and gasification procedure is selected with the activities of cracking and gasification. In comparison with silica sand, calcium aluminate catalyst showed the higher vacuum residue cracking activity, and cracking activity gradually increased with increasing the Ca/Al ratios. The results indicated that C2[sbnd]C4 olefinicity of above 60.4%, cracking-generated coke of about 5.0 wt%, and light oil yields is over 84.0 wt% at 650 °C with a catalyst-to-oil ratio of 7.0. Moreover, it was also found that calcium aluminate catalyst synthetized with the Ca/Al molar ratio of 12:7 and carbon black as pore-forming agent displayed a better cracking properties than that of the other catalysts. VR cracking properties over calcium aluminate catalysts was closely related to their basicity, as indicated by the Hammett indicators method. Cracking-generated coke on the base catalyst was well gasified with pure steam at 800 °C and produced the syngas with the total content of H2 and CO2 up to 81.5 vol %, the coke conversion over the tested catalysts is of above 93.6% in 30 min. Also, the alternating base cracking and gasification operations were performed three times to verify the stability of the optimal calcium aluminate catalyst. The selected catalysts presented high hydrothermal stability and stable cracking activity, which could be potentially used for vacuum residue stepwise and high-efficient utilization via vacuum residue catalytic cracking and gasification regeneration process. © 2018 Energy Institute
Number of references: 29
Main heading: Gasification
Controlled terms: Catalysts - Coke - Silica sand - Sodium Aluminate - Fluid catalytic cracking - Chemical reactors - Calcium compounds - Carbon black - Synthesis gas - Fluidized beds - Silica - Molar ratio
Uncontrolled terms: Bi-functional catalysts - Catalyst-to-oil ratios - Coke gasification - Fluidized bed reactors - Hydrothermal stabilities - Regeneration process - Syn-gas - Vacuum residue
Classification code: 524 Solid Fuels - 801.4 Physical 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
Numerical data indexing: Percentage 6.04e+01%, Percentage 9.36e+01%, Temperature 1.07e+03K, Temperature 9.23e+02K, Time 1.80e+03s
DOI: 10.1016/j.joei.2018.11.001
Funding Details: Number: 2015202, Acronym: -, Sponsor: -; Number: 2013010042, Acronym: -, Sponsor: -; Number: 21576293, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016RCJJ006, Acronym: SDUST, Sponsor: Shandong University of Science and Technology;
Funding text: The authors are grateful for the financial support provided by the National Natural Science Foundation of China (Nos. 21576293), Scientific Research Foundation of Shandong University of Science and Technology for Recruited Talents (Nos. 2016RCJJ006), Qingdao Postdoctoral Applied Research Project (Nos. 2015202), Scientific Research Foundation of China University of Petroleum for Recruited Talents (Nos. 2013010042).The authors are grateful for the financial support provided by the National Natural Science Foundation of China (Nos. 21576293), Scientific Research Foundation of Shandong University of Science and Technology for Recruited Talents (Nos. 2016RCJJ006), Qingdao Postdoctoral Applied Research Project (Nos. 2015202), Scientific Research Foundation of China University of Petroleum for Recruited Talents (Nos. 2013010042).
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

116. Retraction notice to “Efficient preparation of biodiesel from rapeseed oil over modified CaO” (Applied Energy (2011) 88(8) (2735–2739), (S0306261911001322) (10.1016/j.apenergy.2011.02.033))

Accession number: 20190906564646
Authors: Tang, Ying (1); Meng, Mei (1); Zhang, Jie (1); Lu, Yong (2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an shiyou University, Xi'an Shannxi, China; (2) Shanghai Key Laboratory of Green Chemistry and Chemical Processes, Department of Chemistry, East China Normal University, Shanghai; 200062, China
Source title: Applied Energy
Abbreviated source title: Appl. Energy
Issue date: 15 March 2019
Publication year: 2019
Pages: 1596
Language: English
ISSN: 03062619
CODEN: APENDX
Document type: Erratum (ER)
Publisher: Elsevier Ltd
Abstract: This article has been retracted: please see Elsevier Policy on Article Withdrawal (https://www.elsevier.com/about/our-business/policies/article-withdrawal). This article has been retracted at the request of Editor-in-Chief.
The article is a duplicate of a paper that has already been published in Bull. Chem. Soc. Ethiop. 2011, 25(1), 37-42 (http://www.ajol.info/index.php/bcse/article/viewFile/63359/51224). One of the conditions of submission of a paper for publication is that authors declare explicitly that the paper is not under consideration for publication elsewhere. As such this article represents a severe abuse of the scientific publishing system. The scientific community takes a very strong view on this matter and apologies are offered to readers of the journal that this was not detected during the submission process. © 2019
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Database: Compendex
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117. Propagation characteristics of vortex beam using visualization analysis

Accession number: 20200508093074
Authors: Zhang, Yan (1); Hao, Minru (1); Zhang, Yunzhe (2)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an Shaanxi, 710065, China; (2) Atomic and Molecular Physics Key Discipline in Shaan'xi Province, School of Mechanical and Material Engineering, Xi'an University, Xi'an Shaanxi; 710065, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 11209
Part number: 1 of 1
Issue title: Eleventh International Conference on Information Optics and Photonics, CIOP 2019
Issue date: 2019
Publication year: 2019
Article number: 112093Z
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510631731
Document type: Conference article (CA)
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Conference date: August 6, 2019 - August 9, 2019

Conference location: Xi'an, China
Conference code: 156655
Publisher: SPIE
Abstract: According to the paraxial theory, we analyzed the linear momentum density and orbital angular momentum (OAM) the propagation characteristics of a Gaussian vortex beam in free space. The propagation characteristics are simulated and analyzed in the visualization. Further, we study the variation of the propagation characteristics with different topological charges. In addition, we also analyzed the position of momentum in the transverse profile, where the momentum density of the spot will be broadened with propagation distance. This study can provide guidance for using vortex beams in optical communication and manipulation. © 2019 SPIE.
Number of references: 19
Main heading: Optical communication
Controlled terms: Angular momentum - Gaussian beams - Vortex flow - Visualization
Uncontrolled terms: Linear momenta - Optical vortices - Orbital angular momentum - Propagation characteristics - Propagation distances - Topological charges - Transverse profile - Visualization analysis
Classification code: 631.1 Fluid Flow, General - 711 Electromagnetic Waves - 717.1 Optical Communication Systems
DOI: 10.1117/12.2549190
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

118. A 14-bit DDS Circuit Design Based on CORDIC Algorithm

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Authors: Su, Yali (1); Kuang, Zejie (2); Zhang, Guohe (2); Sun, Li (3)
Author affiliation: (1) Xi'an Shiyou University, College of Mechanical Engineering, Xi'an, Shaanxi; 710061, China; (2) Xi'an Jiaotong University, School of Electronic and Information Engineering, Xi'an, Shaanxi; 710049, China; (3) Airforce Engineering University, Xi'an, Shaanxi; 710077, China
Source title: Proceedings of 2019 IEEE International Conference of Intelligent Applied Systems on Engineering, ICIASE 2019
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Issue title: Proceedings of 2019 IEEE International Conference of Intelligent Applied Systems on Engineering, ICIASE 2019
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Conference name: 2019 IEEE International Conference of Intelligent Applied Systems on Engineering, ICIASE 2019
Conference date: April 26, 2019 - April 29, 2019
Conference location: Fuzhou, Fujian, China
Conference code: 159463
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: A hardware circuit design for high performance DDS(Direct Digital Synthesizer) is discussed here. With proper design of the phase amplitude conversion module, the output truncation error processing module, multi-bits DAC compatibility and phase accumulator, a 14-bit DDS circuit with SMIC 0.13um technology is presented based on CORDIC(Coordinate Rotation Digital Computer) algorithm. Compared with the lookup table method, higher speed performance can be achieved. The FPGA experiment results show that the circuit with operation frequency 200MHz consumes about 43320 equivalent gates and the frequency resolution reaches 0.0466 Hz. The circuit with 520MHz working frequency consumes about 64520 equivalent gates, while the frequency resolution is 0.121 Hz. And SFDR is about 112dB. © 2019 IEEE.
Number of references: 10
Main heading: Table lookup
Controlled terms: Equivalent circuits - Digital computers - Timing circuits - Integrated circuit manufacture
Uncontrolled terms: Co-ordinate rotation digital computers - CORDIC algorithms - Direct digital synthesizer - Frequency resolutions - Lookup table method - Operation frequency - Phase accumulators - Working frequency
Classification code: 713.4 Pulse Circuits - 714.2 Semiconductor Devices and Integrated Circuits - 722.4 Digital Computers and Systems - 723.1 Computer Programming

Numerical data indexing: Decibel 1.12e+02dB, Frequency 1.21e-01Hz, Frequency 2.00e+08Hz, Frequency 4.66e-02Hz, Frequency 5.20e+08Hz
DOI: 10.1109/ICIASE45644.2019.9074119
Funding Details: Number: 61474093,61701531, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was support by the National Science Foundation of China under Grant No.61701531 and No. 61474093.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

119. Laser-induced breakdown spectroscopy in archeological science: a review of its application and future perspectives

Accession number: 20193107248553
Authors: Ruan, Fangqi (1); Zhang, Tianlong (1); Li, Hua (1, 2)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecular Chemistry of Ministry of Education, College of Chemistry & Material Science, Northwest University, Xi'an, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Corresponding author: Zhang, Tianlong(tlzhang@nwu.edu.cn)
Source title: Applied Spectroscopy Reviews
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Volume: 54
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Pages: 573-601
Language: English
ISSN: 05704928
E-ISSN: 1520569X
CODEN: APSRBB
Document type: Journal article (JA)
Publisher: Bellwether Publishing, Ltd.
Abstract: Laser-induced breakdown spectroscopy (LIBS) in the last decades has become a promising analytical technique for a broad variety of archeological objects with great results obtained either alone or in combination with complementary techniques. It is mainly advantageous due to no sample preparation, minimally destructive, rapid analysis and depth profiling analysis spur LIBS technique to become a significant attractive technique for the characterization and conservation of archeological samples or artworks. The present paper describes in brief the basic principles and instrumentation of LIBS, and reviews several case studies on metallic alloys, ceramic, glass, painted artworks, historical buildings and biomaterials in the most recent 7 years (2011–2017) that demonstrate the applicability and prospects of LIBS in the field of archeological science. © 2019, © 2019 Taylor & Francis Group, LLC.
Number of references: 163
Main heading: Spectrum analysis
Controlled terms: Depth profiling - Laser induced breakdown spectroscopy - Atomic emission spectroscopy
Uncontrolled terms: Combined techniques - Complementary techniques - Depth-profiling analysis - Future perspectives - Historical buildings - Laserinduced breakdown spectroscopy (LIBS) - Sample preparation - scientific archeology
Classification code: 801 Chemistry - 931.1 Mechanics
DOI: 10.1080/05704928.2018.1491857
Funding Details: Number: 2011YQ030113, Acronym: -, Sponsor: -; Number: 15NW05, Acronym: -, Sponsor: -; Number: 21375105,21605123,21675123, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: We are grateful for the support of the National Special Fund for the Development of Major Scientific Instruments and Equipment of China (No. 2011YQ030113), the National Natural Science Foundation of China (No. 21375105, 21605123 and 21675123) and the Science Foundation of Northwest University (No. 15NW05).
Compendex references: YES
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120. Design optimization of a VX gasket structure for a subsea connector based on the kriging surrogate model-NSGA-II algorithm considering the load randomness (*Open Access*)

Accession number: 20190906552649
Authors: Zeng, Wei (1, 2, 3); Ren, Tao (1); Yu, Lijun (2); Huang, Jingjing (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) RG Petro-machinery (Group) Co.Ltd., Nanyang; 473006, China; (3) School of Safety and Ocean Engineering, China University of Petroleum, Beijing; 102249, China
Corresponding author: Zeng, Wei(wzeng@xsyu.edu.cn)
Source title: Algorithms
Abbreviated source title: Algorithms
Volume: 12
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Issue date: February 1, 2019
Publication year: 2019
Article number: 42
Language: English
E-ISSN: 19994893
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: The VX gasket is an important part of the wellhead connector for a subsea Christmas tree. Optimization of the gasket's structure can improve the connector's sealing performance. In this paper, we develop an optimization approach for the VX gasket structure, taking into consideration working load randomness, based on the Kriging surrogate model-NSGA-II algorithm. To guarantee the simulation accuracy, a random finite element (R-FE) model of the connector's sealing structure was constructed to calculate the gasket's sealing performance under random working load conditions. The working load's randomness was simulated using the Gaussian distribution function. To improve the calculation efficiency of the sealing performance for individuals within the initial populations, Kriging surrogate models were constructed. These models accelerated the optimization speed, where the training sample was obtained using an experimental method design and the constructed R-FE model. The effectiveness of the presented approach was verified in the context of a subsea Christmas tree wellhead connector, which matched the 20" casing head. The results indicated that the proposed method is effective for VX gasket structure optimization in subsea connectors, and that efficiency was significantly enhanced compared to the traditional FE method. © 2019 by the authors.
Number of references: 32
Main heading: Kriging
Controlled terms: Distribution functions - Structural optimization - Wellheads - Structural design - Efficiency - Forestry
Uncontrolled terms: Calculation efficiency - Experimental methods - Kriging - Kriging surrogate model - Optimization approach - Random load - Sealing performance - Structure optimization
Classification code: 408.1 Structural Design, General - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 913.1 Production Engineering - 921.5 Optimization Techniques - 921.6 Numerical Methods - 922.1 Probability Theory
DOI: 10.3390/a12020042
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Compendex references: YES
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Database: Compendex
Data Provider: Engineering Village

121. Research on phase mask method-based phase-shifted fiber grating fabrication and sensing properties

Accession number: 20200508093042
Authors: Yang, Danqing (1); Wang, Yuxi (1); Li, Bowen (1); Song, Xiaoya (1); Liu, Yinggang (1)
Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource, Optical Fiber Detection and Shaanxi Key Laboratory of Measurement, Control Technology for Oil and Gas Wells, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
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Issue title: Eleventh International Conference on Information Optics and Photonics, CIOP 2019
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Article number: 1120933
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Conference name: 11th International Conference on Information Optics and Photonics, CIOP 2019
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Abstract: In this work, a simple phase-shifted fiber grating (PSFG) inscription technique based on screening method was demonstrated, in which a standard single-mode fiber (SMF) is irradiated by 193 nm excimer laser beam (ELB) via phase mask (PM). During the inscription processes, a small segment of filament with the diameter of about 1mm was perpendicularly inserted in the exposure area to cover the SMF before the ELB is irradiated into the SMF, thus the PSFG will be inscribed. Additionally, in order to clearly observe the PSFG on the temperature and stress characteristics, the reflectance spectrums recorded by a demodulator was processed with the PC. The experimental results show that the notch wavelength has red-shift with the ambient temperature and axial stress increase, or has blue-shift with the ambient temperature and axial stress decrease. The temperature and stress responses sensitivities of the PSFG are 10.26 pm/°Cand 1.36nm/N, in a range from 40°C to 90°C and from 0.2 N to 1.6 N, respectively. And the experimental results exhibited good linearity with an R-square of about 0.998 and 0.999, respectively. The PSFG fabricated by this simple and feasible method can effectively reduce the reflectance spectrum bandwidth of the fiber grating without increasing the length of the grating region or reducing the refractive index modulation depth, thus satisfying the detection of weak dynamic signals. © 2019 SPIE.
Number of references: 15
Main heading: Single mode fibers
Controlled terms: Excimer lasers - Red Shift - Temperature - Reflection - Laser beams - Fabrication - Refractive index
Uncontrolled terms: 193-nm excimer laser beam - Fiber grating fabrication - Fiber gratings - Phase masks - Refractive index modulation depth - Screening methods - Standard single mode fibers - Temperature and pressures
Classification code: 641.1 Thermodynamics - 741.1 Light/Optics - 741.1.2 Fiber Optics - 744.8 Laser Beam Interactions
Numerical data indexing: Force 2.00e-01N to 1.60e+00N, Size 1.00e-03m, Size 1.93e-07m, Temperature 3.13e+02K to 3.63e+02K
DOI: 10.1117/12.2548794
Funding Details: Number: 18JS093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: 2013JM8032, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China (Grant No. 18JS093) and Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS19111014).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

122. An Application of a Wiener Filtering Based on Short Time Spectrum Estimation for High Frequency Seismic Signal Processing

Accession number: 20200708158571
Authors: Liu, Yanping (1, 2); Yan, Zhengguo (1, 2)

Author affiliation: (1) College of Electronic Engineering of Xi'an Shiyou University, Dept. of Measurement and Control Technology and Instrument, China; (2) Key Laboratory of Oil and Gas Well Measurement, Control Technology in Shaanxi, Xi'an, China
Source title: Proceedings - 2019 12th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics, CISP-BMEI 2019
Abbreviated source title: Proc. - Int. Congr. Image Signal Process., BioMed. Eng. Inf., CISP-BMEI
Part number: 1 of 1
Issue title: Proceedings - 2019 12th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics, CISP-BMEI 2019
Issue date: October 2019
Publication year: 2019
Article number: 8965765
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ISBN-13: 9781728148526
Document type: Conference article (CA)
Conference name: 12th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics, CISP-BMEI 2019
Conference date: October 19, 2019 - October 21, 2019
Conference location: Huaqiao, China
Conference code: 157086
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: This paper introduces a Wiener filtering method based on short time spectrum estimation which is implemented in frequency domain and applied to process seismic signals of high frequency. Since many seismic signal filtering methods could preserve the valid information of middle and low frequency well but could not preserve the valid information of high frequency well, so it needs to adopt a method which could preserve both low and high frequency of seismic signal. The Wiener filtering is the optimal filtering in the sense of minimum mean square error, and the way of frequency domain implementation is simpler and more effective than time domain implementation. So, it adopts Wiener filtering of frequency domain in this paper to obtain better results in seismic signal processing than conventional filtering method of time domain such as Kalman filtering, especially for high frequency seismic signals. © 2019 IEEE.
Number of references: 13
Main heading: Mean square error
Controlled terms: Information filtering - Seismology - Frequency domain analysis - Frequency estimation - Kalman filters - Seismic waves - Time domain analysis - Spectrum analysis
Uncontrolled terms: Frequency domains - High frequency HF - Seismic signals - Spectrum estimation - Wiener filtering
Classification code: 484 Seismology - 484.1 Earthquake Measurements and Analysis - 903.1 Information Sources and Analysis - 921 Mathematics - 921.3 Mathematical Transformations - 922.2 Mathematical Statistics
DOI: 10.1109/CISP-BMEI48845.2019.8965765
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

123. Integrated fiber-optic fabry-pérot interferometer sensor for simultaneous measurement of liquid refractive index and temperature

Accession number: 20192407050725
Authors: Zhang, Wei (1); Liu, Yinggang (2); Zhang, Ting (1); Yang, Danqing (1); Wang, Yuxi (1); Yu, Dakuan (1)
Author affiliation: (1) School of Environmental and Municipal Engineering, Xi'An University of Architecture and Technology, Xi'an, China; (2) Key Laboratory of Photo Electricity Gas and Oil Logging and Detecting, Ministry of Education, Xi'An Shiyou University, Xi'an, China
Corresponding author: Zhang, Wei(dearzhang72@163.com)
Source title: IEEE Sensors Journal
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Publication year: 2019
Pages: 5007-5013
Article number: 8662589
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In this paper, an integrated all-fiber Fabry-Pérot interferometer (FPI) sensor is proposed and fabricated for the simultaneous measurement of liquid refractive index (RI) and temperature. The sensor structure consists of an open micro-hole and a tiny section of single-mode fiber. Since, the micro-hole that is machined by 193 nm excimer laser, the micro-fiber, and the integrated micro-hole-fiber, respectively, act as different FPI, consequently, the regular interference spectrum is produced and used in simultaneous measurement based on analyzing wavelength shifts of interference fringes with Fourier band-pass filtering method. Experiments indicate the low-frequency interference fringes resulting from micro-hole cavity is sensitive to liquid RI and temperature changes, and the response sensitivities are 1143.0 nm/RIU and -0.1805 nm/°C, respectively. However, the high-frequency interference fringes of micro-fiber cavity is only sensitive to temperature change, and the obtained temperature sensitivity of 0.0115 nm/°C is obviously superior to that of integrated micro-hole-fiber cavity. Utilizing the different response coefficients, we not only construct a measurement matrix to realize simultaneous liquid RI and temperature measurement successfully, but also achieve resolutions of 0.1 °C and 1.4\boldsymbol {\times } 10^{-5} RIU. The excellent merits such as all-fiber, miniature size, simple structure, and wavelength-sensing structure make the FPI sensor promise for high precision bio/chemical sensing applications. © 2001-2012 IEEE.
Number of references: 29
Main heading: Refractive index
Controlled terms: Fiber optic sensors - Coagulation - Liquids - Single mode fibers - Excimer lasers - Fabry-Perot interferometers - Optical fiber fabrication - Temperature measurement
Uncontrolled terms: 193 nm excimer lasers - High frequency interference - Interference spectrum - Interferometer sensors - Liquid refractive index - Low-frequency interference - Simultaneous measurement - Temperature sensitivity
Classification code: 741.1 Light/Optics - 741.1.2 Fiber Optics - 802.3 Chemical Operations - 941.3 Optical Instruments - 944.6 Temperature Measurements
Numerical data indexing: Size 1.93e-07m, Temperature 2.73e+02K
DOI: 10.1109/JSEN.2019.2903583
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The associate editor coordinating the review of this paper and approving it for publication was Dr. E. H. Yang.
(Corresponding author: Yinggang Liu.) W. Zhang is with the School of Environmental and Municipal Engineering, Xi'an University of Architecture and Technology, Xi'an 710055, China (e-mail: dearzhang72@163.com).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

124. Durable TBCs with self-enhanced thermal insulation based on co-design on macro- and microstructure

Accession number: 20191406736434
Authors: Li, Guang-Rong (1); Wang, Li-Shuang (2)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Guang-Rong(ligrong@mail.xjtu.edu.cn)
Source title: Applied Surface Science
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ISSN: 01694332
CODEN: ASUSEE
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: During thermal exposure of thermal barrier coatings (TBCs), sintering causes degradation of the thermal barrier performance, as well as spallation. However, it is difficult to simultaneously enhance the thermal insulation and extend the lifetime, because the dominant factors (e.g., micropores and the macroscopic thickness) may have opposite effects on these two performances. In this study, a co-design of the macro- and microstructure is proposed to enhance multiple performance characteristics of TBCs. The microstructural design is achieved by using a co-spraying method, to form a hybrid layered coating. During thermal exposure, new pores are formed because the contractions of dense splats and loose porous nanoheaps are reversed. Consequently, the thermal barrier performance is self-enhanced by 40% with respect to that of mono-layered coatings. The macrostructural design is realized by tailoring the thickness according to the equivalent thermal insulation. As a result, the lifetime is extended by 35%. The mechanisms responsible for the simultaneously enhanced performance characteristics are discussed. This study is expected to contribute to structural tailoring of advanced TBCs with both high thermal insulation and long lifetimes. © 2019 Elsevier B.V.
Number of references: 66
Main heading: Thermal insulation
Controlled terms: Microstructure - Sintering - Thermal barrier coatings
Uncontrolled terms: Equivalent thermal - Layered coatings - Lifetime - Macro- and microstructure - Microstructural design - Performance characteristics - Self-enhancing - Thermal barrier coating (TBCs)
Classification code: 413.2 Heat Insulating Materials - 951 Materials Science
Numerical data indexing: Percentage 3.50e+01%, Percentage 4.00e+01%
DOI: 10.1016/j.apsusc.2019.03.309
Funding Details: Number: JZX7Y20190262062001, Acronym: -, Sponsor: -; Number: 51801148, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M631151, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Shaanxi Province Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: -, Acronym: -, Sponsor: National Program for Support of Top-notch Young Professionals;
Funding text: This work was supported by the National Natural Science Foundation of China (grant number 51801148); the China Postdoctoral Science Foundation (grant number 2018M631151); the Equipment Advance Research Foundation (grant number JZX7Y20190262062001); the Shaanxi Province Postdoctoral Science Foundation ; the Fundamental Research Funds for the Central Universities ; and the National Program for Support of Top-notch Young Professionals .
Compendex references: YES
Database: Compendex
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125. Corrigendum to “Achieving self-enhanced thermal barrier performance through a novel hybrid-layered coating design” [Mater. Des. 167 (2019)107647](S026412751930084X) (10.1016/j.matdes.2019.107647) (*Open Access*)

Accession number: 20191906899373
Authors: Li, Guang-Rong (1); Wang, Li-Shuang (2); Yang, Guan-Jun (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
Source title: Materials and Design
Abbreviated source title: Mater. Des.
Volume: 175
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Publication year: 2019
Article number: 107818
Language: English

ISSN: 02641275
E-ISSN: 18734197
Document type: Erratum (ER)
Publisher: Elsevier Ltd
Abstract: The authors regret to inform that (i)the micropore shown in Fig. 14 (a)was obtained from a conventional coating. Based on the initial objective of this paper, this micropore would be more suitable to be obtained from a hybrid-layered coating. Although there is no intrinsic difference regarding the morphology of a micropore, the authors still like to give a new figure obtained from a hybrid-layered coating to make up for it, as shown below; (ii)according to the corresponding description in main body of paper (page 107647–9), a reference label is missing in Fig. 12 caption, and it should be: Fig. 12. Grain boundary grooving and surface faceting caused by thermal exposure [65]. (iii)a note should be added to the caption of Fig. 4: (b)was referenced from J. Eur. Ceram. Soc. (DOI: 10.1016/j.jeurceramsoc.2017.03.11), (d)and (f)was referenced from Scripta Mater. (10.1016/j.scriptamat.2019.01.010). [Figure presented]Revised Fig. 14 Morphologies and aspect ratios of the 2D micropores and the 2D mesopores: (a)morphology of an individual 2D micropore, (b)morphology of an individual 2D mesopore, (c)aspect ratios of the 2D micropores and the 2D mesopores. © 2019 The Authors
DOI: 10.1016/j.matdes.2019.107818
ErratuFlg: 2001573340
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

126. On the extended Estrada index of some graphs

Accession number: 20191106637842
Authors: Li, Jing (1); Gao, Nan (2); Qiao, Lu (1); Liu, Sujuan (3)
Author affiliation: (1) Department of Applied Mathematics, Northwestern Polytechnical University, Xi'an; Shaanxi; 710072, China; (2) College of Science, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) School of Science, Tianjin University of Science&Technology, Tianjin; 300457, China
Corresponding author: Li, Jing(jingli@nwpu.edu.cn)
Source title: Applied Mathematics and Computation
Abbreviated source title: Appl. Math. Comput.
Volume: 355
Issue date: 15 August 2019
Publication year: 2019
Pages: 311-318
Language: English
ISSN: 00963003
CODEN: AMHCBQ
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: Let G be a graph on n vertices and $\eta 1,\eta 2,\ldots,\#n$ the eigenvalues of its extended adjacency matrix. The extended Estrada index EEex is defined as the sum of the terms e#i,i=1,2,…,n. In this paper we show the extended Estrada index of the complete bipartite graphs and the friendship graphs. Also the relationship of the extended Estrada index between the m-splitting, m-shadow graphs and the original graphs are obtained. © 2019 Elsevier Inc.
Number of references: 13
Main heading: Eigenvalues and eigenfunctions
Controlled terms: Graphic methods - Graph theory
Uncontrolled terms: Adjacency matrices - Bound - Complete bipartite graphs - Eigenvalues - Extended Estrada index - Friendship graphs - M-splitting - Shadow graph
Classification code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1016/j.amc.2019.02.069
Funding Details: Number: 11401434,11601428, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Supported by NSFC (No. 11601428 and 11401434).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

127. Inversion of Rayleigh wave dispersion curves via adaptive GA and nested DLS

Accession number: 20192607094784
Authors: Lei, Yuhang (1, 2); Shen, Hongyan (1); Li, Xinxin (1); Wang, Xin (1); Li, Qingchun (3)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Beijing Research Institute of Uranium Geology, Beijing; 100029, China; (3) College of Geology Engineering and Geometics, Chang'An University, Xi'an; 710054, China
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Abbreviated source title: Geophys. J. Int.
Volume: 218
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Publication year: 2019
Pages: 547-559
Language: English
ISSN: 0956540X
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Document type: Journal article (JA)
Publisher: Oxford University Press
Abstract: Dispersion curve inversion is one of the core components of Rayleigh wave surveys, which mainly include linear and non-linear inversion theoretical systems. Damped least squares (DLS) is the most mature and commonly used method of linear optimization, but it relies heavily on more accurate initialmodels, otherwise it can easily fall into a local minimum or can even result in an incorrect inversion. As a representative method of non-linear optimization, genetic algorithm (GA) may be more feasible to obtain a global optimal solution for the geophysical inversion in theory. However, the GA algorithm is less stable, as well as less efficient in the later period of the inversion. In the past, the above two systems have been used independently to perform inversion processing. Faced with complex seismic geological conditions, they often display poor adaptability and lack balance between speed and accuracy. For this reason, we made a reasonable and effective improvement to the generation of the initial population and the coding of the classic GA to overcome the time-consuming and memoryintensive computational issues. We redefined the selection and crossover function to prevent the 'premature convergence' phenomenon in genetic iterations. Simultaneously, the DLS and the steepest descent method are embedded in the GA inversion process to linearly optimize the dominant individuals in the population (i.e. local extrema) in the local space to guide the population to move quickly and stably advance towards the global optimal direction. Next, a robust DLS inversion is used to obtain the final S-wave velocity model using the adaptive GA inversion results as the input velocity model. The model and actual data set processing results show that our proposed nested joint inversion can combine the advantages of linear and nonlinear inversion that can effectively suppress the multisolution problem of the dispersion curve inversion and significantly improve the inversion efficiency and accuracy. © The Author(s) 2019.
Number of references: 39
Main heading: Genetic algorithms
Controlled terms: Steepest descent method - Computation theory - Rayleigh waves - Data handling - Dynamic light scattering - Least squares approximations - Wave propagation - Dispersion (waves) - Nonlinear programming - Acoustic wave velocity
Uncontrolled terms: Damped least squares (DLS) - Dispersion curves - Global optimal solutions - Inversion - Non-linear optimization - Pre-mature convergences - Rayleigh-wave dispersion - S-wave velocity
Classification code: 484 Seismology - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 751.1 Acoustic Waves - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1093/gji/ggz171
Funding Details: Number: 2018-111, Acronym: -, Sponsor: -; Number: 13JS093, Acronym: -, Sponsor: -; Number: 2017JZ007, Acronym: -, Sponsor: -; Number: 41874123, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2014D-5006-0303, Acronym: -, Sponsor: PetroChina Innovation Foundation;
Funding text: This research was supported by the National Natural Science Foundation of China (41874123), Shaanxi Province Natural Science Basic Research Project (2017JZ007), PetroChina Innovation Foundation (2014D-5006-0303), Key Laboratory Research Project of Education Department of Shaanxi Provincial Government (13JS093) and ‘LONG-CAN’ Scientific Research Project (Phase II) of China National Nuclear Corporation (2018-111).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

128. Prediction the variation range of wax deposition with temperature of crude oil in a flow loop

Accession number: 20191906867670
Authors: Quan, Qing (1); Ran, Wen (2); Wang, Shouxi (1); Wang, Yong (1); Li, Rui (1); Gong, Jing (3)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; Shaanxi Province, China; (2) Shaanxi Application of Physical & Chemistry Institute, Xi'an; Shaanxi Province, China; (3) Beijing Key Laboratory of Urban Oil & Gas Distribution Technology, China University of Petroleum, Beijing, China
Corresponding author: Quan, Qing(qingqing.lf@163.com)
Source title: Petroleum Science and Technology
Abbreviated source title: Petrol Sci Technol
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Issue: 15
Issue date: August 3, 2019
Publication year: 2019
Pages: 1739-1746
Language: English
ISSN: 10916466
E-ISSN: 15322459
CODEN: PSTEFV
Document type: Journal article (JA)
Publisher: Bellwether Publishing, Ltd.
Abstract: Wax deposition under different temperature conditions was investigated in a flow loop, using a local crude oil with a wax content of 22.5%. The results revealed that the wax deposition increases with increasing coolant temperature. However, the amount of deposit increased initially with increasing oil temperature and then decreased. Based on these results, the corresponding temperature ranges were divided into three ranges: hot flow, sensitive precipitation of wax crystal, and cold flow. Based on diffusion mass, a method and steps for determining the temperature dependence of wax deposition were proposed. © 2019, © 2019 Taylor & Francis Group, LLC.
Number of references: 6
Main heading: Crude oil
Controlled terms: Deposition - Temperature distribution - Precipitation (chemical)
Uncontrolled terms: Amount of deposits - Coolant temperature - Mass flow - Molecular diffusion - Temperature conditions - Temperature dependence - Temperature range - Wax deposition
Classification code: 512.1 Petroleum Deposits - 641.1 Thermodynamics - 802.3 Chemical Operations
Numerical data indexing: Percentage 2.25e+01%
DOI: 10.1080/10916466.2018.1511580
Funding Details: Number: 51704236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the National Natural Science Foundation of China, [51704236].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

129. Adaptive quasi-newton projection algorithm for sparse recovery

Accession number: 20193607404635
Title of translation:
Authors: Zhou, Xueqin (1, 2); Feng, Xiangchu (1); Jing, Mingli (3)
Author affiliation: (1) School of Mathematics and Statistics, Xidian Univ., Xi'an; 710071, China; (2) School of Statistics, Xi'an Univ. of Finance and Economics, Xi'an; 710100, China; (3) School of Electronic Engineering, Xi'an Shiyou Univ., Xi'an; 710065, China
Corresponding author: Feng, Xiangchu(xcfeng@mail.xidian.edu.cn)
Source title: Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University
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Issue date: June 20, 2019
Publication year: 2019
Pages: 14-19
Language: Chinese
ISSN: 10012400

CODEN: XDKXEP
Document type: Journal article (JA)
Publisher: Science Press
Abstract: An adaptive quasi-Newton projection sparse restoration algorithm is proposed to solve the problem that greedy algorithms need to know the sparsity in advance. The algorithm consists of two layers: the sparsity of the signal is estimated by using the threshold operator in the outer loop, and the sparse signal is recovered based on the quasi-Newton projection algorithm under the current sparsity of the outer iterative estimation in the inner loop. Simulation results show that this method has a better approximation performance and recovery rate of sparse signals with unknown sparsity compared with the greedy algorithms with known sparsity in advance. © 2019, The Editorial Board of Journal of Xidian University. All right reserved.
Number of references: 21
Main heading: Iterative methods
Controlled terms: Recovery - Signal reconstruction - Approximation algorithms
Uncontrolled terms: Adaptive - Approximation performance - Iterative estimation - Projection - Projection algorithms - Quasi-Newton - Restoration algorithm - Sparse recovery
Classification code: 716.1 Information Theory and Signal Processing - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.19665/j.issn1001-2400.2019.03.003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

130. A novel composite-layered coating enabling self-enhancing thermal barrier performance

Accession number: 20190406411350
Authors: Li, Guang-Rong (1); Wang, Li-Shuang (2); Yang, Guan-Jun (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
Source title: Scripta Materialia
Abbreviated source title: Scripta Mater
Volume: 163
Issue date: 1 April 2019
Publication year: 2019
Pages: 142-147
Language: English
ISSN: 13596462
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Document type: Journal article (JA)
Publisher: Acta Materialia Inc
Abstract: A novel composite-layered thermal barrier coating is designed to solve performance degradation caused by inevitable thermal exposure. Inspired by cathodic protection with a sacrificial anode, a degradation-resistant thermal barrier was achieved by the spontaneous formation of mesopores. The increment of thermal conductivity decreased from 110% for conventional coatings to 40% for composite coatings, which means 50% self-enhanced thermal insulation was realized. A new mechanism based on effective thermal-resistance was proposed to account for the self-enhanced behavior. The effective area for heat flux prevention was increased from 10 to 30% for 2D micropores to ~60% for the newly-formed 2D mesopores. © 2019 Elsevier Ltd
Number of references: 78
Main heading: Sintering
Controlled terms: Thermal insulation - Heat flux - Anodes - Plasma spraying - Cathodic protection - Thermal conductivity - Composite coatings - Thermal barrier coatings
Uncontrolled terms: Conventional coatings - Effective thermal resistance - Layered coatings - Performance degradation - Sacrificial anodes - Self-enhanced behavior - Spontaneous formation - Thermal exposure
Classification code: 413.2 Heat Insulating Materials - 539.2 Corrosion Protection - 641.1 Thermodynamics - 641.2 Heat Transfer - 714.1 Electron Tubes - 813.1 Coating Techniques - 813.2 Coating Materials - 932.3 Plasma Physics
Numerical data indexing: Percentage 1.00e+01% to 3.00e+01%, Percentage 1.10e+02%, Percentage 4.00e+01%, Percentage 5.00e+01%
DOI: 10.1016/j.scriptamat.2019.01.010

Funding Details: Number: 2018M631151, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 61409220117, Acronym: -, Sponsor: Domain Foundation of Equipment Advance Research of 13th Five-year Plan; Number: 51801148, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Shaanxi Province Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was supported by the National Natural Science Foundation of China (grant number 51801148); the China Postdoctoral Science Foundation (grant number 2018M631151); the Equipment Advance Research Foundation (grant number 61409220117); the Shaanxi Province Postdoctoral Science Foundation ; the Fundamental Research Funds for the Central Universities ; and the National Program for Support of Top-notch Young Professionals .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

131. Achieving self-enhanced thermal barrier performance through a novel hybrid-layered coating design (*Open Access*)

Accession number: 20190706509716
Authors: Li, Guang-Rong (1); Wang, Li-Shuang (2); Yang, Guan-Jun (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
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Publication year: 2019
Article number: 107647
Language: English
ISSN: 02641275
E-ISSN: 18734197
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The thermal insulation and durability of thermal barrier coatings (TBCs) are mainly affected by sintering-induced healing of 2D micropores, which is inevitable under high temperature conditions. In this study, we designed and prepared novel hybrid-layered TBCs. During thermal exposure, the degree of degradation in thermal conductivity is observed to decrease from 80 to 100% for conventional coatings to ~20% for the novel coatings. For a detailed understanding, the evolution of the hybrid-layered TBCs can be divided into two stages: during stage I (0-10 h), ultrafast healing of 2D micropores occurs, mainly caused by the multiple contacts between the counter-surface. At this stage, the thermal and mechanical properties also increase sharply. During stage II (after 10 h), some new 2D mesopores are formed. Compared with the 2D micropores, the newly formed 2D mesopores have a much larger aspect ratio that increases the ratio of the effective area for thermal insulation from 10 to 30% to 60%, which accounts for the ~50% self-enhancement in the thermal barrier performance. This self-enhancing behavior is expected to prolong the lifetime and increase the performance of the TBCs, which is the main objective of using advanced TBCs in next-generation applications. © 2019 Elsevier B.V.
Number of references: 75
Main heading: Sintering
Controlled terms: Microporosity - Thermal insulation - Aspect ratio - Thermal conductivity - Thermal barrier coatings
Uncontrolled terms: Degradation resistance - Degree of degradation - High temperature condition - Next-Generation Applications - Self-enhancing - Structure design - Thermal and mechanical properties - Thermal barrier coating (TBCs)
Classification code: 413.2 Heat Insulating Materials - 641.1 Thermodynamics - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 3.00e+01% to 6.00e+01%, Percentage 8.00e+01% to 1.00e+02%, Time 3.60e+04s
DOI: 10.1016/j.matdes.2019.107647

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Funding text: This work was supported by the National Natural Science Foundation of China (grant number 51801148); the China Postdoctoral Science Foundation (grant number 2018M631151); the Equipment Advance Research Foundation of China (grant number 61409220117); the Shaanxi Province Postdoctoral Science Foundation ; the Fundamental Research Funds for the Central Universities ; and the National Program for Support of Top-notch Young Professionals .
Compendex references: YES
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Open Access type(s): All Open Access, Gold
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132. Distribution characteristics and its influence factors of movable fluid in tight sandstone reservoir: a case study from Chang-8 oil layer of Yanchang Formation in Jiyuan oilfield, Ordos Basin

Accession number: 20193907468576
Title of translation: -8
Authors: Huang, Xing (1, 2); Li, Tiantai (1); Wang, Xiangzeng (3); Gao, Hui (1); Ni, Jun (3); Zhao, Jinsheng (1); Wang, Chen (1)
Author affiliation: (1) School 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) Shaanxi Yanchang Petroleum(Group)Co., Ltd., Xi'an; Shaanxi; 710075, China
Corresponding author: Huang, Xing(hx@xsyu.edu.cn)
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Publication year: 2019
Pages: 557-567
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The movable fluid parameters are important indicators for evaluating the seepage characteristics of tight sandstone reservoir fluids. Based on the principle of movable fluid testing with nuclear magnetic resonance (NMR), the movable fluid characteristics of six typical tight core samples collected under different small sub-layers of Chang-8 oil layer of Yanchang Formation in Jiyuan oilfield were studied. Based on the capillary pressure curve, a conversion was performed between NMR T2 spectrum distribution and pore-throat radius distribution, thus determining the minimum pore throat radius of movable fluid. The influencing factors of movable fluid were analyzed using casting thin sections, clay mineral X-ray diffraction, field emission scanning electron microscopy and nano-CT scanning. The analysis shows that the NMR T2 spectrum of tight reservoirs of Chang-8 oil layer in the study area is mainly represented by four types: right peak developed type, unimodal type, right peak slightly developed type, and left-right peak equally developed type; the movable fluid mainly occurs in the large and medium pores, and certain movable fluid is also present in the micropores and small pores of some reservoirs; the movable fluid percent is from 6.89% to 70.09%, its porosity is from 0.39% to 5.62%, and its minimum pore throat radius is from 0.024 μm to 0.555 μm with a wide distribution range. Those reflect the strong heterogeneity of Chang-8 oil layer in Jiyuan oilfield. There is a poor correlation between the movable fluid parameters and the reservoir porosity. The main influencing factors causing the difference of the movable fluid parameters in Chang-8 oil layer include permeability, pore throat structure characteristics, clay mineral content and mode of occurrence, secondary pore development degree and pore throat connectivity, micro crack development degree and so on. © 2019, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 30
Main heading: Nuclear magnetic resonance

Controlled terms: Clay minerals - Porosity - Oil fields - Scanning electron microscopy - Petroleum reservoir engineering - Computerized tomography - Field emission microscopes
Uncontrolled terms: Chang-8 oil layer - Distribution characteristics - Field emission scanning electron microscopy - Movable fluid - Nuclear magnetic resonance(NMR) - Ordos Basin - Pore throat radius - Tight sandstone reservoirs
Classification code: 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.5 Computer Applications - 741.3 Optical Devices and Systems - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 3.90e-01% to 5.62e+00%, Percentage 6.89e+00% to 7.01e+01%, Size 2.40e-08m to 5.55e-07m
DOI: 10.7623/syxb201905005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

133. A Hydrocarbon Migration and Accumulation Characteristics of the Chang 9 Reservoir Group of the Yanchang Formation in Upper Triassic of Ordos Basin (*Open Access*)

Accession number: 20194107515911
Authors: Gao, Pengpeng (1, 2); Gao, Shengli (1, 2); Wen, Fenggang (3); Gao, Fengbo (4)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an; 710069, China; (3) Research Institute of Shaanxi Yanchang Petroleum (Group)Co Ltd., China; (4) Shaanxi Yanan Petroleum Corp. Ltd., China
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 310
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Issue: 5
Issue title: 2019 2nd International Conference of Green Buildings and Environmental Management, GBEM 2019 - Resources, Ecology and Sustainable Development
Issue date: September 5, 2019
Publication year: 2019
Article number: 052012
Language: English
ISSN: 17551307
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Document type: Conference article (CA)
Conference name: 2019 2nd International Conference of Green Buildings and Environmental Management, GBEM 2019
Conference date: June 14, 2019 - June 16, 2019
Conference location: Guiyang, China
Conference code: 152070
Publisher: IOP Publishing Ltd
Abstract: Groups of reservoirs were found in the deep zones of Upper Triassic Yanchang formation and the feature of hydrocarbon source rocks, the characteristics of overpressure and genesis mechanism of abnormal overpressure was studied in this paper. The factors of accumulation in lower part of Yanchang formation are different,which could be divided into three types: controlling reservoir, paleo structure controlling reservoir and reservoir controlled by pressure & paleo structure. It is shown that the reservoir distributed in where hydrocarbon source developed, the delta-front and gravity-flow sediment are the main areas for the ultra-low-permeability reservoirs and the places of low-overpressure are the preferential places for hydrocarbon migration & accumulation. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Hydrocarbons
Controlled terms: Petroleum reservoir engineering - Low permeability reservoirs
Uncontrolled terms: Genesis mechanism - Hydrocarbon migration - Hydrocarbon source rocks - Hydrocarbon sources - Paleo structures - Ultra-low permeability reservoirs - Upper Triassic - Yanchang Formation
Classification code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
DOI: 10.1088/1755-1315/310/5/052012

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Database: Compendex
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134. Analysis of adsorption kinetics and thermodynamics of methane in shale based on the volume filling theory of micropores

Accession number: 20192006934996
Authors: Yin, Shuai (1); Xie, Runcheng (2); Zhao, Jingzhou (1)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Lab of Oil and Gas Reservoir Geology and Exploitation, College of Resources, Chengdu University of Technology, Chengdu; 610059, China
Corresponding author: Yin, Shuai(speedysys@163.com)
Source title: International Journal of Oil, Gas and Coal Technology
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Issue date: 2019
Publication year: 2019
Pages: 26-38
Language: English
ISSN: 17533309
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Document type: Journal article (JA)
Publisher: Inderscience Publishers
Abstract: Volume filling of micropores is an adsorption behaviour of adsorbates at higher equilibrium pressures. In this paper, the meaning of the parameters defined in the volume filling theory of micropores is discussed, and the adsorption performance of methane in shale is analysed. Research indicates that it is most appropriate to use the characteristic index curve n = 1 to describe the adsorption behaviour of methane in shale. As adsorption capacity increases, the differential adsorption work (A) will decrease. As the temperature increases, the characteristic energy (E) tends to decrease gradually, and for the case of n = 1, the values of E for shale samples ranged from 4.14 to 5.63 kJ•mol-1. As the filling rate θ increases, the absolute values of the thermodynamic parameters (Q, #H and #S) decrease gradually. Under experimental P-T conditions, the values of the thermodynamic parameters change very regularly and do not have mutation characteristics. This indicates that the adsorption energy can be extrapolated under much wider supercritical conditions. We believe that the thermodynamic parameters actually represent the complementarity and comprehensive effects of the TOC and Ro parameters. © 2019 Inderscience Enterprises Ltd.
Number of references: 27
Main heading: Methane
Controlled terms: Filling - Microporosity - Adsorption - Thermodynamics - Shale
Uncontrolled terms: Adsorption capacities - Adsorption performance - Characteristic indices - Differential adsorption - Micropores - Supercritical condition - Thermodynamic parameter - Volume filling theory
Classification code: 641.1 Thermodynamics - 691.2 Materials Handling Methods - 802.3 Chemical Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1504/IJOGCT.2019.099523
Funding Details: Number: 2016ZX05034,2016ZX05046,2017ZX05035001,41072098,41372139,41572130, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016ZX05034-004-003,2016ZX05046-003-001,2017ZX05035001-007, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This research was supported by the National Natural Science Foundation of China (Grant Nos. 41572130, 41372139 and 41072098) and the National Science and Technology Major Project of China (2017ZX05035001-007, 2016ZX05046-003-001 and 2016ZX05034-004-003). The authors would like to thank the staff, which cooperated in performing the calculations and analysis. We are also grateful to the anonymous reviewers, whose comments improved the quality of this manuscript.
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

135. Well test analysis for a well with stress-sensitive natural fracture permeability and stress-dependent hydraulic fracture conductivities

Accession number: 20192707127621
Authors: Li, Mengmeng (1); Lin, Jiaen (2); Li, Qi (1, 2); Zhang, Jing (3)
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; (3) Science Information Department, China Aviation Oil Qingdao Branch, Qingdao; 266108, China
Corresponding author: Li, Mengmeng(2015312041@student.cup.edu.cn)
Source title: International Journal of Oil, Gas and Coal Technology
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Volume: 21
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Publication year: 2019
Pages: 298-312
Language: English
ISSN: 17533309
E-ISSN: 17533317
Document type: Journal article (JA)
Publisher: Inderscience Publishers
Abstract: The commonly used methods in dual-porosity systems assume constant reservoir permeability over an entire range of formation pressure and constant hydraulic fracture conductivity inside the fractures. In this paper, the hydraulic fracture conductivity and natural fracture permeability were considered as a function of pressure. Based on finite-conductivity vertical fracture bilinear flow model in stress sensitive dual-porosity reservoirs, the analytical solutions were solved by perturbation and Laplace transform method. The features of typical curves were studied. The pressure and pressure derivative curves with stress-sensitivity were compared with the curves without stress-sensitivity. The influences of inter-porosity coefficient, storativity ratio wellbore storage coefficient, permeability modulus and the hydraulic fracture conductivity on the typical curves were analysed with different seepage regimes. The results show that both the pressure and pressure derivative curves move upward in pressure-sensitive formations, especially for the end of the curves. The upward trend behaves more obviously due to stress sensitivity of the fractures. Field examples were applied to verify the validity of the proposed model. The novel well test model improves the accuracy of well test interpretation results, which is essential to the design and evaluation of stimulation treatments in these reservoirs. Copyright © 2019 Inderscience Enterprises Ltd.
Number of references: 22
Main heading: Laplace transforms
Controlled terms: Mechanical permeability - Porosity - Natural fractures - Well testing - Hydraulic fracturing - Perturbation techniques - Petroleum reservoir engineering
Uncontrolled terms: Dual-porosity reservoirs - Finite-conductivity vertical fracture - Fracture conductivities - Laplace transform method - Natural fracture - Stress sensitivity - Well test interpretation - Well-test analysis
Classification code: 421 Strength of Building Materials; Mechanical Properties - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics - 921.3 Mathematical Transformations - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1504/IJOGCT.2019.100229
Funding Details: Number: 51704237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 13JS090, Acronym: -, Sponsor: Education Department of Shaanxi Province;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

136. Electronic pump boosting photocatalytic hydrogen evolution over graphitic carbon nitride

Accession number: 20190206356377
Authors: Zhao, D. (1); Wang, M. (1); Kong, T. (2); Shang, Y. (1); Du, X. (1); Guo, L. (1); Shen, S. (1)
Author affiliation: (1) International Research Center for Renewable Energy, State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710054, China
Corresponding author: Shen, S.(shshen_xjtu@mail.xjtu.edu.cn)
Source title: Materials Today Chemistry
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Publication year: 2019
Pages: 296-302
Language: English
E-ISSN: 24685194
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The high rate of charge carrier recombination greatly limits the photocatalytic activity of graphitic carbon nitride (g-C3N4). In this contribution, body center cubic indium tin oxide nanoparticles (ITO NPs) as electronic pumps are directly formed on g-C3N4 via a facile one-pot method. The hydrogen production rate of Pt/ITO/g-C3N4 is 3.3 times as high as that of Pt/g-C3N4 under visible light (λ > 420 nm) irradiation. The excellent photocatalytic hydrogen evolution performance should be attributed to the close contact of well-dispersed ITO NPs with g-C3N4 in the prepared ITO/g-C3N4 and in situ formation of Pt onto ITO NPs, leading to accelerated photogenerated electron transfer from g-C3N4 to Pt through ITO pumps for hydrogen generation. In the present work, we successfully demonstrate a high-performance Pt/ITO/g-C3N4 system for visible light hydrogen evolution, and the essential role of ITO NPs as the electronic pumps for efficient photogenerated electron transfer could be informative for designing efficient systems for solar hydrogen generation. © 2018 Elsevier Ltd
Number of references: 49
Main heading: Photocatalytic activity
Controlled terms: Carbon nitride - Electron transitions - Solar power generation - Hydrogen production - Platinum - Pumps - Tin oxides - Indium compounds - Light
Uncontrolled terms: Charge carrier recombination - Electron transfer - Indium tin oxide - Indium-tin oxide nanoparticles - Photocatalytic hydrogen evolution - Photogenerated electrons - Solar hydrogen conversions - Solar-hydrogen generation
Classification code: 522 Gas Fuels - 547.1 Precious Metals - 615.2 Solar Power - 618.2 Pumps - 741.1 Light/Optics - 801.4 Physical Chemistry - 804.2 Inorganic Compounds
Numerical data indexing: Size 4.20e-07m
DOI: 10.1016/j.mtchem.2018.11.011
Funding Details: Number: 21875183,51672210, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: The authors acknowledge the financial support from the National Natural Science Foundation of China (No. 51672210 and 21875183), the National Program for Support of Top-notch Young Professionals, and the ‘ Fundamental Research Funds for the Central Universities ’.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

137. Adsorption of toxic gas molecules on pristine and transition metal doped hexagonal GaN monolayer: A first-principles study

Accession number: 20191506757583
Authors: Chen, Guo-Xiang (1); Li, Han-Fei (1); Wang, Dou-Dou (2); Li, Si-Qi (1); Fan, Xiao-Bo (1); Zhang, Jian-Min (3)
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Science, Xi'an University of Science and Technology, Xi'an; 710054, China; (3) College of Physics and Information Technology, Shaanxi Normal University, Xi'an; 710062, China
Corresponding author: Chen, Guo-Xiang(guoxchen@xsyu.edu.cn)
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Abbreviated source title: Vacuum
Volume: 165
Issue date: July 2019

Publication year: 2019
Pages: 35-45
Language: English
ISSN: 0042207X
CODEN: VACUAV
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Using the first-principles calculations based on density functional theory (DFT-D2 method), we systematically study the structural, energetic, electronic and magnetic properties of toxic gas molecules (H2S, NH3 and SO2) adsorbed on pristine and transition metal (TM) atom (Fe, Mn) doped GaN monolayer (GaN-ML). The results show that the H2S and NH3 are physisorbed on pristine GaN-ML with small adsorption energy, charge transfer, and long adsorption distance. While chemical adsorption character of SO2 on GaN-ML can be obtained, which means that the pristine GaN-ML is sensitive to SO2. We find that the adsorption ability of pristine GaN-ML can be improved by introducing TM dopants. TM (Fe, Mn) doping can increase adsorption energy and charge transfer of the adsorbed systems, except for SO2 adsorbed Fe doped GaN-ML. The enhancing interaction between adsorbed molecules and the TM doped GaN-ML can dramatically induce electrical conductivity changes. Therefore, the TM doped GaN-ML is more suitable for gas molecules detection compared with the pristine GaN-ML. These present properties of gas molecules adsorbed on the pristine and TM doped GaN-ML will help to guide scientists to develop better two-dimensional GaN-based gas sensors in the future. © 2019 Elsevier Ltd
Number of references: 54
Main heading: Density functional theory
Controlled terms: Adsorption - III-V semiconductors - Monolayers - Ammonia - Transition metals - Gallium nitride - Gas detectors - Gases - Molecules - Manganese compounds - Charge transfer - Calculations
Uncontrolled terms: Adsorption energies - Chemical adsorption - Electrical conductivity - Electronic and magnetic properties - First-principles calculation - First-principles study - Gas sensing - Toxic gas
Classification code: 531 Metallurgy and Metallography - 712.1 Semiconducting Materials - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 914.1 Accidents and Accident Prevention - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 943.3 Special Purpose Instruments
DOI: 10.1016/j.vacuum.2019.04.001
Funding Details: Number: 2014KJXX-70, Acronym: -, Sponsor: -; Number: 11304246, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YCS17111020, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant no. 11304246), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS17111020).This work is supported by the National Natural Science Foundation of China (Grant no. 11304246), the Shaanxi Province Science and Technology Foundation (Grant no. 2014KJXX-70), and the Postgraduate Innovation and Practical Ability Training Program of Xi'an Shiyou University (Grant no. YCS17111020).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

138. Two Growth Mechanisms of Thiol-Capped Gold Nanoparticles Controlled by Ligand Chemistry

Accession number: 20194107519289
Authors: Chen, Xuelian (1); Wei, Meng (1); Jiang, Shaohua (2); Förster, Stephan (3)
Author affiliation: (1) College of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Materials Science and Engineering, Nanjing Forestry University, Nanjing; 210037, China; (3) JCNS-1/ ICS-1, Forschungszentrum Jülich, Jülich; 52425, Germany
Corresponding author: Chen, Xuelian(chenxl@xsyu.edu.cn)
Source title: Langmuir
Abbreviated source title: Langmuir
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Language: English
ISSN: 07437463
E-ISSN: 15205827
CODEN: LANGD5
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Thiols play an important role in the synthesis of well-defined nanoparticles (NPs) with tailored properties, but their effects on the formation kinetics of NPs are still under investigation. Here, we used in situ small-angle X-ray scattering (SAXS)/UV-vis spectroscopy and time-dependent transmission electron microscopy (TEM) to elucidate the role of thiols in the formation process of gold NPs (AuNPs) by changing the adding sequence between thiol ligand and reducing agent. Through quantitative analysis of in situ SAXS/UV-vis and TEM, detailed information on size, size distribution, the number of particles, optical properties, and the size evolution was obtained. Two different growth mechanisms of monodisperse AuNPs controlled by thiol ligand are exhibited: (i) thiol plays a dual role as a digestive ripening etchant and as a stabilizing ligand in the presence of a weak phosphine ligand. The digestive ripening mechanism involving the dissolution of bigger particles and subsequent deposition of monomers onto existing small NPs is responsible for producing narrowly dispersed NPs. (ii) Thiol acts as a strong stabilizing agent; in this case, the formation rate constant is quite slow, thus limiting the growth rate of NPs. Therefore, diffusion-limited growth mechanism is proposed for obtaining narrowly dispersed NPs with a diameter of 5.6 nm (12%). Our findings demonstrate that the formation of nearly monodisperse AuNPs with controllable size distribution could be realized by different growth mechanisms in the presence of thiol ligand. © 2019 American Chemical Society.
Number of references: 35
Main heading: X ray scattering
Controlled terms: High resolution transmission electron microscopy - Ligands - Phosphorus compounds - Rate constants - Growth rate - Synthesis (chemical) - Size distribution - Chain length - Gold nanoparticles - Optical properties
Uncontrolled terms: Diffusion limited growth - Digestive ripening - Formation kinetics - Stabilizing agents - Stabilizing ligands - Tailored properties - Thiol-capped gold nanoparticles - Well-defined nanoparticles
Classification code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics - 932.1 High Energy Physics
Numerical data indexing: Percentage 1.20e+01%
DOI: 10.1021/acs.langmuir.9b01864
Funding Details: Number: 17JK0611, Acronym: -, Sponsor: Scientific Research Foundation of Hunan Provincial Education Department; Number: 2019JQ-184, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province;
Funding text: This work was supported by the Natural Science Foundation of Shanxi Province (No. 2019JQ-184) and the Scientific Research Foundation of Shaanxi Provincial Department of Education (No. 17JK0611).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

139. An evaluation method of geological sweet spots of shale gas reservoir: a case study of the Jiaoshiba gas field, Sichuan Basin

Accession number: 20192206992093
Title of translation: -
Authors: Liao, Dongliang (1, 2); Lu, Baoping (1, 2); Chen, Yanjun (3)
Author affiliation: (1) State Key Laboratory of Shale Oil and Gas Enrichment Mechanisms and Effective Development, Beijing; 100101, China; (2) Sinopec Research Institute of Petroleum Engineering, Beijing; 100101, China; (3) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Liao, Dongliang(liaodl.sripe@sinopec.com)
Source title: Shiyou Xuebao/Acta Petrolei Sinica
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Issue date: February 1, 2019
Publication year: 2019
Pages: 144-151
Language: Chinese
ISSN: 02532697

CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: "Sweet spot" is an important factor for shale gas evaluation. The previous sweet spot determination method based on a comprehensive analysis on lithology, gas content, physical properties and stress distribution is not capable of classifying the types and properties of sweet spot. Through analyzing the sweet spot parameters of shale gas, the sweet spot is divided into two types, i.e., the geological and engineering sweet spot. Through qualitatively analyzing the influence of geological sweet spot parameters on gas production, the main sweet spot parameters of shale gas were selected using correlation coefficient method to choose. In addition, radar area model and correlation weight model were applied to quantitatively characterize the geological sweet spot parameters of shale gas. Through studying the geological characteristics of Jiaoshiba shale gas field, TOC, kerogen content, gas saturation, total porosity and pore pressure are five main geological sweet spot parameters. Using these two models, the geological sweet spot is evaluated between 0.3 and 0.7, indicating that Jiaoshiba shale gas field has better geological sweet spot and high gas production capacity. © 2019, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 24
Main heading: Radar
Controlled terms: Carbon - Kerogen - Gas industry - Lithology - Gases - Shale gas
Uncontrolled terms: Comprehensive analysis - Correlation coefficient method - Correlation weight - Determination methods - Geological characteristics - Shale gas reservoirs - Sweet spot - Total carbon
Classification code: 481.1 Geology - 512.2 Natural Gas Deposits - 522 Gas Fuels - 716.2 Radar Systems and Equipment - 804 Chemical Products Generally - 804.1 Organic Compounds
DOI: 10.7623/syxb201902002
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

140. Personalized Review Selection (*Open Access*)

Accession number: 20201308335607
Authors: Lei, Ye (1); Hou, Ziwei (2, 3); Xia, Haiyang (1); Tan, Jianlong (4); Li, Xiao (5); Al-Khiza'Ay, Muhmmad (3); Li, Gang (3, 5)
Author affiliation: (1) Xian Shiyou University, Shaanxi; 710065, China; (2) Guangxi Key Laboratory of Trusted Software, Guilin University of Electronic Technology, Guilin, China; (3) Deakin University, VIC; 3126, Australia; (4) Institute of Information Engineering, Chinese Academy of Sciences, China; (5) Xinjiang Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Urumqi; 830011, China
Corresponding author: Li, Gang(gang.li@deakin.edu.au)
Source title: Procedia Computer Science
Abbreviated source title: Procedia Comput. Sci.
Volume: 165
Part number: 1 of 1
Issue title: 2nd International Conference on Recent Trends in Advanced Computing, ICRTAC 2019
Issue date: 2019
Publication year: 2019
Pages: 158-165
Language: English
E-ISSN: 18770509
Document type: Conference article (CA)
Conference name: 2nd International Conference on Recent Trends in Advanced Computing, ICRTAC 2019
Conference date: November 11, 2019 - November 12, 2019
Conference location: Chennai, India
Conference code: 141988
Publisher: Elsevier B.V., Netherlands
Abstract: With the popularity of the online social network, reviews gradually becoming the main data source for users to understand the qualities of the goods to be purchased. However, with the proliferate of online reviews, these large amounts of reviews make it difficult for users to select useful information. Aiming to enable users to quickly obtain valid information from large amounts of reviews, this paper proposes a new method named PG to implicate personalized review selection. The proposed method in our paper is efficient for users by helping them select useful information from massive reviews. © 2019 Procedia Computer Science. All rights reserved.
Number of references: 17
Main heading: Genetic algorithms

Controlled terms: Information use - Social networking (online)
Uncontrolled terms: Data-source - Earth Mover's distance - Large amounts - On-line social networks - Online reviews - Personalizations
Classification code: 723 Computer Software, Data Handling and Applications - 903.3 Information Retrieval and Use
DOI: 10.1016/j.procs.2020.01.096
Funding Details: Number: KX201528, Acronym: -, Sponsor: -;
Funding text: This ow rk as w supported by Xinjiang research fund of r abL oratory of Trusted Sotf arw e (No KX201528).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

141. Modeling flow in anisotropic porous medium with full permeability tensor (*Open Access*)

Accession number: 20194607694767
Authors: Cao, Jie (1, 2); Gao, Hui (1, 2); Dou, Liangbin (1, 2); Zhang, Ming (1, 2); Li, Tiantai (1, 2)
Author affiliation: (1) School of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Engineering Research Center of Development and Management for Low to Extra-Low, Permeability Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1324
Part number: 1 of 1
Issue: 1
Issue title: 2nd International Conference on Physics, Mathematics and Statistics
Issue date: October 14, 2019
Publication year: 2019
Article number: 012054
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Physics, Mathematics and Statistics, ICPMS 2019
Conference date: May 22, 2019 - May 24, 2019
Conference location: Hangzhou, China
Conference code: 153685
Publisher: IOP Publishing Ltd
Abstract: The flow in anisotropic porous medium is significant for the modeling of subsurface fluids transportation. The subsurface porous medium is usually both heterogeneous and anisotropic, caused by the compaction and sedimentations effects on the formation. Full permeability tensor is therefore needed in modeling flow in anisotropic medium. In this research, two widely used finite volume schemes, Two-Point Flux Approximation (TPFA) and Multi-Point Flux Approximation (MPFA), are applied to solve the flow model with a full permeability tensor. The results verified that ignoring anisotropy of the porous medium results in overestimation of the total flux. The TPFA methods have high computational efficiency, but failed to represent the anisotropy. The MPFA scheme takes more CPU time than TPFA for same grid block resolution, but incorporates the anisotropy using a full tensor. The comparison between the results from two methods indicates that ignoring anisotropy results in significant errors in determined flux.
Number of references: 13
Main heading: Anisotropy
Controlled terms: Porous materials - Computational efficiency - Tensors
Uncontrolled terms: Anisotropic medium - Anisotropic porous medium - Finite volume schemes - Flow model - Grid blocks - Multi-points - Permeability tensors - Porous medium
Classification code: 921.1 Algebra - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/1742-6596/1324/1/012054
Funding Details: Number: 2019QNKYCTXD04, Acronym: -, Sponsor: -; Number: 51774236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM5017,No.2017D-5007-0104, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: No.2019JQ-525, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

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

142. Artificial Photosynthesis with Polymeric Carbon Nitride: When Meeting Metal Nanoparticles, Single Atoms, and Molecular Complexes

Accession number: 20191706816313
Authors: Li, Yanrui (1); Kong, Tingting (2); Shen, Shaohua (1)
Author affiliation: (1) International Research Center for Renewable Energy, State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710054, China
Corresponding author: Kong, Tingting(ttkong@xsyu.edu.cn)
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Article number: 1900772
Language: English
ISSN: 16136810
E-ISSN: 16136829
CODEN: SMALBC
Document type: Journal article (JA)
Publisher: Wiley-VCH Verlag
Abstract: Artificial photosynthesis for solar water splitting and CO2 reduction to produce hydrogen and hydrocarbon fuels has been considered as one of the most promising ways to solve increasingly serious energy and environmental problems. As a well-documented metal-free semiconductor, polymeric carbon nitride (PCN) has been widely used and intensively investigated for photocatalytic water splitting and CO2 reduction, owing to its physicochemical stability, visible-light response, and facile synthesis. However, PCN as a photocatalyst still suffers from the fast recombination of electron-hole pairs and poor water redox reaction kinetics, greatly restricting its activity for artificial photosynthesis. Among the various modification approaches developed so far, decorating PCN with metals in different existences of nanoparticles, single atoms and molecular complexes, has been evidently very effective to overcome these limitations to improve photocatalytic performances. In this Review article, a systematic introduction to the state-of-the-art metal/PCN photocatalyst systems is given, with metals in versatility of nanoparticles, single atoms, and molecular complexes. Then, the recent processes of the metal/PCN photocatalyst systems in the applications of artificial photosynthesis, e.g., water splitting and CO2 reduction, are reviewed. Finally, the remaining challenges and opportunities for the development of high efficiency metal/PCN photocatalyst systems are presented and prospected. © 2019 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim
Number of references: 150
Main heading: Metal nanoparticles
Controlled terms: Solar fuels - Hydrogen production - Solar power generation - Metals - Reaction kinetics - Artificial photosynthesis - Atoms - Carbon nitride - Redox reactions
Uncontrolled terms: CO2 reduction - Environmental problems - Molecular complexes - Photocatalytic performance - Photocatalytic water splitting - Physico-chemical stability - Single metal atoms - Visible-light response
Classification code: 522 Gas Fuels - 615.2 Solar Power - 657.1 Solar Energy and Phenomena - 761 Nanotechnology - 802.2 Chemical Reactions - 931.3 Atomic and Molecular Physics
DOI: 10.1002/smll.201900772
Funding Details: Number: 2018JQ2028, Acronym: -, Sponsor: -; Number: 21875183,51672210, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Fundamental Research

Funds for the Central Universities; Number: -, Acronym: -, Sponsor: National Program for Support of Top-notch Young Professionals;
Funding text: This work was supported by the National Natural Science Foundation of China (grant numbers 51672210, 21875183), the National Program for Support of Top-notch Young Professionals, the "Fundamental Research Funds for the Central Universities" and the Basic Research Program of Natural Science-General Project (Youth) (grant numbers 2018JQ2028).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

143. Control actions of sedimentary environments and sedimentation rates on lacustrine oil shale distribution, an example of the oil shale in the Upper Triassic Yanchang Formation, southeastern Ordos Basin (NW China)

Accession number: 20190406417388
Authors: Chen, Yuhang (1, 2, 3); Zhu, Zengwu (3); Zhang, Long (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Laboratory for Marine Geology, Qingdao National Laboratory for Marine Science and Technology, Qingdao; 266061, China; (3) Shaanxi Center of Geological Survey, Xi'an; Shaanxi; 710065, China
Corresponding author: Chen, Yuhang(cyh@xsyu.edu.cn)
Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 102
Issue date: April 2019
Publication year: 2019
Pages: 508-520
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Oil shale is an important form of unconventional resources. It is significant to determine the control factors on oil shale distribution. Abundant oil shale resources are hosted in the Member Chang 7–3 (Ch7-3), Triassic Yanchang Formation in southeastern Ordos Basin (NW China). This study was conducted to investigate the sedimentary environment, distribution and organic matter source of the Ch7-3 Oil shale by a combined study of outcrops, core data, organic and element geochemical indices. The controlling factors of the oil shale distribution were determined by an analysis of sedimentary environments and geochemical features of the oil shale. Sedimentary facies analysis based on outcrops and core data indicated that the Ch7-3 Oil shale was deposited in lacustrine-delta environments. Warm and moist climates and reducing conditions indicated by major and trace elements were favorable to organic matter production and preservation. Rock-Eval pyrolysis showed that the organic matter of the Ch7-3 Oil shale is from both lacustrine phytoplankton and terrigenous higher plants. The organic matter from terrigenous higher plants was probably transported into the deep lake by gravity flows. Sedimentary facies and (La/Yb)N values show that the spatial distribution of oil shale was controlled by sedimentary environments and sedimentation rates. In the deep lake area near to delta-turbidite fan deposition systems, terrestial organic matter input was bounteous, and sedimentation rates were moderate, which were beneficial to organic matter accumulation and preservation, providing favorable conditions for oil shale formation. In delta-turbidite fan deposition systems, high sedimentation rates led to organic matter dilution. In the deep lake area far from delta-turbidite fan deposition systems, sedimentation rates were relatively low, and organic matter was easily degraded, in addition only lacustrine organic matter input with no terrestial organic matter input inhibited organic matter enrichment. © 2019 Elsevier Ltd
Number of references: 77
Main heading: Biogeochemistry
Controlled terms: Biological materials - Metamorphic rocks - Sedimentology - Oil shale - Organic compounds - Resource valuation - Trace elements - Lakes - Sedimentation
Uncontrolled terms: Control actions - Major and trace elements - Ordos Basin - Organic matter inputs - Sedimentary environment - Sedimentation rates - Sedimentay environments - Unconventional resources
Classification code: 461.2 Biological Materials and Tissue Engineering - 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 801.2 Biochemistry - 802.3 Chemical Operations - 804.1 Organic Compounds
DOI: 10.1016/j.marpetgeo.2019.01.006

Funding Details: Number: MGQNLM-KF201716, Acronym: QNLM, Sponsor: Qingdao National Laboratory for Marine Science and Technology; Number: -, Acronym: -, Sponsor: Key Laboratory of Marine Geology and Environment; Number: 20150301, Acronym: -, Sponsor: -;
Funding text: This research project was financially supported by public geological project in Shaanxi Province (Grant No. 20150301) and the Opening Foundation of Laboratory for Marine Geology and Environment, Qingdao National Laboratory for Marine Science and Technology .(Grant No. MGQNLM-KF201716). We thank Dr. Wenhou Li from Department of Geology, Northwest University for his useful comments. Additionally, we would like to thank the anonymous reviewers for the critical comments and constructive suggestions, which greatly improved the manuscript.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

144. Durability of GFRC Modified by Calcium Sulfoaluminate Cement under Elevated Curing Temperatures (*Open Access*)

Accession number: 20200308032345
Authors: Song, Meimei (1, 2); Wu, Ke (3); Dou, Yihua (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, China; (2) State Key Laboratories of Silicate Materials for Architectures, Wuhan University of Technology, Wuhan, China; (3) School of Mechanical and Materials Engineering, University College Dublin, Dublin, Ireland
Corresponding author: Dou, Yihua(yhdou@vip.sina.com)
Source title: Advances in Materials Science and Engineering
Abbreviated source title: Adv. Mater. Sci. Eng.
Volume: 2019
Issue date: 2019
Publication year: 2019
Article number: 2915684
Language: English
ISSN: 16878434
E-ISSN: 16878442
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: CSA/GFRC is an advanced composite material possessed with great ductility and durability. However, its bending performance and fibre condition, as well as intrinsic microstructural changes, under elevated temperature have not been understood so far. XRD was applied in this study to investigate the hydration mechanism of CSA cement under 50°C, 70°C, and 80°C. Bending performance was carried out to test the toughness of CSA/GFRC. SEM was applied to observe the underlying microstructural changes of CSA/GFRC under different curing regimes. It was found out that there was a gradual degradation of both ultimate tensile strength and ultimate strain of CSA/GFRC with elevated curing temperature and curing age, but glass fibre still shows considerable ability to carry stress alone by bridging cracks. Microstructural studies showed that, at accelerated temperatures of 50°C and 70°C, the space between fibres remained empty in general only with some hydration products adhering to the fibre surface occasionally. At a higher accelerated curing temperature of 80°C, densification of the interfilamentary spaces by larger and clustered hydration products can be observed at longer curing ages, causing the fibres to lose parts of the flexibility. Therefore, it can be concluded that densification of interfilamentary spaces may have a greater role to play in the strength degradation of CSA/GFRC than mechanisms associated with fibre weakening caused by chemical corrosion. © 2019 Meimei Song et al.
Number of references: 22
Main heading: Fibers
Controlled terms: Calcium compounds - Corrosion - Curing - Durability - Hydration - Tensile strength - Cements
Uncontrolled terms: Advanced composite materials - Calcium sulfoaluminate cement - Elevated temperature - Hydration mechanisms - Materials science and engineering - Microstructural changes - Strength degradation - Ultimate tensile strength
Classification code: 412.1 Cement - 802.2 Chemical Reactions
Numerical data indexing: Temperature 3.53e+02K, Temperature 3.23e+02K, Temperature 3.43e+02K
DOI: 10.1155/2019/2915684
Compendex references: YES
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Open Access type(s): All Open Access, Gold

Database: Compendex
Data Provider: Engineering Village

145. A NH3 sensor based on tapered optical fiber coated with WO3 nanowires

Accession number: 20202008648592
Authors: Wang, Qiqi (1); Fu, Haiwei (1); Ding, Jijun (1); Yang, Chong (1); Wang, Shuai (1)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection Shaanxi, Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'an; 710065, China
Corresponding author: Fu, Haiwei(hwfu@xsyu.edu.cn)
Source title: Optics InfoBase Conference Papers
Abbreviated source title: Opt. InfoBase Conf. Pap
Volume: Part F145-ISST 2019
Part number: 1 of 1
Issue title: Information Storage System and Technology, ISST_2019
Issue date: 2019
Publication year: 2019
Report number: ISST-2019-JW4A.3
Language: English
ISBN-13: 9781943580729
Document type: Conference article (CA)
Conference name: Information Storage System and Technology, ISST_2019
Conference date: November 11, 2019 - November 14, 2019
Conference location: Wuhan, China
Conference code: 142148
Publisher: OSA - The Optical Society
Abstract: WO3 nanowires are prepared by hydrothermal method as coating material for tapered optical fiber ammonia sensor. The experimental results show that the sensor has obvious selective response to ammonia at room temperature. © 2019 The Author(s)
Number of references: 2
Main heading: Nanowires
Controlled terms: Tungsten compounds - Optical fibers - Ammonia
Uncontrolled terms: Ammonia sensors - Coating material - Hydrothermal methods - NH3 sensors - Selective response - Tapered optical fibers
Classification code: 741.1.2 Fiber Optics - 761 Nanotechnology - 804.2 Inorganic Compounds - 933 Solid State Physics
DOI: 10.1364/ISST.2019.JW4A.3
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

146. Investigation on adsorption properties of Na-decorated Graphene for H2

Accession number: 20202008648582
Authors: Qu, Yongfeng (1); Li, Guoli (1); Chen, Haixia (1); Ding, Jijun (1); Fu, Haiwei (1)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection Shaanxi, Key Laboratory of Measurement and Control Technology for Oil and Gas wells, Xi'an; 710065, China
Corresponding author: Chen, Haixia(chxia8154@163.com)
Source title: Optics InfoBase Conference Papers
Abbreviated source title: Opt. InfoBase Conf. Pap
Volume: Part F145-ISST 2019
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Report number: ISST-2019-JW4A.19
Language: English

ISBN-13: 9781943580729
Document type: Conference article (CA)
Conference name: Information Storage System and Technology, ISST_2019
Conference date: November 11, 2019 - November 14, 2019
Conference location: Wuhan, China
Conference code: 142148
Publisher: OSA - The Optical Society
Abstract: Electronic properties and adsorption mechanism of hydrogen adsorbed onto Na-decorated graphene are investigated by using Density Functional Theory (DFT). The results show that hydrogen prefer to be adsorbed on Na-decorated graphene with parallel configurations. © 2019 The Author(s)
Number of references: 5
Main heading: Graphene
Controlled terms: Density functional theory - Electronic properties - Hydrogen
Uncontrolled terms: Adsorption mechanism - Adsorption properties - Parallel configuration
Classification code: 761 Nanotechnology - 804 Chemical Products Generally - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1364/ISST.2019.JW4A.19
Funding Details: Number: 2016JQ5037, Acronym: -, Sponsor: -; Number: 2016BS12, Acronym: -, Sponsor: -; Number: 11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 16JK1601, Acronym: -, Sponsor: -;
Funding text: Authors thanks Professor Jianhong Peng of Qinghai Nationalities University for his help in software simulation calculation. This work is supported by the National Natural Science Foundation of China (Grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (Grant No. 2016BS12), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS18211019).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

147. Robust Proximal Support Vector Regression Based on Maximum Correntropy Criterion (*Open Access*)

Accession number: 20190506455910
Authors: Wang, Kuaini (1); Pei, Huimin (2); Ding, Xiaoshuai (3); Zhong, Ping (4)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an, China; (2) School of Mathematics and Statistics, Jiangsu Normal University, Xuzhou, China; (3) School of Education, Xizang Minzu University, Xianyang, China; (4) College of Science, China Agricultural University, Beijing, China
Corresponding author: Zhong, Ping(zping@cau.edu.cn)
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Article number: 7102946
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CODEN: SCIPEV
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: The robustness problem of the classical proximal support vector machine for regression estimation (PSVR) when confronting with samples in the presence of outliers is addressed in this paper. Correntropy is a local similarity measure between two arbitrary variables and has been proven the insensitivity to noises and outliers. Based on the maximum correntropy criterion (MCC), a correntropy-based robust PSVR framework is proposed, named as RPSVR-MCC. The half-quadratic optimization method is employed to solve the resultant optimization, and an iterative algorithm is developed to solve RPSVR-MCC. In each iteration, the complex optimization can be converted to a linear system of equations which can be easily solved by the widely popular optimization techniques. The experimental results on synthetic datasets and real-world benchmark datasets demonstrate that the effectiveness of the proposed method.

Moreover, the superiority of the proposed algorithm is more evident in noisy environment, especially in the presence of outliers. © 2019 Kuaini Wang et al.
Number of references: 31
Main heading: Iterative methods
Controlled terms: Linear systems - Support vector machines - Quadratic programming - Statistics
Uncontrolled terms: Complex optimization - Half-quadratic optimizations - Iterative algorithm - Linear system of equations - Local similarity measure - Optimization techniques - Proximal support vector machines - Regression estimation
Classification code: 723 Computer Software, Data Handling and Applications - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 961 Systems Science
DOI: 10.1155/2019/7102946
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Compendex references: YES
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Database: Compendex
Data Provider: Engineering Village

148. Co-annihilators and fuzzy co-annihilators in EQ-algebras

Accession number: 20193807441363
Authors: Cheng, Xiaoyun (1); Xin, Xiaolong (2); Saeid, Arsham Borumand (3); He, Xiaoli (4)
Author affiliation: (1) School of Science, Xi'an Aeronautical University, Xi'an, China; (2) School of Mathematics, Northwest University, Xi'an; 710127, China; (3) Faculty of Mathematics and Computer, Shahid Bahonar University of Kerman, Kerman, Iran; (4) School of Science, Xi'an Shiyou University, Xi'an, China
Corresponding author: Xin, Xiaolong(xlxin@nwu.edu.cn)
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Pages: 2113-2124
Language: English
ISSN: 10641246
E-ISSN: 18758967
Document type: Journal article (JA)
Publisher: IOS Press BV
Abstract: In this paper, we introduce the co-annihilator A of a set A and the co-annihilator of (F : a) of a relative to a prefilter (filter) F in an EQ-algebra . We investigate related properties of them, and obtain that the lattice of all prefilters PF ( ) forms a pseudo-complemented lattice and the collection of all co-annihilators COA ( ) forms a Boolean algebra in a separated EQ-algebra . Moreover, we introduce the notion of $_{\Delta}$–co-annihilators in an EQ#-algebra $_{\Delta}$ and conclude that the collection of all $_{\Delta}$–prefilters PF $_{\Delta}$ ($_{\Delta}$) in an EQ#-algebra $_{\Delta}$ constitutes a relative pseudo-complemented lattice. Finally, we introduce and investigate two types of fuzzy co-annihilators AnnR (μ) and Ann (μ, $_{\nu)}$ in . We come to a conclusion that the set of all fuzzy filters FF ( ) in a residuated EQ-algebra forms a relative pseudo-complemented lattice whence $_{\rightarrow}$ is the Gödel residuated implication in Str (μ, $_{\nu).}$ © 2019 - IOS Press and the authors. All rights reserved.
Number of references: 18
Main heading: Fuzzy filters
Controlled terms: Boolean algebra
Uncontrolled terms: (fuzzy) co-annihilator - fuzzy congruence relation - Prefilters - Residuated - Residuated implications
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723 Computer Software, Data Handling and Applications - 921.1 Algebra
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Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

149. Scale Model Tests for Ventilation Characteristics of Urban Tunnels with Off-ramps

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Title of translation:
Authors: Zhang, Xin (1, 2); Huang, Zhi-Yi (1); Zhang, Tian-Hang (1, 3); Zhang, Chi (1, 3); Kang, Cheng (1, 3); Wu, Ke (1, 3)
Author affiliation: (1) School of Civil Engineering and Architecture, Zhejiang University, Hangzhou; Zhejiang; 310058, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) Key Laboratory of Offshore Geotechnics and Material of Zhejiang Province, Zhejiang University, Hangzhou; Zhejiang; 310058, China
Corresponding author: Wu, Ke(wuke@zju.edu.cn)
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Publisher: Chang'an University
Abstract: Ventilation characteristics are key factors that affect the inside and outside environment of urban tunnels. The objective of this study was to determine the changing trends of air flux and air flux distribution in tunnels with off-ramps, thus formulating an effective control strategy for the total air flux and diversion ratio. A 38 m-long, 1/20-scale model of a tunnel with a ramp was designed and built on the basis of similarity theory. A frequency-conversion control system and real-time automatic measurement and acquisition system were developed to carry out the synchronous control of eight model fans and automatic acquisition of velocity and pressure data of sixteen tunnel sections. When the wind speed in the model tunnel was greater than 2.5 m•s-1, it could synchronously satisfy the similarity criterion for resistance, inertial force, and pressure. The test system of the tunnel ventilation scale model was used to analyze the influence of the changing jet-flow pressurization in a single or multiple ventilation section on the air flux and diversion ratio inside the tunnel. According to the test results, an interactional coupling effect of air flux exists between the ramp and the main tunnel. As the jet-flow pressurization in a certain ventilation section increases, the air flux of the ventilation sections connected to it in series increases as well, whereas that of the ventilation sections connected to it in parallel decreases. The total air flux and diversion ratio are both key factors affecting the inside and outside environment of urban tunnels. The adjustment of the jet-flow pressurization at the main line before the diversion does not change the diversion ratio, however it is highly efficient in controlling the total air flux, with the change in total air flux being 1.43 %•(N•m-2)-1 per unit rise in pressure. The adjustment of the jet-flow pressurization at the main line after the diversion or ramp has limited influence on the total air flux, yet it is effective in controlling the diversion ratio, with the change in the diversion ratio being -4.43%•(N•m-2)-1 by adjusting the jet-flow pressurization at the main line after the diversion and 4.16%•(N•m-2)-1 by adjusting the jet-flow pressurization at the ramp, per unit rise in pressure. For urban tunnels with an off-ramp, the most efficient method for ventilation control is to control the inside environment of urban tunnels by a jet fan at the main line before the diversion, and the outside environment by a jet fan at the main line after the diversion or ramp. © 2019, Editorial Department of China Journal of Highway and Transport. All right reserved.
Number of references: 40
Main heading: Ventilation
Controlled terms: Pressurization - Wind - Tunnels
Uncontrolled terms: Automatic acquisition - Automatic measurements - Coupling effect - Frequency conversion control - Off-ramp - Scale model tests - Tunnel engineering - Ventilation control
Classification code: 401.2 Tunnels and Tunneling - 443.1 Atmospheric Properties - 643.5 Ventilation
Numerical data indexing: Velocity 2.50e+00m/s to 2.20e+01m/s
DOI: 10.19721/j.cnki.1001-7372.2019.05.012
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

150. Micro-fracture development impact factors analysis and its effects on well production of Hua-qing area Ordos Basin in China

Accession number: 20192006934998
Authors: Dong, Feng-Juan (1); Cao, Yuan (1); Ren, Da-Zhong (1); Sun, Wei (2)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an, Shaanxi; 710069, China
Corresponding author: Dong, Feng-Juan(dfj_1222@126.com)
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Publisher: Inderscience Publishers
Abstract: Micro-fractures, which are characterised by complex-non-structural geneses, are critical in tight sand reservoir production. Taking the Chang 6 reservoir of the Huaqing area, the Ordos basin, as an example, the influential factors of the micro-fracture development are analysed from a novel perspective. Studies show that the influences of above factors on micro-fracture are listed as follows: brittle mineral content > median grain size > stratum thickness > overburden pressure. In same lithology, enrichment position of rigid compositions is a key factor to the micro-fracture generation. However, sandstones are rigid and prone to forming micro-fracture. The effect of diagenesis on micro-fracture development is quite complex. Micro-fractures generate at the contact position between soft and hard materials. And then, the effects of micro-fractures on the well production have been analysed, which hence offers scientific guidance for further high-efficiency development of the Chang 6 tight sandstone oil reservoir in this area. © 2019 Inderscience Enterprises Ltd.
Number of references: 45
Main heading: Lithology
Controlled terms: Petroleum reservoir engineering - Tight gas - Sandstone - Metamorphic rocks - Fracture - Petroleum reservoirs
Uncontrolled terms: China - HuaQing area - Influencing factors - Micro-fracture - Well production
Classification code: 481.1 Geology - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 951 Materials Science
DOI: 10.1504/IJOGCT.2019.099532
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Funding text: This work was financially supported by Shaanxi province natural science foundation research project of youth talent project (2017JQ4005), the national natural science foundation of China (41702146), Shaanxi province natural science foundation research project of youth talent project (2016JQ4022), Shaanxi science and technology as a whole the innovation project (ktcl012015-09) and China postdoctoral science foundation (2015M582699) . We thank for support of these projects.
Compendex references: YES
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Data Provider: Engineering Village

151. A novel hybrid feature selection strategy in quantitative analysis of laser-induced breakdown spectroscopy

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Authors: Yan, Chunhua (1); Liang, Jing (1); Zhao, Mingjing (1); Zhang, Xin (1); Zhang, Tianlong (1); Li, Hua (1, 2)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecular Chemistry of Ministry of Education, College of Chemistry & Materials 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)
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ISSN: 00032670
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Publisher: Elsevier B.V., Netherlands
Abstract: Laser-induced breakdown spectroscopy (LIBS) has been recognized as a significant tool for quantitative analysis of elements with its unique advantages, especially in combination with multivariate calibration methods. However, LIBS spectra typically include large amounts of high-dimensional data that affect the predictive accuracy of multivariate calibration based on LIBS. Feature selection, as an important preprocessing step in data mining, can improve the performance of the multivariate calibration model by eliminating the redundant and irrelevant features. In this study, a hybrid feature selection method based on V-WSP-PSO was proposed to improve the accuracy of LIBS analysis. The proposed method combines the advantages of V-WSP based filter method and particle swarm optimization (PSO) based wrapper method. The uncorrelated and redundant features were first eliminated by V-WSP method to form a simplified input subset, and then the retained features were further refined by PSO method to find a small set of features with high predictive accuracy. In order to evaluate the performance of proposed method, LIBS experiments were performed using 28 coal samples, and a nonlinear multivariate calibration method based on kernel extreme learning machine (KELM) was selected to implement the proposed hybrid feature selection method for calorific value determination of coal. Comparing the proposed method with several other feature selection methods shows that the V-WSP-PSO method is best in terms of number of selected features and predictive accuracy. Finally, 114 features were selected from full spectrum (27620 features) by V-WSP-PSO method and the best root mean square error of cross validation (RMSECV) and determination coefficient of cross validation (RCV2) were 0.4013 MJ/kg and 0.9908, root mean square error of prediction (RMSEP) and determination coefficient of prediction (RP2) were 0.3534 MJ/kg and 0.9894. The overall results demonstrate that the V-WSP-PSO method is more efficient to reduce the redundant features, calculation time and improve the model performance, and it is a good alternative for feature selection in multivariate calibration. © 2019 Elsevier B.V.
Number of references: 40
Main heading: Particle swarm optimization (PSO)
Controlled terms: Knowledge acquisition - Spectrum analysis - Feature Selection - Filtration - Clustering algorithms - Passive filters - Laser induced breakdown spectroscopy - Atomic emission spectroscopy - Data mining - Mean square error - Swarm intelligence
Uncontrolled terms: Best root mean square error - Determination coefficients - Extreme learning machine - Feature selection methods - Hybrid feature selections - Laserinduced breakdown spectroscopy (LIBS) - Multivariate calibration methods - Root-mean-square error of predictions
Classification code: 703.2 Electric Filters - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 802.3 Chemical Operations - 903.1 Information Sources and Analysis - 921.5 Optimization Techniques - 922.2 Mathematical Statistics - 931.1 Mechanics
Numerical data indexing: Specific_Energy 3.53e+05J/kg, Specific_Energy 4.01e+05J/kg
DOI: 10.1016/j.aca.2019.07.012
Funding Details: Number: 2018JQ2013, Acronym: -, Sponsor: -; Number: YZZ17126, Acronym: -, Sponsor: -; Number: 21605123,21675123,21873076, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NWU, Sponsor: Northwest University; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 17JK0780, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
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Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

152. Optimization design and experimental study of a two-disk rotor system based on multi-island genetic algorithm

Accession number: 20191006580690
Authors: Huang, Jingjing (1); Zheng, Longxi (2); Mechefske, Chris K (3); Han, Bingbing (4)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an, China; (2) School of Power and Energy, Northwestern Polytechnical University, Xi'an, China; (3) Department of Mechanical and Materials Engineering, Queen's University, Kingston, Canada; (4) Shanghai Aircraft Airworthiness Certification Center of CAAC, Chengdu, China
Corresponding author: Huang, Jingjing(huangjingjing@xsyu.edu.cn)
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Abbreviated source title: Int. J. Turbo Jet Engines
Volume: 36
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Issue date: March 1, 2019
Publication year: 2019
Pages: 1-8
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Document type: Journal article (JA)
Publisher: De Gruyter Open Ltd
Abstract: Based on rotor dynamics theory, a two-disk flexible rotor system representing an aero-engine with freely supported structure was established with commercial software ANSYS. The physical model of the two-disk rotor system was then integrated to the multidisciplinary design optimization software ISIGHT and the maximum vibration amplitudes experienced by the two disks when crossing the first critical speed were optimized using a multi-island genetic algorithm (MIGA). The optimization objective was to minimize the vibration amplitudes of the two disks when crossing the first critical speed. The position of disk 1 was selected as the optimization variable. The optimum position of disk 1 was obtained at the specified constraint that the variation of the first critical speed could not exceed the range of ±10%. In order to validate the performance of the optimization design, the proof-of-transient experiments were conducted based on a high-speed flexible two-disk rotor system. Experimental results indicated that the maximum vibration amplitude of disk 1 when crossing the first critical speed declined by 60.9% and the maximum vibration amplitude of disk 2 fell by 63.48% after optimization. The optimization method found the optimum rotor positions of the flexible rotor system which resulted in minimum vibration amplitudes. © 2019 Walter de Gruyter GmbH, Berlin/Boston 2019.
Number of references: 22
Main heading: Multiobjective optimization
Controlled terms: Genetic algorithms - Aircraft engines - Transient analysis - Design aids - Speed
Uncontrolled terms: Experimental validations - Flexible rotor systems - Multi island genetic algorithms - Multidisciplinary design optimization - Optimization method - Optimization variables - Supported structures - Transient experiments
Classification code: 653.1 Aircraft Engines, General - 902.1 Engineering Graphics - 921.5 Optimization Techniques
Numerical data indexing: Percentage 6.09e+01%, Percentage 6.35e+01%
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

153. Microfluidic investigations of crude oil-brine interface elasticity modifications via brine chemistry to enhance oil recovery

Accession number: 20184606063966

Authors: Liu, Yafei (1, 3); Kaszuba, John (2); Oakey, John (1)
Author affiliation: (1) Department of Chemical Engineering, University of Wyoming, Laramie; WY; 82071, United States; (2) Department of Geology & Geophysics and School of Energy Resources, University of Wyoming, Laramie; WY; 82071, United States; (3) Department of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Oakey, John(joakey@uwyo.edu)
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Pages: 338-346
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Waterflooding has been widely adopted as an improved oil recovery technique since water is, in general, inexpensive and readily available. More recently, low salinity waterflooding (LSW) has been applied to oil production. LSW has successfully demonstrated higher recovery efficiencies than conventional water flooding, yet the underlying mechanism is still quite unclear. Extensive research has focused upon rock-fluid interactions under low salinity conditions, however very little work has considered interactions between oil and brine and how fluid-fluid interfacial properties are influenced by brine salinity and composition. To fill this gap, we have developed a microfluidic device for multiphase interfacial testing with length scales comparable to the pore scale of oil reservoir rocks. Unlike conventional core flooding tests, fluid-fluid phenomena can be easily visualized within microfluidic devices via optical microscopy. Oil snap-off, a phenomenon that represents a major dispersion mechanism, occurs when crude oil flows through porous media in the reservoir and induces trapping hysteresis, can be investigated within a well-controlled microfluidic flow-focusing geometry. The size of formed droplets is examined as a measure of the resistance to snap-off. It has been previously demonstrated that snap-off events are influenced by brine chemistry, oil composition, and the interaction time between crude oil and brine. Here, we show that asphaltenes in the oil phase contribute directly to the development of the elasticitic film. We also propose the reduction of interfacial elasticity by other polar components, such as naphthenic acids, which counteract asphaltene behavior over different time scales. The contribution of these effects on interfacial elasticity is shown to be mediated by both the composition and concentration of brine and oil. © 2018 Elsevier Ltd
Number of references: 65
Main heading: Microfluidics
Controlled terms: Asphaltenes - Enhanced recovery - Petroleum reservoirs - Crude oil - Floods - Petroleum reservoir engineering - Oil well flooding - Fluidic devices - Porous materials - Elasticity - Reservoirs (water)
Uncontrolled terms: Different time scale - Dispersion mechanisms - Enhance oil recoveries - Improved oil recovery - Interfacial elasticity - Interfacial property - Low salinity - Micro-fluidic devices
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 - 513 Petroleum Refining - 632.2 Hydraulic Equipment and Machinery - 632.5.1 Microfluidics - 732.1 Control Equipment - 951 Materials Science
DOI: 10.1016/j.fuel.2018.11.040
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Database: Compendex
Data Provider: Engineering Village

154. Viscoelastoplastic Compaction Properties of Cement-emulsified Asphalt Mixture Based on Bodner-Partom Model

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Title of translation: Bodner-Partom

Authors: Zhang, Cui-Hong (1, 2); Cao, Xue-Peng (2); Jiao, Sheng-Jie (2); Xu, Xin-Xin (2); Zhi, Tong-Chao (3); Fu, Yao (2)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Highway Maintenance Equipment National Engineering Laboratory, Chang'an University, Xi'an; Shaanxi; 710064, China; (3) Henan Gaoyuan Maintenance Technology of Highway Co. Ltd., Xinxiang; Henan; 453003, China
Corresponding author: Jiao, Sheng-Jie(jsj@chd.edu.cn)
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Language: Chinese
ISSN: 10017372
CODEN: ZGXUFN
Document type: Journal article (JA)
Publisher: Chang'an University
Abstract: In order to reveal the viscoelastoplastic deformation properties and mechanism of cement-emulsified asphalt mixture, universal testing machine compaction test was employed to simulate the compaction process in combination with the construction process parameters of the pavement roller. According to the deformation characteristics of mechanical response curve under loading cycles, the effective mean stress was introduced into the Bodner-Partom (B-P) model to construct a compaction deformation constitutive model of the mixture. Through nonlinear fitting analyses of the strain-time data, the parameter values of the constitutive model in the process of load cycles were identified, and furthermore, the viscoelastoplastic rheological properties and dynamic deformation mechanism in the compaction process of the mixture were revealed. The results show that the universal testing machine compression test fully reflects the deformation characteristics of the mixture. With the increase of loading cycles, plasticity and viscoplasticity deformation of the mixture decreases, and elastic and viscoelastic deformation of the mixture increases. According to viscoplastic deformation rule of the mixture, the expression for calculation of the void fraction in the compaction process is derived, deducing the changing rule of effective mean stress with the void fraction. The changing rules of B-P model parameters are listed as follows. Viscosity coefficient η increases with the increase of the load times and indicates that viscous property of the mixture increases after further compaction process. Strain rate sensitivity coefficient n1 remains the same and demonstrates that mixture temperature in the compaction process is relatively constant. Internal validity Z and stress limit D0 show an increasing and decreasing trend, respectively, with an increase in the load times. The former indicates that the inelastic deformation resistance increases, and plasticity and viscoplasticity deformation decrease with further compaction. The latter implies that the plastic strain rate decreases and plastic deformation proportion of the total deformation decrease gradually under a single cyclic loading. In conclusion, the B-P model parameters accurately describe viscoelastoplastic rheological properties of the mixture, which are associated with time and loading cycles. It can be verified that the reconstructed B-P constitutive model can effectively reveal viscoelastoplastic deformation mechanism in the compaction process. This can provide a theoretical foundation for further research on compaction rheological performance and pavement compaction techniques of the mixture.
Number of references: 22
Main heading: Mixtures
Controlled terms: Viscoplasticity - Pavements - Solvents - Tensile testing - Asphalt mixtures - Compaction - Emulsification - Rheology - Stress analysis - Plastic deformation - Strain rate - Cements - Void fraction - Constitutive models - Plasticity - Viscoelasticity
Uncontrolled terms: Compaction test - Deformation Characteristics - Emulsified asphalts - Road engineering - Strain rate sensitivity coefficient - Universal testing machines - Viscoelastoplastic deformation - Viscoelastoplasticity
Classification code: 411.1 Asphalt - 412.1 Cement - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.19721/j.cnki.1001-7372.2019.07.005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

155. C2 Oxygenates Formation from Syngas over the Cu-Rich and Rh-Rich Surfaces of Rh-Cu Bimetallic Catalysts: Probing into the Effects of the Surface Structure and Composition on the Catalytic Performance

Accession number: 20193407345892
Authors: Wang, Baojun (1); Guo, Weisheng (1); Zhang, Riguang (1); Ling, Lixia (1); Li, Zhiqin (2)
Author affiliation: (1) Key Laboratory of Coal Science and Technology of Ministry of Education and Shanxi Province, Taiyuan University of Technology, Taiyuan, Shanxi; 030024, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Zhang, Riguang(zhangriguang@tyut.edu.cn)
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Pages: 19528-19539
Language: English
ISSN: 19327447
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Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Aiming at identifying the effects of the surface structure and composition for the Rh-Cu bimetallic catalysts on the catalytic performance in syngas conversion to C2 oxygenates, the mechanism of CO initial activation and the carbon chain formation were systematically investigated using density functional theory calculations. Four model surfaces (RhCu(111) and (211) with Cu-rich or Rh-rich) were examined. The results showed that the preferred way of CO activation is the H-assisted mechanism to form CHO over four types of model surfaces. The carbon chain formation revealed the key factors between the surface structure and composition affecting catalytic activity and selectivity of Rh-Cu bimetallic catalysts toward C2 oxygenates formation in syngas conversion, and the surface structure of Rh-rich catalysts only alters the activity and selectivity of C2 oxygenates and cannot substantially affect the type of the main product (C2 oxygenates). C2 hydrocarbons and oxygenates are the main products on the Cu-rich catalysts, and the product selectivity depends on the surface structure. Analysis of d-band centers of Cu and Rh atoms shows that the catalytic performance of Rh-Cu(111) and (211) with Cu-rich or Rh-rich surfaces is closely related to the electronic property. Thus, compared to the Cu-rich surface, the Rh-rich surface of the Rh-Cu bimetallic catalyst is more suitable for the carbon chain formation of C2 oxygenates from syngas in which the synergetic interaction between Rh and Cu facilitates the CHO reaction with CHx to form C2 oxygenates, and Cu inhibits CHx self-coupling and hydrogenation to form the hydrocarbons. Our study provides a method for the design of high-performance catalysts by controlling the surface structure and composition. Copyright © 2019 American Chemical Society.
Number of references: 59
Main heading: Surface structure
Controlled terms: Chemical activation - Density functional theory - Synthesis gas - Binary alloys - Catalyst selectivity - Catalyst activity - Electronic properties - Structure (composition) - Hydrocarbons - Carbon - Copper
Uncontrolled terms: Bimetallic catalysts - C2 - Oxygenates - C2 hydrocarbons - Catalytic performance - Product selectivities - Self-couplings - Synergetic interactions - Syngas conversion
Classification code: 544.1 Copper - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 922.1 Probability Theory - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 951 Materials Science
DOI: 10.1021/acs.jpcc.9b03731
Funding Details: Number: 21476155,21736007,21776193, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

156. Quantitative structure-activity relationship (QSAR) study of carcinogenicity of polycyclic aromatic hydrocarbons (PAHs) in atmospheric particulate matter by random forest (RF)

Accession number: 20191406721309
Authors: Li, Nan (1); Qi, Juan (1); Wang, Ping (1); Zhang, Xin (1); Zhang, Tianlong (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; 710127, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Tianlong(tlzhang@nwu.edu.cn)
Source title: Analytical Methods
Abbreviated source title: Anal. Methods
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Publication year: 2019
Pages: 1816-1821
Language: English
ISSN: 17599660
E-ISSN: 17599679
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The carcinogenicity or toxicity information of a substance can be quickly and easily obtained by using a quantitative structure-activity relationship (QSAR) model. In this study, the carcinogenicity of PAHs was analyzed and predicted by using a random forest (RF) model with the molecular structure information and carcinogenicity data of PAHs. The molecular structure information of 91 PAHs was represented by molecular descriptors (such as structure descriptors, topology descriptors, molecular connectivity index and geometric descriptors) which were calculated by using Dragon5.4 software. The model parameters (ntree and mtry) and input variables were optimized and evaluated with respect to the accuracy, positive predictive value (PPV), negative predictive value (NPV) and out-of-bag (OOB) error. Then, based on the optimized model parameters and input variables, the RF, partial least squares-discriminant analysis (PLS-DA) and artificial neural network (ANN) models were constructed to predict the carcinogenicity of PAHs. The results show that the classification accuracy, PPV, NPV and modeling time are 0.9333, 0.8889, 1.0000 and 10.40 s for the RF model, respectively, which shows a better predictive ability than the PLS-DA and ANN models for the prediction of the carcinogenicity of PAHs. Therefore, it is demonstrated that RF are a very promising method for the accurate prediction of the carcinogenicity of PAHs. © 2019 The Royal Society of Chemistry.
Number of references: 46
Main heading: Least squares approximations
Controlled terms: Molecular structure - Decision trees - Neural networks - Forecasting - Computational chemistry - Polycyclic aromatic hydrocarbons - Discriminant analysis - Molecular graphics
Uncontrolled terms: Artificial neural network models - Atmospheric particulate matter - Molecular connectivity indexes - Partial least squares discriminant analyses (PLSDA) - Polycyclic aromatic hydrocarbons (PAHS) - Positive predictive values - Quantitative structure-activity relationship modeling - Quantitative structure-activity relationship studies
Classification code: 723.5 Computer Applications - 801 Chemistry - 801.4 Physical Chemistry - 804.1 Organic Compounds - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods - 922 Statistical Methods - 931.3 Atomic and Molecular Physics - 961 Systems Science
Numerical data indexing: Time 1.00e+00s, Time 1.04e+01s
DOI: 10.1039/c8ay02720j
Funding Details: Number: 2018JQ2013, Acronym: -, Sponsor: -; Number: 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;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

157. Effect of acid-temperature-pressure on the damage characteristics of sandstone

Accession number: 20193507370864
Authors: Li, Shuguang (1, 2); Huo, Runke (1); Yoshiaki, Fujii (2); Ren, Dazhong (3); Song, Zhanping (1)
Author affiliation: (1) School of Civil Engineering, Xi'an University of Architecture and Technology, Xi'an; 710055, China; (2) Rock Mechanics Laboratory, Faculty of Engineering, Hokkaido University, Sapporo; 060-8628, Japan; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Shuguang(lssgg2015@163.com)
Source title: International Journal of Rock Mechanics and Mining Sciences
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Article number: 104079
Language: English
ISSN: 13651609
CODEN: IRMGBG
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The primary objective of this study is to experimentally study the effects of different curing temperatures (25, 50 and 75 °C) and pressures (5, 10 and 15 MPa) on the mechanical properties and damage deterioration mechanism of sandstone samples subjected to pH3 H2SO4. The responses of mass loss, aperture structure based on NMR, deformation behaviour and mechanical parameters of sandstone were compared and analyzed. The microstructure change in sandstone samples was observed and analyzed with SEM-EDS. The deterioration mechanism of sandstone after treatment with acid-temperature-pressure (ATP) was discussed considering pH and ion concentration in acidic solution. The results indicated that mass, uniaxial compressive strength and elastic modulus of the samples decreased and sandstone sample porosity as well as pH and ion concentration of corrosion solution increased after treatment with APT. Under the same conditions, increasing curing temperature had apparent deterioration effect on acid-corroded sandstone, yet increasing pressure had little effect on it, especially the pressure increased from 10 MPa to 15 MPa. The results of SEM and electron spectroscopy showed that the microstructure, defects and mineral content of sandstone changed after treatment with ATP. The secondary pores increased and the surface structures became loose. The chemical reactions between sandstone samples and acidic solutions with different curing temperatures and pressures as well as the damage mechanism underlying the interaction were discussed in the theoretical context of chemical kinetics. © 2019 Elsevier Ltd
Number of references: 35
Main heading: Deterioration
Controlled terms: Compressive strength - Corrosion - Microstructure - Pressure effects - Sandstone
Uncontrolled terms: Acid-temperature-pressure - Acidic solutions - After-treatment - Curing temperature - Damage deterioration mechanism - Damage deteriorations - Deterioration mechanism - Ion concentrations - Mechanical parameters - Sandstone samples
Classification code: 482.2 Minerals - 931.1 Mechanics - 951 Materials Science
Numerical data indexing: Pressure 1.00E+07Pa, Pressure 1.00E+07Pa to 1.50E+07Pa, Pressure 1.50E+07Pa, Temperature 3.23E+02K, Temperature 3.48E+02K
DOI: 10.1016/j.ijrmms.2019.104079
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Funding text: The authors would like to thank the National Natural Science Foundation of China (Nos. 51578447, 41172237 and 41702146) and China Postdoctoral Science Foundation (2018M643554) for supporting this research project and also thank Tian Qiu, Meiting Qian, Guodong Liang, and Baolai Wang for their contribution to this paper. The authors gratefully acknowledge the comments of the reviewers and the editors.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

158. Design of reconfigurable filtering ultra-wideband antenna with switchable band-notched functions

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Authors: Yang, Hailong (1); Xi, Xiaoli (1, 2); Wang, Lili (1); Zhao, Yuchen (1); Shi, Xiaomin (3); Yuan, Yanning (1)
Author affiliation: (1) Department of Electric Engineering, Xian University of Technology, Xian; 710048, China; (2) Science and Technology on High Power Microwave Laboratory, Northwest Institute of Nuclear Technology, Xi'an; 710024, China; (3) Communication Engineering Department, Xi'An Shiyou University, Xi'an, China
Corresponding author: Xi, Xiaoli(xixiaoli@xaut.edu.cn)
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Document type: Journal article (JA)
Publisher: Cambridge University Press
Abstract: A compact reconfigurable filtering ultra-wideband (UWB) antenna with switchable band-notched functions is proposed. The basic structure of the proposed design is a filtering slot antenna with good band-edge selectivity using stepped impedance resonator feeding line. The reconfigurability is achieved by using two microstrip lines paralleling to the feeding line and two PIN diodes. The reconfigurable structure and bias circuit of the antenna are relatively simple and are not connected to the radiation structure, so they have little negative influence on the radiation characteristics of the antenna. Total four states could be achieved by using two PIN diodes to short the microstrip lines and ground. To verify the performance of the final design, multiple measured and simulated results in frequency and time domain are studied and analyzed. The measured results agreed very well with simulation. Compared with the traditional UWB antenna, the proposed antenna has advantages in size, filtering function in-band and out-of-band, and tunable states for multiple UWB applications. Copyright © Cambridge University Press and the European Microwave Association 2018 A.
Number of references: 24
Main heading: Slot antennas
Controlled terms: Antenna feeders - Directional patterns (antenna) - Microstrip lines - Ultra-wideband (UWB) - Semiconductor diodes
Uncontrolled terms: Filtering functions - Frequency and time domains - Notch-band - Radiation characteristics - Radiation structure - Reconfigurable structure - Stepped impedance resonator - Ultra-wideband antennas
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 716.3 Radio Systems and Equipment
DOI: 10.1017/S1759078718001587
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

159. Control of air pollutants emission and improvement of incineration rate during incineration of oily sludge-based briquette

Accession number: 20195107838055
Authors: Du, Mingming (1, 2); Wang, Fengchao (2); Li, Jinling (1, 2); Yu, Tao (2); Qu, Chengtun (2)
Author affiliation: (1) State Key Laboratory of Petroleum Pollution Control, CNPC Research Institute of Safety and Environmental Technology, Beijing; 102206, China; (2) Shaanxi Oil and Gas Pollution Control and Reservoir Protection Key Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Chengtun
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Abbreviated source title: Nat. Environ. Pollut. Technol.
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Pages: 1157-1167
Language: English
ISSN: 09726268
E-ISSN: 23953454

Document type: Journal article (JA)
Publisher: Technoscience Publications
Abstract: The incineration technology of oily sludge-based briquette makes great contributions to oily sludge treatment. In order to resolve these problems, air pollutants (SO2 and organic gas) emission and low incinerating rate during the briquette incineration, the effects of additives (CaCO3, CaO; K2CO3, Na2CO3, NaCl; KMnO4, KNO3, NaNO3; Fe2O3, KClO3) on the generating gas and incinerating rate during incineration were studied. The results show that CaCO3 is more effective than CaO for fixing sulphur into residue, and K2CO3 improved the sulphation efficiency of calcium-based additives, which is more useful than NaCl and Na2CO3 did. As for the incinerating rate of briquette, KMnO4 is more effective than KNO3 and NaNO3. The maximum of incinerating rate of briquette is improved from 0.38 to 0.6 g/ min and Fe2O3 and KClO3 can apparently reduce the release of organic gas during the incineration of briquette. But KClO3 can greatly reduce the release of sulphur. When the adding amount of CaCO3, K2CO3, KMnO4 and KClO3 is 16%, 12%, 18%, 6% respectively in the process of briquette preparation, the sulphation efficiency reached the maximum of 95.3%, and there is still an extremely small amount of organic gas in flue gas. CaCO3, K2CO3, KMnO4 and KClO3 used in emission control of air pollutants and full combustion of briquette during incineration of oily sludge based-briquette, demonstrates high efficiency and low emission compared to other additives tested in this study.
Number of references: 29
Main heading: Efficiency
Controlled terms: Air pollution - Potassium Nitrate - Additives - Calcite - Hematite - Sulfur - Sodium chloride - Emission control - Gases - Potash
Uncontrolled terms: Air pollutants - High efficiency and low emission - Incineration technology - Oily sludges - Sulphation
Classification code: 451 Air Pollution - 451.2 Air Pollution Control - 482.2 Minerals - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 913.1 Production Engineering
Numerical data indexing: Mass_Flow_Rate 6.33e-06kg/s to 1.00e-05kg/s, Percentage 1.20e+01%, Percentage 1.60e+01%, Percentage 1.80e+01%, Percentage 6.00e+00%, Percentage 9.53e+01%
Funding Details: Number: 2017KJXX-49, Acronym: -, Sponsor: -; Number: 2019JM-506, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 18JS087, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: State Key Laboratory of Pollution Control and Resource Reuse;
Funding text: This work was supported by the Open Project Program of State Key Laboratory of Petroleum Pollution Control; and Shaanxi Youth Science and technology new star project (2017KJXX-49); and Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No.18JS087); and Natural Science Basic Research Plan in Shaanxi Province of China (Program 2019JM-506).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

160. Microstructure evolution and crystallography of directionally solidified Al2O3/Y3Al5O12 eutectic ceramics prepared by the modified Bridgman method

Accession number: 20192407038074
Authors: Wang, Xu (1); Zhang, Nan (1); Zhong, Yujie (2); Jiang, Bailing (1); Lou, Langhong (3); Zhang, Jian (3); Wang, Jingyang (3)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Technology, Xi'an; 710048, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Institute of Metal Research, Chinese Academy of Sciences, Shenyang; 110016, China
Corresponding author: Wang, Xu(xwang@alum.imr.ac.cn)
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Abbreviated source title: J. Mater. Sci. Technol.
Volume: 35
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Publication year: 2019
Pages: 1982-1988
Language: English
ISSN: 10050302
CODEN: JSCTEQ
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Publisher: Chinese Society of Metals

Abstract: Large size, high-density (99.97%) and well-organized Al2O3/Y3Al5O12 (YAG) eutectic ceramics were prepared by the modified Bridgman method. The evolution of the three dimensional microstructure and micropores were investigated. The diameter of the micro-pores and the porosity decreased during directional solidification. The average equivalent diameter of the micro-pores was 2.41 μm in the well-prepared eutectic ceramics. Most of the pores (98.07%) were smaller than 4 μm. These data are comparable to those prepared by the optical floating zone method. The as-grown eutectic ceramics were polycrystalline, but the interfaces were well-bonded and there were no amorphous phases in the microstructure. The misfits of the different crystallographic relationships were calculated, and the bottleneck of the single-crystal preparation was identified. These results could provide theoretical guidance for the preparation of large, single-crystal Al2O3/YAG eutectic ceramics by the modified Bridgman method. © 2019
Number of references: 28
Main heading: Yttrium aluminum garnet
Controlled terms: Crystallography - Aluminum oxide - Ceramic materials - Solidification - Microstructure - Alumina - Single crystals - Crystal growth from melt - Eutectics
Uncontrolled terms: Crystal preparation - Directionally solidified - Equivalent diameter - Eutectic ceramics - Micro-structure evolutions - Modified Bridgman method - Optical floating zone methods - Three-dimensional microstructures
Classification code: 531.2 Metallography - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 812.1 Ceramics - 933.1 Crystalline Solids - 933.1.2 Crystal Growth - 951 Materials Science
Numerical data indexing: Percentage 1.00e+02%, Percentage 9.81e+01%, Size 2.41e-06m, Size 4.00e-06m
DOI: 10.1016/j.jmst.2019.05.018
Funding Details: Number: 101-451116013, Acronym: -, Sponsor: -; Number: 51701156,51804252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 6140759040102,6140923040203, Acronym: -, Sponsor: National Defense Pre-Research Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

161. Data Fusion of Raman and Near-Infrared Spectroscopies for the Rapid Quantitative Analysis of Methanol Content in Methanol-Gasoline

Accession number: 20194707715005
Authors: Li, Maogang (1); Xue, Jia (1); Du, Yao (1); Zhang, Tianlong (2); Li, Hua (1, 2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Key Laboratory of Synthetic and Natural Functional Molecular Chemistry of Ministry of Education, College of Chemistry and Material Science, Northwest University, Xi'an; 710069, China
Corresponding author: Li, Hua(huali@nwu.edu.cn)
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Pages: 12286-12294
Language: English
ISSN: 08870624
E-ISSN: 15205029
CODEN: ENFUEM
Document type: Journal article (JA)
Publisher: American Chemical Society
Abstract: Rapid analysis of methanol content in methanol-gasoline is of great significance to monitor the methanol-gasoline quality. In this work, two different data-fusion strategies based on Raman and near-infrared (NIR) spectroscopies coupled with partial least square (PLS) were constructed and applied for a rapid and accurate analysis of the methanol content in methanol-gasoline. The Raman and NIR spectra of 49 methanol-gasoline samples were recorded, and the characteristic peaks of the methanol-gasoline samples in Raman and NIR spectroscopies were identified. For spectral data fusion, two different data-fusion strategies based on Raman and NIR spectroscopies coupled with PLS were proposed; normalization was used for low-level data fusion, and variable importance in

projection (VIP) was used for mid-level data fusion. The different spectra pretreatment methods, latent variables, and variable importance thresholds of VIP were explored and optimized by 5-fold cross-validation (CV) to optimize the PLS calibration model for methanol content analysis. To further prove the predictive performance and stability of the PLS calibration model based on two data-fusion strategies, four PLS calibration models based on Raman, NIR, and two data-fusion strategies were applied to the quantitative analysis of methanol content in methanol-gasoline. The results show that the predictive performance of PLS calibration models based on the two data-fusion strategies is improved, and the PLS calibration model based on mid-level data fusion strategy gave an excellent predictive performance in methanol content analysis, with coefficients of determination of cross-validation (Rcv2) and validation set (Rv2) of 0.9988 and 0.9905, respectively, and root mean square error of cross-validation (RMSECV) and validation set (RMSEV) of 0.0068 and 0.0288%, respectively. Therefore, data fusion based on Raman and NIR spectroscopies coupled with PLS can give a rapid and accurate quantitative analysis of the methanol content in methanol-gasoline.
Number of references: 43
Main heading: Methanol
Controlled terms: Infrared devices - Mean square error - Near infrared spectroscopy - Quality control - Spectrum analysis - Data fusion - Gasoline
Uncontrolled terms: Accurate analysis - Characteristic peaks - Data fusion strategy - Partial least square (PLS) - Predictive performance - Pretreatment methods - Root mean square errors - Variable importances
Classification code: 523 Liquid Fuels - 723.2 Data Processing and Image Processing - 804.1 Organic Compounds - 913.3 Quality Assurance and Control - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 2.88e-02%, Percentage 6.80e-03%
DOI: 10.1021/acs.energyfuels.9b03021
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Funding text: This research was financially supported by the National Natural Science Foundation of China (Grant Nos. 21873076, 21675123, and 21605123), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2018JQ2013), Scientific Research Plan Projects of Shaanxi Education Department (Grant No. 17JK0780), and Graduate Innovation and Practice Ability Development Project of Xi’an Shiyou University (Grant No. YCS19121013).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

162. A new model to improve the accuracy of wellbore pressure calculation by considering gas entrapment

Accession number: 20200708169927
Authors: Pan, Shaowei (1); Sun, Baojiang (1); Wang, Zhiyuan (1); Fu, Weiqi (1); Zhao, Yang (2); Lou, Wenqiang (1); Wang, Junqi (3)
Author affiliation: (1) China U. of Petroleum, East China, China; (2) Missouri U. of Science and Technology, United States; (3) 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/IATMI Asia Pacific Oil and Gas Conference and Exhibition 2019, APOG 2019
Abbreviated source title: Soc. Pet. Eng. - SPE/IATMI Asia Pac. Oil Gas Conf. Exhib., APOG
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - SPE/IATMI Asia Pacific Oil and Gas Conference and Exhibition 2019, APOG 2019
Issue date: 2019
Publication year: 2019
Report number: SPE-196471-MS
Language: English
ISBN-13: 9781613996478
Document type: Conference article (CA)
Conference name: SPE/IATMI Asia Pacific Oil and Gas Conference and Exhibition 2019, APOG 2019
Conference date: October 29, 2019 - October 31, 2019
Conference location: Bali, Indonesia
Conference code: 157053

Publisher: Society of Petroleum Engineers
Abstract: Drilling fluid is a yield stress fluid, which can trap invading gas in the wellbore. The entrapment of gas leads to the decrease of ECD and the inaccuracy of wellbore pressure calculation during gas kick. This study established a mathematic model for predicting the ultimate gas entrapment concentration (UGEC) by coupling the stress field between multiple bubbles. The prediction model for UGEC is related to drilling fluid yield stress, the mean bubble size and the density difference. The UGEC is linearly with the dimensionless drilling fluid yield stress Bi (=ty/(?m-?g)gRb) and there is no gas can entrapped in the drilling fluid for Bi less than 0.143. Based on the UGEC model, a new method for calculating the wellbore pressure is established. The results of model simulation show that with the increase of the drilling fluid yield stress, the height of the invaded gas front and the peak value of the wellbore pressure decrease. Thus, we proposed to inject the high yield stress slug in the well bottom to minimize the damage caused by the gas invasion under the shut-in situation. Copyright 2019, Society of Petroleum Engineers.
Number of references: 14
Main heading: Drilling fluids
Controlled terms: Gases - Gasoline - Oil field equipment - Boreholes - Yield stress - Infill drilling - Oil wells
Uncontrolled terms: Density difference - Gas entrapments - Mathematic model - Model simulation - Prediction model - Stress field - Wellbore pressure - Yield stress fluids
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 523 Liquid Fuels - 951 Materials Science
DOI: 10.2118/196471-ms
Funding Details: Number: Q2016135, Acronym: -, Sponsor: -; Number: 51622405, Acronym: -, Sponsor: -; Number: JQ201716, Acronym: -, Sponsor: -; Number: 2015CB251200, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

163. Influence of modulation period on structure and mechanical properties of WB2/CrN films deposited by direct-current magnetron sputtering

Accession number: 20191006587737
Authors: Liu, Yanming (1); Shi, Wenbo (2, 3); Tian, Li (1); Li, Tong (1); Wang, Chen (1); Liu, Feng (1); Pei, Zhiliang (2); Fan, Di (2)
Author affiliation: (1) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Institute of Metal Research, Chinese Academy of Sciences, Shenyang; 110016, China; (3) Department of Materials Science and Engineering, University of Science and Technology of China, Shenyang; 110016, China
Corresponding author: Pei, Zhiliang(zlpei@imr.ac.cn)
Source title: Journal of Alloys and Compounds
Abbreviated source title: J Alloys Compd
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Issue date: 5 June 2019
Publication year: 2019
Pages: 729-738
Language: English
ISSN: 09258388
CODEN: JALCEU
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: WB2/CrN multilayer films with thick modulation periods over 50 nm (Λ = 1400, 315, 235, 150, 55 nm) were synthesized by direct-current magnetron sputtering, and the influence of modulation period on microstructure and mechanical properties for the multilayer films was systematically studied. In WB2/CrN multilayer films, CrN sublayers present the columnar microstructure. As Λ decreases, the structure of WB2 sublayers evolves from (110) orientation to (001) orientation to amorphous structure, and critical crystalline thickness for WB2 sublayers is over 150 nm here. A transition layer, which shows the columnar crystal with size of 10–11 nm high and 2.5–3.5 nm wide caused by the effect of the crystalline interface of the CrN sublayers, is detected in WB2 sublayers. Additionally, a-BN, WB2, WB2(N), CrN, Cr2N and Cr2O3 phase are formed in the multilayer films. Moreover, film hardness mainly obeys the rule of mixture. The maximum hardness of 31.2 GPa is obtained at Λ = 315 nm due to crystalline WB2 sublayers with (001)

preferred orientation, and amorphous WB2 sublayers greatly reduce the film hardness to only 22.3–24.3 GPa at $\Lambda \leq$ 235 nm. Consequently, the poor hardness leads to the higher wear rates (5.7–7.8 × 10-7 mm3/mN) of multilayer films with $\Lambda \leq$ 235 nm compared with those (2.9–3.3 × 10-7 mm3/mN) of other films. However, both the fracture toughness and adhesive strength of the films present an increasing trend with decreasing Λ resulting from the soft CrN and BN phases and a certain amount of interface. In conclusion, decreasing the critical crystal-thickness of the WB2 sublayers, controlling the N content in WB2 sublayers and getting sharp interfaces will play important roles in developing the higher-performance WB2/CrN multilayer films. © 2019 Elsevier B.V.
Number of references: 42
Main heading: Chromium compounds
Controlled terms: Adhesives - Crystalline materials - Magnetron sputtering - Fracture toughness - Modulation - Microstructure - Multilayer films - Hardness - Multilayers
Uncontrolled terms: Amorphous structures - Columnar crystals - Columnar microstructures - Crystalline interfaces - Direct current magnetron sputtering - Microstructure and mechanical properties - Modulation period - Preferred orientations
Classification code: 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Pressure 3.12e+10Pa, Size 1.50e-07m, Size 2.35e-07m, Size 3.15e-07m, Size 5.00e-08m, Size 5.50e-08m
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Database: Compendex
Data Provider: Engineering Village

164. Aggregation of gold nanoparticles caused in two different ways involved in 4-mercaptophenylboronic acidand hydrogen peroxide (*Open Access*)

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Authors: Li, Runmei (1); Gu, Xuefan (2); Liang, Xingtang (1); Hou, Shi (1); Hu, Daodao (1)
Author affiliation: (1) Engineering Research Center of Historical and Cultural Heritage Protection, Ministry of Education, School of Materials Science and Engineering, Shaanxi Normal University, Xi'an; 710062, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Hu, Daodao(daodaohu@snnu.edu.cn)
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Abstract: The difference in gold nanoparticle (AuNPs) aggregation caused by different mixing orders of AuNPs, 4-mercaptophenylboronic acid (4-MPBA), and hydrogen peroxide (H2O2) has been scarcely reported. We have found that the color change of a ((4-MPBA + AuNPs) + H2O2) mixture caused by H2O2 is more sensitive than that of a ((4-MPBA + H2O2) + AuNPs) mixture. For the former mixture, the color changes obviously with H2O2 concentrations in the range of 0~0.025%. However, for the latter mixture, the corresponding H2O2 concentration is in the range of 0~1.93%. The mechanisms on the color change originating from the aggregation of AuNPs occurring in the two mixtures were investigated in detail. For the ((4-MPBA + H2O2) + AuNPs) mixture, free 4-MPBA is oxidized by H2O2 to form bis(4-hydroxyphenyl) disulfide (BHPD) and peroxoboric acid. However, for the ((4-MPBA+AuNPs) + H2O2) mixture, immobilized 4-MPBA is oxidized by H2O2 to form 4-hydroxythiophenol (4-HTP) and boric acid. The decrease in charge on the surface of AuNPs caused by BHPD, which has alarger steric hindrance, is poorer than that caused by -4-HTP, and this is mainly responsible for the difference in the aggregation of AuNPs in the two mixtures. The

formation of boric acid and peroxoboric acid in the reaction between 4-MPBA and H2O2 can alter the pH of the medium, and the effect of the pH change on the aggregation of AuNPs should not be ignored. These findings not only offer a new strategy in colorimetric assays to expand the detection range of hydrogen peroxide concentrations but also assist in deepening the understanding of the aggregation of citrate-capped AuNPs involved in 4-MPBA and H2O2, as well as in developing other probes. © 2019 by the authors.
Number of references: 61
Main heading: Sulfur compounds
Controlled terms: Gold nanoparticles - Metal nanoparticles - Color - Fiber optic sensors - Agglomeration - Boric acid - Colorimetry - Mixtures - Oxidation - Hydrogen peroxide
Uncontrolled terms: 4-Mercaptophenylboronic acids - AuNPs - Color changes - Colorimetric assays - Detection range - H2O2 - Hydrogen peroxide concentration - Steric hindrances
Classification code: 741.1 Light/Optics - 741.1.2 Fiber Optics - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 941.4 Optical Variables Measurements
Numerical data indexing: Percentage 0.00e+00% to 1.93e+00%, Percentage 0.00e+00% to 2.50e-02%
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165. Laser frequency locking system using orthogonally demodulated Pound-Drever-Hall method

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Authors: Su, Juan (1, 2); Jiao, Mingxing (1); Jiang, Fei (1); Xing, Junhong (1)
Author affiliation: (1) Xi'An University of Technology, Faculty of Mechanical and Precision Instrument Engineering, No.5 South Jinhua Road, Xi'an; 710048, China; (2) Xi'an Shiyou University, School of Electronic Engineering, No.18 East Section Second Dianzi Road, Xi'an; 710065, China
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Document type: Conference article (CA)
Conference name: 10th International Symposium on Precision Engineering Measurements and Instrumentation, ISPEMI 2018
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Conference code: 145754
Sponsor: China Instrument and Control Society (CIS); Chinese Society for Measurement (CSM); International Committee on Measurements and Instrumentation (ICMI); National Natural Science Foundation of China (NSFC)
Publisher: SPIE
Abstract: Based on the principle of orthogonal demodulation, a Pound-Drever-Hall laser frequency locking scheme is developed. 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 two orthogonal components of

the error signal. Using an analogto- digital converter, the two orthogonal components are processed using orthogonal phase sensitive detection to obtain the error signal on a host computer. 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. © 2019 SPIE.
Number of references: 27
Main heading: Demodulation
Controlled terms: Cavity resonators - Natural frequencies - Fiber optic sensors - Laser beams - Fabry-Perot interferometers - Locks (fasteners) - Optical variables measurement - Phase modulation
Uncontrolled terms: Analog to digital converters - Direct digital synthesizer - Electro-optic modulators - Frequency discrimination - Laser frequency - Orthogonal components - Phase sensitive detection - Pound-Drever-Hall technique
Classification code: 741.1.2 Fiber Optics - 744.8 Laser Beam Interactions - 941.3 Optical Instruments - 941.4 Optical Variables Measurements
DOI: 10.1117/12.2510863
Funding Details: Number: 51175421,61205135, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
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166. Shale strength characterization based on the multi-scale homogenization theory

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Title of translation:
Authors: Han, Qiang (1, 2); Qu, Zhan (1, 2); Ye, Zhengyin (3)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoirs, Xi'an; Shaanxi; 710065, China; (3) School of Aeronautics, Northwest Polytechnical University, Xi'an; Shaanxi; 710072, China
Corresponding author: Han, Qiang(hqcampus@163.com)
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ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Shale strength is a basic technical parameter required for shale oil and gas development. At present, macroscopic laboratory test and logging interpretation have problems with sample preparation and discontinuous interpretation of parameters. To effectively evaluate shale multi-scale strength, the micro/meso-strength homogenization $\prod$ function models of shale were established based on the principle of maximum plastic dissipation energy and the theory of microscopic porous media. The basic mechanical properties of pure clay minerals were evaluated by shale micromechanical test. Meanwhile, the numerical simulation of shale micro/meso-mechanical test was performed. Micro/meso scale hardness-strength model was solved by dimensional analysis. The results demonstrate that the clay packing density has a significant influence on strength at a micro scale. Under the influence of non-clay inclusions, the ratio of hardness and internal cohesion coefficient is positively correlated to friction coefficient at a meso scale. According to the shale meso-mechanical test, the prediction of shale macro strength parameters was performed based on model solutions. The normalized comparison analysis was conducted considering the common lab results as conventional true value. The results show that the normalized mean value of the friction angle is 1.12, and that of the cohesion is 1.21.The established system on shale strength characterization can provide basis for effectively solving oil and gas development. © 2019, Editorial Office of ACTA PETROLEI SINICA. All right reserved.
Number of references: 36

Main heading: Porous materials
Controlled terms: Friction - Hardness - Numerical methods - Homogenization method - Numerical models
Uncontrolled terms: Characterization methods - Dimensional analysis - Friction coefficients - Homogenization theory - Logging interpretation - Micromechanical tests - Multi-scale - Strength characterization
Classification code: 921 Mathematics - 921.6 Numerical Methods - 951 Materials Science
DOI: 10.7623/syxb201907010
Compendex references: YES
Database: Compendex
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167. Quantification of fatigue damage at dry–wet cycles of polymer fiber cement mortar

Accession number: 20194007492554
Authors: Zhang, Yan (1); Li, Ning (2); Lv, Gao (3); Chen, Zhuanwen (1)
Author affiliation: (1) School of Civil Engineering and Architecture, Xi'an University of Science and Technology, Xi'an; 710054, China; (2) Institute of Rock and Soil Mechanics, Xi'an University of Technology, Xi'an; 710048, China; (3) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Yan(ylozy@126.com)
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Article number: 126754
Language: English
ISSN: 0167577X
E-ISSN: 18734979
CODEN: MLETDJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Dry–wet cycles on cement has brought huge potential safety hazards of some high geothermal diversion tunnel every year. However studies for wet and dry conditions under temperatures on cement-based materials are still rare due to the special environment. The difficulty in qualitative evaluation of fatigue damage of polymer fibrous mortars lies in the properties of varying strength and plastic deformation. In this paper, an attempt was made to quantify repeated dry–wet cyclic performance of fibers mortars by using the concept of irreversible plastic fatigue energy. Attention was paid to the strength and strain of polymer fibers mortars specimens under dry–wet cycles. Starting from the fact that the stress curve governs the energy-loss characteristics of mortars subjected to dry–wet cycles were determined by calculating the irreversible plastic fatigue strain increment of dry–wet cycles. These parameters made it possible to estimate the fatigue damage of polymer fibers mortars. © 2019 Elsevier B.V.
Number of references: 16
Main heading: Mortar
Controlled terms: Energy dissipation - Fibers - Cements
Uncontrolled terms: Cement based material - Cyclic performance - Dry-wet cycle - Loss characteristics - Polymeric composites - Potential safety hazards - Qualitative evaluations - Strength
Classification code: 412.1 Cement - 414.3 Mortar (Before 1993, use code 412) - 525.4 Energy Losses (industrial and residential)
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Compendex references: YES
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168. Design & Development of Well Site Drilling Information System used in South Azadagan (*Open Access*)

Accession number: 20193207296129
Authors: Liu, Zhikun (1, 2); Zhang, Chaoqun (1, 2); Wu, Wenrui (3)

Author affiliation: (1) Eng. Res. Ctr. Devmt./Mgmt. Low Ultra-Low Perm. Oil/Gas Res. W. China, Ministry of Education, Shannxi Xi'an; 710065, China; (2) Institute of Petroleum Engineering, Xi'An Shiyou University, Shannxi Xi'an; 710065, China; (3) Fifth Production Plant, Changqing Oilfield Company of CNPC, China
Source title: Journal of Physics: Conference Series
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Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Based on our experience and successe in the development of drilling information management software as well as our understanding of the South Azadagan well site situation in Iran, the South Azadagan Well Site Drilling Information Management System has been designed. Through the establishment of database of DIMS, the integrated well site drilling information management and application system is developed. In the process of collaborative information management under network environment, a convenient and unified data manage and analysis platform for well site drillers in different Rigs has been provided. This paper describes the design and development of South Azadagan Well Site Drilling Information Management System in detail. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 8
Main heading: Information management
Controlled terms: Infill drilling
Uncontrolled terms: Application systems - Collaborative information management - Data manage - Design and Development - Drilling information - Network environments
Classification code: 511.1 Oil Field Production Operations
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Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

169. A new phenomenological model for single particle erosion of plastic materials (*Open Access*)

Accession number: 20190206350993
Authors: Cheng, Jiarui (1); Zhang, Ningsheng (1); Wei, Liang (2); Mi, Hongxue (2); Dou, Yihua (3)
Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Xibu Drilling Engineering Company Limited, China National Petroleum Corporation, Kelamayi; 834000, China; (3) Department of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cheng, Jiarui(cjr88112@163.com)
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Publication year: 2019
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Abstract: A phenomenological model for single particle erosion (SPE) of plastic materials was constructed based on the Hertzian contact theory and conservation of momentum to solve the particle impact erosion. The extrusion deformation and contact time of materials in three processes of wall elastic extrusion, elastic-plastic extrusion, and elastic recovery were discussed. Later, the critical angle for sliding contact between the particle and metal surface was calculated according to the impact angle of a particle and the corresponding critical sliding friction force of the particle. The wall indentation depths under sliding contact and no sliding contact were compared. Finally, the erosion volume of materials by impact of a single particle was gained. Moreover, a contrastive analysis on calculation results was carried out by using the gas-solid jet erosion experiment. Contact time, normal and tangential deformations of materials, as well as material erosion under sliding contact and no sliding contact in two processes of particle extrusion and rebound were gained from calculation and experiment. The constructed model showed a good agreement without involving too many empirical coefficients. © 2019 by the authors.
Number of references: 24
Main heading: Extrusion
Controlled terms: Deformation - Elastoplasticity - Friction - Erosion
Uncontrolled terms: Gas solid - Hertzian-contact theory - Phenomenological modeling - Single particle - Sliding angle
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Funding Details: Number: 51674199, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: APC, Sponsor: Association for Progressive Communications;
Funding text: Author Contributions: J.C. and N.Z. designed the experiments and supervised experimental work; J.C. and Y.D. wrote the program; L.W. and H.M. verified and changed the manuscript; Y.D. provided experimental Sand and Improvement of SAGD Effect (grant no. 2016ZX05031-002). instruments. Acknowledgments: This work was supported by Institute of Safety Evaluation and Control of Completion TFeusnt dSyinstge:mT.his research was funded by National Natural Science Foundation of China grant number 51674199. And the APC was funded by Research and Application of New Technologies for Efficient Development of Oil Conflicts of Interest: The authors declare no conflict of interest. Sand and Improvement of SAGD Effect (grant no. 2016ZX05031-002).This research was funded by National Natural Science Foundation of China grant number 51674199. And the APC was funded by Research and Application of New Technologies for Efficient Development of Oil Sand and Improvement of SAGD Effect (grant no. 2016ZX05031-002). This work was supported by Institute of Safety Evaluation and Control of Completion Test System
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

170. Green Solution-Processed Tin-Based Perovskite Films for Lead-Free Planar Photovoltaic Devices

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Authors: Li, Xiao-Lei (1); Gao, Li-Li (1); Chu, Qian-Qian (1); Li, Yan (2); Ding, Bin (1); Yang, Guan-Jun (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'An Jiaotong University, No. 28, Xianning West Road, Xi'an; 710049, China; (2) School of Materials Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Guan-Jun(ygj@mail.xjtu.edu.cn)
Source title: ACS Applied Materials and Interfaces
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Language: English
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Publisher: American Chemical Society

Abstract: The eco-friendly Sn-based perovskites have attracted more and more attention in lead-free perovskite photovoltaic field. However, the device performance and reproducibility are greatly challenged in preparing high-quality perovskite films. Here, we fabricated uniform and dense Sn-based perovskite films via a green gas pump treatment technology. Remarkably, we successfully fabricated a large-area (>20 cm2) Sn-based perovskite film with a mirror-like surface, which is the largest Sn-based perovskite film ever reported. Besides, we found that the phase separation phenomenon induced by excess SnF2 was eliminated when the pressure is 1500 Pa. Finally, we fabricated highly reproducible Sn-based solar cells and obtained an inspiring efficiency of 1.85%, which is the highest reported efficiency for Sn-based devices with a configuration of fluorine-doped tin oxide/compact TiO2/perovskite/hole transport material/electrode. Our results demonstrate the feasibility of using gas pump treatment technique to prepare high-quality Sn-based perovskite films, which paves a way for large-scale green manufacturing of Sn-based perovskite solar cells in the future. © 2018 American Chemical Society.
Number of references: 60
Main heading: Perovskite
Controlled terms: Perovskite solar cells - Fluorine compounds - Manufacture - Solar power generation - Efficiency - Nanocomposites - Phase separation - Titanium dioxide - Pumps - Tin oxides
Uncontrolled terms: Fluorine doped tin oxide - Gas pump - Lead-Free - Lead-free perovskites - Photovoltaic devices - Transport materials - Treatment techniques - Treatment technologies
Classification code: 482.2 Minerals - 537.1 Heat Treatment Processes - 615.2 Solar Power - 618.2 Pumps - 641.1 Thermodynamics - 702.3 Solar Cells - 761 Nanotechnology - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 913.1 Production Engineering - 913.4 Manufacturing - 933 Solid State Physics
Numerical data indexing: Percentage 1.85e+00%, Pressure 1.50e+03Pa
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

171. A CFD study of wet gas metering over-reading model under high pressure

Accession number: 20193307322709
Authors: Jing, Jiaqiang (1, 2); Yuan, Ying (1, 3); Du, Shejiao (3); Yin, Xiaoyun (1); Yin, Ran (1)
Author affiliation: (1) School of Oil & Natural Gas Engineering, Southwest Petroleum University, Chengdu; Sichuan; 610500, China; (2) Oil & Gas Fire Protection Key Laboratory of Sichuan Province, Chengdu; Sichuan; 611731, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Yuan, Ying(201811000100@stu.swpu.edu.cn)
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Publication year: 2019
Article number: 101608
Language: English
ISSN: 09555986
CODEN: FMEIEJ
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The venturi flow meter is increasingly being preferred in multiphase flow measurement because of its shorter upstream and downstream straight sections, less influenced by the flow pattern and relatively small pressure loss. However, when the venturi is used for wet gas measurement, the over-reading phenomenon occurs due to the presence of a small amount of liquid. Many scholars have established over-reading models to correct the measured values of wet gas. Regrettably, the applicability of these over-reading models under actual high pressure operating conditions has not been verified. Therefore, this review focuses on numerical simulation of the flow of wet gas in the venturi tube under high pressure conditions (11MPa/13MPa/15 MPa). The discrete phase model (DPM) and the standard k-$_{E}$ model was employed in this review. The simulations results reveals the flow characteristics of wet gas in venturi tube, which includes the flow field distributions, droplet concentration distributions and wall pressure profile distributions, and indicates that the over-reading values increases with the increase of Lockhart-Martinelli parameters and gas volume flow rate, but decreases with the increase of pressure. Moreover, the ISO model has the best performance under high pressure conditions. © 2019 Elsevier Ltd
Number of references: 20
Main heading: Computational fluid dynamics

Controlled terms: Hydraulics - Nozzles - Flow patterns - Flowmeters - Gases - Flow measurement - Two phase flow - Orifices
Uncontrolled terms: Flow charac-teristics - High pressure - Over readings - Venturi flow meters - Wet gas
Classification code: 631.1 Fluid Flow, General - 632.1 Hydraulics - 723.5 Computer Applications - 931.1 Mechanics - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements
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Compendex references: YES
Database: Compendex
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172. A fluorescent probe for hydrazine based on a newly developed 1-indanone-fused coumarin scaffold

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Authors: Liu, Yuan (1); Ren, Dandan (1); Zhang, Jianjian (1); Li, Hua (2); Yang, Xiao-Feng (1)
Author affiliation: (1) Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of the Ministry of Education, College of Chemistry and Materials Science, Northwest University, Xi'an; 710127, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Yang, Xiao-Feng(xfyang@nwu.edu.cn)
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ISSN: 01437208
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CODEN: DYPIDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: A 7-diethylaminocoumarin and 1-indanone-fused fluorescent dye (CI) was developed. CI was superior to traditional coumarins in terms of bathochromic shift in absorption and emission maxima (#abs/#em = 518/598 nm in ethanol). To illustrate its value, we rational designed a new hydrazine-selective fluorescent probe by the judicious anchoring of CI to malononitrile to form CI-DCV. Upon mixing with hydrazine, the dicyanovinyl group of CI-DCV was converted to the corresponding hydrazone, which inhibited the intramolecular charge transfer within the probe, thereby affording remarkable blue shifts in the absorption and fluorescence spectra. The proposed probe shows high selectivity toward hydrazine over other structural analogs and reductive species and can be applied in hydrazine detection in a variety of samples. © 2018 Elsevier Ltd
Number of references: 55
Main heading: Charge transfer
Controlled terms: Fluorescence spectroscopy - Red Shift - Probes - Fluorescence - Scaffolds - Hydrazine
Uncontrolled terms: Absorption and emissions - Absorption and fluorescence spectra - Bathochromic shift - Coumarin - Fluorescent dyes - Fluorescent probes - Indanone - Intra-molecular charge transfer
Classification code: 405.1 Construction Equipment - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 941.3 Optical Instruments - 941.4 Optical Variables Measurements
DOI: 10.1016/j.dyepig.2018.10.012
Funding Details: Number: YZZ17113, Acronym: NWU, Sponsor: Northwest University; Number: 21675123, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM2001, Acronym: -, Sponsor: -;
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Compendex references: YES
Database: Compendex

Data Provider: Engineering Village

173. An effective way to solve the abnormal oxidation behavior of Fe in Ti(C,N)-304ss cermet

Accession number: 20192006923849
Authors: He, Lin (1, 2); Gao, Yimin (1); Li, Yefei (1); Liu, Zhiwei (1); Zhai, Wenyan (3); Yuan, Wei (1); Chen, Wenqing (1); Yan, Wentao (2)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an; 710049, China; (2) Department of Mechanical Engineering, National University of Singapore, 117575, Singapore; (3) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China
Corresponding author: Gao, Yimin(ymgao@xjtu.edu.cn)
Source title: Corrosion Science
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Volume: 155
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Language: English
ISSN: 0010938X
CODEN: CRRSAA
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: WC and TiB2 were added into Ti(C,N)-304ss cermet to relieve an abnormal oxidation behavior of Fe in this cermet. During high-temperature oxidation (650 °C), the volume swelling of WO3 eliminated the gap led by the volume shrinkage of TiO2. Liquid B2O3 covered the oxidation surface or filled in cracks, forming a dense oxidation layer. As a result, the abnormal oxidation behavior was relieved. The oxidation mechanism was investigated using FESEM, XRD, LSCM, and AFM. Fe atoms outward diffused to the surface along with the TiO2/304ss boundary forming ring-structure oxide and across the TiO2 generating aggregated oxide on TiO2 surface. © 2019 Elsevier Ltd
Number of references: 35
Main heading: Titanium dioxide
Controlled terms: Cermets - Iron - Thermooxidation - Tungsten compounds
Uncontrolled terms: Abnormal oxidation - Oxidation layers - Oxidation mechanisms - Ring structures - Ti (C ,N) - TiO2 surfaces - Volume shrinkage - Volume swelling
Classification code: 531 Metallurgy and Metallography - 545.1 Iron - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.1 Ceramics
Numerical data indexing: Temperature 9.23e+02K
DOI: 10.1016/j.corsci.2019.04.033
Funding Details: Number: 201604046009, Acronym: -, Sponsor: -; Number: -, Acronym: MOE, Sponsor: Ministry of Education - Singapore; Number: -, Acronym: CSC, Sponsor: China Scholarship Council; Number: 2018JM5002, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2015B010122003,2015B090926009, Acronym: -, Sponsor: Science and Technology Planning Project of Guangdong Province; Number: GUIKEAA18242001, Acronym: -, Sponsor: Guangxi Innovation-Driven Development Project;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

174. Phase separation of molybdenum, cesium and selenium from the borosilicate glass containing simulated nuclear wastes under a CO2-rich heating atmosphere

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Authors: Xu, Zhanglian (1); Xu, Weiguo (1); Lv, Ying (2); Wang, Sheng (1); Wang, Jie (1)

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, No.28, Xianning West Road, Xi'an; Shaanxi province; 710049, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, No. 18, 2nd East Dianzi Road, Xian; Shaanxi; 710065, China
Corresponding author: Wang, Sheng(shengwang@xjtu.edu.cn)
Source title: Journal of Nuclear Materials
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Molybdenum, cesium and selenium along with potassium-rich materials were phase-separated onto the surface from the borosilicate glass containing simulated high level radioactive wastes by heat treatment under a CO2-containing atmosphere. The phase separation behaviors of potassium, molybdenum, cesium and selenium were characterized by FE-SEM, EDS, XPS and Raman analysis. These elements could be further extracted by leaching for recovery. The leaching results show that the extraction efficiencies of these elements under CO2-containing atmosphere were much higher than that under air atmosphere. Attempts were further made to investigate the effects of the melting temperature, melting time, the concentration of CO2 gas and the amount of potassium carbonate flux on the extraction efficiencies of molybdenum, cesium and selenium from the glass phase under the CO2-containing atmosphere. As a result, more than ca. 80% molybdenum, almost 100% selenium and ca. 50% cesium were extracted in the leachate from the highly simulated borosilicate glass under the CO2-containing heat treatment. It is expected that this technique can be extended to study the separation of other fission products by optimizing the process parameters in the future research. © 2019
Number of references: 21
Main heading: Carbon dioxide
Controlled terms: Efficiency - Potash - Melting - Fission products - Molybdenum - Borosilicate glass - Cesium compounds - Molybdenum oxide - Heat treatment - Extraction - Leaching - Selenium compounds - Phase separation
Uncontrolled terms: Air atmosphere - Extraction efficiencies - High level radioactive wastes - Melting time - Phase separation behavior - Process parameters - Raman analysis - Surface from
Classification code: 537.1 Heat Treatment Processes - 543.3 Molybdenum and Alloys - 622.1 Radioactive Materials, General - 641.1 Thermodynamics - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 812.3 Glass - 913.1 Production Engineering
Numerical data indexing: Percentage 1.00e+02%, Percentage 5.00e+01%, Percentage 8.00e+01%
DOI: 10.1016/j.jnucmat.2019.05.057
Funding Details: Number: 2016YFE0128900, Acronym: -, Sponsor: -; Number: 7121181102, Acronym: -, Sponsor: -; Number: 11775166, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XJH012019018, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
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Compendex references: YES
Database: Compendex
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175. Pinball loss based extreme learning machines (*Open Access*)

Accession number: 20193707414005
Authors: Wang, Kuaini (1, 2); Ding, Xiaoshuai (3)
Author affiliation: (1) College of Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Mathematics and Research Centre for Complex Systems and Network Sciences, Southeast University, Nanjing, Jiangsu; 210096, China; (3) School of Education, Xizang Minzu University, Xianyang, Shaanxi; 712082, China
Corresponding author: Wang, Kuaini(wangkuaini1219@sina.com)
Source title: IOP Conference Series: Materials Science and Engineering
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Issue title: 2019 2nd International Conference on Advanced Materials, Intelligent Manufacturing and Automation - Machine Learning and Algorithms
Issue date: August 9, 2019
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Language: English
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Document type: Conference article (CA)
Conference name: 2019 2nd International Conference on Advanced Materials, Intelligent Manufacturing and Automation, AMIMA 2019
Conference date: May 17, 2019 - May 19, 2019
Conference location: Zhuhai, China
Conference code: 151051
Publisher: IOP Publishing Ltd
Abstract: Extreme Learning Machine (ELM) is a novel machine learning method by training single hidden layer feedforward neural network. It employs squared loss function to minimize the mean squares error, which is sensitive to noises and outliers. In this paper, pinball loss function with quantile error is introduced into ELM in order to improve the robustness of ELM. An ELM model based on squared pinball loss function (SPELM) and an ELM model based on pinball loss function (PELM) are proposed. The corresponding optimization problem are solved by iterative reweighted algorithm. Three simulated datasets and nine Benchmark datasets are used to verify the validity of the proposed models. It is concluded that the proposed SPELM and PELM are superior to other comparisons, especially for datasets containing larger proportion of outliers. © Published under licence by IOP Publishing Ltd.
Number of references: 16
Main heading: Statistics
Controlled terms: Knowledge acquisition - Multilayer neural networks - Iterative methods - Machine learning - Network layers
Uncontrolled terms: Benchmark datasets - Extreme learning machine - Loss functions - Machine learning methods - Model-based OPC - Optimization problems - Simulated datasets - Single-hidden layer feedforward neural networks
Classification code: 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 921.6 Numerical Methods - 922.2 Mathematical Statistics
DOI: 10.1088/1757-899X/569/5/052061
Funding Details: Number: -, Acronym: -, Sponsor: Natural Science Foundation of Guangxi Zhuang Autonomous Region; Number: 11626186, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M642129, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: XZ2018ZRG-68, Acronym: -, Sponsor: Natural Science Foundation of Tibet Autonomous Region;
Funding text: The work was supported by the National Natural Science Foundation of China under Grant No.11626186, the China Postdoctoral Science Foundation No. 2018M642129 and the Natural Science Foundation of Tibet Autonomous Region of China under Grant No. XZ2018ZRG-68.
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Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

176. Synthetic process optimization of benzyl acrylate using fuzzy neural networks-genetic algorithms

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Title of translation: -
Authors: Fan, Zheng (1); Ji, Panpan (1); Li, Chao (2); Liu, Zhuang (3); Zhao, Yigang (3); Jing, Xiaoyan (1)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Gas Field Development Office, Changqing Oilfield Company of PetroChina, Xi'an; Shaanxi; 710021, China; (3) The First Gas Plant, Changqing Oilfield Company of PetroChina, Yulin; Shaanxi; 718500, China
Corresponding author: Fan, Zheng(fanzheng@xsyu.edu.cn)
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Abbreviated source title: Huagong Xuebao
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Publication year: 2019
Pages: 4315-4324
Language: Chinese
ISSN: 04381157
CODEN: HUKHAI
Document type: Journal article (JA)
Publisher: Materials China
Abstract: Firstly, the effects of water-carrying agent dosage, reaction temperature, reaction vacuum degree, reaction time, acid-alcohol ratio on the mass fraction and yield of benzyl acrylate were investigated by multivariate analysis of variance. Then the Takagi-Sugeno fuzzy artificial neural networks was established with significant factors as input and comprehensive scores as output. Finally, the genetic algorithm was used to optimize the synthesis conditions of benzyl acrylate and the reliability was verified by t-test. The research demonstrated that all mentioned factors behaved extremely significant effects on the mass fraction and yield of benzyl acrylate synthesized products simultaneously. The prediction model was based on 5-15-243-1 network structure. After 36859 training iterations, the mean square error of the prediction model was less than the allowable convergence error limit 0.0050. The relationship between the output value and the expected value was approximately linear. The determination coefficient of training and testing stages were 0.9999 and 0.9998, respectively. The optimal control parameters including 53 ml water-carrying agent, 125 reaction temperature, 0.095 MPa reaction vacuum degree, 2.2 h reaction time and 1.4 acid-alcohol ratio were obtained by 149 evolutions of genetic algorithm. The mass fraction, yield and comprehensive scores of benzyl acrylate synthesis were 99.27%, 98.04% and 98.78% on the basis of the optimal process conditions. The prediction model was also proved to be reliable. © All Right Reserved.
Number of references: 36
Main heading: Genetic algorithms
Controlled terms: Mean square error - Multivariant analysis - Forecasting - Fuzzy neural networks
Uncontrolled terms: Benzyl acrylate - Convergence errors - Determination coefficients - Fuzzy artificial neural network - Multivariate analysis of variances - Reaction temperature - Synthesis conditions - Training and testing
Classification code: 723.4 Artificial Intelligence - 922 Statistical Methods - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 9.80e+01%, Percentage 9.88e+01%, Percentage 9.93e+01%, Pressure 9.50e+04Pa, Time 7.92e+03s, Volume 5.30e-02l
DOI: 10.11949/0438-1157.20190268
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

177. Applications of chemostratigraphy in a characterization of shale gas Sedimentary Microfacies and predictions of sweet spots —taking the Cambrian black shales in Western Hubei as an example

Accession number: 20192707139406
Authors: Zhai, Gangyi (1, 2); Li, Juan (1, 2, 3); Jiao, Yang (1, 2); Wang, Yufang (1, 2); Liu, Guoheng (1, 2); Xu, Qiang (1); Wang, Chao (1, 2); Chen, Rong (1, 2); Guo, Xiaobo (4)
Author affiliation: (1) Oil and Gas Survey, China Geological Survey, Beijing; 100083, China; (2) Key Laboratory of Unconventional Oil and Gas Geology, China Geological Survey, Beijing; 100083, China; (3) China University of Geosciences (Beijing), Beijing; 100083, China; (4) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhai, Gangyi(zhaigangyi@126.com)
Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
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Publication year: 2019
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Language: English
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Document type: Journal article (JA)

Publisher: Elsevier Ltd
Abstract: Exploratory research was conducted in this paper on the correlation of chemical elements with sedimentary microfacies and shale gas sweet spots through cluster analysis, factor analysis, and so on, using a large amount of geochemical data of elements obtained from shale gas exploration of the Cambrian Niutitang Formation in Western Hubei. This paper screened the chemical element associations and parameter systems that can reflect sedimentary microfacies and sweet spot evaluations, proposed a classification method for the chemostratigraphic facies of shales, and finely depicted the sedimentary chemical microfacies of the shales in the Cambrian Niutitang Formation. A chemostratigraphic lithofacies paleogeography map of SQ1 (the first sequence strata) in the Cambrian Niutitang Formation in Western Hubei was compiled. Sweet spots were predicted and evaluated, and favourable areas were predicted, thereby providing important support for making a breakthrough in the exploration of the Cambrian shale gas in the Yichang area. Chemostratigraphy has a higher precision and a low characterization cost of reservoir sedimentary microfacies; especially in areas lacking drilling data and seismic data and having a low exploration degree, chemostratigraphy is an important means for identifying of shale sedimentary sequences and predicting shale sweet spot sections. © 2019 Elsevier Ltd
Number of references: 64
Main heading: Forecasting
Controlled terms: Sedimentology - Shale gas - Analytical geochemistry - Chemical elements - Gases - Petroleum prospecting - Cluster analysis - Seismology
Uncontrolled terms: Chemostratigraphic facies - Niutitang formation - Sedimentary micro-facies - Sweet spot - Western Hubei
Classification code: 481.1 Geology - 481.2 Geochemistry - 484.1 Earthquake Measurements and Analysis - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 723 Computer Software, Data Handling and Applications - 801 Chemistry - 804 Chemical Products Generally
DOI: 10.1016/j.marpetgeo.2019.06.045
Funding Details: Number: 2016ZX05034, Acronym: -, Sponsor: -; Number: 121201229000160021,2017YFE0106300,DD20179623, Acronym: -, Sponsor: -;
Funding text: Funded projects: the National Science and Technology Major Project of the Ministry of Science and Technology of China (Grant No. 2016ZX05034); The Innovative Special Project of Sino-US Intergovernmental Cooperation in Science and Technology (Carboniferous-Permian shale reservoir evaluation and technology between China and the USA) (Grant No. 2017YFE0106300); Basic geological survey project for shale gas in Southern China (121201229000160021); Strategic investigation of shale gas favorable areas in Zigui-Changyang , Hubei DD20179623 .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

178. Conversion of naphthalene as model compound of polyaromatics to mono-aromatic hydrocarbons under the mixed hydrogen and methane atmosphere

Accession number: 20190606464157
Authors: Shen, Zhibing (1, 2); He, Peng (2); Wang, Aiguo (2); Harrhy, Jonathan (2); Meng, Shijun (2); Peng, Hehuan (2, 3); Song, Hua (2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Department of Chemical and Petroleum Engineering, University of Calgary, Calgary; Alberta; T2N 1N4, Canada; (3) School of Engineering, Zhejiang Agriculture and Forestry University, Hangzhou; Zhejiang; 311300, China
Corresponding author: Song, Hua(sonh@ucalgary.ca)
Source title: Fuel
Abbreviated source title: Fuel
Volume: 243
Issue date: 1 May 2019
Publication year: 2019
Pages: 469-477
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: Hydrocracking of naphthalene as a model compound of polyaromatics to mono-aromatic hydrocarbons including benzene, toluene, ethylbenzene and xylene (BTEX) had been investigated over various modified zeolite supported catalysts under a mixed hydrogen (H2) and methane (CH4) atmosphere. Among them, the 5 wt% Zn/HY (Si:Al ratio of 30) exhibited the best catalytic performance with a naphthalene conversion of 98% and a BTEX selectivity of 82%. Compared to those from the control experiment conducted under its H2 and N2 counterparts, the superior catalytic performance achieved under the environment of CH4/H2 mixture leads us to infer that methane presence might exert a positive impact on directing the reaction pathway to produce BTEX during hydrocracking of naphthalene, resulting in notably enhanced liquid yield and BTEX selectivity accompanied with reduced coke formation. Pyridine and ammonia were used as probes to investigate the catalysts' surface acidity and it was found that Brønsted acid sites with moderate medium acidity play an important role in the selective hydrocracking of naphthalene into BTEX under H2 and CH4 environment. © 2019 Elsevier Ltd
Number of references: 40
Main heading: Catalysts
Controlled terms: Aromatization - Zeolites - Hydrogenation - Naphthalene - Hydrocracking - Hydrogen - Toluene - Methane - Ammonia
Uncontrolled terms: BTEX - Catalytic performance - Coke formation - Control experiments - Modified zeolite - Naphthalene conversion - Reaction pathways - Surface acidity
Classification code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 8.20e+01%, Percentage 9.80e+01%
DOI: 10.1016/j.fuel.2019.01.148
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

179. Matching correlation-function velocity analysis based on ADCIG

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Title of translation:
Authors: Li, Jiang (1); Li, Qingchun (2); Tang, Wen (3)
Author affiliation: (1) Xi'an Research Institute, China Coal Technical & Engineering Group Corp, Xi'an; Shaanxi; 710077, China; (2) School of Geological Engineering and Geoma-tics, Chang'an University, Xi'an; Shaanxi; 710154, China; (3) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Qingchun(dcliqc@chd.edu.cn)
Source title: Shiyou Diqiu Wuli Kantan/Oil Geophysical Prospecting
Abbreviated source title: Shiyou Diqiu Wuli Kantan
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Issue: 5
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Publication year: 2019
Pages: 962-969
Language: Chinese
ISSN: 10007210
CODEN: SDWKEP
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Avoiding the multi-solution problem of wavefield propagation and being sensitive to errors of migration velocity, angle-domain common image gathers (ADCIG) are very suitable for migration velocity analysis.Residual depth equations suitable for inclined strata are derived based on kinematics properties of ADCIGs to satisfy the velocity analysis of complex structures.A matching correlation-function residual curvature spectrum algorithm is developed to obtain accurate residual curvature va-lues.Compared with stack and correlation methods, the proposed algorithm has better noise-resistance and a higher resolution, achieves more accurate velocity analysis.Model and real data tests prove the validity of the proposed algorithm. © 2019, Editorial Department OIL GEOPHYSICAL PROSPECTING. All right reserved.
Number of references: 26
Main heading: Correlation methods
Controlled terms: Image analysis - Velocity

Uncontrolled terms: Angle domains - Correlation function - Kinematics properties - Matching correlation - Migration velocity - Residual curvature - Velocity analysis - Wavefield propagation
Classification code: 922.2 Mathematical Statistics
DOI: 10.13810/j.cnki.issn.1000-7210.2019.05.003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

180. Corrosion behavior of epoxy composite coatings reinforced with reduced graphene oxide nanosheets in the high salinity environments

Accession number: 20193007221335
Authors: Zhu, Lijuan (1); Feng, Chun (1); Cao, Yaqiong (2)
Author affiliation: (1) Tubular Goods Research Institute of China National Petroleum Corporation, State Key Laboratory for Performance and Structure Safety of Petroleum Tubular Goods and Equipment Materials, No. 89 Jinyeer Road, Xi'an; Shaanxi; 710077, China; (2) Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Feng, Chun(fengchun003@cnpc.com.cn)
Source title: Applied Surface Science
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Volume: 493
Issue date: 1 November 2019
Publication year: 2019
Pages: 889-896
Language: English
ISSN: 01694332
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Epoxy composite coatings reinforced with different contents of reduced graphene oxide (RGO) nanosheets were prepared on N80 substrate. The aim of this work is to identify the applicability of RGO modified epoxy coatings on N80 tubing in oil and gas production environments with high temperature and high salinity. Transmission electron microscopy, selected area electron diffraction and scanning electron microscopy were employed to characterize the RGO and coatings. The adhesion, toughness and corrosion resistance of epoxy composite coatings were investigated. It indicated that the proper addition of RGO nanosheets effectively reduced the number and size of pores in the epoxy composite coatings, and improved the adhesion, toughness, corrosion resistance of the epoxy composite coatings. The epoxy composite coating with 1.0 wt% RGO displayed the best anti-corrosion performance in 10.0 wt% NaCl solution. © 2019
Number of references: 37
Main heading: Sodium chloride
Controlled terms: Corrosion resistance - Graphene - Adhesion - High resolution transmission electron microscopy - Reinforcement - Scanning electron microscopy - Electron diffraction - Nanosheets - Corrosive effects - Epoxy resins - Corrosion resistant coatings - Composite coatings
Uncontrolled terms: Anticorrosion performance - Corrosion behavior - Epoxy - Epoxy composite coatings - Graphene oxide nanosheets - Oil and gas production - Reduced graphene oxides (RGO) - Selected area electron diffraction
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 741.3 Optical Devices and Systems - 761 Nanotechnology - 804 Chemical Products Generally - 813.2 Coating Materials - 815.1.1 Organic Polymers - 933 Solid State Physics - 951 Materials Science
DOI: 10.1016/j.apsusc.2019.06.271
Funding Details: Number: 51804335, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017Z-04, Acronym: CNPC, Sponsor: China National Petroleum Corporation;
Funding text: This work is sponsored by the National Natural Science Foundation of China (NO. 51804335): corrosion resistance and mechanism of graphene modified epoxy coatings in the coupled oil and water multi-phase medium, the Basic research and Strategic reserve Technology Fund of CNPC (2017Z-04): Applied basic research on the application of graphene technology on the surface treatment of tubing.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

181. Microseismic event location using multi-scale time reversed imaging

Accession number: 20184706111949
Authors: Li, Meng (1); Li, Huifeng (1); Tao, Guo (2); Ali, Mohammed (2); Guo, Yuhua (3)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department of Petroleum Geosciences, Khalifa University of Science and Technology, P.O. Box 2533, Abu Dhabi, United Arab Emirates; (3) Xi'an Changqing Technology Engineering Co., Ltd., Xi'an; 710021, China
Corresponding author: Li, Meng(meli@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
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Volume: 174
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Publication year: 2019
Pages: 144-160
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Locating passive seismic sources in a reservoir monitoring system has attracted considerable interest recently due to its ability to image the induced fracture geometry that results from fluid injection and fracturing processes. Time reversed imaging (TRI) techniques are well recognized localization tools, which back-propagates the received microseismic recordings to focus at its real source location without picking various arrival phases. However, the time reversed images are often contaminated due to the strong noise, coherent noise and poor spatial constraints especially in surface microseismic measurements, leading to unreliable location estimations. To minimize these interferences, we propose a multi-scale TRI technique using the shift-invariant dual-tree complex wavelet transform (DTCWT) to decompose the original waveforms into multiple time-frequency domains (different levels). The Birge-Massart threshold is applied to the wavelet coefficients at each level to further attenuate the noise amplitude. The TRI are then applied to the reconstructed waveform component at each level. Both the synthetic and field studies show that the multi-scale cross-correlation of TR images at effective levels substantially improved the quality of the final image of subsurface microseismic events with a much sharper and brighter focus. On the other hand, the images at noise levels may reveal the velocity structure, which is helpful in event location. In addition, the noise components recognized by the multi-scale TRI can be applied to estimate the background noise level, which can be further used in microseismic sensitivity and location uncertain analysis. © 2018 Elsevier B.V.
Number of references: 47
Main heading: Location
Controlled terms: Seismology - Image enhancement - Uncertainty analysis - Wavelet transforms
Uncontrolled terms: Background noise levels - Dual tree complex wavelet transform (DT-CWT) - Event location - Microseismic - Multi-scale - Reservoir monitoring - Time frequency domain - Time-reversed
Classification code: 484.1 Earthquake Measurements and Analysis - 921.3 Mathematical Transformations - 922.1 Probability Theory
DOI: 10.1016/j.petrol.2018.11.015
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

182. Six-component stand design and vector thrust positioning

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Title of translation:
Authors: Zhang, You (1); Zhang, Binshan (2); Wu, Feng (1); Wang, Jungang (3); Yuan, Zhanbin (3)
Author affiliation: (1) Science and Technology on Altitude Simulation Laboratory, Sichuan Gas Turbine Establishment, Aero Engine Corporation of China, Jiangyou; Sichuan; 621700, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) School of Science, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Yuan, Zhanbin(yzzzb@nwpu.edu.cn)

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Abbreviated source title: Hangkong Dongli Xuebao
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Publication year: 2019
Pages: 2324-2330
Language: Chinese
ISSN: 10008055
CODEN: HDOXE5
Document type: Journal article (JA)
Publisher: Beijing University of Aeronautics and Astronautics (BUAA)
Abstract: Based on the screw theory, some basic design principles of six-component thrust stand were described to ensure its effectiveness. This proved that it was improper mathematically to predict the vector thrust by multiplying the inverse static mapping matrix with the reading of sensors, and only three forces and three moments of the vector thrust can be obtained, but the action point cannot be accurately positioned. In order to find the action point, an experimental method denoted as circular deflection method was proposed, at least three tests about thrusts of same axial angle and different direction angles were needed. Finally, the validity of the proposed method was verified by examples. The numerical result showed that the weights of the engine and the floating frame seriously affected the positioning of action point, so the gravity influence must be eliminated before using this method. © 2019, Editorial Department of Journal of Aerospace Power. All right reserved.
Number of references: 18
Main heading: Inverse problems
Controlled terms: Numerical methods
Uncontrolled terms: Design Principles - Direction angle - Experimental methods - Floating frames - Load sensor - Numerical results - Static mapping - Vector thrust
Classification code: 921.6 Numerical Methods
DOI: 10.13224/j.cnki.jasp.2019.11.003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

183. Designing a broad locally-resonant bandgap in a phononic crystals

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Authors: Li, Suobin (1); Dou, Yihua (1); Chen, Tianning (2); Xu, Jianning (1); Li, Bing (3); Zhang, Fan (4)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710056, China; (2) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; Shaanxi; 710049, China; (3) School of Aeronautics, Northwestern Polytechnical University, Xi'an; Shaanxi; 710072, China; (4) Xi'an Modern Chemistry Research Institute, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Suobin(ziyedeyan@stu.xjtu.edu.cn)
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Abbreviated source title: Phys Lett Sect A Gen At Solid State Phys
Volume: 383
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Issue date: 10 April 2019
Publication year: 2019
Pages: 1371-1377
Language: English
ISSN: 03759601
CODEN: PYLAAG
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Producing a broad locally-resonant bandgap for low frequencies in a phononic crystals is a challenging task, using conventional methods. In this paper, we describe the design of a broad, locally-resonant, bandgap in a phononic crystals using a numerical simulation. The structure consists of periodic double-sided novel composite sonators, deposited on a 2D locally-resonant phononic-crystals plate made of a rubber-filler array, which is embedded in an epoxy plate. Using the finite element method, we calculate the dispersion relations, the power-transmission spectra, and the displacement fields for the eigenmodes. Our results confirm that, the new structure facilitates a significant increase in absolute bandwidth (by a factor of 4.2) compared to conventional phononic crystals. It also broadens the

range of elastic wave attenuation. The formation mechanisms that generates the broad locally-resonant bandgap is explored numerically. The simulation indicates that the formation of this bandgap is possible due to coupling between the entire vibration mode of the novel composite-resonator and the Lamb-wave mode of the 2D locally-resonant phononic-crystals plate. The bandwidth of the locally-resonant bandgap is determined by the resonator mode. This study opens new possibilities to broaden locally-resonant bandgaps of phononic crystals for low frequencies. The results can potentially be used to reduce vibration and noise in many applications. © 2019
Number of references: 36
Main heading: Energy gap
Controlled terms: Crystal structure - Phonons - Resonators - Vibrations (mechanical) - Elastic waves - Noise abatement - Surface waves - Bandwidth - Plates (structural components)
Uncontrolled terms: Composite resonator - Conventional methods - Dispersion relations - Displacement field - Formation mechanism - Phononic Crystal - Resonant bands - Vibration and noise reduction
Classification code: 408.2 Structural Members and Shapes - 716.1 Information Theory and Signal Processing - 751.4 Acoustic Noise - 931.1 Mechanics - 933.1.1 Crystal Lattice
DOI: 10.1016/j.physleta.2019.01.061
Funding Details: Number: 2017JQ5114, Acronym: -, Sponsor: -; Number: 51275377, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JK0613, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This research was supported by the Project of National Science Foundation of China (No. 51275377), the Program of Natural Science Basic Research Plan in Shanxi Province of China (No. 2017JQ5114) and the Scientific Research Program Funded by Shaanxi Provincial Education Department (No. 18JK0613). We thank the reviewers and the editors for their suggestions, which helped us to improve this paper to a great extent.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

184. Sacrificial additive-assisted film growth endows self-powered CsPbBr3 photodetectors with ultra-low dark current and high sensitivity

Accession number: 20200208017876
Authors: Zhu, Weidong (1); Deng, Minyu (1); Chen, Dandan (2); Chen, Dazheng (1); Xi, He (1, 3); Chang, Jingjing (1); Zhang, Jincheng (1); Zhang, Chunfu (1); Hao, Yue (1)
Author affiliation: (1) State Key Discipline Laboratory of Wide Band Gap Semiconductor Technology, School of Microelectronics, Xidian University, Xi'an, Shanxi; 710071, China; (2) College of Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (3) State Key Laboratory of Crystal Materials, Shandong University, Jinan; 250100, China
Corresponding author: Zhu, Weidong(wdzhu@xidian.edu.cn)
Source title: Journal of Materials Chemistry C
Abbreviated source title: J. Mater. Chem. C
Volume: 8
Issue: 1
Issue date: 2019
Publication year: 2019
Pages: 209-218
Language: English
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CODEN: JMCCCX
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Inorganic halide perovskite CsPbBr3 is promising for stable, high-performance self-powered photodetectors (PDs). However, solution-processed polycrystalline CsPbBr3 films generally exhibit inferior photodetection performance in contrast to single-crystal and micro-/nano-structured counterparts, primarily because of their low carrier mobility and high defect density. We propose herein a sacrificial additive-assisted CsPbBr3 film growth strategy, in which a 2-phenylethanamine iodide (PEAI) additive was firstly introduced into a CsPbBr3 precursor film and then was extracted during CsPbBr3 film crystallization by high-temperature annealing. The as-obtained CsPbBr3 film exhibits multiple advantages of full coverage, pure phase, micro-sized grains, higher crystallinity, fewer defects, and particularly a CsBr-rich surface with less conductivity, compared with the control film prepared without PEAI sacrificial additive. The resulting self-powered PD with a simple configuration of FTO/TiO2/CsPbBr3/carbon yields an ultra-low dark current of

8.05 × 10-11 A cm-2, a high R of 0.35 A W-1, a superior D# of 3.83 × 1013 Jones, and a fast response time of 1.46 μs. These figures of merit are far beyond those of the one prepared with the control film and even most of self-powered CsPbBr3 PDs reported previously. Furthermore, the optimized PD exhibits excellent operational reliability and long-term stability in an ambient air atmosphere. © 2020 The Royal Society of Chemistry.
Number of references: 59
Main heading: Bromine compounds
Controlled terms: Additives - Lead compounds - Cesium compounds - Film preparation - Crystallinity - Perovskite solar cells - Photodetectors - Single crystals - Film growth - Perovskite - Photons
Uncontrolled terms: Fast response time - High defect densities - High-temperature annealing - Long term stability - Operational reliability - Photodetectors (PDs) - Sacrificial additives - Solution-processed
Classification code: 482.2 Minerals - 702.3 Solar Cells - 803 Chemical Agents and Basic Industrial Chemicals - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids
Numerical data indexing: Time 1.46e-06s
DOI: 10.1039/c9tc05403k
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

185. Selective hydrodeoxygenation of: P -cresol as a model for coal tar distillate on Ni-M/SiO2 (M = Ce, Co, Sn, Fe) bimetallic catalysts (*Open Access*)

Accession number: 20192907207630
Authors: Pan, Liuyi (1, 2); He, Yulong (1); Niu, Menglong (3); Dan, Yong (1); Li, Wenhong (1)
Author affiliation: (1) School of Chemical Engineering, Northwest University, Xi'an Shaanxi; 710069, China; (2) College of Chemistry and Chemical Engineering, Baoji University of Arts and Sciences, Baoji Shaanxi; 721013, China; (3) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an Shaanxi Province; 710065, China
Corresponding author: Li, Wenhong(liwenhong@nwu.edu.cn)
Source title: RSC Advances
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Publication year: 2019
Pages: 21175-21185
Language: English
E-ISSN: 20462069
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Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Ni-M/SiO2 with different binary metals M (M = Ce, Co, Sn, Fe) prepared by an incipient impregnation method was used in the hydrodeoxygenation (HDO) of low-temperature coal tar distillate, which is rich in phenolic compounds. p-Cresol, as a model compound of the distillate, was used to evaluate the activity and selectivity of BTX products on the series of reduced Ni-M/SiO2 catalysts in a fixed bed reactor. The properties of the catalysts were characterized by N2 adsorption-desorption, ICP-AES, XRD, H2-TPR, and XPS. Benzene and toluene as the direct deoxygenation (DDO) products and cyclohexane and methylcyclohexane as the hydrogenolysis (HYD) products were detected to evaluate the selectivity of the path in the deoxygenation process. In this series of catalysts, the order of reactivity was Ni-Ce > Ni-Sn > Ni-Co > Ni-Fe > monometallic Ni. Meanwhile, the addition of Ce and Co loaded in the Lewis acid sites of the catalyst affected the electron distribution of nickel atom and its atomic arrangement on the surface of the carrier. Compared to monometallic Ni, the DDO path become dominant on Ni-Ce and Ni-Co and the selectivity for BTX products increased from 58.8% to 77.4% and 71.1%, respectively. The binary metal Sn, unlike the former two metals, formed a Ni3Sn crystal form with Ni, which resulted in significant enhancement of the HYD path while obviously increasing the reactivity. © 2019 The Royal Society of Chemistry.

Number of references: 61
Main heading: Temperature
Controlled terms: Atomic emission spectroscopy - Catalyst selectivity - Silicon alloys - Cerium alloys - Chemical reactors - Silica - Tin alloys - Binary alloys - Iron alloys - Cobalt alloys
Uncontrolled terms: Atomic arrangement - Benzene and Toluene - Bimetallic catalysts - Electron distributions - Hydrodeoxygenation - Incipient impregnation - Low temperature coal tar - Phenolic compounds
Classification code: 545.2 Iron Alloys - 546.2 Tin and Alloys - 547.2 Rare Earth Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 641.1 Thermodynamics - 802.1 Chemical Plants and Equipment - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally
Numerical data indexing: Percentage 5.88e+01% to 7.74e+01%, Percentage 7.11e+01%
DOI: 10.1039/c9ra02791b
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

186. A New Prediction Model for Continuous Liquid Carrying in Gas Wells

Accession number: 20191706819324
Authors: Pan, Jie (1, 2); Wang, Wu-Jie (1); Wei, Yao-Qi (1); Chen, Jun-Bin (1); Wang, Liang-Liang (3)
Author affiliation: (1) College of Petroleum Engineering, Post-doctoral Innovation Base, Xi'an Shiyou University, Xi'an; 710065, China; (2) Post-doctoral Research Station of Oil and Gas Engineering, China University of Petroleum, Beijing; 102249, China; (3) Fourth Gas Production Plant, PetroChina Changqing Oilfield Company, Erdos; 017300, China
Corresponding author: Chen, Jun-Bin(chenjbxu@126.com)
Source title: Kung Cheng Je Wu Li Hsueh Pao/Journal of Engineering Thermophysics
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Publication year: 2019
Pages: 579-586
Language: Chinese
ISSN: 0253231X
CODEN: KCJPDF
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Accurate prediction of liquid loading is the basis of proration optimization in gas well production. A new prediction model for continuous liquid-carrying in gas wells is proposed in this paper, which takes into account the influence of liquid-droplet size and liquid-droplet deformation. In this model, the maximum droplet diameter was determined based on the equal relationship between total surface free energy of droplets and total turbulent kinetic energy of gas phase. A critical liquid-carrying velocity formula for ellipsoidal droplet is established by analyzing the droplet force balance. An energy conservation-based functional relation between deformation parameter and critical Weber number was proposed. The drag coefficient and ellipsoid surface area formulas with high precision were introduced in the model. The present and the existing continuous liquid-carrying models are compared and validated with the actual gas well data. The results show that the present model agrees well with the actual state of the gas wells, implying the present model can predict the liquid loading in gas wells effectively. © 2019, Science Press. All right reserved.
Number of references: 31
Main heading: Liquids
Controlled terms: Gases - Loading - Natural gas wells - Drops - Forecasting - Kinetics - Kinetic energy - Deformation - Free energy
Uncontrolled terms: Continuous liquid-carrying - Critical weber numbers - Deformation parameter - Liquid droplet sizes - Liquid droplets - Liquid loading - Total surface free energies - Turbulent kinetic energy
Classification code: 512.2.1 Natural Gas Fields - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 691.2 Materials Handling Methods - 931 Classical Physics; Quantum Theory; Relativity
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

187. Spectral Characteristics Analysis on Six Shrubs in Different Alpine Brushlands of Eastern Qilian Mountains

Accession number: 20193907481894
Title of translation:
Authors: Wang, Bo (1, 2); Liu, Xiao-Ni (1, 2); Wang, Hong-Wei (3); Wang, Cai-Ling (4); Zhang, De-Gang (1, 2); Ji, Tong (1, 2)
Author affiliation: (1) College of Pratacultural Science, Gansu Agricultural University, Lanzhou; 730070, China; (2) Key Laboratory of Grassland Ecosystem, Ministry of Education/Pratacultural Engineering Laboratory of Gansu Province, Lanzhou; 730070, China; (3) Engineering University of CAPF, Xi'an; 710086, China; (4) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Xiao-Ni(Liuxn@gsau.edu.cn)
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CODEN: GYGFED
Document type: Journal article (JA)
Publisher: Science Press
Abstract: As an very important part of the Qinghai-Tibet Plateau ecosystem, it is of great significance to study alpine shrubs. But for a long time, due to the remote location and underdeveloped transportation, as well as the harsh growing conditions, the alpine shrub on the Qinghai-Tibet Plateau has been less studied. Remote sensing detection technology can overcome the difficulties caused by geography and environment and can be used to detect large areas and non-destructive. Therefore, remote sensing detection technology can be used to study alpine shrubs in Qinghai-Tibet Plateau. As the traditional high-resolution remote sensing detection technology is often adopted with three bands of RGB, the discrimination accuracy of different plants is low, and the difference of NDVI' index and RVI' index of corresponding plants is small, which cannot effectively distinguish various types of vegetation. At the same time, hyperspectral reflectance curve and irradiance curve contain spectral information of thousands of bands. If a single band is selected for plants detection, the loss of spectral information is very large, and the characteristics of thickets reflected are not obvious, resulting in low confidence. In order to distinguish the alpine shrub vegetation, this paper uses hyperspectral technology to carry out spectral characteristic analysis of the shrub, providing theoretical support for remote sensing detection of the shrub on the Qinghai-TibetPlateau. The research draws support from FieldSpec4 high resolution spectrometer of the America. It was used to identify 6 shrubs (Rhododendron capitatum, Caraganajubata, Potentillafruticosa, Salix cupularis, Daphne tangutica and Berberisdiaphana) grown in the eastern Qilian Mountains through measuring the reflectance rate and absorption rate, calculating the first order differential of absorption rate (GREF and GABS) to enlarge the resolution of spectral curve, screening the sensitive wavelength, and then identifying different shrubs by calculating their values with NDVI and RVI. The result indicated that (1) the absorption spectral curves of shrubs were similar with most plants, but their first absorption valley shifted to left; (2) the shrubs performed unique spectral features in some sensitive wavelengths, and these features could be used to improve the resolution by REF, ABS, GREF and GABS transformation to identify the shrublands; (3) The spectral values of the 6 shrubs are different, and the relatively stable wavelengths are 550~680, 860~1 075, 1 375~1 600 and 1 900~2 400 nm. Therefore, these 4 wavelengths can be selected as sensitive areas to identify shrub plants; (4) NDVI and RVIcalculated with the REF average value of sensitive wavelengths of 575~673 and 874~920 nm and/or the area value of sensitive wavelengths of 685~765, 556~590, 635~671 and 1 117~1 164 nm could effectively identify 6 shrubs.

Number of references: 15
Main heading: Remote sensing
Controlled terms: Landforms - Vegetation - Reflection
Uncontrolled terms: Alpine brushlands - Analysis - Qilian mountains - Shrubs - Spectral feature
Classification code: 481.1 Geology
Numerical data indexing: Size 1.12e-06m to 1.16e-06m, Size 1.90e-06m to 2.40e-06m
DOI: 10.3964/j.issn.1000-0593(2019)05-1509-08
Compendex references: YES
Database: Compendex

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188. Three-way dual concept analysis

Accession number: 20193707417592
Authors: Zhi, Huilai (1); Qi, Jianjun (2); Qian, Ting (3); Wei, Ling (4)
Author affiliation: (1) School of Computer Science and Technology, Henan Polytechnic University, Jiaozuo; Henan; 454000, China; (2) School of Computer Science and Technology, Xidian University, Xi'an; 710071, China; (3) College of Science, Xi'an Shiyou University, Xi'an; 710065, China; (4) School of Mathematics, Northwest University, Xi'an; 710069, China
Corresponding author: Qi, Jianjun(qijj@mail.xidian.edu.cn)
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Language: English
ISSN: 0888613X
CODEN: IJARE4
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: Three-way concept analysis is a mathematical theory, which combines formal concept analysis and three-way decision. The existing models, i.e., three-way concept lattices and three-way object oriented concept lattices, have been used successfully in many fields. However, these two models are established to cater some specific applications and cannot fulfill some special requirements such as the needs to seek potential collaborators in international import and export transactions. In this paper, a novel type of three-way concept lattices is presented based on dual concept analysis, which enables ones to characterize specific set by pointing out the attributes that are not possessed by at least one object in the complement of this specific set. And then, the connections between three-way dual concept lattices and classical dual concept lattices are explored. Besides, the relationships among four types of three-way concept analysis models, i.e., three-way concept lattices, three-way dual concept lattices, three-way object oriented concept lattices and three-way property oriented concept lattices, are investigated. © 2019 Elsevier Inc.
Number of references: 61
Main heading: Formal concept analysis
Controlled terms: Decision theory - Information analysis
Uncontrolled terms: Concept analysis - Concept Lattices - Import and exports - Mathematical theory - Object-oriented concepts - Potential collaborators - Property- oriented concept lattices
Classification code: 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 961 Systems Science
DOI: 10.1016/j.ijar.2019.08.010
Funding Details: Number: 2017KJXX-60, Acronym: -, Sponsor: -; Number: 61772021, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Database: Compendex
Data Provider: Engineering Village

189. Surface Modification of Carbon Steel with Plasma Chemical Vapor Deposition for Enhancing Corrosion Resistance in CO2/Brine

Accession number: 20192006933720
Authors: Ma, Yun (1, 2); Bai, Haitao (3); Yang, Bo (4); Yu, Qingsong (5); Zhang, Qingbo (4)
Author affiliation: (1) Shaanxi Province Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Eng. Res. Ctr. of Devmt. and Mgmt. for Low to Ultralow Permeability Oil and Gas Reservoirs in W. China, Ministry of Education, Xi'an; 710065, China; (3) Institute of Petroleum and Gas Engineering, Southwest Petroleum University, Chengdu; 610500, China; (4) Key Laboratory of Environment Pollution Control Technology of Oil Gas and Reservoir Protection, Xi'An

Shiyou University, Xi'an; 710065, China; (5) Department of Mechanical and Aerospace Engineering, Center for Surface Science and Plasma Technology, University of Missouri, Columbia; MO; 65211, United States
Corresponding author: Ma, Yun(mayun9401@xsyu.edu.cn)
Source title: IEEE Transactions on Plasma Science
Abbreviated source title: IEEE Trans Plasma Sci
Volume: 47
Issue: 5
Issue date: May 2019
Publication year: 2019
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Article number: 8691696
Language: English
ISSN: 00933813
E-ISSN: 19399375
CODEN: ITPSBD
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: More and more oil and gas reservoirs are used for commercial carbon-dioxide-enhanced oil recovery (CO2-EOR), resulting in associated CO2 storage that occurs as part of the process. CO2/brine corrosion of oil tube steel that can occur anywhere along the wellbore is a challenging issue faced by the oil and gas industry. In this paper, to enhance their corrosion resistance in CO2/brine, J55 and N80 oil tube steels were coated with trimethylsilane (TMS) with the plasma chemical vapor deposition (PCVD) method. Both atmosphere and vacuum direct-current (DC) discharges were utilized for TMS plasma coatings (TMS-PCs) deposition. X-ray photoelectron spectroscopy (XPS) was used to characterize the coating surface chemistry. It was found that TMS-PCs deposited with vacuum direct current (DC) coatings (VDCPCs) had higher Si- and C-rich composition than atmospheric DC plasma coatings (ADCPCs). The corrosion resistance of samples with or without TMS-PC was evaluated through the weight loss method (WLM) and the 3-D pitting corrosion quantitative evaluation method (3D-PCQEM), which was conducted in CO2/brine with the self-built corrosion-resistant performance evaluation system (CRPES) and a 3-D scanning optical microscope. The results demonstrated that the TMS-PCs can significantly decrease not only the uniform corrosion rate but also the pitting corrosion rate of N80 and J55 oil tube steels. TMS-PCs deposited with VDCPC showed a lower corrosion rate than that of ADCPC. The scanning electron microscopy (SEM) was used to characterize the surface morphology of the samples before and after WLM, and the results indicated less corrosion and pitting corrosion on coated samples than that of uncoated controls. The energy dispersive spectrometer (EDS) was used to characterize the coating surface chemistry before and after WLM, which also indicated that the ferric content of coated samples was higher than that of uncoated controls after WLM. The results obtained in this paper indicate that TMS-PCs may serve as a very promising barrier against the corrosion and pitting corrosion of tube steel in CO2/brine. © 1973-2012 IEEE.
Number of references: 28
Main heading: Carbon dioxide
Controlled terms: Corrosion rate - Enhanced recovery - Electric discharges - Plasma CVD - Surface morphology - Corrosion resistance - Gas industry - Morphology - Oil well flooding - Petroleum reservoir engineering - Plasma enhanced chemical vapor deposition - Spectrometers - Corrosion resistant coatings - Scanning electron microscopy - Pitting - Steel corrosion - X ray photoelectron spectroscopy - Chemical modification
Uncontrolled terms: Corrosion testing - Corrosion-Resistant Performance - Energy dispersive spectrometers - Enhanced oil recovery - Enhancing corrosion resistances - Oil and gas reservoir - Plasma chemical vapor deposition - Quantitative evaluation methods
Classification code: 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 545.3 Steel - 701.1 Electricity: Basic Concepts and Phenomena - 741.3 Optical Devices and Systems - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 813.1 Coating Techniques - 931.2 Physical Properties of Gases, Liquids and Solids - 932.3 Plasma Physics - 951 Materials Science
DOI: 10.1109/TPS.2019.2907562
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Funding text: Manuscript received December 25, 2018; revised January 28, 2019; accepted March 9, 2019. Date of publication April 15, 2019; date of current version May 8, 2019. This work was supported in part by the National Science Foundation of China under Grant 51504193 and in part by Key laboratory Research Project of Shaanxi Education Department of China under Grant 15JS090. The review of this paper was arranged by Senior Editor J. L. Lopez. (Corresponding author: Yun Ma.) Y. Ma is with the Shaanxi Province Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China, and also with the Engineering Research Center of Development and Management for Low to

Ultralow Permeability Oil and Gas Reservoirs in West China, Ministry of Education, Xi'an 710065, China (e-mail: mayun9401@xsyu.edu.cn).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

190. Formation Mechanisms of Vibration Band Gaps in Locally Resonant Periodic Structures

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Title of translation:
Authors: Li, Suobin (1); Dou, Yihua (1); Chen, Tianning (2); Li, Bing (3); Su, Jianjun (4); Zhang, Fan (4); Cui, Xiaoxiao (5)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an; 710065, China; (3) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China; (4) Xi'an Modern Chemistry Research Institute, Xi'an; 710065, China; (5) Beijing Special Engineering Design and Research Institute, Beijing; 100028, 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: 53
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Issue date: June 10, 2019
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Language: Chinese
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Document type: Journal article (JA)
Publisher: Xi'an Jiaotong University
Abstract: Detailed formation mechanisms of vibration band gaps in locally resonant periodic structures are investigated based on a two-dimensional locally resonant periodic structure. Firstly, based on the dynamic theory a basic theoretical hypothesis of the formation mechanism for the band gap of locally resonant periodic structure is proposed following the modal superposition principle. Secondly, the detailed formation mechanism of vibration band gaps is further clarified according to the formation mechanism model of band gaps. Finally, the formation mechanism of vibration band gaps is verified by the interaction between the elastic wave and the structure during the formation of vibration band gaps in a typical two-dimensional locally resonant periodic structure. The result shows that there exist six types of generalized propagation modes of waves in the locally resonant periodic structure, while these generalized propagation modes are formed by the mutual transformation of the main modes and these main modes are generated by corresponding 12 modes based on the superposition principle. The vibration mode dominated by the main mode of the vibrator determines the formation of a vibration band gap by suppressing or releasing the generalized propagation mode. When the oscillator's main mode suppresses the generalized propagation mode of the wave, a generalized sub-band gap that can only suppress the corresponding propagation mode is formed. The influencing mechanism of the band gap is further studied and an active design method of the band gap is proposed. This research may perfect the basic theory of periodic structure, lay a theoretical foundation for the study of band gap theory of periodic structure and the active design of band gap characteristics, and provide a new method for vibration reduction of engineering structures. © 2019, Editorial Office of Journal of Xi'an Jiaotong University. All right reserved.
Number of references: 20
Main heading: Periodic structures
Controlled terms: Energy gap - Mechanics - Elastic waves
Uncontrolled terms: Engineering structures - Influencing mechanisms - Local resonance - Mutual transformations - Superposition principle - Theoretical foundations - Vibration band gap - Vibration reductions
Classification code: 931.1 Mechanics - 931.3 Atomic and Molecular Physics
DOI: 10.7652/xjtuxb201906022
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

191. Amphiphilic micellar CdSe QD as microreactors to self-assemble nickel complexes for photosynthetic hydrogen evolution in water

Accession number: 20192507059519
Authors: Lei, You-Jia (1); Liu, Si (1); Hu, Gui-Lin (1); Hu, Rong (1); Yan, Rui-Tao (2); Lu, Yong-Bin (3); Wang, Hong-Yan (1)
Author affiliation: (1) Key Laboratory for Macromolecular Science of Shaanxi Province, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710119, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Shaanxi Xi'an; 710065, China; (3) Research Institute of Shaanxi Yanchang Petroleum Company, Xi'an; 710075, China
Corresponding author: Wang, Hong-Yan(hongyan-wang@snnu.edu.cn)
Source title: International Journal of Hydrogen Energy
Abbreviated source title: Int J Hydrogen Energy
Volume: 44
Issue: 36
Issue date: 26 July 2019
Publication year: 2019
Pages: 20079-20084
Language: English
ISSN: 03603199
CODEN: IJHEDX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Inspired by the internal structure of photosynthetic organelles, integration of all the molecular components into a soft material to generate storable fuels is an interesting target in supermolecular chemistry. We report here on the light-driven hydrogen production inside of amphiphilic CdSe QDs micellar microreactors, where the hydrophobic cavity can attract water insoluble Nickel complexes through self-assembly, in the presence of electron donor, giving a high efficiency with TONs of 10667 at a mild condition. Combination of the steady-state and time-resolved studies, it is proposed that the photo-excited electrons from the conduction band of CdSe QDs to Ni2+ centered complexes occurs. Futhermore, the supermolecular assembly can be concentrated into stable photocatalytic material, which could be further placed on surface or in the pores of solid supports. © 2019 Hydrogen Energy Publications LLC
Number of references: 62
Main heading: Hydrophobicity
Controlled terms: Nickel compounds - Selenium compounds - Chemical reactors - Excited states - Cadmium compounds - Hydrogen production - II-VI semiconductors
Uncontrolled terms: Amphiphilics - Hydrogen evolution - Micro-reactor - Photosynthetic - Supermolecular
Classification code: 522 Gas Fuels - 712.1 Semiconducting Materials - 802.1 Chemical Plants and Equipment - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.1016/j.ijhydene.2019.05.014
Funding Details: Number: 21402113, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-175, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: GK201802033,GK201903041, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work is supported by the National Natural Science Foundation of China (21402113), National Natural Science Foundation of Shaanxi Province (2019JQ-175), the Fundamental Research Funds for the Central Universities (GK201802033 , GK201903041).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

192. Developmental characteristics, influencing factors and prediction of fractures for a tight gas sandstone in a gentle structural area of the Ordos Basin, China

Accession number: 20194207543468
Authors: Yin, Shuai (1, 2, 6); Han, Chao (3); Wu, Zhonghu (4); Li, Qingmei (5)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology), Chengdu; Sichuan; 610059, China; (3) Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Minerals, Shandong University of Science and Technology, Qingdao; Shandong; 266590, China; (4) College of Civil Engineering, Guizhou University, Guiyang; 550025, China; (5) Shandong Land & Mining Group

Co.,Ltd., Jinan; 250000, China; (6) Shanxi Key Laboratory of Petroleum Accumulation Geology, School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; Shanxi; 710065, China
Corresponding author: Yin, Shuai(speedysys@163.com)
Source title: Journal of Natural Gas Science and Engineering
Abbreviated source title: J. Nat. Gas Sci. Eng.
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Article number: 103032
Language: English
ISSN: 18755100
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The study of fracture development characteristics of tight gas sandstone reservoirs in the gentle structural areas of the Ordos Basin has been a research hot spot in recent years. However, there remains a lack of systematic research in this field. In this paper, we conducted a systematic study of the developmental characteristics, influencing factors and prediction of fractures for the tight gas sandstone in the Lower Permian He 8 Member in the Sulige gas field. The results show that the development degree of the fractures in the He 8 Member is mainly concentrated between 1 and 2 m-1. Meanwhile, the degree of fracture development is positively correlated with the cumulative sand body thickness, porosity and permeability and that it has no obvious correlation with gas saturation. Moreover, the degree of fracture development is positively correlated with the energy storage coefficient (Esc), indicating that the enrichment of natural gas in the tight gas sandstone reservoir of the He 8 Member is obviously affected by the fractures. The fracture index U is constructed by the finite element method and has a positive power exponential correlation with the fracture linear density. Finally, the fracture index was divided into three grades according to its coupling relationship with the gas well productivity. © 2019 Elsevier B.V.
Number of references: 55
Main heading: Forecasting
Controlled terms: Fracture - Tight gas - Gases - Gas industry - Sandstone - Metamorphic rocks - Natural gas fields
Uncontrolled terms: Development characteristics - Exponential correlation - Gas well productivities - Gentle structural area - Ordos Basin - Sweet spot - Tight gas sandstone reservoirs - Tight sandstone reservoirs
Classification code: 482.2 Minerals - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 951 Materials Science
DOI: 10.1016/j.jngse.2019.103032
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

193. Optimizing the construction parameters of modified zipper fracs in multiple horizontal wells

Accession number: 20193507385423
Authors: Zhou, Desheng (1, 3); Zheng, Peng (1, 2); Yang, Jingwen (1); Li, Meng (1); Xia, Yucheng (2); Cai, Wenbin (1); Ma, Xianlin (1); Liu, Shun (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Xi'an University of Science and Technology, Xi'an; Shaanxi; 710054, China; (3) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an; Shaanxi; 710065, China
Corresponding author: Zhou, Desheng(desheng@xsyu.edu.cn)
Source title: Journal of Natural Gas Science and Engineering
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Language: English
ISSN: 18755100
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: In recent years, with the intensive study of volume fracturing, multiple horizontal well fracturing technologies have been widely used in unconventional low-permeability reservoirs to improve production efficiency. Induced stress is the fundamental mechanism that generates a fracture network. In research on the stress disturbance between multiple fractures in continuous construction, changing stress in different fracturing stages have been overlooked; therefore, the mechanism of induced stress changes is not clear in modified zipper fracturing. In this paper, based on the deformation and failure mechanisms of rock, a BEM calculation model considering the induced stress of complex fracture networks is presented. The distribution rule of induced stress in different fracturing stages during the modified zipper fracturing process is studied for the first time in this paper. The simulated results demonstrated that the induced stress is affected by the fracturing stages. In addition, the magnitude and direction of induced stress are constantly changing with the progress of hydraulic fracturing. Based on the formation characteristics of self-supporting fractures under changing stress condition, a new evaluation method for evaluating the area of the stimulated reservoirs under different fracture spacings has been proposed. This work is helpful for obtaining a better understanding of the formation of complex modified zipper fracs and optimizing the fracturing parameters. © 2019 Elsevier B.V.
Number of references: 36
Main heading: Boundary element method
Controlled terms: Horizontal wells - Petroleum reservoir engineering - Hydraulic fracturing - Fracture - Low permeability reservoirs - Complex networks - Numerical methods - Sailing vessels
Uncontrolled terms: Construction parameter - Deformation and failure mechanism - Formation characteristics - Fundamental mechanisms - Horizontal well fracturing - Induced stress - Modified zipper frac - New evaluation methods
Classification code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 674.1 Small Marine Craft - 722 Computer Systems and Equipment - 921.6 Numerical Methods - 951 Materials Science
DOI: 10.1016/j.jngse.2019.102966
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

194. Theoretical investigation of high-voltage superjunction GaN-based vertical hetero-junction field effect transistor with ununiformly doped buffer to suppress charge imbalance effect

Accession number: 20192807163519
Authors: Zhu, Chao (1, 2, 3); Zhou, Xingye (2); Feng, Zhihong (2); Zhao, Ziyu (4); Wei, Zhiheng (1); Zhao, Ziqi (1, 2, 3)
Author affiliation: (1) Department of Microelectronic Science and Engineering, Ningbo University, Ningbo; 315211, China; (2) National Key Laboratory of ASIC, Hebei Semiconductor Research Institute, Shijiazhuang; 050051, China; (3) National Laboratory of Solid State Microstructures, Nanjing University, Nanjing; 210093, China; (4) College of Sciences, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Semiconductor Science and Technology
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Article number: 065012
Language: English
ISSN: 02681242
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Publisher: IOP Publishing Ltd
Abstract: A superjunction GaN-based vertical heterojunction field effect transistor with ununiformly doped buffer (UDSJ-VHFET) is proposed in this paper. In contrast to the conventional superjunction vertical heterojunction field effect transistor (SJ-VHFET), the doping density of n-pillar increases linearly from top to bottom, while the p-pillar is split into three regions: linearly doped top region, uniformly doped middle region and linearly doped bottom region. The ununiform doping profile suppresses the increase of electric field peak due to the imbalanced charge and smooths the electric field distribution, thus leads to an increase of the breakdown voltage (V br) under charge imbalance condition. Simulation results show that with the doping dose of p-pillar 40% lower (higher) than that of the n-pillar, the V br and on-state resistance (R on) of the proposed device are 6863 V and 4.25 m# cm2 (5751 V and 4.32 m# cm2), comparing with 3205 V and 4.03 m# cm2 (2175 V and 4.10 m# cm2) for the conventional SJ-VHFET. Additionally, the proposed device shows a V br of 12280 V and R on of 4.29 m# cm2 under charge balance condition, comparing with 12874 V and 4.07 m# cm2 for the conventional SJ-VHFET. © 2019 IOP Publishing Ltd.
Number of references: 42
Main heading: Gallium nitride
Controlled terms: Field effect transistors - Heterojunctions - III-V semiconductors - Electric breakdown - Heterojunction bipolar transistors
Uncontrolled terms: Charge imbalance - Doping densities - Electric field distributions - Heterojunction field effect transistor - Junction field effect transistors - On-state resistance - Superjunctions - Theoretical investigations
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits
Numerical data indexing: Percentage 4.00e+01%, Voltage 1.23e+04V, Voltage 1.29e+04V, Voltage 2.18e+03V, Voltage 3.20e+03V, Voltage 5.75e+03V, Voltage 6.86e+03V
DOI: 10.1088/1361-6641/ab2013
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

195. A hybrid variable selection method based on wavelet transform and mean impact value for calorific value determination of coal using laser-induced breakdown spectroscopy and kernel extreme learning machine

Accession number: 20191006601109
Authors: Yan, Chunhua (1); Zhang, Tianlong (1); Sun, Yaqin (3); Tang, Hongsheng (1); Li, Hua (1, 2)
Author affiliation: (1) Key Laboratory of Synthetic, Natural Functional Molecular Chemistry of Ministry of Education, College of Chemistry & Materials Science, Northwest University, Xi'an; 710069, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (3) Xi'an Special Equipment Inspection Institute, Xi'an; 710068, China
Corresponding author: Zhang, Tianlong(tlzhang@nwu.edu.cn)
Source title: Spectrochimica Acta - Part B Atomic Spectroscopy
Abbreviated source title: Spectrochim. Acta Part B At. Spectrosc.
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Publication year: 2019
Pages: 75-81
Language: English
ISSN: 05848547
CODEN: SAASBH
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Variable selection plays an important role in the multivariate analysis of laser-induced breakdown spectroscopy (LIBS). In this study, a hybrid variable selection method based on wavelet transform (WT) and mean impact value (MIV) was proposed to extract useful information from LIBS spectra for calorific value determination of coal. Firstly, WT method was employed to filter the useless or irrelevant information from the broadband LIBS spectra, and 881 wavelet coefficients were obtained by global thresholding. Then the wavelet coefficients were further eliminated by MIV method. Finally, 142 wavelet coefficients were obtained by WT-MIV method. The retained wavelet coefficients were used directly as input variables to establish a nonlinear KELM model for calorific value determination of coal. The results demonstrated a significant improvement over full spectra model, with root mean square error of prediction (RMSEP) reducing from 1.2584 MJ/kg to 0.6151 MJ/kg, correlation coefficient of prediction (RP) improving from 0.9802 to 0.9879. It indicates that LIBS coupled with WT-MIV-KELM is a feasible method for calorific value

determination of coal, and the hybrid variable selection method was more efficient to reduce the calculation time and improve the model performance. © 2019 Elsevier B.V.
Number of references: 33
Main heading: Mean square error
Controlled terms: Wavelet transforms - Coal - Multivariant analysis - Atomic emission spectroscopy - Laser induced breakdown spectroscopy - Machine learning - Physicochemical properties - Calorific value - Knowledge acquisition - Spectrum analysis
Uncontrolled terms: Correlation coefficient - Extreme learning machine - Hybrid variables - Laserinduced breakdown spectroscopy (LIBS) - Multi variate analysis - Root-mean-square error of predictions - Value determination - Wavelet coefficients
Classification code: 524 Solid Fuels - 723.4 Artificial Intelligence - 801.4 Physical Chemistry - 921.3 Mathematical Transformations - 922 Statistical Methods - 922.2 Mathematical Statistics - 931.1 Mechanics
Numerical data indexing: Specific_Energy 1.26e+06J/kg to 6.15e+05J/kg
DOI: 10.1016/j.sab.2019.02.007
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;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

196. Tectonic division by gravity and magnetic anomaly data of salt-bearing basins, south-central section of West Africa

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Title of translation:
Authors: Ji, Xiaolin (1); Wang, Wanyin (1); Du, Xiangdong (2); Lu, Baoliang (1); Huang, Xingwen (2); Feng, Xuliang (1, 3); Guo, Yun (2)
Author affiliation: (1) School of Geology Engineering and Geomatics, Key Laboratory of Western China's Mineral Resources and Geological Engineering, Chang'an University, Xi'an; 710054, China; (2) Exploration Department of CNOOC China Limited, 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)
Source title: Acta Geophysica Sinica
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Issue: 4
Issue date: April 1, 2019
Publication year: 2019
Pages: 1502-1514
Language: Chinese
ISSN: 00015733
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The salt-bearing basins in south-central section of West Africa are located on the east coast of the Atlantic Ocean. The thick salt rock formed during the Aptian period that happened at the transition stage of structural evolution, which is divided into three tectonic sequences: upper salt layer, salt layer and lower salt layer. It is a big challenge to research the major faults that control the boundaries of rifts and morphological dimensions of rifts based on the poor-quality seismic reflection data that is influenced by the shading effect of salt rock. In this paper, we study the subsalt structure of salt-bearing basins in this region using gravity and magnetic anomaly data which have several advantages such as wide area coverage, strong horizontal resolution and less effect from salt rock. In addition, combining the seismic reflection and geologic data, we further study the tectoniv pattern of subsalt in this area. Results suggest that the salt-bearing basins in south-central section of West Africa are characterized by "zones in east-west and blocks in south-north". The boundaries of Rio Muni Basin, Gabon Basin, Lower Congo Basin and Kwanza Basin are redefined.

Two subsalt rifts and 28 subsalt sags are identiflied, where are present alternating uplifts and depressions. We also infer 16 first-order and 23 second-order subsalt faults, which exhibit "extension in east-west and strike-slip in north-east". The results of this study provide geophysical supports to the seismic sequence reanalysis, choosing exploration areas of subsalt oil and gas and the exploration deployment in the next step.
Number of references: 36
Main heading: Seismology
Controlled terms: Petroleum prospecting - Salt tectonics - Salt deposits - Seismic waves - Geophysical prospecting
Uncontrolled terms: Gravity and magnetic anomalies - Horizontal resolution - Minimum curvature - Potential field datum - Seismic reflection data - Structural evolution - Sub salts - West Africa
Classification code: 481.1 Geology - 481.4 Geophysical Prospecting - 484 Seismology - 484.1 Earthquake Measurements and Analysis - 505.1 Nonmetallic Mines - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.6038/cjg2019L0573
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

197. Numerical analysis of high-voltage RESURF AlGaN/GaN high-electron-mobility transistor with graded doping buffer and slant back electrode (*Open Access*)

Accession number: 20194407611981
Authors: Zhu, Chao (1, 2); Zhou, Xingye (2); Feng, Zhihong (2); Wei, Zhiheng (1); Zhao, Ziyu (3); Zhao, Ziqi (1, 2, 4)
Author affiliation: (1) Department of Microelectronic Science and Engineering, Ningbo University, Ningbo; 315211, China; (2) National Key Laboratory of ASIC, Hebei Semiconductor Research Institute, Shijiazhuang; 050051, China; (3) College of Sciences, Xi'an Shiyou University, Xi'an; 710065, China; (4) National Lab of Solid State Microstructures, Nanjing University, Nanjing; 210093, China
Corresponding author: Zhao, Ziqi(zhaoziqi@nbu.edu.cn)
Source title: Micro and Nano Letters
Abbreviated source title: Micro. Nano. Lett.
Volume: 14
Issue: 12
Issue date: October 23, 2019
Publication year: 2019
Pages: 1282-1286
Language: English
E-ISSN: 17500443
Document type: Journal article (JA)
Publisher: Institution of Engineering and Technology, United States
Abstract: A reduced surface field (RESURF) AlGaN/GaN high-electron-mobility transistor (HEMT) with graded doping buffer (GDB) and slant back electrode (SBE) is proposed. In the GDB, the p-dopant density increases linearly both from top to bottom and right to left. The concentrated negative space charges in the lower-left corner of GDB attract the electric field lines from the channel and barrier towards the gate under OFF-state, which flats the electric field and enhances the breakdown voltage (Vbr). Additionally, the low p-dopant density near the top of GDB achieves the device with low ON-state resistance (RON). The SBE flats the electric field along the channel above it and introduces a peak electric field near its edge. Simulation results show a Vbr of 2150 V and RON of 7.05 #mm for the proposed device, compared with 1701 V and 7.73 #mm for the conventional back electrode RESURF HEMT (BE-RESURF HEMT) with the same gate -drain spacing. Moreover, due to the reduced depletion of 2DEG from the GDB, the proposed device shows slight increases in fT and fmax (8.76 and 14.80 GHz), comparing with the conventional BE-RESURF HEMT (8.24 and 13.84 GHz). © The Institution of Engineering and Technology 2019
Number of references: 31
Main heading: High electron mobility transistors
Controlled terms: Electric lines - Electron mobility - Gallium nitride - III-V semiconductors - Electric fields - Electrodes - Aluminum gallium nitride
Uncontrolled terms: AlGaN/GaN high electron mobility transistors - Back electrode - Electric field lines - High voltage - Negative space charge - On-state resistance - Peak electric field - Reduced surface field (RESURF)
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 706.2 Electric Power Lines and Equipment - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 804.2 Inorganic Compounds
Numerical data indexing: Frequency 1.38e+10Hz, Frequency 1.48e+10Hz, Frequency 8.24e+09Hz, Frequency 8.76e+09Hz, Voltage 1.70e+03V, Voltage 2.15e+03V

DOI: 10.1049/mnl.2018.5421
Funding Details: Number: 2014A610149, Acronym: -, Sponsor: Natural Science Foundation of Ningbo; Number: 11747088, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Ningbo University; Number: 201708330427, Acronym: CSC, Sponsor: China Scholarship Council; Number: OSKL2017KF06,xkzwl1616, Acronym: SKLIOE, Sponsor: State Key Laboratory on Integrated Optoelectronics;
Funding text: 5. Acknowledgments: Supported by National Natural Science Foundation of China (grant no. 11747088), Natural Science Foundation of Ningbo (grant no. 2014A610149), Open Fund of the State Key Laboratory of Integrated Optoelectronics (grant no. OSKL2017KF06), Zhejiang Open Fund of the top priority Subject (grant no. xkzwl1616) State Scholarship Fund from China Scholarship Council (grant no. 201708330427) and K. C. Wong Magna Fund in Ningbo University.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

198. Distributed coordination control for suppressing circulating current in parallel inverters of islanded microgrid

Accession number: 20191606804438
Authors: Wu, Ying (1); Guerrero, Josep M. (2); Wu, Yanpeng (3)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Dianzi Road No. 18, Xi'an, China; (2) Department of Energy Technology, Aalborg University, Aalborg East; DK-9220, Denmark; (3) School of Information and Control Engineering, Xi'an University of Architecture and Technology, Yanta Road No. 13, Xi'an, China
Corresponding author: Wu, Ying(wuyg1226@hotmail.com)
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Pages: 968-975
Language: English
ISSN: 17518687
Document type: Journal article (JA)
Publisher: Institution of Engineering and Technology, United States
Abstract: This study proposes a distributed hierarchical coordination control paradigm for parallel inverters, which not only enhances the flexibility of plug and play architecture but also strengthens the accuracy of current sharing with low sensitivity to the different line impedances and with fast response to the transient current change in islanded microgrid. Two kinds of distributed coordinated controller are designed to remove the voltage and frequency deviation from primary control. One is proportional–integral–derivative-based control, which detects the error between the segmented reference current and the actual measured current of the local inverter to calculate the compensating control input of the primary controller. The other is consensus-based control, which uses distributed control actions to spread local information among neighbouring distributed units. To improve the robustness of consensus algorithm, the authors take a relative value instead of absolute value from the primary control as the consensus variable to achieve accurate current sharing among different nominal power rating inverters. Then, a detailed small-signal state-space model is developed with the proposed secondary cooperated controller to achieve the stability analysis and parameters design purpose. Finally, an islanded MG test system is built in MATLAB/Simulink and control performances of two strategies are verified and compared. © The Institution of Engineering and Technology 2019.
Number of references: 26
Main heading: Controllers
Controlled terms: State space methods - Distributed parameter control systems - Electric inverters
Uncontrolled terms: Circulating current - Compensating control - Consensus algorithms - Control performance - Coordinated controllers - Distributed coordination control - Hierarchical coordination - Plug-and-play architecture
Classification code: 731.1 Control Systems - 732.1 Control Equipment - 921 Mathematics
DOI: 10.1049/iet-gtd.2018.5454
Funding Details: Number: 2015GY102, Acronym: -, Sponsor: -; Number: 51707158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 201808610075,2018JQ6006, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

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

199. A prediction model for the critical liquid-carrying velocity of gas-liquid stratified flow in micro-tilting line pipes with low liquid contents

Accession number: 20200208027832
Title of translation:
Authors: Pan, Jie (1); Pu, Xuelei (1); Wang, Wujie (2); Yan, Minmin (1); Wang, Liangliang (3)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Institute of New Energy Science and Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China; (3) No.4 Gas Production Plant, PetroChina Changqing Oilfield Company, Ordos; Inner Mongolia; 017300, China
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Abbreviated source title: Natur. Gas Ind.
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Issue date: December 25, 2019
Publication year: 2019
Pages: 124-133
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: Wet gas can form liquid loading at the lower line pipe sections, so the transportation efficiency will be impacted and the line pipes will be corroded and even blocked. Therefore, to accurately predict the critical liquid-carrying velocity of gas is of great significance to preventing the liquid loading in wet gas line pipes. In view of the gas-liquid two-phase stratified flow in micro-tilting line pipes with low liquid contents, this paper newly established a critical liquid-carrying velocity prediction model considering droplet entrainment according to the momentum balance equation of a gas-liquid two-phase flow and the closure relationship of a new gas-liquid interface shape. Then, based on the experimental data, the new model, FLAT model, ARS model, double-circle model and MARS model were verified and their prediction results were compared. Finally, the new model was applied to analyze the effects of pipe dip, operation pressure, liquid density and gas component on the critical liquid-carrying velocity and critical liquid content of natural gas-water and natural gas-60% glycerine with water stratified flow in a micro-tilting line pipe. And the following research results were obtained. First, with the increase of pipe dip and liquid density, the critical liquid-carrying velocity increases continuously and the critical liquid content decreases gradually. Second, with the increase of operation pressure and heavy component content, the critical liquid-carrying velocity decreases continuously and the critical liquid content increases gradually. In conclusion, the new model is higher in prediction accuracy and its prediction result is better accordant with the experimental value, so it can be used to predict the critical liquid-carrying velocity in wet gas line pipes.
Number of references: 26
Main heading: Liquids
Controlled terms: Drops - Gases - Shear stress - Phase interfaces - Pipeline corrosion - Thermal stratification - Two phase flow - Shear flow - Aerodynamics - Hydrodynamics - Density of gases - Natural gas - Forecasting - Pipelines - Pressure drop - Velocity
Uncontrolled terms: Droplet entrainment - Friction factors - Interface shape - Line pipes - Liquid fraction - Stratified flows
Classification code: 522 Gas Fuels - 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 651.1 Aerodynamics, General - 801.4 Physical Chemistry - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.3787/j.issn.1000-0976.2019.12.016
Compendex references: YES
Database: Compendex

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200. Shale hydration damage captured by nuclear magnetic resonance

Accession number: 20184105934143
Authors: Wang, Ping (1, 2, 3); Qu, Zhan (3); Charalampidou, Elli-Maria (4)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Petroleum University, Xi'an, China; (2) The Key Laboratory of well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, China; (3) School of Petroleum Engineering, Xi'an Petroleum University, Xi'an, China; (4) Institute of Petroleum Engineering, School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University, Edinburgh, United Kingdom
Corresponding author: Wang, Ping(wp8230@xsyu.edu.cn)
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Abbreviated source title: J. Dispersion Sci. Technol.
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Issue date: August 3, 2019
Publication year: 2019
Pages: 1129-1135
Language: English
ISSN: 01932691
E-ISSN: 15322351
Document type: Journal article (JA)
Publisher: Bellwether Publishing, Ltd.
Abstract: Wellbore instability could restrict the efficient development of unconventional petroleum resources in shales as drilling fluids may influence the integrity of shales by causing hydration damage. In this work we study the impact of hydration on shale samples from Xi Feng formations using Nuclear Magnetic Resonance. Samples were saturated in distilled water for different durations and then samples' T2 relaxation time and the spectrum area were analyzed using NMR. Damage variable, which can not only interpret the hydration damage in shales quantitatively but has also a key importance to build the damage theory, was defined with NMR T2 spectrum area, according to a relationship between the T2 relaxation time and the size of damage. Accuracy of the defined damage variable was verified by NMR images.GRAPHICAL ABSTRACT (Figure presented.). © 2018, © 2018 Taylor & Francis.
Number of references: 33
Main heading: Hydration
Controlled terms: Drilling fluids - Nuclear magnetic resonance - Shale - Nuclear magnetic resonance spectroscopy - Boreholes - Oil wells - Relaxation time
Uncontrolled terms: Damage theory - Damage variables - Distilled water - Shale hydration - T2 spectrums - Unconventional petroleums - Wellbore instability
Classification code: 512.1.1 Oil Fields - 931 Classical Physics; Quantum Theory; Relativity
DOI: 10.1080/01932691.2018.1496839
Funding Details: Number: 14JK1575, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 51674200, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by The Key Laboratory of well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province; The National Natural Science Foundation of China under Grant 51174162; The National Natural Science Foundation of China under Grant 51674200; and Shaanxi Provincial Department of Education scientific research project under Grant 14JK1575.
Compendex references: YES
Database: Compendex
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201. Design strategy for high plasticity and strength in metallic glasses: A molecular dynamics simulation study

Accession number: 20190106333388
Authors: Song, H.Y. (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)
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The poor plasticity of metallic glasses (MGs) limits their application as structural materials. How to enhance dramatically the plasticity of the MGs without compromising the strength is a highly attractive topic. Here, the effect of layer thicknesses and analogous flow defects concentrations (AFDCs) on the mechanical behavior of amorphous/amorphous (A1/A2) nano-multilayers is investigated by molecular dynamics method. The results indicate, when layer thickness is small (from 1.8 to 8.5 nm), for any given layer thickness, the plastic deformation of A1/A2 nano-multilayer evolves from a "shear localization" fashion to a "uniform deformation" mode, and eventually to a "shear localization" deformation again with the increase of AFDC. Comparing with the monolithic MGs, the A1/A2 nano-multilayers with optimum AFDC manifesting uniform deformation achieve a perfect combination of high strength and superior plasticity. What is more, the optimum AFDC could always be found for the sample with arbitrary layer thickness, and shows an upward tendency with increasing layer thickness. When layer thickness is large (13.0 and 25.0 nm), no matter how the AFDC changes, the optimum AFDC disappears for determined layer thickness. In this case, the plastic deformation behavior is arrested in A1 soft layer, resulting in intense shear localization and the reduced plasticity. © 2018 Elsevier B.V.
Number of references: 37
Main heading: Plasticity
Controlled terms: Multilayers - Glass - Molecular dynamics - Plastic deformation - Metallic glass
Uncontrolled terms: Deformation behavior - Mechanical behavior - Molecular dynamics methods - Molecular dynamics simulations - Nanolaminate - Plastic deformation behavior - Shear localizations - Uniform deformation
Classification code: 531 Metallurgy and Metallography - 801.4 Physical Chemistry - 812.3 Glass - 951 Materials Science
Numerical data indexing: Size 1.30e-08m, Size 1.80e-09m to 8.50e-09m, Size 2.50e-08m
DOI: 10.1016/j.physe.2018.12.010
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: YCS17111006, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant No. 11572259), the Natural Science Foundation of Shaanxi Provincial (No. 2018JM1013), and the Graduate Innovation and Practice Project of Xi'an Shiyou University (No. YCS17111006).This work is supported by the National Natural Science Foundation of China (Grant No. 11572259), the Natural Science Foundation of Shaanxi Provincial (No. 2018JM1013), and the Graduate Innovation and Practice Project of Xi'an Shiyou University (No. YCS17111006).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

202. Atomic simulation of interaction mechanism between basal/prismatic interface and amorphous/crystalline interface of dual-phase magnesium alloys

Accession number: 20192807157868
Authors: Song, H.Y. (1); Zhang, K. (1); An, M.R. (1); Wang, L. (1); Xiao, M.X. (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.(hysong@xsyu.edu.cn)
Source title: Journal of Non-Crystalline Solids
Abbreviated source title: J Non Cryst Solids
Volume: 521
Issue date: 1 October 2019
Publication year: 2019
Article number: 119550
Language: English
ISSN: 00223093

CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Dual-phase nanostructured amorphous/crystalline (A/C) model is an effective method to improve the mechanical properties of Mg alloys. However, the interaction behavior between A/C interface (ACI) and various defects is still unclear. Here, the interaction mechanisms between the basal/prismatic interface (BPI) and ACI of dual-phase nanoscale A/C MgAl/Mg alloys are investigated by molecular dynamics simulation method. The results indicate that the ACIs have a significant Peach-Koehler (attractive or repulsive) force to govern the activation of interfacial dislocations in BPI. When the spacing between ACI and BPI (SAB) is less than 12.0 nm, it is found that the attractive force plays a dominant role in interfacial dislocation activation. On the contrary, the repulsive force has an effect on the activation of dislocations. The results also show that the maximum peak strain increases almost linearly with increasing SAB, and the maximum peak strain delay is attributed to the strain contributed by BPIs migration. © 2019 Elsevier B.V.
Number of references: 49
Main heading: Molecular dynamics
Controlled terms: Magnesium alloys - Chemical activation
Uncontrolled terms: Amorphous/crystalline interface - Atomic simulations - Dual phase - Interaction behavior - Interaction mechanisms - Interfacial dislocations - Molecular dynamics simulation methods - Molecular dynamics simulations
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally
Numerical data indexing: Size 1.20e-08m
DOI: 10.1016/j.jnoncrysol.2019.119550
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YCS18111003, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

203. Enhancing the plasticity of noncrystalline Cu–Zr multilayer: Insights from molecular dynamics simulations

Accession number: 20190406423206
Authors: Song, H.Y. (1, 2); Wang, M. (1, 2); 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: 507
Issue date: 1 March 2019
Publication year: 2019
Pages: 11-18
Language: English
ISSN: 00223093
CODEN: JNCSBJ
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Amorphous alloys with pre-fabricated defective structure have been proved to have splendid ductility, making it a prospective second phase for metallic glass (MG) matrix composites. Here, the plastic deformation behavior of amorphous-amorphous (A/A) dual-phase nano-multilayers is successfully simulated by performing molecular dynamics method. The results reveal that the soft phase with structural defects in A/A nano-multilayers plays a key role in improving plasticity of MG. Specifically, when the density of structural defects is small, most of plastic deformation dominated by a single shear band is mainly confined to the flabby soft phase. A suitable density makes

the clusters with large atomic shear strain more likely to be activated at the A/A interfaces, thereby linking the shear deformation between the two amorphous phases and promoting a relatively uniform global plasticity. Nevertheless, the free volume gradient caused by excessive density difference between two amorphous phases will create the rapid release of large stress at the A/A interfaces. The results indicate that the introduction of A/A interfaces and soft MG phase is an effective approach for significantly improving the plasticity without damage and expense the strength of MG. © 2019 Elsevier B.V.
Number of references: 48
Main heading: Molecular dynamics
Controlled terms: Metallic matrix composites - Plasticity - Phase interfaces - Plastic deformation - Defects - Glass - Metallic glass - Shear strain - Amorphous alloys - Multilayers
Uncontrolled terms: Defective structures - Density difference - Effective approaches - Metallic glass matrix composite - Molecular dynamics methods - Molecular dynamics simulations - Plastic behavior - Plastic deformation behavior
Classification code: 531 Metallurgy and Metallography - 801.4 Physical Chemistry - 812.3 Glass - 931.1 Mechanics - 951 Materials Science
DOI: 10.1016/j.jnoncrysol.2018.12.014
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), and the Natural Science Foundation of Shaanxi Provincial (No. 2018JM1013).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

204. Monadic NM-algebras

Accession number: 20215111337626
Authors: WANG, JUNTAO (1); HE, PENGFEI (2); SHE, YANHONG (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Mathematics and Information Science, Shaanxi Normal University, Xi'an; 710119, China
Source title: Logic Journal of the IGPL
Abbreviated source title: Logic J. IGPL
Volume: 27
Issue: 6
Issue date: 2019
Publication year: 2019
Pages: 812-835
Language: English
ISSN: 13670751
E-ISSN: 13689894
Document type: Journal article (JA)
Publisher: Oxford University Press
Abstract: In this paper, we investigate universal and existential quantifiers on NM-algebras. The resulting class of algebras will be called monadic NM-algebras. First, we show that the variety of monadic NM-algebras is algebraic semantics of the monadic NM-predicate logic. Moreover, we discuss the relationship among monadic NM-algebras, modal NM-algebras and rough approximation spaces. Second, we introduce and investigate monadic filters in monadic NM-algebras. Using them, we prove the subdirect representation theorem of monadic NM-algebras, and characterize simple and subdirectly irreducible monadic NM-algebras. Finally, we present the monadic NM-logic and prove its (chain) completeness with respect to (strong) monadic NM-algebras. These results constitute a crucial first step for providing an algebraic foundation for the monadic NM-predicate logic. © The Author(s) 2019.
Number of references: 29
Main heading: Algebra
Controlled terms: Computer circuits - Semantics
Uncontrolled terms: Algebraic semantic - Existential quantifiers - Monadic NM-logic - NM-algebras - Non-classical logic - Predicate logic - Quantifier - Rough approximation space - Subdirect representation - Universal quantifiers
Classification code: 721.3 Computer Circuits - 921.1 Algebra
DOI: 10.1093/jigpal/jzz005

Funding Details: Number: 2017KJXX-60, Acronym: -, Sponsor: -; Number: 18JK0625, Acronym: -, Sponsor: -; Number: 11601302,61472471, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016M602761, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2017JQ1005, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

205. Research on Method of Improving Thermal Efficiency of Oilfield Horizontal Water Jacket Heating Furnace Based on Smith Algorithms (*Open Access*)

Accession number: 20193207296145
Authors: Xu, Xiang-Qian (1); Zhou, Hao-Bin (1)
Author affiliation: (1) College of Materials Science and Engineering, Xi'An Shiyou University, No. 18, Electronic Second Road, Yanta District, Xi'an City, Shaanxi Province, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022095
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In view of the low thermal efficiency of oil field horizontal water jacket heating furnace, the single neuron SVM-Smith predictive control method was proposed to improve the heating efficiency according to the structure of the reformed heating furnace. The Support Vector Machine (SVM) was used to predict the flow rate of heated medium and improved the accuracy of Smith prediction and compensation. The single neuron PID control and Smith predictive compensation were combined to tune the parameters of the control system. The experiments showed that the thermal efficiency had been significantly improved, and the control algorithm had achieved good control effect. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Support vector machines
Controlled terms: Efficiency - Heating - Oil fields - Three term control systems
Uncontrolled terms: Heating efficiencies - Predictive compensation - Single neuron - Single neuron PID controls - Smith algorithm - Smith predictive control - Thermal efficiency - Water jackets
Classification code: 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 731.1 Control Systems - 913.1 Production Engineering
DOI: 10.1088/1742-6596/1237/2/022095
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

206. First-principles study on solid solution embrittlement effect of Ga in Al3.8Ga0.2 alloy

Accession number: 20194307579691
Authors: Zhou, Yong (1); Dang, Mohan (1); Li, Xiao (1); Sun, Liang (1); Dong, Hui (1); Zhai, Wenyan (2); Zhang, Chang (1); Gao, Qian (1); Peng, Jianhong (2)
Author affiliation: (1) College of Material Science and Engineering, Xi'An Shiyou University, Xi'an, China; (2) College of Physics and Energy, Qinghai Nationalities University, Xining, China
Corresponding author: Sun, Liang(tottirocket@hotmail.com)
Source title: Materials Research Express
Abbreviated source title: Mater. Res. Express
Volume: 6
Issue: 11
Issue date: October 4, 2019
Publication year: 2019
Article number: 116541
Language: English
E-ISSN: 20531591
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: The structural properties, mechanical properties and electronic structure of Al3.8Ga0.2 crystal have been investigated by using the virtual crystal approximation (VCA) based on the density functional theory (DFT). The lattice constants, elastic constants, elastic modulus, poisson's ratio, anisotropic index and density of states (DOS) of three Al3.8Ga0.2 crystal structures are analyzed in this work and that of pure Al crystal are also calculated as comparison. The results show that 5% solid solubility of Ga atoms in Al crystal structure caused about 10% pure Al volume shrinkage; Three structures of Al3.8Ga0.2 exhibited thermodynamic stability and mechanical stability; The solid solution of Ga enables Al-Ga alloy to have higher resistance to linear compression along the [001] direction and shear deformation resistance along the (100) crystal plane; Al3.8Ga0.2 crystal structures have stronger fracture resistance, plastic deformation resistance and elastic deformation resistance than that of pure Al. Mechanical calculation results show that possibility of embrittlement after the solid solutuion of Ga atom in Al-Ga alloy, and Al3.8Ga0.2 crystal structures exhibit mechanical anisotropy; According to the electronic structures analysis, the DOS of three Al3.8Ga0.2 structures are higher than pure Al at the Fermi level, and have stronger activity than pure Al. © 2019 IOP Publishing Ltd.
Number of references: 37
Main heading: Binary alloys
Controlled terms: Anisotropy - Elastic constants - Lattice constants - Solid solutions - Aluminum alloys - Calculations - Mechanical stability - Atoms - Crystal atomic structure - Electronic structure - Gallium alloys - Density functional theory
Uncontrolled terms: Deformation resistance - Elastic properties - First principles - First-principles study - Mechanical anisotropy - Mechanical calculations - Stronger activities - Virtual crystal approximation
Classification code: 541.2 Aluminum Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 921 Mathematics - 922.1 Probability Theory - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics - 933.1.1 Crystal Lattice
Numerical data indexing: Percentage 1.00e+01%, Percentage 5.00e+00%
DOI: 10.1088/2053-1591/ab462c
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

207. Atomic simulation of deformation behavior of dual-phase crystalline/amorphous Mg/Mg-Al nanolaminates

Accession number: 20191706828825
Authors: Song, H.Y. (1); Dai, J.L. (1); An, M.R. (1); Xiao, M.X. (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.(hysong@xsyu.edu.cn)
Source title: Computational Materials Science

Abbreviated source title: Comput Mater Sci
Volume: 165
Issue date: July 2019
Publication year: 2019
Pages: 88-95
Language: English
ISSN: 09270256
CODEN: CMMSEM
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Dual-phase crystalline/amorphous nanostructure model is an effective method to improve the mechanical properties of Mg alloys. The effects of amorphous thickness and crystal orientation on the plastic deformation mechanism of dual-phase crystalline/amorphous Mg/Mg-Al nanolaminates under tensile loading are investigated by using molecular dynamics simulation method. The results indicate that for the model in which the crystal phase orientation is [0 0 0 1] along tensile direction, with the increase of amorphous thickness, the deformation mechanism of samples changes from localized deformation dominated by generalized shear band (GSB) to the homogeneous plastic deformation. Here, the uniform plastic deformation is achieved by combining complete basal-prismatic (BP) transformation in crystal phase and uniformly distributed shear transformation zones in amorphous phase. The results also show that for the large amorphous thickness model, there is an obvious secondary hardening stage in the plastic deformation process, and the large amorphous phase is conducive to the formation of BP interface. However, when the crystal orientation is [1- 0 1 0] along tensile direction, all samples undergo local plastic deformation dominated by GSB, which indicates that the plastic deformation mechanisms of dual-phase nanolaminates depend not only on the thickness of amorphous phase, but also on the orientation of crystalline phase. © 2019 Elsevier B.V.
Number of references: 39
Main heading: Crystal orientation
Controlled terms: Crystalline materials - Molecular orientation - Molecular dynamics - Plastic deformation - Magnesium alloys
Uncontrolled terms: Deformation mechanism - Local plastic deformation - Localized deformations - Molecular dynamics simulation methods - Molecular dynamics simulations - Nanolaminate - Plastic deformation mechanisms - Shear transformation zones
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 801.4 Physical Chemistry - 931.1 Mechanics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice - 933.3 Electronic Structure of Solids
DOI: 10.1016/j.commatsci.2019.04.034
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 11572259), the Natural Science Foundation of Shaanxi Province (No. 2018JM1013) and the Program for Graduate Innovation Fund of Xi’an Shiyou University (No. YCS18111004).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

208. Sufficient optimality conditions for nondifferentiable multiobjective programming problem with generalized uniform invexity (*Open Access*)

Accession number: 20194607695281
Authors: An, Gang (1); Gao, Xiaoyan (2)
Author affiliation: (1) College of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Science, Xi'An University of Science and Technology, Xi'an; 710054, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1324
Part number: 1 of 1
Issue: 1
Issue title: 2nd International Conference on Physics, Mathematics and Statistics
Issue date: October 14, 2019
Publication year: 2019
Article number: 012018
Language: English

ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Physics, Mathematics and Statistics, ICPMS 2019
Conference date: May 22, 2019 - May 24, 2019
Conference location: Hangzhou, China
Conference code: 153685
Publisher: IOP Publishing Ltd
Abstract: In this paper, a new class of generalized invex functions named generalized uniform pseudoinvex (C, q) - type I, generalized uniform pseudoquasi-invex (C, q) - type I and generalized uniform quasipseudo-invex (C, q) - type I are defined by utilizing the Clarke subdifferential, where C is sublinear in the third argument. Then some sufficient optimality conditions are derived and proved for a class of nondifferentiable multiobjective programming problems involving the new generalized uniform invexity.
Number of references: 13
Main heading: Multiobjective optimization
Controlled terms: Artificial intelligence - C (programming language)
Uncontrolled terms: Clarke subdifferential - Generalized invex functions - Invexity - Nondifferentiable multiobjective programming - Sublinear - Sufficient optimality conditions
Classification code: 723.1.1 Computer Programming Languages - 723.4 Artificial Intelligence - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1324/1/012018
Funding Details: Number: 2017JM1041, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work is supported by Natural Science Foundation of Shaanxi Province of China (Program No. 2017JM1041).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

209. Detection and Recognition of Defects in X-ray Images of Welding Seams under Compressed Sensing (*Open Access*)

Accession number: 20194907794773
Authors: Ye, Han (1); Juefei, Liu (1); Huijun, Liang (1); Yuejun, Zhang (1); Weixin, Gao (2)
Author affiliation: (1) SINOPEC Oil and Gas Pipeline Inspection Co. Ltd., Xuzhou; 221008, China; (2) School of Electrical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1314
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Issue: 1
Issue title: 3rd International Conference on Electrical, Mechanical and Computer Engineering
Issue date: November 6, 2019
Publication year: 2019
Article number: 012064
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 3rd International Conference on Electrical, Mechanical and Computer Engineering, ICEMCE 2019
Conference date: August 9, 2019 - August 11, 2019
Conference location: Guizhou, China
Conference code: 155153
Publisher: IOP Publishing Ltd
Abstract: In order to solve the defects in welding seams of submerged arc welding, the X-ray images were used to detect defects. By comprehensive analysis and experimental study, the offline database of defects in welding seams was established, and online intensification and segmentation algorithm as well as recognition method based on the compressed sensing for defect images were designed. First, the defect database of X-ray images of welding

seams was established by the offline data. After the welding images were acquired, the defect segmentation and acquisition algorithm based on the clustering method were proposed. A series of characteristic values of defects in the offline database were used as atoms in the compressed sensing algorithm dictionary, and atoms were optimized with the PCA method, to facilitate the improvement of the processing speed. Supported by the optimal dictionary, the category of defects was obtained. The actual analysis of circular and linear defects was carried out to give ROC curves classified in two cases. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Defects
Controlled terms: Database systems - Seam welding - Clustering algorithms - Image segmentation - Submerged arc welding
Uncontrolled terms: Characteristic value - Clustering methods - Comprehensive analysis - Defect images - Linear defect - Processing speed - Recognition methods - Segmentation algorithms
Classification code: 538.2.1 Welding Processes - 723.3 Database Systems - 903.1 Information Sources and Analysis - 951 Materials Science
DOI: 10.1088/1742-6596/1314/1/012064
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

210. Computational research of electronic, optical and magnetic properties of Ce and Nd co-doped ZnO

Accession number: 20184205946932
Authors: Wen, Jun-Qing (1); Han, Yu-Shun (1); Yang, Xu (1); Zhang, Jian-Min (2)
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: Journal of Physics and Chemistry of Solids
Abbreviated source title: J Phys Chem Solids
Volume: 125
Issue date: February 2019
Publication year: 2019
Pages: 90-95
Language: English
ISSN: 00223697
CODEN: JPCSAW
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: We have performed a systematical calculations for Ce and Nd co-doped ZnO using the first principles method. The ZnO crystal with two Zn atoms substituted by Ce and Nd atoms is direct band gap, and the Fermi level moves upward into conduction band with the n-type properties. At the same time, the band gaps of Ce and Nd co-doped model are bigger than that of single Ce or Nd doped systems, and there are more electrons near the Fermi level. Ce or Nd doped ZnO is half-metallic and the total magnetic moments mainly come from the contribution of Ce 4f and Nd 4f states. The Ce and Nd co-doped makes the crystal undergo transition from AFM to FM to AFM with the change of Ce-Nd distance. Ce and Nd co-doped ZnO can enhance absorption in the visible range, and all optical coefficients of Ce and Nd co-doped ZnO have obviously red-shift in low energy range. © 2018 Elsevier Ltd
Number of references: 44
Main heading: Electronic structure
Controlled terms: II-VI semiconductors - Binary alloys - Magnetic moments - Red Shift - Fermi level - Calculations - Energy gap - Zinc oxide - Cerium
Uncontrolled terms: Co-doped - Co-doped ZnO - Computational researches - Direct band gap - First principles method - Half-metallic - Low-energy range - Visible range
Classification code: 547.2 Rare Earth Metals - 701.2 Magnetism: Basic Concepts and Phenomena - 712.1 Semiconducting Materials - 741.1 Light/Optics - 804.2 Inorganic Compounds - 921 Mathematics - 931.3 Atomic and Molecular Physics
DOI: 10.1016/j.jpcs.2018.10.014
Funding Details: Number: 11247229, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

211. Establishment and Simulation of DG Model Based on PQ Control

Accession number: 20201808605793
Authors: Zhangzhuo, Dong (1); Xia, Huang (1); Pengxiong, Huo (2)
Author affiliation: (1) School of Electrical Engineering, Xi'An Shiyou University, Xi'an, China; (2) School of Electrical and Control Engineering, Xi'An University of Science and Technology, Xi'an, China
Source title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
Abbreviated source title: IEEE Int. Conf. Electron. Commun. Eng., ICECE
Part number: 1 of 1
Issue title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
Issue date: December 2019
Publication year: 2019
Pages: 306-309
Article number: 9058574
Language: English
ISBN-13: 9781728147840
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Electronics and Communication Engineering, ICECE 2019
Conference date: December 9, 2019 - December 11, 2019
Conference location: Xi'an, China
Conference code: 159156
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In this paper, the principle of PQ control strategy is elaborated according to the grid-connected operation state of distributed power generation. The transfer functions of current loop and power loop are deduced through the circuit structure of the inverter and its mathematical model in the dq coordinate system. A typical I-type system scheme is adopted to design the current inner loop, and the control strategy model is built based on the simulation platform of MATLAB/Simulink, which verifies the validity and correctness of the model. The simulation results show that the system has good stability and dynamic performance, and the model can be used to study the grid-connected control of distributed generation, which has a certain reference significance. © 2019 IEEE.
Number of references: 13
Main heading: Distributed power generation
Controlled terms: Functions - Simulation platform - Electric power system control - Electric power transmission networks - MATLAB - Radial basis function networks
Uncontrolled terms: Circuit structures - Control strategies - D-q coordinates - Dynamic performance - Grid-connected controls - Grid-connected operation - MATLAB /simulink - P-q control strategies
Classification code: 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 706.1.2 Electric Power Distribution - 723.5 Computer Applications - 731.2 Control System Applications - 921 Mathematics
DOI: 10.1109/ICECE48499.2019.9058574
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

212. Simulation Research of Inverter Interfaced Distributed Generation Grid-Connected Model with Low Voltage Ride Through Ability

Accession number: 20201808605802
Authors: Zhangzhuo, Dong (1); Sike, Dong (2); Wenjing, Zhao (2)
Author affiliation: (1) School of Electrical Engineering, Xi'An Shiyou University, Xi'an, China; (2) School of Electrical and Control Engineering, Xi'An University of Science and Technology, Xi'an, China
Source title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
Abbreviated source title: IEEE Int. Conf. Electron. Commun. Eng., ICECE
Part number: 1 of 1

Issue title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
Issue date: December 2019
Publication year: 2019
Pages: 270-274
Article number: 9058584
Language: English
ISBN-13: 9781728147840
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Electronics and Communication Engineering, ICECE 2019
Conference date: December 9, 2019 - December 11, 2019
Conference location: Xi'an, China
Conference code: 159156
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In view of the problem that the full component of d-axis of inverter interfaced distributed generation(IIDG) grid-connected point's voltage cannot accurately reflect the voltage sag of the grid-connected point when the distribution network asymmetric fault, the method of adopting the positive sequence component of that used to establish the relationship between the reference value of dq-axis of the grid-connected point's current to meet the requirement of Low Voltage Ride Through(LVRT) is proposed. The method can coordinately control the IIDG output current and reactive power to support the grid-connected point's voltage recovery, and enhance the stability of the grid-connected system. Simulation was used to verify the method in this paper. © 2019 IEEE.
Number of references: 10
Main heading: Electric inverters
Controlled terms: Electric power transmission networks - Electric power system control - Distributed power generation
Uncontrolled terms: Grid connected systems - Inverter interfaced distributed generations - Low-voltage ride-through - Output current - Positive-sequence components - Reference values - Simulation research - Voltage recovery
Classification code: 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 706.1.2 Electric Power Distribution - 731.2 Control System Applications
DOI: 10.1109/ICECE48499.2019.9058584
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

213. First-principle studies on the electronic structural, thermodynamics and elastic properties of Mg17Al12 intermediate phase under high pressure

Accession number: 20193007229515
Authors: Zhou, Yong (1); Dang, Mohan (1); Sun, Liang (1); Zhai, Wenyan (1); Dong, Hui (1); Gao, Qian (1); Zhao, Fei (1); Peng, Jianhong (2)
Author affiliation: (1) College of Material Science and Engineering, Xi'An Shiyou University, Xi'an, China; (2) College of Physics and Energy, Qinghai Nationalities University, Xining, China
Source title: Materials Research Express
Abbreviated source title: Mater. Res. Express
Volume: 6
Issue: 8
Issue date: June 5, 2019
Publication year: 2019
Article number: 0865E1
Language: English
E-ISSN: 20531591
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: As an intermediate phase in Mg-Al alloy, Mg17Al12 has an important role of hindering dislocation motion to strengthen grain boundaries. The influence of pressure on the structural properties, electronic structure, and mechanical properties of Mg17Al12 from 0 GPa to 8 GPa have been investigated by using first-principles calculations. As the pressure increases in the pressure range, Mg17Al12 intermediate phase stay thermodynamic stable. Based on first-principles calculations study, from band structure analysis, Mg17Al12 has strong metallic character, and

the metallicity of this phase reduced due to applied pressure. Moreover, the ionic bond interaction between Mg and Al atoms increase with increasing pressure. Due to empirical criterion and Cauchy pressure, Mg17Al12 have a mechanically stable structure as well as brittleness property from 0 GPa to 8 GPa. Generally speaking, after theoretical study, the effect of pressure on Mg17Al12 improve its compression resistance and fracture resistance, the ability of resisting plastic deformation also becomes stronger. Moreover, appling pressure can weaken the brittleness of Mg17Al12. The study of its anisotropy also play an important rule in Mg-Al alloy grain boundary strengthening. Mg17Al12 exhibits anisotropy at 0 GPa to 8 GPa, and Mg17Al12 has the strongest stiffness along the 100 direction. © 2019 IOP Publishing Ltd.
Number of references: 41
Main heading: Electronic structure
Controlled terms: Structural properties - Plasticity - Thermodynamics - Grain boundaries - Binary alloys - Elasticity - Anisotropy - Calculations - Aluminum alloys - Fracture mechanics - Magnesium alloys
Uncontrolled terms: Band structure analysis - Compression resistance - Elastic properties - First principles - First-principle study - First-principles calculation - Mechanically stable - Mg-Al alloys
Classification code: 408 Structural Design - 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 641.1 Thermodynamics - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 0.00e+00Pa to 8.00e+09Pa
DOI: 10.1088/2053-1591/ab2420
Funding Details: Number: HKDNM201811, Acronym: -, Sponsor: -; Number: YCS17211037, Acronym: -, Sponsor: -; Number: 20192110, Acronym: -, Sponsor: State Key Laboratory for Mechanical Behavior of Materials;
Funding text: This work was financially supported by the Open Foundation of National Joint Engineering Research Center for abrasion control and molding of metal aterials(HKDNM201811); Xi'an Shiyou University Graduate Innovation and Practice ability training project(YCS17211037); The provincial superiority discipline of Materials Science and Engineering, Xi'an Shiyou University; The Open Fund of State Key Laboratory for Mechanical Behavior of Materials (20192110)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

214. Selective doping of titanium into double layered hematite nanorod arrays for improved photoelectrochemical water splitting

Accession number: 20192106954880
Authors: Kong, Ting-Ting (1, 2); Huang, Jian (1); Jia, Xin-Gang (1); Wang, Wen-Zhen (1); Zhou, Yong (2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710054, China; (2) Department of Physics, Nanjing University, Nanjing; Jiangsu; 210039, China
Corresponding author: Kong, Ting-Ting(ttkong@xsyu.edu.cn)
Source title: Applied Surface Science
Abbreviated source title: Appl Surf Sci
Volume: 486
Issue date: 30 August 2019
Publication year: 2019
Pages: 312-322
Language: English
ISSN: 01694332
CODEN: ASUSEE
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Element doping is effective to improve the photoelectrochemical (PEC)performance of photoelectrodes, as it can increase the carrier density and then enhance electrical conductivity for efficient charge transfer. In this study, titanium (Ti)was selectively doped into the bottom and/or top layer of the double layered hematite ($_{\alpha}$–Fe2O3/$_{\alpha}$–Fe2O3)nanorod arrays grown on conductive transparent substrate (F:SnO2, FTO)via a two-step hydrothermal method to optimize the electron donor distribution and improve the charge separation efficiency for a remarkable enhancement in PEC water splitting. It was demonstrated that, by selectively doping Ti into the bottom layer, the obtained FTO/$_{\alpha}$–Fe2O3:Ti/$_{\alpha}$–Fe2O3 nanorod photoanode showed the highest PEC performance for water splitting, with photocurrent density reaching 1.69 mA/cm2 at 1.9 V vs. RHE under AM 1.5G illumination, which was 4.3 times that of undoped $_{\alpha}$–Fe2O3/$_{\alpha}$–Fe2O3 nanorod film (0.39 mA/cm2)and even much higher than the top layer and double layer doped $_{\alpha}$–Fe2O3 nanorod films (FTO/$_{\alpha}$–Fe2O3/$_{\alpha}$–Fe2O3:Ti and FTO/$_{\alpha}$–Fe2O3:Ti/$_{\alpha}$–Fe2O3:Ti). By introducing the Ti electron

donor dopants into α–Fe2O3, the electron density will be increased in the α–Fe2O3:Ti layer, raising the Fermi level. For the FTO/α–Fe2O3:Ti/α–Fe2O3 nanorod film, the band realignment will create a terraced band structure and then build an internal electric field at the interface of the bottom and top layers. As a result, the photoexcited electrons and holes will transfer to the FTO substrate and the photoanode surface, respectively, as driven by the internal electric field. This study demonstrated an alternative approach to the design of novel photoanodes with improved PEC performances, by engineering the electron density distribution and the band structure for efficient charge carrier separation. © 2019 Elsevier B.V.
Number of references: 78
Main heading: Carrier concentration
Controlled terms: Titanium - Band structure - Electric fields - Photoelectrochemical cells - Charge transfer - Electron density measurement - Nanorods - Semiconductor doping - Electrons - Hematite
Uncontrolled terms: Electrical conductivity - Hematite nanorods - Internal electric fields - Photo-anodes - Photoelectrochemical water splitting - Photoexcited electrons - Selective doping - Two-step hydrothermal method
Classification code: 482.2 Minerals - 542.3 Titanium and Alloys - 701.1 Electricity: Basic Concepts and Phenomena - 702.1 Electric Batteries - 712.1 Semiconducting Materials - 761 Nanotechnology - 802.2 Chemical Reactions - 933 Solid State Physics
Numerical data indexing: Current_Density 1.69e+01A/m2, Current_Density 3.90e+00A/m2
DOI: 10.1016/j.apsusc.2019.04.219
Funding Details: Number: 20173114, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The project was supported by the National Natural Science Foundation of China (20173114).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

215. The fracture network inversion based on gas production profile

Accession number: 20191506773439
Authors: Mi, Lidong (1, 2); Yan, Bicheng (3); Liu, Qianjun (2); Ren, Zongxiao (4)
Author affiliation: (1) Sinopec Petroleum Exploration and Production Research Institute, China; (2) China University of Petroleum, China; (3) Texas A and M University, United States; (4) Xi'an Shiyou University, China
Source title: International Petroleum Technology Conference 2019, IPTC 2019
Abbreviated source title: Int. Pet. Technol. Conf., IPTC
Part number: 1 of 1
Issue title: International Petroleum Technology Conference 2019, IPTC 2019
Issue date: 2019
Publication year: 2019
Report number: IPTC-19152-MS
Language: English
ISBN-13: 9781613996195
Document type: Conference article (CA)
Conference name: International Petroleum Technology Conference 2019, IPTC 2019
Conference date: March 26, 2019 - March 28, 2019
Conference location: Beijing, China
Conference code: 146421
Publisher: International Petroleum Technology Conference (IPTC)
Abstract: The fracture description plays an important role in shale gas well production performance prediction, late production refracturing design and infill well trajectory design. Based on the development and geological parameters of Fuling shale gas field, the enhanced discrete fracture network (EDFN) numerical simulator is used to study the influence of fracture length, total fracture length, stage spacing and relative position of fractures on the contribution ratio of fracture stage. According to the relationship among JY46-3HF gas production profile, gas production contribution ratio and fracture characteristic parameters, a fracture network model is established. The simulation results of gas production contribution ratio of each fracture stage are highly consistent with the measured data. The research results show that: the contribution ratio of gas production in each fracture stage is positively related to the total cumulative fracture length, and the fracture spacing and relative position of fractures affect the contribution ratio of fracture stage to shale gas well by the size of matrix area controlled by fracture. © 2019, International Petroleum Technology Conference
Number of references: 9
Main heading: Fracture
Controlled terms: Gases - Natural gas well production - Oil wells - Gasoline - Shale gas - Natural gas wells - Infill drilling - Gas industry

Uncontrolled terms: Contribution ratios - Discrete fracture network - Fracture characteristics - Fracture network models - Geological parameters - Numerical simulators - Relative positions - Research results
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 523 Liquid Fuels - 951 Materials Science
DOI: 10.2523/19152-ms
Funding Details: Number: 51804258, Acronym: -, Sponsor: -; Number: 2016ZX05061003-003, Acronym: -, Sponsor: Science and Technology Major Project of Guangxi;
Funding text: This study was supported by the National Science Foundation for Young Scientists of China (Grant No.51804258) the National Science and Technology Major Project (No. 2016ZX05061003-003) and the Science Foundation of Sinopec Group (No.P16058).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

216. Numerical calculation and analysis on phase behavior of fireflood exhaust from HQ-1 well in Xinjiang oilfield (*Open Access*)

Accession number: 20191606808176
Authors: Wang, Yong (1, 2); Wang, Suwen (1); Chen, Lijuan (3); Chen, Long (3); Wang, Shouxi (2, 4)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (3) Research Institute of Engineering Technology, Xinjiang Petroleum Corporation, CNPC, Karamay, Xinjiang Uygur Autonomous Region; 834000, China; (4) Pipe Plus Technology Ltd, Xi'an Shaanxi; 710003, China
Corresponding author: Wang, Yong(wyong029@163.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 242
Part number: 2 of 6
Issue: 2
Issue title: 4th International Conference on Energy Equipment Science and Engineering - Energy Engineering Technology, Application and Management
Issue date: April 1, 2019
Publication year: 2019
Article number: 022024
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Energy Equipment Science and Engineering, ICEESE 2018
Conference date: December 28, 2018 - December 30, 2018
Conference location: Xi'an, China
Conference code: 147102
Publisher: IOP Publishing Ltd
Abstract: For designing a reinjection system of fireflood exhaust, phase calculation and analysis are the most fundamental things. Aspen Hysys and FEPE which was developed with our own intellectual property rights were employed to study the phase envelope of fireflood exhaust from HQ-1 well. After comparing the applicability of the software adopted, the rule of phase behavior and affecting factors were summarized. The result shows that the composition and phase envelope of fireflood exhaust are dramatically different with that of natural gas. Envelope Utility, a tool which is commonly used to produce fluid phase envelope in Aspen Hysys, makes fault in generating that of wet fireflood exhaust. By contrast, FEPE can produce the dew point line for wet and water-free fireflood exhaust, showing batter applicability than Envelope Utility. The results also show that among the components, water content affects the dew point most seriously. There will exist liquid-vapor phase during rejection process, which will threaten the rejection safety. Thus, for safety's sake, it is required to take prevention measures such as dehydration to avoid corrosion and other risks. © Published under licence by IOP Publishing Ltd.
Number of references: 28
Main heading: Laws and legislation
Controlled terms: Intellectual property - Corrosion prevention - Risk assessment - Environmental protection

Uncontrolled terms: Affecting factors - Fluid-phase - Intellectual property rights - Liquid-vapor - Numerical calculation - Phase calculation - Phase envelope - Prevention measures
Classification code: 454.2 Environmental Impact and Protection - 539.2 Corrosion Protection - 902.3 Legal Aspects - 914.1 Accidents and Accident Prevention - 971 Social Sciences
DOI: 10.1088/1755-1315/242/2/022024
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

217. Study on optimization of weight on bit for automatic bit feeding based on improved ant colony algorithm (*Open Access*)

Accession number: 20193207295624
Authors: Liu, Guangxing (1); Li, Qiaohua (1)
Author affiliation: (1) Shaanxi Key Laboratory of Oil and Gas Well Measurement and Control Technology, College of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022024
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In the process of automatic bit feeding, to make the drilling process reach the optimal technical and economic indicators, the effect of the parameters on the drilling process should be analyzed. A drilling control parameter optimization model taking unit footage cost as the objective function is established to seek the optimal weight on bit (WOB) - rotary speed combination under certain constraint conditions. The objective function is optimized by the improved ant colony algorithm, and is finally applied to the specific example for simulation. A contrastive analysis is carried out with several kinds of typical optimization algorithm. It is indicated from the result that the improved ant colony algorithm can effectively reduce the unit footage cost, prolong the service life of drill bit, and shorten the trip time. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 14
Main heading: Ant colony optimization
Controlled terms: Artificial intelligence - Infill drilling
Uncontrolled terms: Constraint conditions - Contrastive analysis - Control parameters - Drilling process - Economic indicators - Improved ant colony algorithm - Objective functions - Optimization algorithms
Classification code: 511.1 Oil Field Production Operations - 723.4 Artificial Intelligence - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1237/2/022024
Funding Details: Number: 17JS107, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
Funding text: This work was financially supported by the Scientific Research Project of Education Department of Shaanxi Provincial Government (17JS107) and the Graduate Student Innovation and Practice Ability Training Project of Xi'an Shiyou University. (YCS17212056)
Compendex references: YES
Open Access type(s): All Open Access, Bronze

Database: Compendex
Data Provider: Engineering Village

218. Study on heavy oil components transformation path based on core analysis during in-situ combustion process

Accession number: 20191906899292
Authors: Yuan, Shibao (1); Jiang, Haiyan (1); Shi, Yaoli (2); Ren, Zongxiao (1); Wang, Jiao (1); Zhang, Yupeng (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: Fuel
Abbreviated source title: Fuel
Volume: 253
Issue date: 1 October 2019
Publication year: 2019
Pages: 72-78
Language: English
ISSN: 00162361
CODEN: FUELAC
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Coke combustion makes the temperature of heavy oil higher to achieve lower viscosity during in-situ combustion process. The conversion of heavy oil components into coke is significant for the start-up of combustion, but most of the current research results come from laboratory experiments. To further study the conversion of crude oil components in oilfield pilot, this paper divides the reactions of heavy oil into oxidation reaction and thermal reaction, and the reaction mechanism and characteristics are analyzed deeply. Then, the oxidation stages of different sections are determined by analyzing the data of coring wells in the oilfield. Furthermore, the infrared spectra and GC-MS of crude oil in different oxidation stages are analyzed to observe the changes of components and functional groups of heavy oil in this process. Combined core analysis results and the reaction mechanism of heavy oil, the conversional sequence of different components is obtained, and then a systematic heavy oil component conversion path is formed. The above studies validate and improve the conclusions of laboratory experiments and deepen the understanding of the conversion of heavy oil components and the formation of fuel in fire flooding process. © 2019 Elsevier Ltd
Number of references: 25
Main heading: Crude oil
Controlled terms: Oxidation - In situ combustion - Coke - Floods - Heavy oil production - Oil well flooding
Uncontrolled terms: Crude oil components - In-situ combustion process - Infrared spectrum - Laboratory experiments - Oxidation reactions - Reaction mechanism - Thermal reactions - Transformation paths
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 521.1 Fuel Combustion - 524 Solid Fuels - 802.2 Chemical Reactions
DOI: 10.1016/j.fuel.2019.04.135
Funding Details: Number: 51674198,51804258, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is funded by National Natural Science Foundation of China : Investigations on Fuel Transformation and Deposition Mechanism in the Process of In-Situ Combustion (Grant No. 51674198), The multi-scale and multi-mechanism coupled seepage model of volume fracturing horizontal well based on boundary element method in tight oil reservoir (Grant No. 51804258).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

219. Research on X-ray welding image defect detection based on convolution neural network (*Open Access*)

Accession number: 20193307300229
Authors: Yaping, Li (1); Weixin, Gao (2)
Author affiliation: (1) SINOPEC Pipeline Storage and Transportation Company Limited, Science and Technology Division, 21008, China; (2) School of Electrical Engineering, Xi'An Shiyou University, 710065, China

Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
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Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to improve the efficiency of X-ray welding image defect recognition, it is proposed to use the deep learning network to identify welding defects. Based on the analysis of X-ray weld defect image characteristics, the convolutional neural network template and the number of layers are determined. By constructing a deep learning network structure that simulates the principle of visual perception, the steps of feature extraction of weld defect images are avoided. Also the deep learning network can directly determine whether the suspected defect image is a linear defect, circular defect or noise. The designed system can automatically learn the complex depth features in the X-ray weld defect image. The actual calculation shows that the proposed method is feasible and effective. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 15
Main heading: Welding
Controlled terms: Defects - Image enhancement - Welds - Multilayer neural networks - Deep learning - Convolution
Uncontrolled terms: Circular defects - Convolution neural network - Depth features - Image defect detection - Learning network - Number of layers - Visual perception - Welding defects
Classification code: 461.4 Ergonomics and Human Factors Engineering - 538.2 Welding - 716.1 Information Theory and Signal Processing - 951 Materials Science
DOI: 10.1088/1742-6596/1237/3/032005
Funding Details: Number: 14JS079, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by the Scientific Research Project of Education Department of Shaanxi Provincial Government(14JS079).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

220. Robust Optimization of High-Speed Rail Vehicle Suspension Parameters Based on Vertical Running Stability

Accession number: 20203809213873
Title of translation:
Authors: Wang, Pan-Pan (1); Yang, Yue (1); Yi, Bing (1); Zeng, Wei (2); Wang, Ting (3)
Author affiliation: (1) CAD/CAM Institute, Central South University, Changsha, China; (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China; (3) Nanning Railway Bureau, Nanning, China
Corresponding author: Yang, Yue
Source title: Journal of the Chinese Society of Mechanical Engineers, Transactions of the Chinese Institute of Engineers, Series C/Chung-Kuo Chi Hsueh Kung Ch'eng Hsuebo Pao
Abbreviated source title: J Chin Soc Mech Eng Trans Chin Inst Eng Ser C
Volume: 40
Issue: 6
Issue date: December 1, 2019

Publication year: 2019
Pages: 583-593
Language: English
ISSN: 02579731
Document type: Journal article (JA)
Publisher: Chinese Mechanical Engineering Society
Abstract: Since noise factors have a significant influence on vertical running stability of high-speed rail vehicles, robust optimization of the suspension parameters can improve the robustness of vehicle under different running conditions, and thus ensure running quality. Vertical stiffness and damping of primary and secondary suspensions were here regarded as controllable factors, with speed, passenger capacity and railway curve radius selected as noise factors. Then Taguchi method was introduced to construct a basic robust optimization model of vehicle suspension parameters. Based on the advantages of non-linear fitting of Radial Basis Function (RBF) surrogate model, an RBF surrogate model of vehicle vertical running stability was constructed to analyze the influence of both controllable factors and noise factors. On this basis, the suspension parameter combination with best robustness was determined through internal and external orthogonal testing of the controllable factors and noise factors, as well as signal-to-noise ratio analysis. The results indicated that, after robust optimization of the suspension parameters, the mean value of the vertical running stability index under different running conditions was improved by 7.55%, and the amplitude of vertical running stability index over the whole range was reduced by 31.0%, which validated the effectiveness of the proposed method.
Number of references: 20
Main heading: Taguchi methods
Controlled terms: Signal to noise ratio - Stability - Optimization - Well testing
Uncontrolled terms: Radial Basis Function(RBF) - Robust optimization - Robust optimization models - Running conditions - Running stability indices - Secondary suspension - Suspension parameters - Vertical stiffness
Classification code: 716.1 Information Theory and Signal Processing - 913.3 Quality Assurance and Control - 921.5 Optimization Techniques - 922.2 Mathematical Statistics
Numerical data indexing: Percentage 3.10e+01%, Percentage 7.55e+00%
Funding Details: Number: 2015JJ2168, Acronym: -, Sponsor: -; Number: 51605495, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The paper is funded by the National Natural Science Foundation of China (No.51605495), and the Project supported by Hunan Province Natural Science Foundation of China (No.2015JJ2168).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

221. Water reclamation and reuse (*Open Access*)

Accession number: 20194407613402
Authors: Sun, Huijuan (1, 2); Zhang, Huixin (1); Zou, Xin (1); Li, Ran (2); Liu, Yang (1, 2)
Author affiliation: (1) Department of Civil and Environmental Engineering, University of Alberta, Edmonton; AB, Canada; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi, China
Corresponding author: Sun, Huijuan(huijuan3@ualberta.ca)
Source title: Water Environment Research
Abbreviated source title: Water Environ. Res.
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Issue date: October 1, 2019
Publication year: 2019
Pages: 1080-1090
Language: English
ISSN: 10614303
E-ISSN: 15547531
CODEN: WAERED
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: Literature published in 2018 pertinent to water reclamation and reuse has been classified into five topics: safe reuse, treatment technologies, management, assessment, and case studies. Researches have been conducted to develop new technologies and improve conventional treatments for achieving sustainable wastewater reclamation, and increasing efforts have been made to facilitate safe water reuse. Practitioner Points: The way of publicity greatly

influences people's acceptance of water reuse and willingness to purchase produce irrigated with recycled water. Integrated process is the most commonly used treatment technology to reclaim water. There is a lack of local or regional regulatory and policy for sustainable water management. © 2019 Water Environment Federation
Number of references: 97
Main heading: Wastewater reclamation
Controlled terms: Water conservation - Wastewater treatment
Uncontrolled terms: Case-studies - Conventional treatments - Reclamation and reuse - Recycled water - Safe water - Sustainable water management - Treatment technologies - Water reuse
Classification code: 444 Water Resources - 452.4 Industrial Wastes Treatment and Disposal
DOI: 10.1002/wer.1199
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

222. Shear-tensile fractures in hydraulic fracturing network of layered shale

Accession number: 20193707417946
Authors: Wu, Shan (1); Li, Tiantai (2); Ge, Hongkui (1, 3); Wang, Xiaoqiong (1, 3); Li, Ning (1); Zou, Y. (1, 3)
Author affiliation: (1) China University of Petroleum, Beijing, Beijing, China; (2) Xi'an Shiyou University, Beijing, China; (3) State Key Laboratory of Petroleum Resource and Engineering, China University of Petroleum, Beijing, China
Corresponding author: Ge, Hongkui(gehongkui@163.com)
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Understanding hydraulic fractures generation and geometric properties are significant for optimizing hydraulic fracturing treatment design which improves the ultimate production from shale reservoirs. The propagation of the hydraulic fractures is influenced by bedding planes. Simple opening or tensile crack model is not enough to meet the hydraulic fractures generation process, and the fault slipping model which is regarding as the cause of the natural earthquake is also not compatible with the actual physical meaning of fracking induced fractures. Hydraulic fractures consist of not only the opening but also slippage. Acoustic emission monitoring combined with the true triaxial hydraulic experiment provides direct information about the propagation and the geometric parameters of fractures. Moment tensor of acoustic emission is related to the mechanical mechanics of fractures. In this paper, the moment tensor interpretation is based on the shear-tensile crack model, then the orientation and the opening width of the hydraulic fractures are calculated. Computerized tomography scanning figures of the samples give support to the interpretation process. The distributions of hydraulic fractures orientations are different in the two samples with different normal stress applied on the bedding plane. Higher normal stress on the bedding plane led to a more complex fracture orientation. And the opening widths of the fractures in the far area from the wellbore are smaller than the fractures nearby the wellbore. These two parameters quantify the fractures geometric properties and provide information for adjusting the next step of the fracturing process. The findings of this study can help for better understanding of hydraulic fractures generation in the bedding shale. Shear-tensile crack model is supported by actual physical models has good adaptability in explaining the hydraulic fracture propagation process. © 2019 Elsevier B.V.
Number of references: 57
Main heading: Fracture
Controlled terms: Boreholes - Computerized tomography - Network layers - Oil field equipment - Tensors - Acoustic emission testing - Cracks - Shale - Geometry - Hydraulic fracturing
Uncontrolled terms: Acoustic emission monitoring - Fracture orientations - Fracturing process - Generation process - Geometric properties - Hydraulic fracture propagation - Hydraulic fracturing treatments - Moment tensors
Classification code: 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 751.2 Acoustic Properties of Materials - 921 Mathematics - 921.1 Algebra - 951 Materials Science
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

223. A new sinking agent used in water-control fracturing for low-permeability/bottom-water reservoirs: Experimental study and field application

Accession number: 20190906549263
Authors: Zhao, Jinsheng (1, 2); Li, Tiantai (1, 2); Shi, Yu (1, 2); An, Chongqing (3); Liu, Yueliang (4)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) Changqing Downhole Operation Technology Company, CNPC Chuanqing Drilling Engineering Company Limited, Xi'an; Shaanxi; 710021, China; (4) School of Petroleum Engineering, China University of Petroleum, Qingdao; Shandong; 266580, China
Corresponding author: Liu, Yueliang(sdliuyueliang@163.com)
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Publisher: Elsevier B.V., Netherlands
Abstract: Hydraulic fracturing is widely applied in tight reservoirs for hydrocarbon recovery. However, as for bottom-water reservoirs, the created vertical hydraulic fractures can readily penetrate into the bottom-water layer, leading to a drastic increase of water cut when the pay-zones are too thin and the barrier lying between the pay-zone and bottom water are quite weak. In this work, a new sinking agent is used in hydraulic fracturing for water control in the low-permeability/bottom-water reservoirs. The settlement velocity and the plugging ability of this new sinking agent as well as the flow conductivity of the sinking-agent barrier is measured and compared with that of the other six commonly used sinking agents. We finally investigate the placement rule of the new sinking agent by varying the concentration of the carrying fluid and sand ratio in the modeling fracture. Filtration test show that this new sinking agent can form a barrier, which can strongly plug fracturing fluid. When the closure pressure range is in the range of 6.9 MPa–69.0 MPa, conductivity of the barrier formed by this new sinking agent is at a low level of 2.9 μm2 cm to 1.5 μm2 cm. With a given sand ratio and carrying-fluid concentration, the barrier formed in the fracture by the new sinking agent is more uniform than the other sinking agents. Based on the field application in a low-permeability/bottom-water reservoir, the usage of this new sinking agent increases oil recovery but decreases the water cut compared to other sinking agents. © 2019
Number of references: 29
Main heading: Hydraulic fracturing
Controlled terms: Petroleum reservoir engineering - Fracturing fluids - Low permeability reservoirs
Uncontrolled terms: Barrier - Bottom water reservoir - Fracture height - Low permeability - Water control
Classification code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations
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224. Fluid-solid fully coupling flow simulation for SRV-fractured horizontal wells in tight oil reservoirs

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Title of translation:
Authors: Ren, Long (1, 2); Su, Yuliang (3); Zhou, Desheng (1, 2); Zhan, Shiyuan (3); Jing, Cheng (1, 2); Sun, Jian (4)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) School of Petroleum Engineering, China University of Petroleum(East China), Qingdao; Shandong; 266580, China; (4) School of Petroleum Engineering, China University of Petroleum(Beijing), Beijing; 102249, China
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Abstract: In terms of the characteristic of complex fracture network and stress sensitivity for stimulated reservoir volume(SRV)-fractured horizontal wells in tight oil reservoirs, based on the effective stress principle and flowing features of stimulated areas with multi-porosity media, the fluid-solid coupling mathematical model considering the system characteristics of the matrix, natural fractures and network fractures is presented. The fully coupling numerical solution of the stress field and flow field is solved by the finite element method. The accuracy of this model is verified by comparing the existing software solution, analyzing the difference of the production performance of SRV-fractured horizontal well under the condition of the non-coupled and full-coupled model, and revealing the fluid flow characteristics and productivity influence factors of tight oil. The results show that for full-coupled model, the production rate of SRV-fractured horizontal well is large but declines quickly. There is an economically optimal reservoir fracturing parameter. And the development pattern of "well factory" involving horizontal wells with large scale SRV fracturing is more favorable for enhanced oil recovery(EOR). This study could provide a certain theoretical and technical guidance for the optimization design of horizontal wells with SRV fracturing and efficient development of tight oil reservoirs. © 2019, Science Press. All right reserved.
Number of references: 27
Main heading: Horizontal wells
Controlled terms: Numerical methods - Petroleum reservoir engineering - Rock mechanics - Flow of fluids - Porosity - Enhanced recovery - Natural fractures - Petroleum reservoirs
Uncontrolled terms: Enhanced oil recovery - Fluid solids - Fractured horizontal wells - Oil reservoirs - Porosity media - Production performance - Stimulated reservoir volumes - System characteristics
Classification code: 421 Strength of Building Materials; Mechanical Properties - 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.13722/j.cnki.jrme.2018.0293
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225. Biodegradation of crude oil by Chelatococcus daeguensis HB-4 and its potential for microbial enhanced oil recovery (MEOR)in heavy oil reservoirs

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Authors: Ke, Cong-Yu (1); Lu, Guo-Min (1); Wei, Ying-Lin (1); Sun, Wu-Juan (1); Hui, Jun-Feng (2); Zheng, Xiao-Yan (2); 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) School of Chemical Engineering, Northwest University, Xi'an; Shaanxi; 710069, China
Corresponding author: Zhang, Xun-Li(xlzhang@xsyu.edu.cn)
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Biodegradation of crude heavy oil was investigated with Chelatococcus daeguensis HB-4 that was isolated from the produced fluid of Baolige Oilfield in China. Batch growth characterization and crude oil degradation tests confirmed HB-4 to be facultative anaerobic and able to degrade heavy oil. The oil degradation was found to occur through degrading long hydrocarbons chains to shorter ones, resulting in oil viscosity reduction. By mixing crude oil with glucose, or using sole crude oil as carbon source, the content of light fractions (C8-C22)increased by 4.97% while heavy fractions (C23-C37)decreased by 7.98%. It was also found that bioemulsifiers were produced rather than commonly observed biosurfactants in the fermentation process, which was attributed to the extracellular degradation of hydrocarbons. Core flooding tests demonstrated 20.5% oil recovery by microbial enhancement, and 59.8% viscosity reduction, showing potential of strain HB-4 for application in the oil industry, especially in enhanced heavy oil recovery.

Number of references: 49
Main heading: Crude oil
Controlled terms: Oil well flooding - Petroleum reservoir engineering - Reservoirs (water) - Enhanced recovery - Floods - Heavy oil production - Petroleum reservoirs - Hydrocarbons - Biodegradation - Viscosity
Uncontrolled terms: Baolige oilfield - Chelatococcus daeguensis - Core flooding test - Fermentation process - Heavy oil recovery - Heavy oil reservoirs - Microbial enhanced oil recovery (MEOR) - Viscosity reduction
Classification code: 441.2 Reservoirs - 461.8 Biotechnology - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 801.2 Biochemistry - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Percentage 2.05e+01%, Percentage 4.97e+00%, Percentage 5.98e+01%, Percentage 7.98e+00%
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Database: Compendex
Data Provider: Engineering Village

226. Investigation on plugging and profile control of polymer microspheres as a displacement fluid in enhanced oil recovery (*Open Access*)

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Authors: Nie, Xiangrong (1, 2); Chen, Junbin (1, 2); Cao, Yi (1, 2); Zhang, Jinyuan (1, 2); Zhao, Wenjing (1, 2); He, Yanlong (1, 2); Hou, Yunyi (3); Yuan, Shaomin (4)

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Well Stability and Fluid Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; 710065, China; (3) Research Institute of Shannxi Yanchang Petroleum (Group) Co. Ltd., Xi'an; 710075, China; (4) Exploration and Development Research Institute of Daqing Oil Field, Daqing; 163712, China
Corresponding author: Nie, Xiangrong(nxrcup@163.com)
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Language: English
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Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: Polymer microspheres (PMs) are used as a new material to recover residual oil left in unswept oil areas after secondary recovery methods. The fact that the PMs plug the macropores causes the flow direction of the injection fluid to be transferred from macropores to micropores. In order to investigate the plugging and profile control mechanisms of PMs in reservoirs, four kinds of PMs with different particle sizes and four kinds of artificial cores with different permeability were selected for flooding tests, including plugging experiments and profile control experiments. The pore throat size distribution of cores was characterized by nuclear magnetic resonance (NMR) technology. The particle size distribution of PMs used in the experiment was characterized using a laser particle size analyzer. The results showed that there are six matching relationships existing simultaneously between pore throats and PMs based on theoretical analysis, which are completely plugging, single plugging, bridge plugging, smooth passing, deposition, and deformable passing. A key principle for optimizing PMs in profile control is that the particle size of the selected PMs can enter the high permeability layer well, but it is difficult for it to enter the low permeability layer. The results of this paper provide a theoretical basis for the optimal particle size of PMs during the oil field profile control process. © 2019 by the authors.
Number of references: 41
Main heading: Particle size analysis
Controlled terms: Nuclear magnetic resonance - Petroleum reservoir engineering - Oil well flooding - Enhanced recovery - Reservoirs (water) - Size distribution - Microspheres - Particle size
Uncontrolled terms: Enhanced oil recovery - Plugging - Polymer microspheres - Pore throat - Profile control
Classification code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 922.2 Mathematical Statistics - 951 Materials Science
DOI: 10.3390/polym11121993
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227. Effect of nanocellulose on linear viscoelastic behavior of zwitterionic wormlike micelle

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Title of translation:
Authors: Qin, Wenlong (1, 2); Jiang, Guanfeng (2); Qin, Guowei (2); Yang, Jiang (2)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an Petroleum University, Xi'an; 710065, China; (2) College of Petroleum Engineering, Xi'an Petroleum University, Xi'an; 710065, China

Corresponding author: Yang, Jiang(jyang@xsyu.edu.cn)
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CODEN: FCXUEC
Document type: Journal article (JA)
Publisher: Beijing University of Aeronautics and Astronautics (BUAA)
Abstract: The thermal stability of zwitterionic wormlike micelle(Z-WLM) solution with different nanocelluloses(NCs) was investigated. The effects of NCs concentration on the dynamic viscoelastic behavior, thixotropy and creep of Z-WLM were studied by linear rheological methods. The experimental result shows that a wormlike micelle(WLM) structure is formed by 4wt% erucy lamidopropyl betaine surfactant solution with many unique rheological properties, including shear thinning behavior, viscoelastic behavior, creep behavior and higher thixotropy recovery behavior, et al. Compared to other NCs, the NCs with high -COOH mass fraction and large aspect ratio possess better thickening efficiency. Moreover, the NCs can increase the Z-WLM solution's relaxation time and storage modulus, extend its thixotropy recovery time of shear viscosity and dynamic modulus, improve its creep recovery performance and thermal stability, which can use as a stimulation fluid in high temperature reservoirs from 70 to 100. With the increase of NCs concentration, the viscoelasticity and creep recovery performance of composite systems are increased and its thixotropy recovery performance is decreased. © 2019, Editorial Office of Acta Materiae Compositae Sinica. All right reserved.
Number of references: 22
Main heading: Micelles
Controlled terms: Aspect ratio - Thermodynamic stability - Shear thinning - Viscoelasticity - Nanocellulose - Surface active agents - Creep - Recovery
Uncontrolled terms: High temperature reservoirs - Linear viscoelastic behaviors - Recovery performance - Shear-thinning behavior - Stimulation - Surfactant solution - Thickening efficiency - Visco-elastic behaviors
Classification code: 631.1 Fluid Flow, General - 641.1 Thermodynamics - 801.3 Colloid Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 811.3 Cellulose, Lignin and Derivatives - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.13801/j.cnki.fhclxb.20180328.004
Compendex references: YES
Database: Compendex
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228. Hydrogen adsorption and storage of pristine and metal decorated hexagonal GaN monolayer: A first-principles study

Accession number: 20200508093223
Authors: Chen, Guo-Xiang (1); Li, Si-Qi (2); Fan, Xiao-Bo (2); Zhang, Jian-Min (1)
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) College of Physics and Information Technology, Shaanxi Normal University, Xi'an, Shaanxi; 710062, China
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Volume: 11209
Part number: 1 of 1
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Document type: Conference article (CA)
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Conference date: August 6, 2019 - August 9, 2019
Conference location: Xi'an, China
Conference code: 156655
Publisher: SPIE
Abstract: Using the first-principles calculations based on density functional theory (DFT-D2 method), we systematically study the structural, energetic and electronic properties of hydrogen atom adsorbed on pristine and metal atom (Li, Na, K, Ni, Pd and Pt) decorated GaN monolayer (GaN-ML). The results show that the metal decorated GaN-ML substrates shows a significant enhancement of adsorption the hydrogen atom than the pristine GaN-ML. Therefore, the use of metal-decorated gallium nitride for hydrogen storage improve the hydrogen storage effic. © 2019 SPIE.
Number of references: 25
Main heading: Monolayers
Controlled terms: Calculations - Gas adsorption - Platinum compounds - Atoms - Gallium nitride - Density functional theory - Electronic properties - III-V semiconductors - Hydrogen storage - Metals
Uncontrolled terms: dft-d2 - Energetic and electronic properties - First-principles calculation - First-principles study - Hexagonal GaN - Hydrogen adsorption - Hydrogen adsorption and storages - Hydrogen atoms
Classification code: 522 Gas Fuels - 712.1 Semiconducting Materials - 802.3 Chemical Operations - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
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Compendex references: YES
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229. The study of surfactant huff and puff of horizontal well with SRV in tight oil reservoirs

Accession number: 20191506773438
Authors: Weirong, Li (1); Zhenzhen, Dong (1); Gang, Lei (2); Cai, Wang (3); Huijie, Wang (4)
Author affiliation: (1) Xi'an Shiyou University, China; (2) King Fahd University of Petroleum and Minerals, Saudi Arabia; (3) Research Institute of Petroleum Exploration and Development, Petrochina, China; (4) Peking University, China
Source title: International Petroleum Technology Conference 2019, IPTC 2019
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Report number: IPTC-19151-MS
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Conference name: International Petroleum Technology Conference 2019, IPTC 2019
Conference date: March 26, 2019 - March 28, 2019
Conference location: Beijing, China
Conference code: 146421
Publisher: International Petroleum Technology Conference (IPTC)
Abstract: A local refined model, using micro-seismic data to model fracture geometry, is presented to study huff-n-puff surfactant injection in a tight oil reservoir. The goal of this study is to understand the key parameters that control the surfactant huff-n-puff performance in tight oil reservoirs. In this new approach, natural fractures in tight oil reservoir is described by dual permeability model, and stimulated reservoir volume (SRV) based on micro-seismic datais is modeled by local refined grid. In the study, sensitivity analysis is carried out to optimize oil recovery, such as wettability change, interfacial tension, surfactant adsorption, huff-n-puff cycle, etc. The results indicate that surfactant injection is a favorable method to mobilize oil in tight oil reservoirs; wettability alteration and interfacial tension of surfactant are the dominant mechanisms for the oil recovery through surfactant injection; surfactant adsorption is a key element to the success of the wettability alteration process; and soaking time does not have obvious impact on recovery. The incremental oil recovery factor over primary production for 15 years of total production is up to 3.5% of OOIP that doubles the recovery from the primary production. The study gives new method to study surfactant injection in the tight oil reservoirs when micro-seismic data available. It can be helpful for modeling other EOR process in tight

oil reservoirs. The results also can guide surfactant injection in field development for similar tight oil field. © 2019, International Petroleum Technology Conference
Number of references: 13
Main heading: Surface active agents
Controlled terms: Sensitivity analysis - Infill drilling - Fracture - Seismic waves - Gasoline - Seismic response - Horizontal wells - Petroleum reservoir engineering - Wetting
Uncontrolled terms: Dominant mechanism - Dual permeability model - Fracture geometries - Natural fracture - Primary production - Stimulated reservoir volumes - Surfactant adsorption - Wettability alteration
Classification code: 484 Seismology - 484.2 Secondary Earthquake Effects - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 803 Chemical Agents and Basic Industrial Chemicals - 921 Mathematics - 951 Materials Science
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230. A novel hybrid model on the prediction of time series and its application for the gold price analysis and forecasting

Accession number: 20192006923419
Authors: E, Jianwei (1); Ye, Jimin (1); Jin, Haihong (2)
Author affiliation: (1) School of Mathematics and Statistics, Xidian University, Xian, Shaanxi; 710071, China; (2) Manth Department, School of Science, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Ye, Jimin(jmye@mail.xidian.edu.cn)
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Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: Gold, as a dominant ingredient in financial market, has gripped a large quantities of the financiers and scholars to research the formation mechanism of its price. Academic circles spring up plenty of methods to analyze and predict the gold price, such techniques are based on linear regression (MLR), support vector machine (SVM), artificial neural network (ANN), respectively. However, the existing methods cannot track the random and nonlinear features of the gold price well. The accurate and effective estimation models are acceptable for researching the temporal sequence, at the same time, it will be a powerful tool for governments and investors to formulate strategies. In this paper, a novel combination technique is put forward based on independent component analysis (ICA)and gate recurrent unit neural network (GRUNN)methods, which called ICA-GRUNN. In the first place, due to the ICA is multichannel mixed-signal analysis technique, variational mode decomposition (VMD)technique is utilized to decompose the original temporal series into virtual multichannel mixed-signal. Next, statistically independent components (ICs)are separated out from the time sequence via ICA, and then, the influence factors of the gold price are analyzed from the aspect of ICs. The results demonstrate that the fluctuation of the gold price will be interrupted by long-term trends, cyclic recurrent factors and random events. Thirdly, applying GRUNN on ICs to acquire the prediction series of independent components (ICPs)and the forecasting result of the gold price is the combination of the ICPs. Finally, comparison experiments indicate that ICA-GRUNN provides prediction with high accuracy and outperforms the benchmark methods, autoregressive integrated moving average (ARIMA), radial basis function neural network (RBFNN), long short term memory neural network (LSTM), GRUNN and ICA-LSTM. © 2019 Elsevier B.V.
Number of references: 49
Main heading: Forecasting
Controlled terms: Support vector machines - Long short-term memory - Independent component analysis - Time series analysis - Radial basis function networks

Uncontrolled terms: Auto-regressive integrated moving average - Gold prices - Hidden state - Independent component analysis(ICA) - Independent components - Mixed signal analysis - Mode functions - Radial basis function neural networks
Classification code: 723 Computer Software, Data Handling and Applications - 922.2 Mathematical Statistics
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231. A cationic tetrahedral Zn(II) cluster based on a new salicylamide imine multidentate ligand: Synthesis, structure and fluorescence sensing study

Accession number: 20193407331415
Authors: Meng, Huan-Huan (1); Wang, Cai-Yun (1); Xi, Wei (1); Song, Xue-Qin (1); Wang, Li (2)
Author affiliation: (1) School of Chemical and Biological Engineering, Lanzhou Jiaotong University, Lanzhou, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Dalton Transactions
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Pages: 12326-12335
Language: English
ISSN: 14779226
E-ISSN: 14779234
CODEN: DTARAF
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: A monocationic ZnII tetrahedral cluster, [Zn4L3(μ3-OH)]·NO3·1.25H2O (Zn4L3) based on a new salicylamide imine ligand H2L, H2L = 1-(2-hydroxy-3-methoxy-benzamido)-3-(2-hydroxy-3-methoxy-benzylideneamino)-propane, has been prepared. Single crystal X-ray analysis reveals that three deprotonated ligands L2- chelate three Zn(ii) centres with their salicylamide moiety in such a way that the three salicylimine groups attached to the other side of the three chelates are converged to bind another Zn(ii) centre to provide a tetrahedral cluster with two phenyl groups of the same ligand L2- being close enough to present a strong intramolecular ππ stacking effect. Fluorescence studies indicate that Zn4L3 is stable in water and exhibits highly sensitive and selective recognition of phosphates against other common anions including CO32-, HCO3-, NO3-, F-, Cl-, Br-, I-, HSO4-, SO42-, OAc-, BF4-, ClO4- and CF3SO3- in HEPES buffer solution (pH = 7.4) + DMSO (V:V = 1:9). The excellent sensing capability of Zn4L3 for phosphate against other common anions with a low detection limit of 0.15 μM renders it a candidate probe for phosphate detection. Furthermore, the observed fluorescence quenching responses of Zn4L3 towards phosphates were highly reversible. The possible sensing mechanisms for phosphate detection by Zn4L3 was investigated by means of 1H NMR, UV-Vis spectra and high-resolution ESI-MS spectra and the results indicate that phosphates could exclusively decompose Zn4L3 to release H2L in HEPES buffer solution (pH = 7.4) + DMSO (V:V = 1:9). © The Royal Society of Chemistry 2019.
Number of references: 80
Main heading: Zinc compounds
Controlled terms: Ligands - Single crystals - Amides - Energy dispersive X ray analysis - Quenching - Chelation - Phosphates - Fluorescence - X ray diffraction analysis
Uncontrolled terms: Fluorescence sensing - Fluorescence studies - Low detection limit - Multidentate ligands - Phosphate detections - Selective recognition - Single crystal X-ray analysis - Tetrahedral clusters

Classification code: 537.1 Heat Treatment Processes - 741.1 Light/Optics - 801 Chemistry - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds - 933.1 Crystalline Solids - 944.8 Radiation Measurements
DOI: 10.1039/c9dt01376h
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

232. The mechanical anisotropy of directionally solidified Mg-4 wt.% Zn alloy under compression test

Accession number: 20192807168135
Authors: Jia, Hongmin (1, 2); Feng, Xiaohui (2); Yang, Yuansheng (2)
Author affiliation: (1) Xi'an Shiyou University, School of Materials Science and Engineering, Xi'an; 710065, China; (2) Institute of Metal Research, Chinese Academy of Sciences, Shenyang; 110016, China
Corresponding author: Yang, Yuansheng(ysyang@imr.ac.cn)
Source title: Materials Science and Engineering: A
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Volume: 762
Issue date: 5 August 2019
Publication year: 2019
Article number: 138104
Language: English
ISSN: 09215093
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The mechanical anisotropy of directionally solidified Mg-4 wt.% Zn alloy was studied under compression test at room temperature. The results show that directionally solidified Mg-4 wt.% Zn has higher compression strength and work hardening rates when compression axis is parallel to the growth direction, which is mainly due to the formation of {101#2} extension twins. Besides, the microstructural evolution in the process of plastic deformation was also investigated. When the compression axis is parallel to the growth direction, plastic deformation of the alloy starts with multi-slip systems and {101#2} twins are activated as the strain increases. The interactions among the twins, matrix and dislocations result in the occurrence of sub-grains and the fragmentation of columnar grains. © 2019 Elsevier B.V.
Number of references: 24
Main heading: Plastic deformation
Controlled terms: Anisotropy - Compression testing - Magnesium alloys - Microstructural evolution - Strain hardening - Zinc alloys
Uncontrolled terms: Compression axis - Compression strength - Deformation twin - Directionally solidified - Growth directions - High compressions - Mechanical anisotropy - Mg alloy - Work hardening rate - Zn alloys
Classification code: 537.1 Heat Treatment Processes - 542.2 Magnesium and Alloys - 546.3 Zinc and Alloys - 549.2 Alkaline Earth Metals - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.msea.2019.138104
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

233. Study on fracture toughness of mode I of shale based on micro-mechanical test

Accession number: 20193407347559
Title of translation: I
Authors: Han, Qiang (1, 2, 3); Qu, Zhan (1, 2, 3); Ye, Zhengyin (3); Dong, Guangjian (4)
Author affiliation: (1) College of Petroleum Engineering, Postdoctoral Innovation Base, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; 710065, China; (3) School of Aeronautics/Center for Postdoctoral Studies, Northwestern

Polytechnical University, Xi'an; 710072, China; (4) Petroleum Engineering School, Southwest Petroleum University, Chengdu; 610500, China
Source title: Lixue Xuebao/Chinese Journal of Theoretical and Applied Mechanics
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Publication year: 2019
Pages: 1245-1254
Language: Chinese
ISSN: 04591879
CODEN: LHHPAE
Document type: Journal article (JA)
Publisher: Chinese Society of Theoretical and Applied Mechanics
Abstract: Fracture toughness of mode I (KIC) is one of the important mechanical parameters for hydraulic fracturing of shale gas reservoir. Due to the heterogeneity of shale composition, the conventional mechanical measurement has some problems such as large sample volume, discontinuous mechanical interpretation parameters, and low interpretation accuracy. One of the challenges is to obtain the fracture characteristics of shale in time to ensure the safety and efficiency of engineering construction. In this paper, research on fracture toughness of mode I of shale is performed based on micro-indentation. It can be used to study the mechanism of shale micro-crack initiation, development and formation of macro-crack, and to predict the macro-parameters of shale. Based on the analysis of multi-scale composition of shale, the fracture toughness tests with pyramid indenter (Vickers indenter and Berkovich indenter) were performed by microindentation. The relationship between residual indentation and indenter was evaluated, and the effect of experimental load on shale micro-fracture was analyzed. The optimization of indenter parameter also was discussed. The fracture toughness of shale is evaluated at meso-scale. The applicability of the micro-indentation test was evaluated, based on a comparative analysis with the results of the Brazil disc test. The results show that t the fluctuation of fracture toughness obtained by micro-indentation is slight when load is within the effective range. When load is too large, the fracture toughness of mesoscale is gradually reduced due to local drop-cuts on the indentation area. The average value of KIC obtained by microindentation is 0.86 MPa•#m, and the average value obtained by Brazilian disc test is 0.92 MPa•#m. The heterogeneity of shale composition results in more dispersed meso-mechancial measurement than macroscopic measurement. Microindentation test can be used to characterize shale fracture toughness of mode I and perform macroscopic prediction. It provides a new method for effectively solving shale gas hydraulic fracturing.
Number of references: 39
Main heading: Fracture toughness
Controlled terms: Petroleum reservoirs - Shale gas - Fracture - Indentation - Cracks - Hydraulic fracturing
Uncontrolled terms: Engineering constructions - Fracture characteristics - Fracture toughness tests - Influencing factor - Macroscopic measurements - Mechanical interpretations - Micro-indentation tests - Safety and efficiencies
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 951 Materials Science
DOI: 10.6052/0459-1879-18-283
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

234. CFD modeling of the effects of particle shrinkage and intra-particle heat conduction on biomass fast pyrolysis

Accession number: 20191606777326
Authors: Zhong, Hanbin (1); Xiong, Qingang (2); Zhu, Yuqin (1); Liang, Shengrong (1); Zhang, Juntao (1); Niu, Ben (1); Zhang, Xinyu (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) IT Innovation Center, General Motors, Warren; MI; 48092, United States
Corresponding author: Xiong, Qingang(qgxiong@126.com)
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Pages: 236-245
Language: English
ISSN: 09601481
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: This study numerically characterizes the combined effects of particle shrinkage and intra-particle heat conduction on biomass fast pyrolysis using computational fluid dynamics (CFD). The so-called multi-fluid model (MFM) was employed to simulate hydrodynamics and biomass fast pyrolysis was modeled by a lumped kinetics. The particle shrinkage and intra-particle heat conduction were modeled through modification of the diameter of biomass phases and reaction rate constant. Four cases with different combinations of particle shrinkage and intra-particle heat conduction were designed and their performances regarding product yields were compared. The hydrodynamics and reaction behaviors in the reactor were predicted. The distributions of particle diameter and density, product yields, and char properties were analyzed and compared with the experiments. The mechanisms for the effects of these two models were revealed. Both the particle shrinkage and intra-particle heat conduction effects lead to lower tar yield and higher char yield. The predicted product yields considering both models are in the best agreement with the experiment results. © 2019 Elsevier Ltd
Number of references: 35
Main heading: Biomass
Controlled terms: Rate constants - Shrinkage - Computational fluid dynamics - Heat conduction - Fluidized beds - Hydrodynamics - Pyrolysis
Uncontrolled terms: CFD modeling - Combined effect - Fast pyrolysis - Heat conduction effects - Multi-fluid models - Particle diameters - Product yields - Reaction behavior
Classification code: 641.2 Heat Transfer - 723.5 Computer Applications - 802.2 Chemical Reactions - 931.1 Mechanics - 951 Materials Science
DOI: 10.1016/j.renene.2019.04.006
Funding Details: Number: 2018D-5007-0402, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: SKLHOP201804, Acronym: -, Sponsor: State Key Laboratory of Heavy Oil Processing;
Funding text: Financial supports from the State Key Laboratory of Heavy Oil Processing (No. SKLHOP201804) and PetroChina Innovation Foundation (No. 2018D-5007-0402) were greatly appreciated.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

235. Energy price prediction based on independent component analysis and gated recurrent unit neural network

Accession number: 20194307578781
Authors: E, Jianwei (1); Ye, Jimin (1); He, Lulu (1); Jin, Haihong (2)
Author affiliation: (1) School of Mathematics and Statistics, Xidian University, Xian; Shaanxi; 710071, China; (2) Manth Department, School of Science, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Ye, Jimin(jmye@mail.xidian.edu.cn)
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Issue date: 15 December 2019
Publication year: 2019
Article number: 116278
Language: English
ISSN: 03605442
CODEN: ENEYDS
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The changes of energy prices are exercising ever deeper influence on the world economic pattern. Meanwhile, due to the inherent non-stationarity and non-linear characteristics of energy prices, improving the prediction accuracy of the energy price is perceived as a challenging area to work in. Inspired by this, a novel hybridization of multi-scale model for predicting the energy price based on independent component analysis (ICA), gated recurrent unit neural network (GRUNN) and support vector regression (SVR), which is abbreviated to IGS, is proposed. Firstly,

the energy price is decomposed into several intrinsic mode functions (MFs) by variational mode decomposition (VMD) technique. Then, MFs are modeled through ICA to separate out independent components (ICs) that reflect the inherent features of energy price. Secondly, applying the GRUNN model to the ICs for predicting the inner driving features, each of the predicted features may represents the future trends of different factors of the original data. Finally, by replacing the conventional linear combination or regression with SVR, the forecasting results are integrated into the prediction of energy price. Experiments on three types energy price series: natural gas price, crude oil price and carbon price demonstrate the validity and reliability of the improved IGS. © 2019 Elsevier Ltd
Number of references: 48
Main heading: Variational mode decomposition
Controlled terms: Forecasting - Recurrent neural networks - Costs - Independent component analysis - Natural gas - Regression analysis
Uncontrolled terms: Energy prices - Independent component analysis(ICA) - Independent components - Intrinsic Mode functions - Mode decomposition - Multi-scale Modeling - Nonlinear characteristics - Support vector regression (SVR)
Classification code: 522 Gas Fuels - 716.1 Information Theory and Signal Processing - 911 Cost and Value Engineering; Industrial Economics - 922.2 Mathematical Statistics
DOI: 10.1016/j.energy.2019.116278
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

236. A Study on Moving Window Adaptively Weighting Estimation Method

Accession number: 20193907463523
Authors: Gao, Yi (1); Gao, Ya (2); Mao, Yanhui (1)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Electronic Information Engineering, Xi'An Technological University, Xi'an, Shaanxi; 710021, China
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Part number: 1 of 1
Issue title: Proceedings of 2019 IEEE International Conference on Mechatronics and Automation, ICMA 2019
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Publication year: 2019
Pages: 198-202
Article number: 8816279
Language: English
ISBN-13: 9781728116983
Document type: Conference article (CA)
Conference name: 16th IEEE International Conference on Mechatronics and Automation, ICMA 2019
Conference date: August 4, 2019 - August 7, 2019
Conference location: Tianjin, China
Conference code: 151420
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: The paper gives a new moving window random adaptively weighting adaptively estimation method. This new method adopts the concept of weighting estimation with moving window to control predicted residuals and the observational residuals for resisting the disturbances on observations and the system model errors. The theories and methods of moving window adaptively weighting estimation can estimated the covariance matrix of the observational residuals and the innovation vectors. From the experimental results and its comparisons that can demonstrate this proposed moving window random adaptively weighting adaptively estimation method cannot only control the observational error vector and predicted residual vector of the covariance matrix, but also it can effectively resist the disturbances of system error. By the calculation it can be obtained this method is much better than the traditional Kalman filtering method and adaptive filtering method. © 2019 IEEE.
Number of references: 11
Main heading: Adaptive filtering

Controlled terms: Errors - Kalman filters - Covariance matrix - Adaptive filters
Uncontrolled terms: Dynamic navigations - Estimation methods - Kalman filtering method - Kalman-filtering - Moving window - Observational errors - Predicted residuals - System modeling
Classification code: 921 Mathematics
DOI: 10.1109/ICMA.2019.8816279
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

237. CFD Simulation of Wet Fluidized Beds Using TFM with Variable Particle-Particle Restitution Coefficient

Accession number: 20224613127778
Authors: Zhong, Hanbin (1); Xiong, Qingang (2); Zhang, Juntao (1); Zhu, Yuqin (1); Liang, Shengrong (1); Zhang, Xinyu (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Shaanxi, Xi'an; 710065, China; (2) It Innovation Center, General Motors, Warren; MI; 48092, United States
Corresponding author: Xiong, Qingang
Source title: Fluidization XVI
Abbreviated source title: Fluid.
Part number: 1 of 1
Issue title: Fluidization XVI
Issue date: 2019
Publication year: 2019
Pages: 238-240
Language: English
ISBN-13: 9781713807322
Document type: Conference article (CA)
Conference name: 16th Fluidization Conference 2019
Conference date: May 26, 2019 - May 31, 2019
Conference location: Guilin, China
Conference code: 183522
Publisher: AIChE
Database: Compendex
Data Provider: Engineering Village

238. The PEk Algorithm of Solving the Quasi-Block Tridiagonal Systems (*Open Access*)

Accession number: 20193107262455
Authors: Xuefei, Lu (1); Fengjuan, Dong (1)
Author affiliation: (1) College of Science xi'An Petroleum University xi'An, 710065, China
Corresponding author: Xuefei, Lu(luxuefei@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1213
Part number: 3 of 5
Issue: 3
Issue title: International Conference on Advanced Algorithms and Control Engineering, ICAACE 2019 - Algorithms and Data Structures
Issue date: June 19, 2019
Publication year: 2019
Article number: 032003
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 2nd International Conference on Advanced Algorithms and Control Engineering, ICAACE 2019
Conference date: April 26, 2019 - April 28, 2019

Conference location: Guilin, China
Conference code: 148935
Publisher: IOP Publishing Ltd
Abstract: In this paper, the PEk method of solving special linear algebraic systems-block quasi-tridiagonal systems is presented. On the condition that the coefficient matrix is Hermitian positive definite, the solvability and convergence of the new method are proved, and the selection range for the parameters k is also given. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Algebra
Uncontrolled terms: Block-tridiagonal systems - Coefficient matrix - Hermitians - Linear algebraic systems - Positive definite - Solvability and convergences - Tridiagonal systems
Classification code: 921.1 Algebra
DOI: 10.1088/1742-6596/1213/3/032003
Funding Details: Number: 2017JQ4005, Acronym: -, Sponsor: -; Number: 41802166, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The paper was founded by Xi'an Petroleum University Teaching Reform Project, research on advanced mathematics curriculum system and teaching methods for international students. 0309-13105020; Shaanxi Provincial Natural Science Basic Research Program Youth Project, 2017JQ4005; Quantitative characterization of micro-scale pore throat heterogeneity in tight sandstone reservoirs; National Natural Science Foundation of China (41802166), the effect of full-scale pore-throat distribution and micro-scale heterogeneity on the occurrence of fluid in tight sandstone reservoirs.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

239. Experimental and numerical study of erosion in a non-Newtonian hydraulic fracturing fluid

Accession number: 20190106336338
Authors: Wang, Zhiguo (1); Zhang, Jun (2); Shirazi, Siamack A. (2); Dou, Yihua (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) The Erosion/Corrosion Research Center, The University of Tulsa, OK; 74104, United States
Corresponding author: Zhang, Jun(jun-zhang@utulsa.edu)
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Issue date: 15 March 2019
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Pages: 1-8
Language: English
ISSN: 00431648
CODEN: WEARAH
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Erosion in hydraulic fracturing fluid is investigated utilizing Computational Fluid Dynamics (CFD) and with comparison to new experimental data for sand in shear thinning non-Newtonian fluids. A grid optimized CFD-based erosion prediction procedure is applied utilizing Dense Discrete Phase Model (DDPM) and one-way coupling model. The effect of different turbulence models on flow modeling, sand particle transport and impact characteristics are also examined. Constant viscosity fluid and power law constitutive equations are implemented and their capability in predicting erosion is examined by comparison to experimental data gathered in this investigation. This investigation has shown that significant error can arise from utilizing constant viscosity model to predict erosion resulting from particles entrained in non-Newtonian fluids. Thus, this investigation has resulted in selecting the best CFD approach and model combination for predicting erosion in this hydraulic fracturing non-Newtonian fluid. © 2018 Elsevier B.V.
Number of references: 28
Main heading: Erosion
Controlled terms: Shear thinning - Constitutive equations - Hydraulic fracturing - Non Newtonian flow - Computational fluid dynamics - Non Newtonian liquids - Viscous flow - Fracturing fluids - Flow measurement - Forecasting - Turbulence models - Rheology

Uncontrolled terms: Discrete phase model - Erosion predictions - Experimental and numerical studies - Impact characteristics - Model combination - Non-Newtonian fluids - Power-law constitutive equation - Viscosity modeling
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 723.5 Computer Applications - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 943.2 Mechanical Variables Measurements
DOI: 10.1016/j.wear.2018.12.080
Funding Details: Number: -, Acronym: TUCoRE, Sponsor: Tulsa University Center of Research Excellence, Tulsa University; Number: -, Acronym: TU, Sponsor: University of Tulsa; Number: 51674199, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors wish to acknowledge the support of National Natural Science Foundation of China (No. 51674199) and the Visiting Scholar Plan by Young Teachers for Advanced Study Abroad of SXYU. Drs. Zhang and Shirazi also acknowledge the support of the University of Tulsa Erosion/Corrosion Research Center (E/CRC) member companies.The authors wish to acknowledge the support of National Natural Science Foundation of China (No. 51674199) and the Visiting Scholar Plan by Young Teachers for Advanced Study Abroad of SXYU . Drs. Zhang and Shirazi also acknowledge the support of the University of Tulsa Erosion/Corrosion Research Center (E/CRC) member companies.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

240. Toughened high-flow polypropylene with polyolefin-based elastomers (*Open Access*)

Accession number: 20200708159438
Authors: Wang, Xiong (1); Hu, Sheng (2); Guo, Yi (1); Li, Guangquan (1); Xu, Renwei (1)
Author affiliation: (1) Lanzhou Petrochemical Research Center, Petrochemical Research Institute, PetroChina, Lanzhou; 730060, China; (2) College of Chemical and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Xiong(wangxiong1@petrochina.com.cn)
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Volume: 11
Issue: 12
Issue date: December 1, 2019
Publication year: 2019
Article number: 1976
Language: English
E-ISSN: 20734360
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: Polyolefin is themostwidely used and versatile commodity polymer. In thiswork, three types of polyolefin-based elastomers (PBEs) were adopted to toughen a high-flow polypropylene to improve its overall performance. The chain microstructures of these PBEs, including ethylene/1-octene (E/O) random copolymer from Dow Chemical0s polyolefin elastomer (POE), olefin block copolymers (OBCs) of E/O from Dow, and ethylene/propylene random copolymer from ExxonMobil's propylene-based elastomer, were elucidated by GPC, 13C NMR, TREF, and DSC techniques. The mechanical, thermal and optical properties, and morphology analysis of the PP/PBE blends were also studied to investigate the tougheningmechanismof these PBEs. The results showed that all three types of PBEs can effectively improve the Izod impact strength of the PP/PBE blends by the addition of the rubber compositions, at the cost of the stiffness. PBE-1 and PBE-2 were found to have a great stiffness-toughness balance with about 1700 MPa of flexural modulus, about 110 °C of HDT and 3.6 kJ/m2 of impact strength on the prepared PP/PBE blends by forming separated rubber phase and refined spherulite crystals. As a result, the OBC with alternating hard and soft segments could achieve a similar toughening effect as the E/P random copolymer. Surprisingly, no obvious rubber phase separation was observed in the PP/PBE-4 blend, which might be due to the good compatibility of the E/P random chains with the isotactic PP; therefore, the PP/PBE blend obtains great toughness performance and optical transparency with the highest Izod impact strength of 4.2 kJ/m2 and excellent transparency. © 2019 by the authors.
Number of references: 34
Main heading: Polypropylenes
Controlled terms: Phase separation - Propylene - Stiffness - Rubber - Transparency - Morphology - Ethylene - Blending - Block copolymers - Impact strength
Uncontrolled terms: Ethylene/propylene random copolymers - Izod impact strength - Morphology analysis - Olefin block copolymers - Optical transparency - Polyolefin elastomers - Rubber composition - Toughening effects

Classification code: 641.1 Thermodynamics - 741.1 Light/Optics - 802.3 Chemical Operations - 804.1 Organic Compounds - 815.1 Polymeric Materials - 815.1.1 Organic Polymers - 818.1 Natural Rubber - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 1.70e+09Pa, Temperature 3.83e+02K
DOI: 10.3390/polym11121976
Funding Details: Number: 18-LH-07-24-01, Acronym: -, Sponsor: -; Number: -, Acronym: PetroChina, Sponsor: PetroChina Company Limited;
Funding text: Acknowledgments: The financial support from PetroChina Company limited is gratefully acknowledged. The authors would like to thank Prof. Haiyang Gao from Sun Yat-Sen University (Guangzhou, China) for conducting 13C NMR analysis.This work was financially supported by PetroChina Refining and Petrochemicals Company (18-LH-07-24-01).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

241. Evaluating the efficiency of sub regional environmental regulations in China (*Open Access*)

Accession number: 20192607097227
Authors: Fanyong, Zhang (1, 2); Yueping, Du (1)
Author affiliation: (1) School of Economics and Management, Xi'An Shiyou University, Xi'an Shaanxi; 710065, China; (2) School of Economics and Management, Xidian University, Xi'an, Shaanxi; 710126, China
Corresponding author: Fanyong, Zhang(38389509@qq.com)
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Volume: 267
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Issue: 3
Issue title: 2019 3rd International Workshop on Renewable Energy and Development, IWRED 2019 - Energy Efficient Systems and Optimization Theory
Issue date: June 10, 2019
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Article number: 032095
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Document type: Conference article (CA)
Conference name: 2019 3rd International Workshop on Renewable Energy and Development, IWRED 2019
Conference date: March 8, 2019 - March 10, 2019
Conference location: Guangzhou, China
Conference code: 148815
Publisher: IOP Publishing Ltd
Abstract: Based on the three-stage DEA-Windows method, we evaluated the environmental regulation efficiency of 30 provinces in China from 2000-2015. Environmental regulations were efficient, with a fluctuation of about 0.66, following the order eastern regions > central regions > western regions, with significant differences between provinces. In addition, regulation efficiency was affected by the level of the local economic development, the industry structure, the FDI index, the population density, and the marketization level. Efforts should be made to strengthen environmental regulations, formulate adequate policies, and coordinate the relationship between economic development, industrial structure, FDI, and environmental regulation. © Published under licence by IOP Publishing Ltd.
Number of references: 9
Main heading: Environmental regulations
Controlled terms: Industrial economics - Population statistics - Economic and social effects - Efficiency
Uncontrolled terms: Eastern regions - Industrial structures - Industry structures - Local economic development - Population densities - Western region - Windows methods
Classification code: 454.2 Environmental Impact and Protection - 911.2 Industrial Economics - 913.1 Production Engineering - 971 Social Sciences
DOI: 10.1088/1755-1315/267/3/032095
Funding Details: Number: 2014D27, Acronym: -, Sponsor: -;

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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
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242. Prediction of corrosion inhibition efficiency of imidazoline derivatives using fuzzy artificial neural network based on quantum chemical characteristics

Accession number: 20192607099617
Title of translation:
Authors: Fan, Zheng (1); Liu, Zhao (1); Jing, Xiaoyan (1); Ji, Panpan (1); Zhao, Hui (2); Kang, Jian (2)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Fushun Petrochemical Company No.3 Refinery, CNPC, Fushun; Liaoning; 113001, China
Corresponding author: Fan, Zheng(fanzheng@xsyu.edu.cn)
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Language: Chinese
ISSN: 10006613
Document type: Journal article (JA)
Publisher: Materials China
Abstract: In order to build the complicated nonlinear relationship between quantum chemical characteristics of imidazoline derivatives and corrosion inhibition efficiency, the fuzzy artificial neural network adopting quantum chemical characteristics, including the highest occupied molecular orbital energy, the lowest unoccupied orbital energy, molecular dipole moment, single point energy, hardness, softness, nucleophilic attack index, electrophilic attack index, electron transfer parameter and the sum of static charges of non-hydrogen atoms on the imidazole ring as inputs, corrosion inhibition efficiency as outputs, was established to determine their correlation based on multi-factor variance analysis. The results revealed that there was a very significant correlation between the mentioned quantum chemical characteristics and the corrosion inhibition efficiency. With the help of above research, the obtained prediction model of Takagi-Sugeno fuzzy artificial neural network with 10-30-1 structure using momentum optimization algorithm was trained repeatedly until its mean square error less than convergence tolerance 0.005 was reached. The model output values were approximately linear with actual desired values in the training and testing stage and demonstrated superior correlation due to determination coefficient 0.9999. The good reliability of prediction model was also displayed in the validating stage. Therefore, the fuzzy artificial neural network model based on quantum chemical characteristics accurately predicted the capacities of corrosion inhibition efficiency of various imidazoline derivatives. © 2019, Chemical Industry Press. All right reserved.
Number of references: 22
Main heading: Mean square error
Controlled terms: Atoms - Fuzzy inference - Fuzzy neural networks - Molecular orbitals - Structural optimization
Uncontrolled terms: Chemical characteristic - Corrosion inhibition - Corrosion inhibition efficiency - Fuzzy artificial neural network - Imidazoline derivatives - Inhibition efficiency - Network-based - Neural-networks - Prediction modelling - Quantum chemical
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.4 Artificial Intelligence - 723.4.1 Expert Systems - 801.4 Physical Chemistry - 921.5 Optimization Techniques - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics
DOI: 10.16085/j.issn.1000-6613.2018-1478
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

243. Variation of Geldart classification in MFM simulation of biomass fast pyrolysis considering the decrease of particle density and diameter

Accession number: 20190106332717
Authors: Zhong, Hanbin (1); Xu, Fei (2); Zhang, Juntao (1); Zhu, Yuqin (1); Liang, Shengrong (1); Niu, Ben (1); Zhang, Xinyu (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Electronics Business Unit, Ansys, Inc., Austin; TX; 78746, United States
Corresponding author: Xu, Fei(fei.xu@ansys.com)
Source title: Renewable Energy
Abbreviated source title: Renew. Energy
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Issue date: May 2019
Publication year: 2019
Pages: 208-217
Language: English
ISSN: 09601481
E-ISSN: 18790682
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The multi-fluid model (MFM) has been widely used in computational fluid dynamics (CFD) simulation of biomass fast pyrolysis in the fluidized bed. After considering the variation of particle density and diameter, the Geldart classification of the formed char particles may be different with that of the virgin biomass particles due to the decrease of particle density and diameter. Thus, two or more Geldart group particles may be found in one solid phase. Normally, different gas-solid models are recommended for different Geldart particles. Therefore, in order to account the gas-solid drag of a specified solid phase with various Geldart particles, the present work applied the classification method proposed by Grace to determine the real-time particle classification in each computational cell during MFM simulation. A monotonic function which can avoid the potential discontinuous behavior was developed to combine different drag models from the inspiration of Lu-Gidaspow model. Based on the combined gas-solid drag model, the application of different drag models to the different Geldart particles in one solid phase was realized in the MFM. This method provides an option to precisely describe the gas-solid drag of the gas-solid fluidized bed reactor with the variation of Geldart classification in a specified solid phase. © 2018 Elsevier Ltd
Number of references: 36
Main heading: Fluidized beds
Controlled terms: Chemical reactors - Computational fluid dynamics - Fluid catalytic cracking - Gases - Drag - Biomass
Uncontrolled terms: Classification methods - Computational fluid dynamics simulations - Gas solid - Gas-solid fluidized bed - Geldart classification - Monotonic functions - Multi-fluid models - Particle classification
Classification code: 723.5 Computer Applications - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 931.1 Mechanics
DOI: 10.1016/j.renene.2018.11.097
Funding Details: Number: 2018D-5007-0402, Acronym: -, Sponsor: PetroChina Innovation Foundation; Number: SKLHOP201804, Acronym: -, Sponsor: State Key Laboratory of Heavy Oil Processing;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

244. Research on modify protection of metrology electronic certificate based on blockchain technology

Accession number: 20194207542889
Authors: Zhu, Yangpeng (1); He, Jiabao (1); Yuan, Kun (2); Yang, Yanmei (1)
Author affiliation: (1) School of Economic and Management, Xi'An Shiyou University, China; (2) Science and Technogy, Shiyou University, No.18 East Dianzi 2nd Road, Xian; 710065, China

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Article number: 8845467
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Conference name: 14th International Conference on Computer Science and Education, ICCSE 2019
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Conference location: Toronto, ON, Canada
Conference code: 152165
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: The metrological verification certificate is an important basis for the metrology instrument to be verified by the statutory verification agency. The verification result affects whether the measuring instrument can be used normally again. With the development of computer network technology, electric certification has been widely promoted and applied due to its low cost and easy to check characteristics. The authenticity of electric certification is the basis of practical application, how to ensure its uniqueness, integrity and Non-destructible metrology will have a significant impact on metrological verification. Blockchain technology uses a decentralized distributed network structure. Once the data information is added to the main chain through hash algorithm, Merkle tree structure, asymmetric key encryption technology and consensus mechanism verification, it will be saved and cannot be Make malicious modifying or deletion. On the basis of summarizing the blockchain anti-modifying technology, the article applies the principle and method of blockchain related technology to the feasibility of measuring electric certification to meet the requirements of ensuring the uniqueness and authenticity of electric certification. © 2019 IEEE.
Number of references: 13
Main heading: Blockchain
Controlled terms: Authentication - Trees (mathematics) - Hash functions
Uncontrolled terms: Computer network technology - Data informations - Distributed network structures - Encryption technologies - Measuring instruments - Merkle tree structures - Metrology instruments - Verification results
Classification code: 723 Computer Software, Data Handling and Applications - 723.3 Database Systems - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1109/ICCSE.2019.8845467
Funding Details: Number: 15JZ047, Acronym: -, Sponsor: -; Number: 2015R026, Acronym: -, Sponsor: -; Number: YCS18111008, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT Thanks for support from Science and Technol-ogy Department Research Plan of Shanxi province Granted number2016GY-106, Social Science Foundation of Shanxi province Granted Number 2015R026, and Education Department Research Plan of Shanxi province Granted Number 15JZ047 and Xi'an Shiyou University Postgraduate Cultivation Plan of Innovation and Practical Ability with project ID YCS18111008. We thank to reviewers for their valuable.Thanks for support from Science and Technol-ogy Department Research Plan of Shanxi province Granted number2016GY-106, Social Science Foundation of Shanxi province Granted Number 2015R026, and Education Department Research Plan of Shanxi province Granted Number 15JZ047 and Xi'an Shiyou University Postgraduate Cultivation Plan of Innovation and Practical Ability with project ID YCS18111008. We thank to reviewers for their valuable.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

245. Electrostatic Probe Differential Analysis for Temperature Distribution Diagnostics of Constricted Arc Current-carrying Region in Sheet Slanting Tungsten Electrode with Insulating Solid Wall (*Open Access*)

Accession number: 20192307005040
Title of translation:
Authors: Li, Yuanbo (1); Yang, Tao (2); Zheng, Shaoxian (1); Zhao, Xilong (1)

Author affiliation: (1) School of Mech-Electronic Technology, Lanzhou Jiaotong University, Lanzhou; 730070, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Li, Yuanbo(liyuanbo1027@163.com)
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Issue date: February 20, 2019
Publication year: 2019
Pages: 60-66
Language: Chinese
ISSN: 05776686
CODEN: CHHKA2
Document type: Journal article (JA)
Publisher: Chinese Mechanical Engineering Society
Abstract: The method is proposed to control temperature distribution of arc in ultra narrow gap welding process with combined regulation of sheet tungsten electrode and insulating solid wall, and then the lack of fusion on the corner of square groove in ultra narrow gap can be avoided. For understanding the regulating mechanism of temperature distribution of constricted arc in sheet slanting tungsten electrode with insulating solid wall, the differential analysis of electrostatic probe is applied to diagnose the constricted arc current-carrying region. The results show that the peak temperature of arc current-carrying region in sheet slanting tungsten electrode could be enhanced by constricted effect of insulating solid wall, and then the temperature distribution range would shrink in thickness direction of sheet slanting tungsten electrode; the gap width of arc discharge could be changed by the sheet slanting tungsten electrode to lead the current density concentrate on the location with smaller gap width, which cause the global shift of higher temperature in arc, and the greater constricted effect would give rise to shift further; meanwhile the degree of shift would be reduced along the direction of arc length from anode to cathode under the influence of arc electric field; the excessive constricted effect could result in the arc current density concentrating on sheet slanting tungsten electrode locally to take electrode melting, moreover the temperature of arc current-carrying region in sheet slanting tungsten electrode could not be controlled effectively with insufficient constricted effect. © 2019 Journal of Mechanical Engineering.
Number of references: 24
Main heading: Temperature distribution
Controlled terms: Probes - Tungsten - Electric discharges - Insulation
Uncontrolled terms: Arc current density - Differential analysis - Electrostatic probe - Narrow gap welding - Peak temperatures - Thickness direction - Tungsten electrodes - Welding arc
Classification code: 413 Insulating Materials - 543.5 Tungsten and Alloys - 641.1 Thermodynamics - 701.1 Electricity: Basic Concepts and Phenomena
DOI: 10.3901/JME.2019.04.060
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

246. A Novel Learning Method for Electric Circuit Course

Accession number: 20200408067866
Authors: Zhao, Xufeng (1, 2); Mu, Xiangyang (3); Zhang, Yaming (4)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (2) School of Electrical Engineering, Shaanxi University of Technology, Hanzhong, China; (3) Shaanxi key Laboratory of Measurement and Control Technology for Oil and Gas Wells, School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China; (4) Key Laboratory of Education Informalization for Nationalities, Ministry of Education, Yunnan Normal University, Kunming, China
Source title: 2019 IEEE International Conference on Computer Science and Educational Informatization, CSEI 2019
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Conference name: 2019 IEEE International Conference on Computer Science and Educational Informatization, CSEI 2019
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Conference code: 156177
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In recent years, with the rapid development of mobile Internet technology and intelligent mobile terminal equipment, mobile learning has been widely used in various teaching modes and attained good teaching effectiveness. By introducing the mobile learning mode into the electric circuit teaching in universities and combining with the traditional teaching mode, this paper discussed the notion of the application of Wechat platform to create a learning environment. Then elaborated the designing of mobile learning environment mode and the evaluation mechanism of learning effectiveness, and finally presented and analyzed the data obtained from the new teaching mode. Through nearly three years of application of the mode into the teaching for students majoring in electric automation, the mobile learning effectiveness has become gradually outstanding, compared with the learning method applied in the traditional teaching mode. The number of the students involved in mobile learning in the past three years has increased from 60% to 96.75,%. And the passing rate has risen from 50% to 86.7%. In general, the new teaching methodology has become popular with the students. © 2019 IEEE.
Number of references: 14
Main heading: Students
Controlled terms: Electric network analysis - Computer aided instruction - Terminals (electric) - E-learning - Electric network parameters - Teaching - Learning systems - Timing circuits
Uncontrolled terms: Electric automation - Learning effectiveness - Learning environments - Mobile Internet technology - Mobile Learning - Mobile learning environment - Teaching effectiveness - Wechat platform
Classification code: 703.1 Electric Networks - 703.1.1 Electric Network Analysis - 704.1 Electric Components - 713.4 Pulse Circuits - 723.5 Computer Applications - 901.2 Education
Numerical data indexing: Percentage 5.00e+01% to 8.67e+01%
DOI: 10.1109/CSEI47661.2019.8938833
Funding Details: Number: 2017JM6068, Acronym: -, Sponsor: -; Number: 16JK1604, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was supported by a grant from The Project Supported by Natural Science Basic Research Plan in Shaanxi Province of China (Program No. 2017JM6068) and Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 16JK1604).
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Database: Compendex
Data Provider: Engineering Village

247. Predicting erosion in a non-Newtonian shear-thinning jet flow with validated CFD models from PIV and PTV measurements

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Authors: Wang, Zhiguo (1); Zhang, Jun (2); Shirazi, Siamack A. (2); Dou, Yihua (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) The Erosion/Corrosion Research Center, The University of Tulsa, Tulsa; OK; 74104, United States
Corresponding author: Zhang, Jun(jun-zhang@utulsa.edu)
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Pages: 501-506
Language: English
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Document type: Journal article (JA)
Publisher: Elsevier Ltd

Abstract: In oil and gas industry, an increase in production is often achieved by injecting fracturing fluids with particles/proppants into rocks and reservoirs. There are various fracking fluids that oil and gas companies use, and some of these fracturing fluids demonstrate non-Newtonian flow behavior. In this paper, sand erosion behavior in shear-thinning carboxymethyl cellulose (CMC) solution is investigated with a jet impingement facility. Particularly, near wall flow speeds and particle impinging speeds are investigated in shear-thinning CMC fluids by Particle Image Velocimetery (PIV) and Particle Tracing Velocimetery (PTV) techniques. Computational Fluid Dynamics (CFD) are also used to predict the near wall particle impact information. The results indicate that different turbulence models resolve different near wall flow and particle impact characteristics. User Defined Functions (UDF) are developed and used to implement erosion ratio equations and simulate solid particle erosion behavior in the non-Newtonian fluid. The predictions are compared with experimental results. The results of this study can help improving erosion prediction in the hydraulic fracturing process utilizing CFD. © 2018 Elsevier B.V.
Number of references: 26
Main heading: Shear thinning
Controlled terms: Forecasting - Non Newtonian flow - Rheology - Erosion - Turbulence models - Gas industry - Public utilities - Turbulent flow - Shear flow - Velocity measurement - Computational fluid dynamics - Fracturing fluids - Hydraulic fracturing - Non Newtonian liquids - Vortex flow
Uncontrolled terms: Carboxymethyl cellulose - Erosion predictions - Hydraulic fracturing process - Non-newtonian - Particle image velocimetery - Particle transportation - Solid particle erosion - User-defined functions
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels - 631.1 Fluid Flow, General - 723.5 Computer Applications - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 943.3 Special Purpose Instruments
DOI: 10.1016/j.wear.2018.12.027
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

248. A novel acidizing technology in carbonate reservoir: In-Situ formation of CO2 foamed acid and its self-diversion

Accession number: 20193407329532
Authors: Yan, Yong-li (1); Xi, Qi (1); Una, Christian-chibuike (1); He, Bing-cheng (2); Wu, Chun-sheng (2); Dou, Long-long (2)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) No. 10 Oil Recovery factory, Changqing Oilfield Co. Ltd, CNPC, Qingcheng; 745100, China
Corresponding author: Yan, Yong-li(yylhill@163.com)
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Language: English
ISSN: 09277757
E-ISSN: 18734359
CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The serious fingering and nonuniform injectivity profile of acid liquid result from the features of heterogeneity in most carbonate reservoir, leading to a poor effect on the acidizing process. In the present contribution, for the first time, we report a novel diversion acidizing strategy that uses acid-rock reaction between the acidizing fluid itself and carbonate core to produce CO2 at supercritical state. Under the action of a mixture of foaming agent and stabilizer contained in this working fluid, a CO2 foamed acid fluid is in-situ formed in the acidizing layer, which would play a diverting role in carbonate matrix acidizing operations. Experiments on in-situ formation of CO2 microfoams

(emulsions) were performed utilizing a visible acid-rock reaction simulation device and a self-made high pressure and temperature foam generator. A series of divided-flow experiments were undertaken by the core displacement setup. Results based on these experiments indicate that with 0.5% SDBS as a foaming agent and 0.15% CMC as a stabilizing agent, the supercritical CO2 microfoams (emulsions) could be created in-situ in the process of acidizing through the carbonate reservoirs. The foamed acid has the accumulating and plugging effects, with divided-flow selectivity not only in the parallel cores of oil saturation and water saturation, but also in the parallel cores of different permeability. This foamed acid fluid could provide better diversion acidizing operations for heterogeneous carbonate formation. Finally, the mechanism of this novel diversion acidizing technology was uncovered in detail. It is suggested that the whole working process is actually an interface effect in the dynamic system of gas/liquid/solid multiphase fluid. Such findings are potentially important for a better understanding on the mechanisms of in-situ formation of CO2 foamed acid and its self-diversion. Looking out to the future, our report attempts to provide a new and efficient technology for the improvement of acid stimulation in the carbonate reservoirs. © 2019 Elsevier B.V.
Number of references: 43
Main heading: Carbon dioxide
Controlled terms: Petroleum reservoirs - Phase interfaces - Carbonation - Ostwald ripening - Petroleum reservoir engineering
Uncontrolled terms: Acidizing - Carbonate reservoir - Efficient technology - Heterogeneous carbonates - High-pressure and temperatures - In-situ formations - Microfoams - Supercritical state
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 1.50e-01%, Percentage 5.00e-01%
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Data Provider: Engineering Village

249. Non-covalent loading of ionic liquid-functionalized nanoparticles for bovine serum albumin: Experiments and theoretical analysis (*Open Access*)

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Authors: Jia, Xingang (1, 2); Hu, Xiaoling (1); Wang, Wenzhen (2); Du, Chunbao (2)
Author affiliation: (1) School of Natural and Applied Science, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Hu, Xiaoling(huxl054@163.com)
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Publication year: 2019
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Language: English
E-ISSN: 20462069
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Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Biomacromolecule-based nanomaterials have attracted much attention due to their excellent function in sensing, catalysis, medicine, biology and recognition. In this work, a silane-coupling ionic liquid, 1-(3-trimethoxysilylpropyl)-3-methylimidazolium chloride ([TMIM]Cl), was synthesized and applied to prepare ionic liquid-functionalized nanoparticles (SiO2@IL) using surface grafting technology. By employing multiple non-covalent interactions, including electrostatic interactions, hydrogen bonding and π–π stacking, the obtained functional nanoparticles were able to bind bovine serum albumin (BSA) with strong binding affinity, which has been illustrated through experiments and theoretical calculations. Moreover, the stability of SiO2@IL further demonstrated that it is promising in applications for biomacromolecule immobilization. © 2019 The Royal Society of Chemistry.
Number of references: 47

Main heading: Ionic liquids
Controlled terms: Chlorine compounds - Grafting (chemical) - Silica - Mammals - Nanoparticles - Synthesis (chemical) - Surface plasmon resonance - Hydrogen bonds - Binding energy
Uncontrolled terms: Biomacromolecule - Biomacromolecule immobilization - Bovine serum albumins - Functional nanoparticles - Functionalized nanoparticles - Methylimidazolium chloride - Non-covalent interaction - Theoretical calculations
Classification code: 761 Nanotechnology - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 933 Solid State Physics
DOI: 10.1039/c9ra02265a
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Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
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250. Numerical study on the prediction of "sweet spots" in a low efficiency-tight gas sandstone reservoir based on a 3d strain energy model (*Open Access*)

Accession number: 20205009600062
Authors: Yin, Shuai (1, 2, 3); Gao, Zhiyou (4)
Author affiliation: (1) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Chengdu University of Technology, Chengdu; 610059, China; (3) Shanxi Key Laboratory of Petroleum Accumulation Geology, School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Shandong Geo-Mineral Engineering Group Company Ltd., Jinan; 250200, China
Corresponding author: YIN, SHUAI(speedysys@163.com)
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Article number: 2933450
Language: English
E-ISSN: 21693536
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: The study of the construction of a micro-scale rupture parameter from the perspective of rock stress and strain is a frontier in geoscience. The strain energy density (U) can quantitatively characterize the probability of internal micro-scale ruptures in different types of rock. Based on this, in this paper, a systematic forecasting method for tight sandstone sweet spots in a low-amplitude tectonic zone based on U-value calculations was proposed. The specific steps are as follows. First, a geological model of the target layer was created, and a new rock mechanics parameter assignment method based on sedimentary facies control principle was proposed. Then, the palaeo-tectonic stress field of the target layer in the Yanshanian period was recovered through the boundary loading. Finally, the strain energy density distribution of the target layer was obtained based on energy conservation principle. The simulation results of the paleo-tectonic stress field show that, the distribution of horizontal stress is mainly affected by lithology and local structure, and the vertical stress is mainly affected by the burial depth. Stress diffusion occurs in some areas, which are mainly affected by lithologic mutations or complex structures. The U values of the target layers have a band-like distribution and are mainly distributed between 0.12 and 0.30 J m-3. The relationship between strain energy density and productivity of tight sandstone reservoirs was analyzed, and the criteria for distinguishing sweet spot areas based on U values were proposed. This method is applicable to strongly heterogeneous tight sandstone reservoirs in the low-amplitude tectonic zone of the Ordos Basin and have reference values for similar types of reservoirs around the world.

Number of references: 73
Main heading: Tectonics

Controlled terms: Lithology - Numerical methods - Tight gas - Strain energy - Stress analysis - Finite element method - Rock mechanics - Sandstone - Geomechanics
Uncontrolled terms: Energy conservation principle - Geological modeling - Palaeo tectonic stress - Rock mechanics parameters - Strain energy density - Tectonic stress fields - Tight gas sandstone reservoirs - Tight sandstone reservoirs
Classification code: 481 Geology and Geophysics - 481.1 Geology - 482.2 Minerals - 483.1 Soils and Soil Mechanics - 512.2 Natural Gas Deposits - 522 Gas Fuels - 921.6 Numerical Methods - 931.1 Mechanics - 951 Materials Science
DOI: 10.1109/ACCESS.2019.2933450
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Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

251. A survey of power flow calculations considering distributed generation (*Open Access*)

Accession number: 20193207296126
Authors: Wu, Xiaomeng (1, 2); Guo, Xinyu (1); Yang, Mingyue (1); Shi, Zheng (1)
Author affiliation: (1) School of Electric Engineering, Xi'An Shiyou University, China; (2) Key Laboratory of Measurement and Control Technique of Oil and Gas Wells of Shaanxi Province xi'An, China
Source title: Journal of Physics: Conference Series
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Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
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Article number: 022076
Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: With the construction of China's smart grid and the gradual implementation of the power market, the traditional centralized power grid mode has been unable to meet the demand of electricity in today's society. The introduction of distributed generation has become a new trend in the future development of power grids. Due to the introduction of distributed generation, many new node types will appear in the distribution network. It is often difficult to achieve the expected results when using traditional power flow algorithms when dealing with these nodes. Therefore, it is particularly important to study the power flow calculation of distribution networks with distributed generation. This paper discusses in detail the impact of distributed power sources on distribution networks and the current research status of distribution network power flow calculations with distributed generation. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Distributed power generation
Controlled terms: Smart power grids - Electric power transmission networks - Electric load flow
Uncontrolled terms: Current research status - Distributed power sources - Network power - Node types - Power flow algorithm - Power flow calculations - Power grids - Smart grid
Classification code: 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 706.1.2 Electric Power Distribution
DOI: 10.1088/1742-6596/1237/2/022076

Funding Details: Number: 18JS094, Acronym: -, Sponsor: -; Number: 2017081CGRC044, Acronym: -, Sponsor: -; Number: YCS18251003, Acronym: -, Sponsor: -;
Funding text: This paper is supported by the Key Project of Shaanxi Provincial Education Department(18JS094), the Science and Technology Project of Xi'an(2017081CGRC044), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project(YCS18251003).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

252. Study on treatment of acidified waste liquid by process of neutralization/oxidation/flocculation (*Open Access*)

Accession number: 20191306711594
Authors: Qu, Xuan (1); Wang, Feifei (1); Qu, Chengtun (1, 2); Yu, Tao (1, 2)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Petrochemical Pollution Control and Treatment, Beijing; 102206, China
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 227
Part number: 5 of 6
Issue: 5
Issue title: 3rd International Conference on Energy Engineering and Environmental Protection - Environmental Protection and Pollution Control
Issue date: March 4, 2019
Publication year: 2019
Article number: 052064
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 3rd International Conference on Energy Engineering and Environmental Protection, EEEP 2018
Conference date: November 19, 2018 - November 21, 2018
Conference location: Sanya, China
Conference code: 146116
Publisher: IOP Publishing Ltd
Abstract: Acidification technology is an effective measure to increase the production of oil and gas wells or stimulate water injection wells. In order to prevent residual acid from damaging and contaminating the hydrocarbon reservoir, the residual acid should be discharged to the ground for centralized treatment after acidizing process. The present experimental work focused on acidified waste liquid composition analysis of the main pollutants so as to study pH adjustment process and optimization of parameters like dose of hydrogen peroxide and polyacrylamide flocculant. The results show that neutralization-oxidation-flocculation disposal technology enables the treated acidified waste liquid to reach the standard of the combined station sewage treatment system. This study provides theoretical basis and guidance for the process of acidified waste liquid re-injection treatment, the design of sewage treatment and spot application. © Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Flocculation
Controlled terms: Oil well flooding - Liquids - Waste disposal - Injection (oil wells) - Waste treatment
Uncontrolled terms: Disposal technologies - Effective measures - Hydrocarbon reservoir - Liquid compositions - Oil and gas well - Optimization of parameters - Spot application - Water injection wells
Classification code: 452.4 Industrial Wastes Treatment and Disposal - 511.1 Oil Field Production Operations - 802.3 Chemical Operations
DOI: 10.1088/1755-1315/227/5/052064
Funding Details: Number: -, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This research was financially supported by National Science and Technology Major Project of China. (No. 2016ZX05040-003)
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex

Data Provider: Engineering Village

253. Experimental Strength of Earth-Based Construction Materials in Different Regions of China (*Open Access*)

Accession number: 20191306674615
Authors: Zhang, Kun (1); Lu, Bairu (2); Wang, Yihong (3); Lei, Zhijun (1); Yang, Zhanshen (1)
Author affiliation: (1) Infrastructure Department, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Human Settlements, Xi'an Eurasia University, Xi'an; 710065, China; (3) School of Civil Engineering, Chang'an University, Xi'an; 710061, China
Corresponding author: Zhang, Kun(491543584@qq.com)
Source title: Advances in Materials Science and Engineering
Abbreviated source title: Adv. Mater. Sci. Eng.
Volume: 2019
Issue date: 2019
Publication year: 2019
Article number: 8130743
Language: English
ISSN: 16878434
E-ISSN: 16878442
Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: According to the latest UN statistics, more than 2 billion people in the world still live in various forms of earthen buildings, including some in China. The variety of earth-based constructional materials is significant among different regions, with each region influencing the selection of local earth construction materials. In this study, earth materials from four regions of China were collected and sorted, with 10 samples from each source, and cube compressive strength tests were performed to analyze the composition and mechanical properties of the four materials, including northeast black earth, southeast red earth, northwest loess, and Xinjiang yellow sand earth. The results showed that significant differences existed in the composition of earth-based constructional materials from different regions, which have influence on the materials' compressive strength. The order from large to small of compressive strengths was loess, black earth, yellow sandy earth, and red earth. Material load-displacement curves were influenced significantly by the plasticity index, but the overall failure processes of the various samples were basically the same. © 2019 Kun Zhang et al.
Number of references: 37
Main heading: Compressive strength
Controlled terms: Building materials - Sediments
Uncontrolled terms: Constructional material - Earth construction - Earth materials - Earthen buildings - Material loads - Overall failure - Plasticity indices - Yellow sands
Classification code: 483 Soil Mechanics and Foundations
DOI: 10.1155/2019/8130743
Funding Details: Number: 51478043, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: ,is research was supported by the National Natural Science Foundation of China for the Study on the Standard Test Method of Materials and Masonry Based on Raw Soil (51478043). ,eir financial support is highly appreciated.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

254. Study on time-varying reliability analysis method (*Open Access*)

Accession number: 20200107952951
Authors: Yao, Jitao (1); Cheng, Zhengjie (1); Cheng, Kaikai (2); Chen, Liuzhuo (1)
Author affiliation: (1) College of Civil Engineering, Xi'An University of Architecture and Technology, Xi'an shanxi; 710055, China; (2) Mechanical Engineering College, Xi'An Shiyou University, Xi'an, Shanxi; 710065, China
Corresponding author: Cheng, Zhengjie(chengzhengjie_1995@163.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 330

Part number: 3 of 5
Issue: 3
Issue title: 2019 International Conference on Advances in Civil Engineering, Energy Resources and Environment Engineering - 3. Energy Science, Environmental Pollution and Pollution Control
Issue date: November 11, 2019
Publication year: 2019
Article number: 032009
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2019 International Conference on Advances in Civil Engineering, Energy Resources and Environment Engineering, ACCESE 2019
Conference date: June 28, 2019 - June 30, 2019
Conference location: Changchun, Jilin, China
Conference code: 155900
Publisher: IOP Publishing Ltd
Abstract: This paper reviewes the research on time-varying reliability of structures in recent years and sums up the problems existing in the system structure of the development of the time-varying reliability, according to the objectives and requirements of reliability theory, the paper introduces some of time-varying reliability calculation method and points out the shortages existing in the above calculation method. Moreover, it further discusses the future research direction of time-varying reliability. Finally, the paper puts forward several approaches for the time-varying reliability analysis of structure. © Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Reliability theory
Controlled terms: Reliability analysis
Uncontrolled terms: Future research directions - System structures - Time varying reliability
Classification code: 922.2 Mathematical Statistics
DOI: 10.1088/1755-1315/330/3/032009
Funding Details: Number: 2019JQ-055, Acronym: -, Sponsor: -; Number: 2016YFC0701301-01, Acronym: -, Sponsor: National Key Scientific Instrument and Equipment Development Projects of China;
Funding text: Authors wishing to acknowledge assistance from the National Key Research and Development Projects (Program 2016YFC0701301-01) and the Natural Science Basic Research Program of Shaanxi (Program No. 2019JQ-055).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

255. Calculation and Analysis on Heat Transfer Characteristics of Submerged Combustion Vaporizer at Supercritical Pressure

Accession number: 20194607689529
Authors: Pan, Jie (1); Zhang, Li (2); Bai, Jun-Hua (1); Tang, Ling-Hong (1); Li, Ran (1); Wu, Gang (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Factory of Producing and Selling Natural Gas, SINOPEC Zhongyuan Oilfield Company, Puyang; 457000, China
Source title: Kung Cheng Je Wu Li Hsueh Pao/Journal of Engineering Thermophysics
Abbreviated source title: Kung Cheng Je Wu Li Hsueh Pao
Volume: 40
Issue: 9
Issue date: September 1, 2019
Publication year: 2019
Pages: 2162-2169
Language: Chinese
ISSN: 0253231X
CODEN: KCJPDF
Document type: Journal article (JA)
Publisher: Science Press

Abstract: SCV as regasification unit is widely equipped in LNG vaporizing stations and receiving terminals. In this paper, an energy balance-based distributed parameter model considering icing effects was established for estimating the coupled heat transfer between tube-side and shell-side in SCV. Based on this model, the heat transfer characteristics of SCV under supercritical LNG pressure was numerically calculated and analyzed, and the effects of operating parameters and heat transfer enhancement measures on the thermal performance were discussed. The results indicated that SCV has good heat transfer performance under supercritical pressure, can achieve LNG gasification at low water bath temperature conditions. The ice formed outside the lower part of LNG heat transfer tube bundle due to low temperature, and the ice thickness decreases continuously along the tube length until disappears. The operation parameters including LNG pressure, operating load, inlet LNG temperature, have significantly different influences on the heat transfer characteristics of SCV. The twisted tape insert and wire coil insert can enhance the convective heat transfer of LNG flowing in heat transfer tube bundle markedly. The wire coil insert with a helix angle of 75° is a better choice than the twisted tape insert with a helix angle of 45° and the wire coil insert with a helix angle of 45° considering its effects on both heat transfer and flow resistance. © 2019, Science Press. All right reserved.
Number of references: 18
Main heading: Temperature
Controlled terms: Heat convection - Heat resistance - Liquefied natural gas - Wire
Uncontrolled terms: Convective heat transfer - Distributed-parameter model - Heat transfer and flows - Heat transfer characteristics - Heat Transfer enhancement - Numerical calculation - Submerged combustion vaporizers - Super-critical pressures
Classification code: 523 Liquid Fuels - 535.2 Metal Forming - 641.1 Thermodynamics - 641.2 Heat Transfer
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

256. Review of Physical Property Calculations of Liquid Aluminum and Alumina

Accession number: 20192907187017
Title of translation:
Authors: Xia, Sheng-Yong (1); Hu, Chun-Bo (2)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China; (2) National Key Laboratory of CombustionFlow and Thermo-Structure, Northwestern Polytechnical University, Xi'an; 710072, China
Corresponding author: Xia, Sheng-Yong(xiashengyong@xsyu.edu.cn)
Source title: Tuijin Jishu/Journal of Propulsion Technology
Abbreviated source title: Tuijin Jishu
Volume: 40
Issue: 5
Issue date: May 1, 2019
Publication year: 2019
Pages: 961-969
Language: Chinese
ISSN: 10014055
CODEN: TUJIEG
Document type: Journal article (JA)
Publisher: Journal of Propulsion Technology
Abstract: Aluminum and alumina droplets are produced in the combustion of aluminized propellant, of which precise physical properties are significant for the accurate and microscopic study on the combustion and multiphase flow in solid rocket motor. In order to employ precise physical properties in numerical simulations, the physical properties of liquid aluminum and alumina were investigated, including density, viscosity, surface tension, thermal conductivity, and isobaric mass heat capacity. The experimental studies and the property calculations at different temperatures were reviewed, and their precision and applicability were analyzed. As to the operating condition of solid rocket motor with high temperature and pressure, the physical property calculations of aluminum and alumina droplets were proposed. The obtained property calculations can be referenced by the accurate and microscopic study on the multi-physics process in solid rocket motor. © 2019, Editorial Department of Journal of Propulsion Technology. All right reserved.
Number of references: 27
Main heading: Alumina
Controlled terms: Aluminum - Aluminum powder metallurgy - Combustion - Rocket engines - Aluminum oxide - Thermal conductivity - Specific heat - Drops - Liquid metals
Uncontrolled terms: Aluminized propellants - High temperature and pressure - Liquid alumina - Liquid aluminum - Microscopic study - Multi-physics - Operating condition - Solid rocket motors

Classification code: 531.1 Metallurgy - 536 Powder Metallurgy - 541.1 Aluminum - 641.1 Thermodynamics - 654.2 Rocket Engines - 804.2 Inorganic Compounds
DOI: 10.13675/j.cnki.tjjs.180377
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

257. Synergistic effects of platinum-cerium carbonate hydroxides-reduced graphene oxide on enhanced durability for methanol electro-oxidation

Accession number: 20191106641965
Authors: Chen, Guanjun (1); Dai, Zhengfei (1); Sun, Lan (1); Zhang, Long (1); Liu, Shuai (2); Bao, Hongwei (1); Bi, Jinglei (1); Yang, Shengchun (1); Ma, Fei (1)
Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an, Shaanxi; 710049, China; (2) College of Sciences, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Dai, Zhengfei(sensdai@mail.xjtu.edu.cn)
Source title: Journal of Materials Chemistry A
Abbreviated source title: J. Mater. Chem. A
Volume: 7
Issue: 11
Issue date: 2019
Publication year: 2019
Pages: 6562-6571
Language: English
ISSN: 20507488
E-ISSN: 20507496
CODEN: JMCAET
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The durability of electrocatalysts for the methanol oxidation reaction (MOR) is currently the main concern for the commercial application of direct methanol fuel cells (DMFCs). In this work, a hybrid electrocatalytic material consisting of Pt nanoparticles, Ce(CO3)OH nanoparticles and reduced graphene oxide (rGO) has been synthesized through a facile two-step solution method. Compared to Pt/C and Pt/rGO materials, the Pt-Ce(CO3)OH/rGO electrocatalyst exhibits excellent activity and operational durability towards the MOR in alkaline solution. Impressively, an activity of higher than 52% (540 mA mg-1) is retained for the hybrid electrocatalyst after 14400 s chronoamperometric measurement, and the catalytic activity could be fully reactivated in clean KOH through a few CV cycles. The enhanced properties can be ascribed to the Ce-OH-Pt interface which could effectively promote the oxidation of carbonaceous poisons on Pt sites. Furthermore, Ce3+ in Ce(CO3)OH can also greatly promote the transformation from oxidation state Pt#+ into metallic state Pt0, favoring the oxidation reaction of methanol on Pt. The synergistic effects provide us a new strategy of structure engineering for highly efficient methanol oxidation. © 2019 The Royal Society of Chemistry.
Number of references: 58
Main heading: Electrocatalysts
Controlled terms: Electrooxidation - Cerium oxide - Durability - Methanol fuels - Potassium hydroxide - Synthesis (chemical) - Direct methanol fuel cells (DMFC) - Nanoparticles - Catalyst activity - Graphene - Platinum compounds - Methanol
Uncontrolled terms: Commercial applications - Direct methanol fuel cells (DMFCs) - Electrocatalytic materials - Enhanced properties - Methanol electrooxidation - Methanol oxidation reactions - Reduced graphene oxides (RGO) - Structure engineering
Classification code: 523 Liquid Fuels - 702.2 Fuel Cells - 761 Nanotechnology - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 933 Solid State Physics
Numerical data indexing: Time 1.44e+04s
DOI: 10.1039/c9ta00226j
Funding Details: Number: BP2018008, Acronym: -, Sponsor: -; Number: 51471130,51601142,51771144,51802252, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JZ015, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;

Funding text: We acknowledge the funding support from the National Natural Science Foundation of China (Grant No. 51771144, 51471130, 51601142, and 51802252), Natural Science Foundation of Shaanxi Province (No. 2017JZ015), 111 Project 2.0 by China (BP2018008), and Fundamental Research Funds for the Central Universities. Shengwu Guo contributed to the materials characterization in this work.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

258. Study on Seepage Characteristics and Complex Well Pattern in Low Permeability Reservoir

Accession number: 20191506743462
Authors: Jin, Lv (1, 2)
Author affiliation: (1) Chemical-Machinery Department, Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Multi-phase Flow, Xi'an Jiaotong University, Xi'an; 710049, China
Corresponding author: Jin, Lv(lvjin69@Hotmail.com)
Source title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Abbreviated source title: Proc. - Int. Conf. Intell. Transp., Big Data Smart City, ICITBS
Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Issue date: March 18, 2019
Publication year: 2019
Pages: 618-621
Article number: 8669587
Language: English
ISBN-13: 9781538653944
Document type: Conference article (CA)
Conference name: 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Conference date: January 12, 2019 - January 13, 2019
Conference location: Changsha, China
Conference code: 146381
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Experimental research on the joint development of horizontal and vertical wells is carried out in this paper. Four well patterns (VIVP, HIVP, VIHP and HIHP) were used to compare the advantages and disadvantages of water-injection and oil-production in horizontal and vertical wells. It is concluded that HIHP well pattern can form linear drive, delay injection water breakthrough time, improve sweep efficiency and reservoir recovery rate; horizontal wells are more suitable as production wells. © 2019 IEEE.
Number of references: 4
Main heading: Horizontal wells
Controlled terms: Mechanical permeability - Petroleum reservoir engineering - Low permeability reservoirs
Uncontrolled terms: Complex well - Experimental research - Joint development - Low permeability - Production wells - Recovery rate - Reservoir recovery - Seepage characteristics
Classification code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1109/ICITBS.2019.00154
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

259. HRRP Target Recognition Based on Sparse Representation (*Open Access*)

Accession number: 20193307300245
Authors: Peipei, Duan (1); Yan, Zhang (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Electrical and Information Engineering, Shaanxi University of Science and Technology, Xi'an; 710021, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.

Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
Publication year: 2019
Article number: 032021
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: When high resolution range profiles(HRRP) are used to recognize radar target, a few traditional recognition methods analyze the sparseness of HRRP samples. In order to overcome the large sample size problem and simplify the recognition procedure, sparse representation is an effective way to compress HRRP samples and extract the features. Thus, a structure redundant dictionary and a fast sparse representation algorithm are introduced to implement radar target recognition here. The simulation results show that this algorithm has higher recognition rate and better denoising performance. It is easy and practical for radar target recognition. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 9
Main heading: Radar target recognition
Controlled terms: Data mining - Signal processing
Uncontrolled terms: De-noising - High resolution range profiles - Radar target - Recognition methods - Redundant dictionaries - Sample size problems - Sparse representation - Target recognition
Classification code: 716.1 Information Theory and Signal Processing - 716.2 Radar Systems and Equipment - 723.2 Data Processing and Image Processing
DOI: 10.1088/1742-6596/1237/3/032021
Funding Details: Number: 2018SF-409, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by the Key R&D Program Projects in Shaanxi Province 2018SF-409.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

260. Continual refined isothermal adsorption of pure illite in shale with gravimetric method

Accession number: 20183905874840
Authors: Li, Teng (1, 2); Wu, Caifang (3, 4)
Author affiliation: (1) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi'an Shiyou University, Xi'an; Shannxi; 710065, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shannxi; 710065, China; (3) Key Laboratory of Coalbed Methane Resource and Reservoir Formation Process, Ministry of Education, China University of Mining and Technology, Xuzhou; Jiangsu; 221008, China; (4) School of Resources and Geosciences, China University of Mining and Technology, Xuzhou; Jiangsu; 221008, China
Corresponding author: Li, Teng(liteng2052@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 172
Issue date: January 2019
Publication year: 2019
Pages: 190-198
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: Conventional isothermal adsorption measurement (CM) and continual refined isothermal adsorption measurement (CRM) were used to investigate the methane adsorption of illite. The main differences between these two measurements are the repeated pressure during the buoyancy measurement and adsorption measurement in CRM. The results show that the adsorption isotherms of illite with CM and CRM were different, depending mainly on sample volumes calculated with various maximum buoyancy measurement pressures. The dynamic of sample volumes during the buoyancy measurement can be divided into 3 different stages. The rapid filling of helium at lower pressure stages results in an initial increase of the sample volume. With increasing test pressure, the shrinking interlayer space and decreased interparticle void volume in illite that can be compressed leading to the subsequent reduction in sample volume. Finally, when the test pressure exceeds to 5MPa, the sample volume presents stable. Combined with the volume of adsorbed phase CH4, the absolute volume that would be used to calculate the methane adsorption can be acquired. According to the mass balance equation, the modified and believable methane adsorption of illite was calculated. © 2018 Elsevier B.V.
Number of references: 54
Main heading: Buoyancy
Controlled terms: Adsorption - Adsorption isotherms - Methane
Uncontrolled terms: Adsorption measurement - Gravimetric methods - Illite - Isothermal adsorption - Mass balance equations - Methane adsorption - Sample volume - Subsequent reduction
Classification code: 802.3 Chemical Operations - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Pressure 5.00e+06Pa
DOI: 10.1016/j.petrol.2018.09.059
Funding Details: Number: 2016ZX05044001, Acronym: -, Sponsor: -; Number: 41572140, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Qinglan Project of Jiangsu Province of China;
Funding text: This work was supported by the National Major Special Project of Science and Technology of China (Grant No. 2016ZX05044001), the National Natural Science Foundation of China (Grant No. 41572140), and Qing Lan Project .
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

261. Analysis of continental shale gas accumulation conditions in a rifted basin: A case study of Lower Cretaceous shale in the southern Songliao Basin, northeastern China

Accession number: 20185106269025
Authors: Tang, Ying (1, 3); Yang, Runze (4); Yin, Shuai (2, 5); Fan, Tailiang (6); Dong, Lingfeng (7); Hou, Yunchao (6)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shandong Provincial Key Laboratory of Depositional Mineralization & Sedimentary Minerals, Shandong University of Science and Technology, Qingdao; Shandong; 266590, China; (3) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (4) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (5) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (6) School of Energy Resources, China University of Geosciences, Beijing; 100083, China; (7) Institute of Geology, China Earthquake Administration, Beijing; 100083, China
Corresponding author: Tang, Ying(tangying330@126.com)
Source title: Marine and Petroleum Geology
Abbreviated source title: Mar. Pet. Geol.
Volume: 101
Issue date: March 2019
Publication year: 2019
Pages: 389-409
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The analysis of shale gas accumulation conditions is the basis of shale gas exploration. Previous research has mainly focused on the Upper Cretaceous shale in the Songliao Basin of northeastern China, and few studies have analyzed the Lower Cretaceous shale in this area. Based on an integrated analysis of the sedimentary facies, shale samples and seismic interpretation from the Lower Cretaceous Shahezi, Yingcheng and Denglouku Formations of

the Fulongquan Depression in the Songliao Basin, the distribution of the shale and the generation, accumulation and preservation conditions of the shale gas are evaluated and discussed. Core observations and sedimentary facies analysis show that the sedimentary facies types in the Shahezi, Yingcheng and Denglouku Formations are mainly fan delta, braided river delta, sublacustrine fan and lacustrine facies. The semideep lake, shallow lake and delta front sedimentary subfacies are favorable for the deposition of shale. The study of the shale distribution indicates that the shale was mainly deposited near the maximum flooding surface of the third-order sequences, and the shales in the Shahezi and Yingcheng Formations are darker and thicker than those in the Denglouku Formation. In addition, the shale in this study area is laterally distributed in the depression belt and the steep slope belt near the boundary faults of the basin. According to the geochemistry tests, rock properties and mineral constituents, the shales in the Shahezi and Yingcheng Formations have favorable gas generation potential. Compared with the properties of the major gas-producing shales in China and the United States, the shales in the Shahezi and the Yingcheng Formations are thick and have a favorable organic matter type, high average organic matter abundance, high organic matter thermal maturity that reached a high maturation stage, high porosity and high gas contents; these properties meet the standards of industrial exploitation, and these shales can therefore be considered favorable targets for unconventional energy exploration. © 2018 Elsevier Ltd
Number of references: 69
Main heading: Gases
Controlled terms: Lakes - Petroleum prospecting - Seismology - Organic compounds - Minerals - Biogeochemistry - Shale gas - Sedimentology
Uncontrolled terms: Continental facies - Gas accumulation - Lower Cretaceous - Maximum flooding surfaces - Organic matter abundances - Preservation condition - Seismic interpretation - Songliao basin
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 484.1 Earthquake Measurements and Analysis - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 801.2 Biochemistry - 804.1 Organic Compounds
DOI: 10.1016/j.marpetgeo.2018.12.002
Funding Details: Number: 20180703, Acronym: -, Sponsor: -;
Funding text: This work was supported by Young Talent fund of University Association for Science and Technology in Shaanxi, China (20180703).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

262. First-principles Study of Intermediate Alloy Mg13Al14 and Mg17Al12

Accession number: 20200908220901
Title of translation: Mg13Al14Mg17Al12
Authors: Zhou, Yong (1); Dang, Mohan (1); Sun, Liang (1); Zhai, Wenyan (1); Dong, Hui (1); Gao, Qian (1); Zhao, Fei (1); Peng, Jianhong (2)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Physics and Electronic Information Engineering, Qinghai Nationalities University, Xining; 810007, China
Corresponding author: Sun, Liang(tottirocket@hotmail.com)
Source title: Cailiao Daobao/Materials Reports
Abbreviated source title: Cailiao Daobao/Mater. Rep.
Volume: 33
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Issue date: December 25, 2019
Publication year: 2019
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Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review
Abstract: In this paper, the crystal structure, electronic structure and mechanical properties of intermediate alloy Mg13Al14 and Mg17Al12 were studied by first-principles method. The results show that the primitive cell structure of Mg13Al14 has no thermodynamic stability, but its conventional cell structure is thermodynamically stable and its stability is higher than that of Mg17Al12; Mg13Al14 and Mg17Al12 both have strong metallic properties, Mg17Al12 has higher structural stability, Mg13Al14 has no mechanical stability; Mg13Al14 is ductile material, and Mg17Al12 is brittle material. In addition, the ability to resist shear deformation of Mg13Al14's conventional cell structure is stronger than Mg17Al12; Mg17Al12 has higher rigidity and stronger resistance to plastic deformation than Mg13Al14; both Mg13Al14 and Mg17Al12 exhibit elastic anisotropy. It is suggested that the general mechanical properties of

Mg13Al14's conventional structure are better than that of Mg17Al12, but the thermodynamics of the primitive cell is unstable. Consequently, comparing with Mg17Al12, Mg13Al14 is not conducive to improving the thermal stability of Mg-Al alloy.
Number of references: 33
Main heading: Electronic structure
Controlled terms: Magnesium alloys - Mechanical stability - Structural properties - Biomechanics - Cells - Cytology - Binary alloys - Aluminum alloys - Thermodynamic stability
Uncontrolled terms: Conventional structures - First principles - First principles method - First-principles study - Metallic properties - Mg-Al alloys - Structural stabilities - Thermodynamically stable
Classification code: 408 Structural Design - 461.2 Biological Materials and Tissue Engineering - 461.3 Biomechanics, Bionics and Biomimetics - 461.9 Biology - 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 641.1 Thermodynamics - 951 Materials Science
DOI: 10.11896/cldb.19010076
Funding Details: Number: HKDNM201811, Acronym: -, Sponsor: -; Number: YCS17211037, Acronym: -, Sponsor: -;
Funding text: (Supplementary Information) :(HKDNM201811); (YCS17211037); This work was financially supported by the Open Foundation of National Joint Engineering Research Center for Abrasion Control and Molding of Metal Materials (HKDNM201811), Xian Shiyou University Graduate Innovation and Practice Ability Training Project (YCS17211037), the Provincial Superiority Discipline of Materials Science and Engineering, Xian Shiyou University.This work was financially supported by the Open Foundation of National Joint Engineering Research Center for Abrasion Control and Molding of Metal Materials (HKDNM201811), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project (YCS17211037), the Provincial Superiority Discipline of Materials Science and Engineering, Xi'an Shiyou University.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

263. Study on rheological properties and phase-change temperature control of asphalt modified by polyurethane solid–solid phase change material

Accession number: 20194607699169
Authors: Wei, Kun (1); Wang, Xiaoqing (1); Ma, Biao (1); Shi, Wenshuo (1); Duan, Shiyu (2); Liu, Fangshu (1)
Author affiliation: (1) Key Laboratory of Ministry of Transportation Road Structure and Materials, Chang' an University, Xi'an; 710064, China; (2) Mechanical Engineering College, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wei, Kun(weikun@chd.edu.cn)
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Pages: 893-902
Language: English
ISSN: 0038092X
CODEN: SRENA4
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Polyurethane solid–solid phase change material (PCM) with low phase change temperature is synthesized via prepolymer method. The synthetic polyurethane solid–solid PCM had lower crystallinity than PTMEG2000. The polyurethane solid–solid PCM was still in solid state during the heating process, and no liquid leakage was observed. After many phase change cycles, the polyurethane solid–solid PCM exhibited good stability of phase change cycles. Hence, the asphalt modified by polyurethane solid–solid PCM was prepared by high-speed shearing method. With increasing polyurethane solid–solid PCM proportion, the high temperature deformation resistance of modified asphalt gradually increased. At low temperature (3 wt%, the specific heat capacity of the modified asphalt had an evident peak ranging from 13 °C to 25 °C. In the range of the proportion, the coefficient of the heat conductivity of the modified asphalt gradually increased with increasing PCM content. During the cooling process, the modified asphalt cooled relatively slow before the phase transition of the polyurethane solid–solid PCM. With continued decrease in the temperature, the phase transition of the polyurethane solid–solid PCM occurred, and the cooling rate of the modified asphalt further decreased. With increasing polyurethane solid–solid PCM content, the temperature control ability of modified asphalt and the efficiency of temperature control gradually increased. © 2019 International Solar Energy Society

Number of references: 27
Main heading: Temperature control
Controlled terms: Phase change materials - Temperature - Specific heat - Synthesis (chemical) - Crystallinity - Thermal conductivity - Polyurethanes
Uncontrolled terms: High temperature deformation - Low temperature performance - Modified asphalts - Phase change temperature - Prepolymer method - Rheological property - Rheology property - Solid phase changes
Classification code: 641.1 Thermodynamics - 731.3 Specific Variables Control - 802.2 Chemical Reactions - 815.1.1 Organic Polymers - 933.1 Crystalline Solids
Numerical data indexing: Temperature 2.86e+02K to 2.98e+02K
DOI: 10.1016/j.solener.2019.11.007
Funding Details: Number: 2015M572513, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: XZ201801-GD-04, Acronym: -, Sponsor: -; Number: 20170507, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology; Number: 300102218523, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities; Number: 2018-019, Acronym: -, Sponsor: -; Number: 51608044, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This research is supported by the National Natural Science Foundation of China (51608044), China Postdoctoral Science Foundation (2015M572513), Young Talent fund of University Association for Science and Technology in Shaanxi, China (20170507), Transportation Industry High-Level Technical Personnel Training project (2018-019), Science and Technology Planning Project of Tibet Autonomous Region of China (XZ201801-GD-04), and Fundamental Research Funds for the Central Universities of Chang'an University (300102218523). The authors declare that they have no conflict of interest to this work.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

264. Research Progress on Preparation of Lubricant Additives From Vegetable Oils

Accession number: 20192507059173
Title of translation:
Authors: Ding, Liqin (1, 2); Li, Mengge (1); Nian, Lili (1); Liang, Shengrong (1); Su, Biyun (1); Cui, Zhengrong (2)
Author affiliation: (1) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Pharmacy, The University of Texas at Austin, Austin; TX; 78712, United States
Corresponding author: Ding, Liqin(lqding@xsyu.edu.cn)
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Publication year: 2019
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Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Traditional petroleum-based lubrication oil additives have negative impact on environment, thus biodegradable lubricant additives from vegetable oils have attracted much attention. In this study, both the advantages and disadvantages of vegetable oils used as lubricant additives were summarized. Chemical modifications of vegetable oils through induction of sulfur, phosphorus and other chemical elements, epoxidation, cyclic carbonation, and polymerization have been studied by different researchers. These can help improve the performance of lubricant in different areas, such as anti-wear, anti-friction, anti-oxidation, viscosity index, pour point, etc. The challenges in research and development of lubricant additives from vegetable oils are also discussed. It is believed that cyclic carbonate type and multifunctional polymeric lubricant additives prepared from vegetable oils through chemical modification are the future development directions. © 2019, Editorial Office of Acta Petrolei Sinica(Petroleum Processing Section). All right reserved.
Number of references: 41
Main heading: Chemical modification
Controlled terms: Vegetable oils - Friction - Lubricants - Petroleum additives - Tribology - Wear of materials
Uncontrolled terms: Biodegradable lubricants - Cyclic carbonates - Development directions - Lubricant additives - Lubrication oil additive - Multifunction - Polymeric lubricants - Research and development

Classification code: 513.1 Petroleum Refining, General - 607.1 Lubricants - 804 Chemical Products Generally - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.3969/j.issn.1001-8719.2019.02.024
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

265. Research on Fault Diagnosis Method of Asynchronous Motor

Accession number: 20193907463752
Authors: Ya, Gao (1); Guanghui, Du (1); Yi, Gao (2); Qinling, Zhu (3); Bo, Li (4)
Author affiliation: (1) Electronic Information Engineering College, Xi'An Technological University, Xi'an, Shaanxi Province, China; (2) School of Electronic Engineering, Xian ShiYou University, Xi'an, Shaanxi Province, China; (3) Western Superconducting Technologies Co., Ltd, Zhuhai Guangdong Province, China; (4) Zhuhai Wanlida Electrical Automation Co., Ltd, Zhuhai, Shaanxi Province, China
Source title: Proceedings of 2019 IEEE International Conference on Mechatronics and Automation, ICMA 2019
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Part number: 1 of 1
Issue title: Proceedings of 2019 IEEE International Conference on Mechatronics and Automation, ICMA 2019
Issue date: August 2019
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Pages: 583-588
Article number: 8816359
Language: English
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Conference name: 16th IEEE International Conference on Mechatronics and Automation, ICMA 2019
Conference date: August 4, 2019 - August 7, 2019
Conference location: Tianjin, China
Conference code: 151420
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Reliability measurement and evaluation of industrial systems is a difficult and important problem for control engineers. Due to the large proportion of asynchronous motors in industrial production and the high cost of maintenance personnel and spare parts, this paper summarizes the online diagnosis method of asynchronous motors and expounds the current state of fault diagnosis method from different aspects through classification. © 2019 IEEE.
Number of references: 23
Main heading: Induction motors
Controlled terms: Costs - Computer aided diagnosis - Fault detection - Digital signal processing - Failure analysis
Uncontrolled terms: Fault diagnosis method - High costs - Industrial production - Industrial systems - Multiple methods - On-line diagnosis - Reliability measurements - Spare parts
Classification code: 461.1 Biomedical Engineering - 705.3.1 AC Motors - 723.5 Computer Applications - 911 Cost and Value Engineering; Industrial Economics
DOI: 10.1109/ICMA.2019.8816359
Funding Details: Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51604226, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM5064,2018JQ5009, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: Xi'an Science and Technology Bureau; Number: 2017075CG/RC038,XAGY005, Acronym: -, Sponsor: Science and Technology Bureau of Nanchang City; Number: No.2016NY-164, Acronym: -, Sponsor: Science and Technology Innovation as a Whole Plan Projects of Shaanxi Province;
Funding text: This work was supported by a grant from the Agricultural Science and Technology Research and Innovation Plan of Shaanxi Province (Grant No.2016NY-164), the National Natural Science Foundation of China (Grant No.51604226), the Xi'an city science and technology bureau (Grant No. 2017075CG/RC038 (XAGY005)), the Shaanxi Natural Science Foundation (Grant No.2018JQ5009, Grant No.2018JM5064)I thank members of my lab and many other colleagues for their input. This work was supported by a grant from the Agricultural Science and Technology Research and Innovation Plan of Shaanxi Province (Grant No.2016NY-164), the National Natural Science Foundation of China (Grant No.51604226), the Xi'an city science and technology bureau (Grant No. 2017075CG/RC038 (XAGY005)), the Shaanxi Natural Science Foundation (Grant No.2018JQ5009, Grant No.2018JM5064).
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

266. Total Dose Radiation Response of Substrate Hot Carrier for Uniaxial Strained Si Nano-Scale NMOSFET

Accession number: 20204409406052
Authors: Hao, Minru (1); Liao, Chenguang (2); Fu, Haiwei (1); Chen, Guoxiang (1)
Author affiliation: (1) Xi'an Shiyou University, Ministry of Key Laboratory on Photoelectric Oil-gas Logging and Detecting, Xi'an; 710065, China; (2) Northwest University, School of Information Technology, Xi'an; 710127, China
Source title: 2019 3rd International Conference on Radiation Effects of Electronic Devices, ICREED 2019
Abbreviated source title: Int. Conf. Radiat. Eff. Electron. Devices, ICREED
Part number: 1 of 1
Issue title: 2019 3rd International Conference on Radiation Effects of Electronic Devices, ICREED 2019
Issue date: May 2019
Publication year: 2019
Article number: 9205168
Language: English
ISBN-13: 9781728173184
Document type: Conference article (CA)
Conference name: 3rd International Conference on Radiation Effects of Electronic Devices, ICREED 2019
Conference date: May 29, 2019 - May 31, 2019
Conference location: Chongqing, China
Conference code: 163512
Publisher: Institute of Electrical and Electronics Engineers Inc.
Abstract: An analytical model of substrate hot carrier of the uniaxial strained Si Nano-scale NMOSFET has been developed due to total dose irradiation effect. The influence of total dose, geometry parameter on hot carrier substrate current was simulated by Sentaurus-TCAD. Thus, the proposed model provides good reference for research on irradiation reliability and application of strained integrated circuit of uniaxial strained Si Nano-scale NMOSFET. © 2019 IEEE.
Number of references: 13
Main heading: Hot carriers
Controlled terms: MOSFET devices - Nanotechnology - Irradiation - Substrates - Electric breakdown
Uncontrolled terms: Carrier substrate - Geometry parameter - Nano scale - NMOSFET - Strained-Si - Total dose - Total-dose irradiation - Total-dose radiation response
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology
DOI: 10.1109/ICREED49760.2019.9205168
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

267. Transition metal complexes with pyrazine amine ligand: Preparation, structure and carbon dioxide copolymerization behavior

Accession number: 20192206980510
Authors: Wang, Wen-Zhen (1); Xu, Ya-Chao (1); Wang, Li (1); Li, Lei-Lei (1); Xia, Li (1); Jia, Xin-Gang (1); Lee, Gene-Hsiang (2); Peng, Shie-Ming (2)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, 18 Dian-zi-er Road, Xi'an; 710065, China; (2) Department of Chemistry, National Taiwan University, Taipei; 106, Taiwan
Corresponding author: Wang, Wen-Zhen(wzwang@xsyu.edu.cn)
Source title: Journal of Molecular Structure
Abbreviated source title: J. Mol. Struct.
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Issue date: 5 October 2019
Publication year: 2019
Pages: 280-285
Language: English

ISSN: 00222860
CODEN: JMOSB4
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Three complexes [Fe(L)2](ClO4)2 (1)[Ni(L)2](ClO4)2 (2) and [Co(L)2](ClO4)2 (3) were synthesized by the reaction of N,N'-(4-methylpyridin-2-yl)pyrazine-2,6-diamine (L) with Fe(ClO4)2·6H2O, (Ni(ClO4)2·6H2O or Co(ClO4)2·6H2O) at room temperature, respectively. They were characterized by elemental analysis, IR spectroscopy and single crystal X-ray diffraction. The catalytic behavior of the complexes for the synthesis of propylene carbonate from propylene oxide and carbon dioxide were studied. The results show that all of them showed excellent catalytic activities with TOF as high as 2104 h-1, 2824 h-1 and 2605 h-1, respectively. Complex 2 that exhibit higher catalytic activity was taken to explore the influence of time, pressure and temperature to optimize the reaction condition in detail.

Number of references: 22
Main heading: Carbon dioxide
Controlled terms: Propylene - Single crystals - Crystal structure - Metal complexes - Coordination reactions - Synthesis (chemical) - Catalyst activity - Transition metals
Uncontrolled terms: Catalytic behavior - Coordination complex - Pressure and temperature - Propylene carbonate - Propylene oxide - Reaction conditions - Single crystal x-ray diffraction - X-ray single crystal
Classification code: 531 Metallurgy and Metallography - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.1016/j.molstruc.2019.05.013
Funding Details: Number: 16JK1598,17JK0606, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: NO.YCS17211016, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: Financial support for this study came from the Science Research Program funded by Shaanxi Provincial Education Department (Program No. 16JK1598 and No. 17JK0606) and special supporting funds from the Xi'an Shiyou University (NO.YCS17211016) in China
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

268. The convective heat transfer of fractal porous media under stress condition

Accession number: 20184706131243
Authors: Lei, Gang (1); Li, Weirong (2); Wen, Qingzhi (3)
Author affiliation: (1) College of Petroleum Engineering & Geosciences, King Fahd University of Petroleum and Minerals, Saudi Arabia; (2) Xi'an Shiyou University, China; (3) ERE & BIC-ESAT, College of Engineering, Peking University, China
Corresponding author: Lei, Gang(gang.lei@kfupm.edu.sa)
Source title: International Journal of Thermal Sciences
Abbreviated source title: Int. J. Therm. Sci.
Volume: 137
Issue date: March 2019
Publication year: 2019
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Language: English
ISSN: 12900729
CODEN: RGTHA7
Document type: Journal article (JA)
Publisher: Elsevier Masson s.r.l.
Abstract: The study of coupled convective heat transfer and deformation behavior in porous media is still a major scientific and engineering challenge, despite major technological advances in both theoretical and computational thermodynamics in the past two decades. Specifically, essential controls on convective heat transfer of porous media under stress condition are not yet definitive. In this paper, meaningful and reasonable quantitative models that manifest the most important fundamental controls on convective heat transfer of porous media under stress condition are proposed. Predictions of the normalized permeability using the theoretical models, derived from Hertzian contact theory and fractal geometry, agree well with available experimental data. The proposed model design specifically accounts for multiple key variables, including the influence of the microstructural parameters of porous media, including elastic modulus and Poisson's ratio, and as functions of rock lithology. The results presented here include (1) the heat transfer rate decreases with the increase of effective stress, and increases with the increased porous media elastic

modulus or the increased power law index for a specific effective stress, (2) the heat transfer rate increases with the increase of pore fractal dimension Df0 or the increased ratio rmin0/rmax0 for a specific effective stress. However, the relationship between the convective heat transfer coefficient and effective stress with different pore fractal dimension Df0 is complicated and not monotonic, (3) The heat transfer rate and convective heat transfer coefficient increase as expected with the increase of Nusselt number (i.e. the parameter represents the convective heat transfer in the pore) for a specific effective stress. In general, fractal convective heat transfer models illustrate mechanisms that affect coupled convective heat transfer and deformation behavior of porous media. And, the model proposed here is intended to increase efficacy of reservoir development strategies. © 2018
Number of references: 39
Main heading: Porous materials
Controlled terms: Fractal dimension - Heat convection - Elastic moduli - Lithology - Deformation - Computation theory - Heat transfer coefficients
Uncontrolled terms: Computational thermodynamics - Convective heat transfer - Convective heat transfer Coefficient - Convective heat transfer model - Heat transfer rate - Hertzian-contact theory - Microstructural parameters - Stress condition
Classification code: 481.1 Geology - 641.2 Heat Transfer - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921 Mathematics - 951 Materials Science
DOI: 10.1016/j.ijthermalsci.2018.11.017
Funding Details: Number: 2017M610706, Acronym: -, Sponsor: China Postdoctoral Science Foundation;
Funding text: The authors are grateful for financial support from the State Major Science and Technology Special Project of China during the 13th Five-Year Plan (2016ZX05014-004) and China Postdoctoral Science Foundation (2017M610706).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

269. First-principles calculations of thermoelectric pbse2 compound to predict its elastic properties

Accession number: 20193607408219
Authors: Fu, Jia (1, 2); Hou, Tian (1); Chen, Jing Rui (1)
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Laboratoire de Génie Mécanique, Institut National des Sciences Appliquées de Rennes, Rennes; 35708, France
Corresponding author: Fu, Jia(fujia@xsyu.edu.cn)
Source title: Materials Science Forum
Abbreviated source title: Mater. Sci. Forum
Volume: 956 MSF
Part number: 1 of 1
Issue title: Frontiers in Advanced Materials
Issue date: 2019
Publication year: 2019
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CODEN: MSFOEP
ISBN-13: 9783035714753
Document type: Conference article (CA)
Conference name: 2nd Academic Conference on Frontiers in Advanced Materials, ACFAM 2018
Conference date: November 2, 2018 - November 4, 2018
Conference location: Nanjing, China
Conference code: 230489
Publisher: Trans Tech Publications Ltd
Abstract: Structural stability and elastic properties of PbSe2 compound are mainly studied by first-principles method and homogenization method of the Y parameter. The optimized structural parameters at 0 GPa are a=b=6.446Å, c=7.887Å (GGA method) and a=b=6.316Å, c=7.651Å (LDA method), which are close to the theoretical and experimental values. Our calculated lattice parameters and Se-Se bond length are consistent with experimental data. PbSe2 compound is energetically stable with a good alloying ability. The elastic coefficients are firstly calculated, and then elastic moduli and Poisson's ratio are determined. Besides, Y parameter method is used to investigate changes

of the Poisson ratio, Young's modulus and shear modulus of PbSe2 within different normal orientation crystal planes. Results show that: 1) Young's modulus is 48.37 GPa from GGA and 58.87 GPa from LDA by the classical Reuss-Voigt-Hill method, which is averaged about 53.62 GPa; 2) The PbSe2 compound is ductile according to B/G ratio. The universal anisotropic index shows that PbSe2 exhibits a fairly high elastic anisotropy. © 2019 Trans Tech Publications Ltd, Switzerland.
Number of references: 33
Main heading: Calculations
Controlled terms: Structural design - Crystal orientation - Homogenization method - Bond length - Stability - Anisotropy - Elastic moduli - Elasticity
Uncontrolled terms: Anisotropic characteristics - Elastic coefficient - First principles method - First-principles calculation - PbSe2 compound - Structural parameter - Structural stabilities - Y-parameters
Classification code: 408.1 Structural Design, General - 801.4 Physical Chemistry - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 933.1.1 Crystal Lattice - 951 Materials Science
Numerical data indexing: Pressure 0.00e+00Pa, Pressure 4.84e+10Pa, Pressure 5.89e+10Pa
DOI: 10.4028/www.scientific.net/MSF.956.46
Funding Details: Number: 21671096, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: CSC, Sponsor: China Scholarship Council; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This original work was supported by the foundation of NSFC (No. 21671096), the China Scholarship Council and the start-up foundation of Xi'an Shiyou University. Thanks to Qiufeng Wang for her proofreading.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

270. Hollow-Core Fiber-Based All-Fiber FPI Sensor for Simultaneous Measurement of Air Pressure and Temperature

Accession number: 20200207991681
Authors: Liu, Yinggang (1); Wang, Yuxi (1); Yang, Danqing (1); Wu, Jianglin (2); Zhang, Ting (1); Yu, Dakuan (1); Zhenan, Jia (1); Fu, Haiwei (1)
Author affiliation: (1) Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Changqing Technology Engineering Company, Xi'an; 710021, China
Corresponding author: Liu, Yinggang(ygliu@xsyu.edu.cn)
Source title: IEEE Sensors Journal
Abbreviated source title: IEEE Sensors J.
Volume: 19
Issue: 23
Issue date: December 1, 2019
Publication year: 2019
Pages: 11236-11241
Article number: 8794831
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In paper, an all-fiber Fabry-Pérot interferometer (FPI) sensor with cascaded micro-cavities is presented to measure air pressure and temperature simultaneously. The proposed sensor mainly consists of two tiny segments of hollow-core fiber (HCF) located at the end of lead-in single mode fiber (SMF), and there is a misalignment fusion splicing between the two HCFs with different core diameter. The sensor has minor length of about 210μ m since the two HCFs lengths are about 80μm and 130μm , respectively. Because the reflection spectrum of the sensor is formed by the fiber cavity, air cavity and their combined cavity, which can be processed by methods of fast Fourier transform (FFT) and Fourier band-pass filter (FBPF), so we can analyze the corresponding responses of every cavity from the reflection spectrum of sensor for temperature and pressure variations. The experiment results show that the sensor has not only two different linear temperature sensitivities but also two different linear pressure sensitivities, which can be used to distinguish air pressure and temperature simultaneously. The validity experiment shows the relative errors of 1.0% and 1.4% are obtained in simultaneous measurements of air pressure and temperature. The advantages of

the presented sensor than other structure sensors are miniaturization, easier to manufacture and with lower fabrication cost, which is promising used in the harsh environment monitoring. © 2001-2012 IEEE.
Number of references: 15
Main heading: Fabry-Perot interferometers
Controlled terms: Atmospheric pressure - Bandpass filters - Fast Fourier transforms - Optical fiber fabrication - Single mode fibers
Uncontrolled terms: Fabrication cost - Harsh environment - Hollow core fiber - Linear pressure - Linear temperature-sensitivity - Reflection spectra - Simultaneous measurement - Temperature and pressures
Classification code: 443.1 Atmospheric Properties - 703.2 Electric Filters - 741.1.2 Fiber Optics - 921.3 Mathematical Transformations - 941.3 Optical Instruments
Numerical data indexing: Percentage 1.00e+00%, Percentage 1.40e+00%, Size 1.30e-04m, Size 8.00e-05m
DOI: 10.1109/JSEN.2019.2934738
Funding Details: Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2013JM8032, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 18JS093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: YCS18211021, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: Manuscript received June 6, 2019; revised July 27, 2019; accepted August 5, 2019. Date of publication August 12, 2019; date of current version November 13, 2019. This work was supported in part by the National Natural Science Foundation of China under Grant 61805197, in part by the Natural Science Basic Research Plan in Shaanxi Province of China under Grant 2013JM8032, in part by the Scientific Research Program through the Shaanxi Provincial Education Department of China under Grant 18JS093, and in part by the Graduate Student Innovation Fund of Xi'an Shiyou University under Grant YCS18211021. The associate editor coordinating the review of this article and approving it for publication was Dr. Anuj K. Sharma. (Corresponding author: Yinggang Liu.) Y. Liu, Y. Wang, D. Yang, T. Zhang, D. Yu, Z. Jia, and H. Fu are with the Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Xi'an Shiyou University, Xi'an 710065, China (e-mail: ygliu@xsyu.edu.cn; 772151808@qq.com; 1922550996@qq.com; 921508548@qq.com; yudakuan04@163.com; jiazhen_an@xsyu.edu.cn; hwfu@xsyu.edu.cn).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

271. Simultaneous occurrence of miscible and immiscible displacement processes during solvent displacement of heavy oil: A parametric analysis using visual capillary-tube experiments

Accession number: 20200207999405
Authors: Shi, Yu (1, 2); Babadagli, Tayfun (3)
Author affiliation: (1) University of Alberta, Canada; (2) College of Petroleum Engineering, Xi'an Shiyou University, China; (3) Civil and Environmental Engineering Department, School of Mining and Petroleum Engineering, University of Alberta, Canada
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Abbreviated source title: SPE J
Volume: 24
Issue: 4
Issue date: 2019
Publication year: 2019
Pages: 1630-1644
Language: English
ISSN: 1086055X
CODEN: SPJRFW
Document type: Conference article (CA)
Publisher: Society of Petroleum Engineers (SPE)
Abstract: Oil/solvent mixing is essential during solvent-injection applications to reduce the viscosity of oil, but mass transfer by diffusion becomes slower because the oil becomes heavier. Thus, an interface exists between the oil and solvent at certain times, being stronger in the beginning of the process. This results in an immiscible displacement controlled by the capillary forces while mixing is in progress. It is of practical and fundamental importance to determine the mechanisms responsible for the displacement of heavy oil and the behavior of solvents (acting as both immiscible and miscible displacement agents) because it could be advantageous to accelerate the dilution of heavy oil in many circumstances, including heterogeneous (fractured, layered, wormholed) systems. This is a complex process consisting of multiple pore phases (oil, solvent, their mixtures, and aqueous and vapor phases) at the same time, while

different mechanisms such as capillary imbibition, miscible interaction (diffusion and convection), and gravity also act simultaneously. To investigate this complex phenomenon for different oil/solvent systems, a novel experimental method was used. The underlying mechanisms that dominate the solvent displacement process were comprehensively identified. The movement and evolution of interfaces among different fluid phases in glass capillary tubes were observed and recorded. Oil samples with different viscosities were used to examine the effects of oil viscosity on the mass transfer accelerated by imbibition transfer. The effects of temperature, wettability, and boundary conditions on the interaction of miscible fluid pairs were also studied. Pentane, heptane, and decane were used as the solvent phases. Advanced photographic techniques using ultraviolet (UV) light and dyed fluids were applied to better track the flow of different phases in the mixing zone. The experiments demonstrated a slowly smearing interface between the solvent and viscous oil. A unique natural convection was induced, with the combined effect of gravity, diffusion (mixing), and capillarity all contributing to the recovery of heavy oil. On the basis of the saturation method, boundary condition, and the Bond number, four different motion modes of mixing zone and interfaces of miscible fluids in the capillary tube were revealed and categorized to identify the degree of interface development (immiscible flooding). Also, the mixing zone, mass flux, and flow behavior were quantified using dimensionless parameters. The results indicate that priority may be given to a solvent with a high interfacial tension (IFT) for the solvent-based oil-recovery technique because of a strong imbibition and further enhancement of the dilution and displacement processes under conditions of a similar viscosity ratio. The data provided will be useful for the accuracy of modeling studies, especially for complex geologies where oil/solvent interaction is critically difficult to develop in order for mixing to occur. © 2019 Society of Petroleum Engineers.
Number of references: 37
Main heading: Solvents
Controlled terms: Capillary tubes - Diffusion in liquids - Heavy oil production - Heptane - Capillarity - Mixing - Paraffins - Viscosity - Boundary conditions - Crude oil
Uncontrolled terms: Diffusion and convection - Dimensionless parameters - Effects of temperature - Glass capillary tubes - Immiscible and miscible displacements - Immiscible displacement - Photographic techniques - Solvent displacements
Classification code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 619.1 Pipe, Piping and Pipelines - 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
DOI: 10.2118/193702-PA
Funding Details: Number: -, Acronym: -, Sponsor: Total; Number: RES0011227, Acronym: -, Sponsor: Saudi Aramco;
Funding text: This research was conducted under the NSERC Industrial Research Chair in Unconventional Oil Recovery (industrial partners are Petroleum Development Oman, Total E&P Recherché Développement, SiGNa Oilfield Canada, Husky Energy, Saudi Aramco, Devon, Apex Engineering, and BASF) and an NSERC Discovery Grant (No: RES0011227). We gratefully acknowledge the support.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

272. Analysis of the causes of tube blocking in Jingbian gas field (*Open Access*)

Accession number: 20192907200279
Authors: Ye, Congdan (1); Gou, Shunchao (2); Feng, Yuhan (2); Niu, Buneng (2); Ma, Yun (3, 4)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an, China; (2) Production Logging Center, China Petroleum Logging Company Limited, Xi'an, China; (3) College of Petroleum Engineering, Shaanxi Province Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'An Shiyou University, Xi'an, China; (4) Eng. Res. Ctr. of Devmt. and Mgmt. for Low to Ultra-Low Permeability Oil and Gas Reservoirs in W. China, Ministry of Education, Xi'an, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
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Conference code: 149370
Publisher: IOP Publishing Ltd
Abstract: A large number of blockage appeared in gas wells and pipeline appeared, which caused plugging, corrosion and the increasing of wellbore pressure difference, and seriously affect the normal production of gas well of problems. In this paper, the water quality over the years and natural gas production of the JB1# well in the Jingbian gas field were analyzed, also include the composition of blockage with the chemical volumetric method (CVM), X-Ray Diffraction (XRD) and x-ray fluorescence (XFS) method. Meanwhile, the blockage powder was leached in simulated acid work solution, and then the leaching solution was analyzed with CVM. The experimental results show that the produced water in the JB1# well has unstable water quality, high salinity, high Cl- content, and low pH value, high H2S and CO2 content in natural gas, so easy to produce corrosion and carbonate scaling. The main component of the blockage is a mixture of corrosion product Fe2O3 and a small amount of CaCO3 scale. The corrosion product Fe2O3 is mainly generated by the mixture of dissolved oxygen, H2S, CO2 and other corrosion effects. The main cause of blockage in the JB1# well is the deposition of Fe2O3 and CaCO3 scales caused by the corrosive effects of dissolved oxygen, H2S and CO2. © Published under licence by IOP Publishing Ltd.
Number of references: 13
Main heading: Carbon dioxide
Controlled terms: Corrosive effects - Corrosion resistance - Calcium carbonate - Calcite - Hydrochemistry - Natural gas - Chlorine compounds - Quality control - Water quality - Gases - Mixtures - Hematite - Internal corrosion - Dissolved oxygen - Environmental technology
Uncontrolled terms: Carbonate scaling - Corrosion effects - Corrosion products - Leaching solution - Natural-gas production - Volumetric methods - Wellbore pressure - X ray fluorescence
Classification code: 445.2 Water Analysis - 454 Environmental Engineering - 481.2 Geochemistry - 482.2 Minerals - 522 Gas Fuels - 539.1 Metals Corrosion - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 913.3 Quality Assurance and Control
DOI: 10.1088/1757-899X/542/1/012072
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

273. Late syn-rift sequence architecture and sedimentary evolution of a continental rift basin: A case study from Fulongquan Depression of the Songliao Basin, northeast China

Accession number: 20184806140945
Authors: Hou, Yunchao (1, 2); Wang, Hongyu (1, 2); Fan, Tailiang (1, 2); Yang, Runze (1, 2); Wu, Chunlong (1, 2); Tang, Ying (3, 4)
Author affiliation: (1) China University of Geosciences, Beijing; 100083, China; (2) Key Laboratory for Marine Reservoir Evolution and Hydrocarbon Accumulation Mechanism, Ministry of Education of China, China University of Geosciences, Beijing; 100083, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) 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 Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Hongyu(wanghy@cugb.edu.cn)
Source title: Marine and Petroleum Geology
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Volume: 100
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: As an important stage in continental rift basin evolution, late syn-rift stage is characterized by the combination of broad crustal subsidence and episodic pulses of extension. Sequence architecture and sedimentary filling process during this period present a certain particularity due to distinctive tectonic subsidence and variable influencing factors. This paper analyzes sequence stratigraphy and sedimentary facies development and their evolution in the Fulongquan Depression, a continental rift basin of the Songliao Basin, and discusses the determinants influencing the sequence architecture and depositional systems evolution. During late syn-rift stage, a major transition in the depositional systems, from predominantly lacustrine and correlated depositional systems to fluvial-floodplain settings, was recorded in the evolution of basin fill. This gradual and slow peneplanation is the final response to the decrease of differential subsidence. The spatial and temporal variability of sedimentary evolution are mainly associated with specific growth history of the major boundary faults. Sequence stratigraphic units recognized in the Fulongquan Depression are likely corresponded to different episodic pulses of extension respectively. Each sequence can be further divided into a lowstand systems tract (LST), transgressive systems tract (TST) and highstand systems tract (HST). Maximum differential subsidence and water deepening mainly occur in the LST. The expanded TST and HST of each sequence tend to be developed in a broader thermal subsidence regime. The depositional systems transition and detrital provenance changes usually occur in the HST. Throughout the late syn-rift stage, in addition to major changes of provenance systems, tectonic movement is likely to be the main factor in controlling the variations of sediment supply. With the decrease of tectonic activity, the impact of climate changes and lake level fluctuations on basin filling tends to be increased. © 2018 Elsevier Ltd
Number of references: 85
Main heading: Subsidence
Controlled terms: Deposition - Sedimentology - Tectonics - Climate change - Architecture - Stratigraphy
Uncontrolled terms: Continental rift - Controlling factors - Depositional system - Fulongquan depression - Sequence architectures - Syn-rift
Classification code: 402 Buildings and Towers - 443.1 Atmospheric Properties - 481.1 Geology - 483.1 Soils and Soil Mechanics - 802.3 Chemical Operations
DOI: 10.1016/j.marpetgeo.2018.11.029
Funding Details: Number: 2017ZX05005-002-003,2017ZX05009-002, Acronym: -, Sponsor: -; Number: 51574208, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XDA14010201-02, Acronym: CAS, Sponsor: Chinese Academy of Sciences; Number: 2-9-2015-141, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

274. Research of Influence of Grid Voltage and Harmonics on Output Current Quality of Grid Connected Inverter and Improved Control Strategy (*Open Access*)

Accession number: 20193207297453
Authors: Shi, Fubin (1); Zhang, Dongning (2); Meng, Ni (1); Zhang, Yanyi (2); Sun, Tao (1)
Author affiliation: (1) Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'An Shiyou University, Xi'an; 710065, China; (2) PetroChina Beijing Gas Pipeline Co. Ltd, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
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Issue date: July 12, 2019
Publication year: 2019
Article number: 042009

Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Considering the background harmonics of common coupling point voltage in renewable generation system, the equivalent circuit model of grid-connected inverter is established. The mechanism of the influence of voltage background harmonics at common coupling point on the output current of grid-connected inverter is analyzed. A multi-resonant controller is introduced into the control loop to improve the output power quality of grid-connected inverter. A parameter design method of multi resonant controller is suggested. Finally, the model of renewable energy generation system and distribution network is built in the simulation software, and the background harmonic parameters are set. The simulation experiments of the control strategy with or without multi-resonance controller are carried out respectively. The experimental results verify the correctness and feasibility of the control strategy used in this paper. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Controllers
Controlled terms: Harmonic analysis - Quality control - Computer software - Renewable energy resources - Resonance - Equivalent circuits - Electric inverters
Uncontrolled terms: Background harmonics - Equivalent circuit model - Grid connected inverters - Output current quality - Parameter design methods - Renewable energy generation - Renewable generation - Simulation software
Classification code: 525.1 Energy Resources and Renewable Energy Issues - 723 Computer Software, Data Handling and Applications - 732.1 Control Equipment - 913.3 Quality Assurance and Control - 921.6 Numerical Methods - 931.1 Mechanics
DOI: 10.1088/1742-6596/1237/4/042009
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

275. Green altered sandstone related to hydrocarbon migration from the uranium deposits in the northern Ordos Basin, China

Accession number: 20192006913433
Authors: Zhang, Long (1, 2); Liu, Chiyang (2); Lei, Kaiyu (2)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an; 710069, China
Corresponding author: Zhang, Long(longz_1988@126.com)
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Publisher: Elsevier B.V., Netherlands
Abstract: The formation of sandstone-hosted uranium deposits has been linked to upward migration of hydrocarbons in many sedimentary basins. However, hydrocarbon-induced diagenetic alterations associated with uranium mineralization and preservation are rarely discussed. Here, we report the bleaching of red sandstone to green in the Middle Jurassic Zhiluo Formation from the uranium deposits in the northern Ordos Basin, China. The original gray sandstone underwent oxidation and was reddened by the downward flow of meteoric water from the northern margin of the basin during the Late Cretaceous–Cenozoic uplift. This process resulted in the leaching of preore-stage uranium concentration and oxidation of preore pyrite in the organic matter-rich sandstone. Uranyl and sulfate ions

were carried downward through the host sandstone by oxygenated groundwater. Meanwhile, hydrocarbons migrated upward and reacted with the downward flowing oxidizing fluids, which induced uranium mineralization at the redox interface between the red and gray sandstone where iron was reduced to Fe2+ and incorporated into pyrite cement. The highly negative 34S values (-58.0‰ to -33.4‰ V-CDT)of the pyrite indicate that it originated from bacterial sulfate reduction during hydrocarbon biodegradation. Abundant organic acids and CO2 were generated from hydrocarbon oxidation, resulting in the dissolution of feldspars and the precipitation of kaolinite in the mineralized sandstone. With the formation of the Cenozoic Hetao graben to the north, the gravity-driven flow of meteoric water was limited, resulting in progressive halting of epigenetic uranium mineralization. Then, the upward hydrocarbons dominated the fluid system throughout the northern slope of the basin and bleached the previous red sandstone updip, which set up a strong reducing environment and protected the early formed uranium deposits at the paleo-redox front from oxidation and remobilization. Due to the oxygen and sulfur supply absence, the iron released from hematite during bleaching was immobilized and incorporated into Fe-rich chlorite that imparts the green color, rather than into pyrite or reprecipitation as hematite. This study provides insights for the processes of hydrocarbon-water-rock interactions associated with uranium mineralization and preservation, which can serve as exploration guides for sandstone-hosted uranium deposits. © 2019 Elsevier B.V.

Number of references: 47
Main heading: Pyrites
Controlled terms: Hematite - Iron deposits - Mineralogy - Sulfur compounds - Hydrocarbons - Bleaching - Uranium - Uranium deposits - Oxidation - Oxygenation - Deposits - Feldspar - Sandstone - Cleaning - Groundwater - Iron - Kaolinite
Uncontrolled terms: Bacterial sulfate reduction - Chlorite - Hydrocarbon biodegradation - Hydrocarbon migration - Ordos Basin - Sandstone hosted uranium deposits - Uranium mineralization - Water rock interactions
Classification code: 444.2 Groundwater - 482 Mineralogy - 482.2 Minerals - 504.3 Heavy Metal Mines - 504.5 Uranium Mines - 545.1 Iron - 547 Minor, Precious and Rare Earth Metals and Alloys - 622.1 Radioactive Materials, General - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.1 Organic Compounds - 811.1.1 Papermaking Processes
DOI: 10.1016/j.oregeorev.2019.05.008
Funding Details: Number: 41330315, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NWU, Sponsor: Northwest University; Number: -, Acronym: MLR, Sponsor: Ministry of Land and Resources of the People's Republic of China; Number: 12120114009201, Acronym: CGS, Sponsor: China Geological Survey; Number: -, Acronym: -, Sponsor: State Key Laboratory of Continental Tectonics and Dynamics;
Funding text: This study was supported by the National Natural Science Foundation of China (grant No. 41330315), the China Geological Survey Project (grant No. 12120114009201), the Opening Foundation of State Key Laboratory of Continental Dynamics, Northwest University, and the Opening Foundation of Key laboratory of Degraded and Unused Land Consolidation Engineering, the Ministry of Land and Resources (grant No. SXDJ2018-15). We are grateful to Dr. Lu Chen and Dr. Kaiyun Chen from Northwest University for their help with in-situ sulfur isotope analysis.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

276. Realization of mechanical properties prediction from nano-to macro-scale structure: An achievement of c-s-h hydrated phases

Accession number: 20193607408249
Authors: Fu, Jia (1, 2)
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Laboratoire de Génie Mécanique, Institut National des Sciences Appliquées de Rennes, Rennes; 35708, France
Corresponding author: Fu, Jia(fujia@xsyu.edu.cn)
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Conference code: 230489
Publisher: Trans Tech Publications Ltd
Abstract: The performance prediction of C-S-H gel is critical to the theoretical research of cement-based materials. In the light of recent computational material technology, modeling from nano-scale to micro-scale to predict mechanical properties of structure has become research hotspots. This paper aims to find the inter-linkages between the monolithic "glouble" C-S-H at nano-scale and the low/high density C-S-H at the micro-scale by step to step method, and to find a reliable experimental verification method. Above all, the basic structure of tobermorite and the "glouble" C-S-H model at nano-scale are discussed. At this scale, a "glouble" C-S-H structure of about 5.5 nm3 was established based on the 11Å tobermorite crystal, and the elastic modulus of the isotropic "glouble" is obtained by simulation. Besides, by considering the effect of porosity on the low/high density of the gel morphology, the C-S-H phase at micro-scale can be reversely characterized by the "glouble". By setting different porosities and using Self-Consistent and Mori-Tanaka schemes, elastic moduli of the low density and high density C-S-H from that of "glouble" are predicted, which are used to compare with the experimental values of the outer and inner C-S-H. Moreover, the nanoindentation simulation is carried out, where the simulated P-h curve is in good agreement with the accurate experimental curve in nanoindentation experiment by the regional indentation technique(RET), thus the rationality of the "glouble" structure modeled is verified and the feasibility of Jennings model is proved. Finally, the studies from the obtained ideal "glouble" model to the C-S-H phase performance has realized the mechanical properties prediction of the C-S-H structure from nano-scale to micro-scale, which has great theoretical significance for the C-S-H structural strengthening research. © 2019 Trans Tech Publications Ltd, Switzerland.
Number of references: 27
Main heading: Nanoindentation
Controlled terms: Elastic moduli - Forecasting - Crystal structure - Porosity - Hydration - Molecular dynamics - Structural properties
Uncontrolled terms: Cement based material - Computational materials - Experimental verification - Nano scale - Nanoindentation experiments - Performance prediction - Structural strengthening - Theoretical research
Classification code: 408 Structural Design - 761 Nanotechnology - 801.4 Physical Chemistry - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1.1 Crystal Lattice - 943.2 Mechanical Variables Measurements - 951 Materials Science
Numerical data indexing: Size 1.10e-09m, Volume 5.50e-27m3
DOI: 10.4028/www.scientific.net/MSF.956.332
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

277. A comprehensive workflow for propagation simulation and structural characterisation of multiple hydraulic fractures in naturally fractured unconventional oil reservoirs

Accession number: 20201008255729
Authors: Ren, Long (1, 2); Zhan, Shiyuan (3, 4); Zhou, Desheng (1, 2); Su, Yuliang (4); Wang, Wendong (4); Chen, Mingqiang (1, 2); Jing, Cheng (1, 2); Sun, Jian (1, 5); Tang, Kang (5)
Author affiliation: (1) Xi'an Shiyou University, China; (2) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, China; (3) University of Alberta, Canada; (4) China University of Petroleum, China; (5) China University of Petroleum, Beijing, China
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Conference name: SPE/AAPG/SEG Asia Pacific Unconventional Resources Technology Conference 2019, APUR 2019
Conference date: November 18, 2019 - November 19, 2019
Conference location: Brisbane, QLD, Australia
Conference code: 157342
Publisher: Unconventional Resources Technology Conference (URTEC)
Abstract: Multiple hydraulic fractures in naturally fractured unconventional oil reservoirs have often induced complex fracture network growth, as revealed by microseismic monitoring data by Maxwell et al. (2002), Fisher et al. (2005) and Daniels et al. (2007). History matching and production forecasting from an unconventional oil reservoir is possible only if a complex fracture network can be clearly described through the engineering parameters. However, currently, the integration technology of propagation simulation and structural characterization of the complex fracture network is still an extreme challenge. A new propagation modeling and characterization technique has been developed for these complex fracture network expansion that combines improved displacement discontinuity method (DDM) and pseudo-3D fracture propagation model to simulate the propagation process of complex fracture network and improve stimulation accuracy. This is very important for modeling and simulation of multi-fracture propagation in a unconventional oil reservoir with natural fractures. The theoretical model include the calculation model of combined stress field, the mechanical model of fracture propagation patterns and the corresponding propagation criteria, the injection fluid distribution model, and the mathematical model for structural description and morphological characterization as a post-processing program. The propagation simulation results of complex fracture network are implicitly and directly entered into the post-processing program and characterized by some engineering parameters as well. Simulation results show that the different propagation patterns of fracture network are produced, which is governed by the in-situ stress anisotropy, hydraulic fracture density, and distribution modes of pre-existing natural fracture as well as fractures interaction angle. More importantly, the simulation results can be characterized as different engineering parameters containing the fracture network bandlength, bandwidth, stimulated reservoir area (SRA) and fracture width. The presented comprehensive workflow could assists the reservoir engineers in clearly understanding and evaluating the complex fracture network, including geometrical morphology, spatial distribution, and conductivity of complex fracture networks. The propagation simulation and structural characterization technique presented in this paper can help identify stimulation and forecasting strategies that will significantly improve well performance and ultimate recovery from an unconventional oil reservoir. © 2019, Unconventional Resources Technology Conference (URTeC).
Number of references: 49
Main heading: Fracture
Controlled terms: Oil wells - Mathematical morphology - Microseismic monitoring - Stresses - Complex networks - Resource valuation - Petroleum reservoir engineering - Hydraulic fracturing
Uncontrolled terms: Characterization techniques - Displacement discontinuity method - Integration technologies - Morphological characterization - Production forecasting - Propagation simulation - Structural characterization - Structural descriptions
Classification code: 484.1 Earthquake Measurements and Analysis - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 722 Computer Systems and Equipment - 951 Materials Science
DOI: 10.15530/ap-urtec-2019-198275
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

278. Acoustic Black Hole Lightweight Superstructure with Low Frequency Broadband High Efficiency Sound Insulation Mechanism and Experimental Study

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Title of translation:
Authors: Liu, Botao (1, 2); Zhang, Hailong (1); Wang, Ke (1); Wu, Jiuhui (1)
Author affiliation: (1) State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wu, Jiuhui
Source title: Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University
Abbreviated source title: Hsi An Chiao Tung Ta Hsueh
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Publication year: 2019
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Language: Chinese
ISSN: 0253987X
CODEN: HCTPDW
Document type: Journal article (JA)
Publisher: Xi'an Jiaotong University
Abstract: Low frequency sound wave has strong penetrating force and difficult attenuation in the propagation process. A new acoustic black hole superstructure is investigated. Multiple acoustic black hole units are embedded in an array on a 10 mm thin plate. The designed superstructure of acoustic black hole is produced by 3D printing technology, and the acoustic characteristics of the superstructure are verified by standing wave tube experiment. According to the analysis of experimental data, the acoustic black hole superstructure can achieve an average sound insulation of nearly 30 dB in the frequency band of 50-1 600 Hz, and an average sound insulation of up to 40 dB in the frequency band of 100-600 Hz. When the power exponent of the geometric shape power function of the acoustic black hole element changes, the sound insulation of the acoustic black hole superstructure is also discussed. Because the designed superstructure of acoustic black hole requires high processing technology and is not convenient in practical engineering application, a superstructure of acoustic black hole that is convenient for practical engineering application is finally designed for experimental verification, and the influence of changed parameter on the sound insulation of the structure is analyzed. The acoustic superstructure of black holes has a potential application foreground in aerospace, automobile and naval ships which require small size structures to achieve low-frequency and wide-band noise reduction.
Number of references: 20
Main heading: Stars
Controlled terms: Sound insulation - Acoustic wave propagation - 3D printers - Acoustic noise - Noise abatement
Uncontrolled terms: Acoustic black holes - Acoustic characteristic - Experimental verification - Low-frequency - Low-frequency sounds - Practical engineering applications - Processing technologies - Standing wave tubes
Classification code: 413.3 Sound Insulating Materials - 657.2 Extraterrestrial Physics and Stellar Phenomena - 745.1.1 Printing Equipment - 751.1 Acoustic Waves - 751.4 Acoustic Noise
Numerical data indexing: Decibel 3.00e+01dB, Decibel 4.00e+01dB, Frequency 1.00e+02Hz to 6.00e+02Hz, Frequency 5.00e+01Hz to 1.60e+03Hz, Size 1.00e-02m
DOI: 10.7652/xjtuxb201910018
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

279. Double-sided coaxial GTA flat-overhead welding of 5083 aluminum alloy

Accession number: 20191906899472
Authors: Qiang, Wei (1); Wang, Kehong (2)
Author affiliation: (1) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing; 210094, China
Corresponding author: Qiang, Wei(qiangw@xsyu.edu.cn)
Source title: Journal of Materials Processing Technology
Abbreviated source title: J Mater Process Technol
Volume: 272
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Publication year: 2019
Pages: 9-16
Language: English
ISSN: 09240136
CODEN: JMPTEF
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Aluminum alloy joint without angular deformation and imperfections was obtained by dual-power double-sided coaxial gas tungsten arc flat-overhead welding process. Irrespective of the heat input distribution on both sides of the plate, the molten pool was frequently depressed as the upward maintenance force could not generally sustain the downward destructive force, and finally achieved equilibrium with the assistance of additional force generated in curved liquid surface. There was no burning loss of the alloying elements, which were distributed homogeneously without any segregation. The tensile strength of the weld reached ˜90% of that of the base metal, and the softening extent of the joint was unnoticeable. © 2019 Elsevier B.V.
Number of references: 18
Main heading: Aluminum alloys
Controlled terms: Gas welding - Tensile strength - Gas metal arc welding - Tungsten - Alloying elements - Deformation
Uncontrolled terms: 5083 aluminum alloys - Additional forces - Aluminum alloy joints - Angular deformation - Curved liquid surface - Double sided - Gas tungsten arc - Welding process
Classification code: 531.1 Metallurgy - 538.2.1 Welding Processes - 541.2 Aluminum Alloys - 543.5 Tungsten and Alloys
DOI: 10.1016/j.jmatprotec.2019.04.042
Funding Details: Number: 513181, Acronym: -, Sponsor: -; Number: -, Acronym: -, Sponsor: Science and Technology Support Program of Jiangsu Province;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

280. Effect of pressure-free heating curing time on bending property of 2D T700/E44 composites prepared by ICM

Accession number: 20190906560385
Authors: Ma, Y.Q. (1); Liu, X.M. (1); Wang, J. (1); Ju, L.Y. (2); Ren, X.Y. (3); Li, S.S. (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; (3) Qing'an Group Co.Ltd of AVIC, Xi'an; 710077, China
Corresponding author: Ma, Y.Q.(yqma@xidian.edu.cn)
Source title: Materials Research Express
Abbreviated source title: Mater. Res. Express
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Issue: 4
Issue date: 2019
Publication year: 2019
Article number: aafb15
Language: English
E-ISSN: 20531591
Document type: Journal article (JA)
Publisher: IOP Publishing Ltd
Abstract: Six kinds of 2D T700/E44 composites with pressure-free curing times of 40 min, 60 min, 80 min, 100 min, 120 min and 140 min are prepared by improved compression molding process (ICM). The macroscopic morphology of the composites is satisfactory. The microstructure observation and bending performance tests show that composites have poor infiltration effect. When the pressure-free curing time is less than 80 min, defects are easy to occur such as insufficient infiltration and voids. Bad infiltration and void defects will lead to poor continuity of carbon fiber and resin, and their bending fracture will also be unreasonable, so the bending strength of composite at 40 min is 275 MPa. The infiltration effect is gradually improved with the increase of pressure-free heating curing time. However, when the pressure-free heating curing time reaches 120 min or more, the infiltration effect of the composites is

deteriorated, and this is due to excessive infiltration time and extrusion force in subsequent heating extrusion infiltration process. Defects such as fiber aggregation and uneven infiltration are prone to occur, and bending strength of composites reduces to 380 MPa. When the pressure-free curing time is 100 min, the infiltration effect of the prepared composite is satisfactory, and the imbalanced infiltration and hole defects are effectively eliminated. The bending fracture of composite material is uneven, carbon fibers and resin play the roles of reinforcement and transferring loads effectively respectively, so the bending strength of the prepared 2D T700/E44 composite reaches 730 MPa. ©2019 IOP Publishing Ltd.
Number of references: 21
Main heading: Defects
Controlled terms: Bending tests - Tensile strength - Curing - Resins - Bending strength - Morphology - Compression molding - Heating - Carbon fibers
Uncontrolled terms: Bending performance - Bending properties - Compression molding process - Curing time - Fracture of composites - Infiltration process - Macroscopic morphology - Microstructure observation
Classification code: 422 Strength of Building Materials; Test Equipment and Methods - 802.2 Chemical Reactions - 804 Chemical Products Generally - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 3.80e+08Pa, Pressure 7.30e+08Pa, Time 2.40e+03s, Time 3.60e+03s, Time 4.80e+03s, Time 6.00e+03s, Time 7.20e+03s, Time 8.40e+03s, Pressure 2.75e+08Pa
DOI: 10.1088/2053-1591/aafb15
Funding Details: Number: 11702202,51705389, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

281. Theoretical and experimental studies on hydrogen migration in dissociative ionization of the methanol monocation to molecular ions H3+ and H2O+ (*Open Access*)

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Authors: Wu, Hua (1); Xue, Yuanxin (1); Wen, Junqing (1); Wang, Hui (1); Fan, Qingfei (2); Chen, Guoxiang (1); Zhu, Jin (1); Qu, Fanghui (1); Guo, Jiale (1)
Author affiliation: (1) School of Sciences, Xi'An Shiyou University, Shanxi; 710065, China; (2) State Key Laboratory of Precision Spectroscopy, School of Physics and Materials, East China Normal University, Shanghai; 200062, China
Corresponding author: Wu, Hua(whua@xsyu.edu.cn)
Source title: RSC Advances
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Issue date: 2019
Publication year: 2019
Pages: 16683-16689
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: The dissociative ionization processes of the methanol monocation CH3OH+ to H3+ + CHO and H2O+ + CH2 are studied by ab initio method, and hydrogen migration processes are confirmed in these two dissociation processes. Due to the positive charge assignment in dissociation processes, the fragmentation pathways of CH3OH+ to H3 + CHO+ and CH3OH+ to H2O + CH2+ are also calculated. The calculation results show that a neutral H2 moiety in the methanol monocation CH3OH+ is the origin of the formation of H3+, and the ejection of fragment ions H3+ and H2O+ is more difficult than CHO+ and CH2+ respectively. Experimentally, by using a dc-slice imaging technique under an 800 nm femtosecond laser field, the velocity distributions of fragment ions H3+, CHO+, CH2+, and H2O + are calculated from their corresponding sliced images. The presence of low-velocity components of these four

fragment ions confirms that the formation of these ions is not from the Coulomb explosion of the methanol dication. Hence, the four hydrogen migration pathways from the methanol monocation CH3OH+ to H3+ + CHO, CHO+ + H3, H2O+ + CH2, and CH2+ + H2O are securely confirmed. It can be observed in the time-of-flight mass spectrum of ionization and dissociation of methanol that the ion yields of fragment ions H3+ and H2O+ are lower than CHO+ and CH2+ respectively, which is consistent with the theoretical results according to which dissociation from the methanol monocation to H3+ and H2O+ is more difficult than CHO+ and CH2+ respectively. © 2019 The Royal Society of Chemistry.
Number of references: 37
Main heading: Methanol
Controlled terms: Calculations - Mass spectrometry - Ions - Ionization - Hydrogen - Dissociation
Uncontrolled terms: Calculation results - Coulomb explosion - Dissociation process - Dissociative ionization - Femtosecond laser field - Fragmentation pathways - Hydrogen migration - Time of flight mass spectrum
Classification code: 801 Chemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 921 Mathematics
Numerical data indexing: Size 8.00e-07m
DOI: 10.1039/c9ra02003a
Funding Details: Number: 2016JQ1027, Acronym: -, Sponsor: -; Number: 201810705019, Acronym: -, Sponsor: -; Number: 11747111, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by National Natural Science Foundation of China (Grant No. 11747111), University Students' Innovation and Entrepreneurship Training Program of Xi'an Shiyou University (201810705019), and Natural Science Basic Research Plan in Shanxi Province of China (Grant No. 2016JQ1027). The authors wish to acknowledge Prof. Zhenrong Sun and Dr Yan Yang of East China Normal University for their help on experimental design.
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

282. Effect of alkali about growth characteristics of CaCO3 on galvanized iron surface

Accession number: 20192106947013
Authors: Jiang, Huayi (1); Cai, Hanghang (1); Liang, Aiguo (2); Zhang, Dingzhou (1); Sun, Nana (1); Chong, Xinmin (3)
Author affiliation: (1) Petroleum Engineering College, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Karamay Hongshan Oileld Company, Karamay; Xinjiang; 834000, China; (3) No.1 Production Plant of Xinjiang Oilfield Branch Company, Karamay; Xinjiang; 834000, China
Corresponding author: Jiang, Huayi(hyjiang@xsyu.edu.cn)
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Abbreviated source title: Huagong Xuebao
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Issue date: 2019
Publication year: 2019
Pages: 170-178
Language: Chinese
ISSN: 04381157
CODEN: HUKHAI
Document type: Journal article (JA)
Publisher: Chemical Industry Press
Abstract: In order to solve the problem of pipeline blockage due to the water scaling, the key idea that the crystallization fouling process was changed from passive to active was proposed in this research. In view of the injected water form oil field, galvanized iron was selected as the substrate. The mechanisms of the influences of alkali types and concentrations on crystal growth were revealed using dynamic simulation experiments,SEM, EDS and liquid turbidity tests. These results were showed that: The effects of five kinds of alkalis (such as Na2CO3, NaHCO3, TEOA, Ca(OH)2 and CaO) on scale mass gains, calcium loss rate and scaling induction periods were different. Among them Na2CO3 has a significant effeet on the loss of calcium loss, while CaO has a significant effect on the rate of fouling. Secondly, the morphology of the crystal is correlated with the alkali types. If the surface of the material was capable of forming a blocky shape scale or a layered fouling, this material was beneficial for the aggregation and deposition of crystals. Finally, the alkali concentration played a twofold role in the growth of fouling, that was, to

promote the aggregation of crystal and to inhibit the scale growth. In other words, there would be a preferred range of alkali concentrations. © All Right Reserved.
Number of references: 30
Main heading: Iron
Controlled terms: Galvanizing - Sodium bicarbonate - Oil fields - Morphology - Sodium chloride - Calcite - Calcium - Calcium carbonate - Fouling - Hydrated lime
Uncontrolled terms: Alkali - Alkali concentrations - Crystal morphologies - Crystallization fouling - Dynamic simulation experiment - Growth characteristic - Loss rates - Pipeline blockages
Classification code: 482.2 Minerals - 512.1.1 Oil Fields - 539.3 Metal Plating - 545.1 Iron - 546.3 Zinc and Alloys - 549.2 Alkaline Earth Metals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.11949/j.issn.0438-1157.20180884
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

283. Microscale flower-like magnesium oxide for highly efficient photocatalytic degradation of organic dyes in aqueous solution (*Open Access*)

Accession number: 20191106634400
Authors: Zheng, Yajun (1, 2); Cao, Liyun (1); Xing, Gaoxuan (2); Bai, Zongquan (2); Huang, Jianfeng (1); Zhang, Zhiping (2)
Author affiliation: (1) School of Material Science and Engineering, Shaanxi University of Science and Technology, Xi'an; 710021, China; (2) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cao, Liyun(caoliyun@sust.edu.cn)
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Issue date: 2019
Publication year: 2019
Pages: 7338-7348
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Flower-like MgO microparticles with excellent photocatalytic performance in degradation of various organic dyes (e.g., methylene blue, Congo red, thymol blue, bromothymol blue, eriochrome black T, and their mixture) were synthesized by a facile precipitation method via the reaction between Mg2+ and CO32- at 70 °C. The reaction time was found to be crucial in determining the final morphology of flower-like MgO. After studying the particles from time-dependent experiments, scanning electron microscope observation, Fourier transform infrared spectra and thermogravimetric analyses demonstrated that the formation of flower-like particles involved a complex process, in which agglomerates or rod-like particles with a formula of xMgCO3·yH2O (x = 0.75-0.77 and y = 1.87-1.96) were favorably formed after the initial mixture of the reactants. Owing to the chemical instability, they would turn into flower-like particles, which had a composition of xMgCO3·yMg(OH)2·zH2O (x = 0.84-0.86, y = 0.13-0.23, and z = 0.77-1.15). After calcination, the generated product not only possessed a superior photocatalytic performance in degradation of organic dyes (100 mg L-1) under UV light irradiation in contrast to other morphologies of MgO and other related state-of-the-art photocatalysts (e.g., N-doped TiO2, Degussa P25 TiO2, ZnO, WO3, α–Fe2O3, BiVO4, and g-C3N4), but also could be used for five cycles, maintaining its efficiency above 92.2%. These capacities made the flower-like MgO a potential candidate for polluted water treatment. Also, the underlying photocatalysis mechanism of MgO was proposed through radical trapping experiments. © The Royal Society of Chemistry.
Number of references: 80
Main heading: Magnesia
Controlled terms: Thermogravimetric analysis - Titanium dioxide - Zinc oxide - Doping (additives) - Precipitation (chemical) - Tungsten compounds - Water pollution - Hematite - Mixtures - Photocatalysis - Aromatic compounds - Azo dyes - Scanning electron microscopy - II-VI semiconductors - Water treatment

Uncontrolled terms: Chemical instability - Degradation of organic dyes - Fourier transform infrared spectra - Photo catalytic degradation - Photocatalytic performance - Polluted water treatments - Precipitation methods - UV-light irradiation
Classification code: 445.1 Water Treatment Techniques - 453 Water Pollution - 482.2 Minerals - 712.1 Semiconducting Materials - 741.1 Light/Optics - 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Numerical data indexing: Percentage 9.22e+01%, Temperature 3.43e+02K
DOI: 10.1039/C8RA10385B
Funding Details: Number: 21575112,21705125,21777128,51672165, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors would like to acknowledge funding support from the National Natural Science Foundation of China (Grant No. 21575112, 51672165, 21777128, and 21705125).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

284. Development KCl/CaO as a catalyst for biodiesel production by tri-component coupling transesterification

Accession number: 20184105928587
Authors: Tang, Ying (1); Liu, Huan (1); Ren, Haomiao (1); Cheng, Qitong (2); Cui, Yi (1); Zhang, Jie (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Department of Chemical & Petroleum Engineering, East China Science and Technology University, Shanghai; 210065, China
Corresponding author: Tang, Ying(tangying78@xsyu.edu.cn)
Source title: Environmental Progress and Sustainable Energy
Abbreviated source title: Environ Prog Sustainable Energy
Volume: 38
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Issue date: March/April 2019
Publication year: 2019
Pages: 647-653
Language: English
ISSN: 19447442
E-ISSN: 19447450
CODEN: ENVPDI
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: In this research, the optimized experimental conditions to obtain CaO supported KCl (KCl/CaO) as an efficient heterogeneous basic catalyst to produce no-glycerol biodiesel using tri-component (canola oil, dimethyl carbonate [DMC], and methanol) coupling transesterification was established. The solid base catalyst was prepared by wet impregnation of CaO in KCl solution and calcination subsequently, which greatly improved the reaction efficiency with high biodiesel yield of 96.4% at only 2 h. The KCl/CaO was characterized by techniques, such as BET surface area, XRD, CO2-TPD, and SEM. Then, it was observed that the KCl introduced not only differed from CaO particles in the surface area and number of basic sites but also changed its base strength significantly. To obtain an improvement in conversion of canola oil, the influence on the catalytic performance of several kinetic parameters, such as mass ratio of catalyst to oil, reaction time, and molar ratio of methanol/oil/DMC were evaluated separately. Novelty or Significance: In this work, it was found that the catalytic performance of CaO-based catalyst to coupling transesterification for no-glycerol biodiesel production can be greatly improved by modifying CaO with KCl. As a result, the time to obtain as high as 96.4% yield of biodiesel over KCl/CaO can be greatly shortened from 5 to 2 h compared with common CaO. © 2018 American Institute of Chemical Engineers Environ Prog, 38: 647–653, 2019. © 2018 American Institute of Chemical Engineers
Number of references: 23
Main heading: Biodiesel
Controlled terms: Synthetic fuels - Catalysts - Methanol - Potassium compounds - Molar ratio - Chlorine compounds - Glycerol - Transesterification

Uncontrolled terms: American Institute of Chemical Engineers - Biodiesel production - Catalytic performance - Dimethyl carbonate - Experimental conditions - Reaction efficiency - Solid base catalysts - Transesterification reaction
Classification code: 523 Liquid Fuels - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds
Numerical data indexing: Percentage 9.64e+01%, Time 1.80e+04s to 7.20e+03s, Time 7.20e+03s
DOI: 10.1002/ep.12977
Funding Details: Number: 2016JM2012, Acronym: -, Sponsor: Science and Technology Innovation as a Whole Plan Projects of Shaanxi Province; Number: 17JS114, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was financially supported by grants from Natural Science Research Plan Projects of Shaanxi Science and Technology Department (2016JM2012), Scientific Research Program Funded by Shaanxi Provincial Education Department (17JS114).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

285. Mode-dependent seamless transfer control strategy of a microgrid via a small-signal stability approach

Accession number: 20190806519394
Authors: Wu, Ying (1); Guerrero, Josep M. (2); Wu, Yanpeng (3)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, China; (2) Department of Energy Technology, Aalborg University, Denmark; (3) School of Information and Control Engineering, Xi'an University of Architecture and Technology, China
Corresponding author: Wu, Ying(wuyg1226@hotmail.com)
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Abbreviated source title: Asian J. Control
Volume: 21
Issue: 4
Issue date: July 1, 2019
Publication year: 2019
Pages: 2087-2104
Language: English
ISSN: 15618625
E-ISSN: 19346093
Document type: Conference article (CA)
Publisher: Wiley-Blackwell
Abstract: A microgrid is an effective solution to enhance the integration of distributed renewable energy resources, which can operate both in grid connected mode and islanded mode. In order to reduce the jumps of the system variables within acceptable limits to ensure the system has good transient performance and power quality in multiple operating modes, seamless transfer is the key problem to be considered. In this paper, due to the different multiple equilibrium points for the two operating modes, the dynamics of every operating mode re modeled as a subsystem with all the variables that are needed to be synchronized. Linearization is carried out respectively for the two operation modes on the different equilibriums in a state-space form based on the small-signal stability method. To reduce the conservatism of the unified controller, the concept of the relative Lyapunov function is introduced to derive a multiple segmental Lyapunov method and a robust feedback mode-dependent switching controller is designed to achieve smooth transfer by making the deviation energy of the two modes both converge to the zero point. To rapidly detect the switching signal, a sparse communication network is introduced by the use of low bandwidth communication links to broadcast the switching signal to each distributed controller. Finally, two microgrid test systems were built in SIMULINK to show the feasibility and effectiveness of the proposed seamless transfer control strategies. © 2019 Chinese Automatic Control Society and John Wiley & Sons Australia, Ltd
Number of references: 26
Main heading: Controllers
Controlled terms: Renewable energy resources - Lyapunov methods - State space methods - Lyapunov functions - Switching
Uncontrolled terms: Micro grid - Multiple equilibrium points - Seamless transfer - Small signal stability - State - space models
Classification code: 525.1 Energy Resources and Renewable Energy Issues - 732.1 Control Equipment - 921 Mathematics - 961 Systems Science

DOI: 10.1002/asjc.2055
Funding Details: Number: 2015GY102, Acronym: -, Sponsor: -; Number: 201808610075, Acronym: -, Sponsor: -; Number: 2018JQ6006, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 51707158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: National Natural Science Foundation of China Grant 51707158 and 61802301; Scientific and technological projects of Shaanxi Province Grant 2015GY102; Natural Science Foundation of Shaanxi Province Grant 2018JQ6006; State Scholarship Fund of China Grant 201808610075.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

286. Research on Well Trajectory Deduction Method Based on Pythagorean-Hodograph Quintic Space Curves (*Open Access*)

Accession number: 20202008673317
Authors: Li, Yufei (1); Cao, Yinping (2); Liu, Yuxue (2); Li, Mingfei (2); Yihua, Dou (2); Zhang, Jiantao (1); Zhang, Lin (1)
Author affiliation: (1) PetroChina Southwest Oil and Gas Field Company Engineering and Technology Research Institute, Chengdu, Sichuan; 610017, China; (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shannxi; 710065, China
Corresponding author: Yihua, Dou(yhdou@vip.sina.com)
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Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 688
Part number: 3 of 5
Issue: 3
Issue title: 3rd International Conference on Traffic Engineering and Transportation System - 2. Vehicle Engineering
Issue date: December 6, 2019
Publication year: 2019
Article number: 033068
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 3rd International Conference on Traffic Engineering and Transportation System, ICTETS 2019
Conference date: September 20, 2019 - September 22, 2019
Conference location: Jiaozuo, China
Conference code: 156507
Publisher: IOP Publishing Ltd
Abstract: Considering the influence of key parameters such as bore angle, azimuth and sounding of wellbore, based on the spatial five-time PH curve with continuous unit tangent and directional curvature, no need for iteration, using Bessel polynomial interpolation method, optimization the spatial model and the curve description can accurately deduct the spatial parameters of the fifth point according to the determined four points of the space, and then establish the wellbore trajectory analytical equation to generate the well trajectory curve. Taking a directional well as an example, the wellbore trajectories of the wells from 403.9 meters to 976 meters were fitted by PH, cubic spline and linear interpolation method respectively, and compared with the real measuring points. The results show that the wells fitted by PH method, the differences of the bevel angle and the measured point, the azimuth angle and the measured point are 0.910 and 5.7. The differences of the cubic spline and the measured point, the straight line method and the measured point are 4.240, 5.86 and 6.54, 9.09. For the PH method, the trajectory inclination and azimuth differences are the smallest, which are 3.51% and 3.17%. © Published under licence by IOP Publishing Ltd.
Number of references: 11
Main heading: Trajectories
Controlled terms: Interpolation - Iterative methods - Boreholes - Curve fitting - Oil field equipment
Uncontrolled terms: Analytical equations - Bessel polynomials - Directional curvature - Linear Interpolation - Pythagorean hodograph - Spatial modeling - Spatial parameters - Wellbore trajectory
Classification code: 511.2 Oil Field Equipment - 921.6 Numerical Methods
Numerical data indexing: Percentage 3.17e+00%, Percentage 3.51e+00%, Size 4.04e+02m to 9.76e+02m
DOI: 10.1088/1757-899X/688/3/033068
Compendex references: YES

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

287. A new air- and moisture-stable pentagonal-bipyramidal DyIII single-ion magnet based on the HMPA ligand

Accession number: 20190606481540
Authors: Li, Lei-Lei (1, 2); Su, Hong-Dan (1); Liu, Shuang (1, 2); Xu, Ya-Chao (1); Wang, Wen-Zhen (1)
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Nankai University, Tianjin; 300071, China
Corresponding author: Li, Lei-Lei(lll@xsyu.edu.cn)
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Abbreviated source title: Dalton Trans.
Volume: 48
Issue: 6
Issue date: 2019
Publication year: 2019
Pages: 2213-2219
Language: English
ISSN: 14779226
E-ISSN: 14779234
CODEN: DTARAF
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: Based on the HMPA ligand, a new air- and moisture-stable pentagonal-bipyramidal DyIII single-ion magnet [Dy(HMPA)2(H2O)5]2·Br6·2HMPA·2H2O (1) was prepared and characterized. Single-crystal X-ray tests showed the two crystallographically independent DyIII ions located in a pentagonal-bipyramidal coordination sphere with strong axial HMPA ligands and weak equatorial water molecules relating to strong unaxial anisotropy. Direct-current and alternating-current magnetic susceptibilities were measured and showed that 1 exhibited slow relaxation of magnetization up to 36 K (1000 Hz) with an energy barrier of 556 K and blocking temperature of 7 K (defined by the peak temperature of zero-field cooling data). The application of a dc field and magnetic dilution were also carried out to explore the existing quantum tunelling of the magnetization process. © The Royal Society of Chemistry.
Number of references: 52
Main heading: Ligands
Controlled terms: Single crystals - Magnetic susceptibility - Molecules - Ions - Magnetization - Magnets - Moisture
Uncontrolled terms: Alternating current - Blocking temperature - Coordination sphere - Equatorial water - Magnetic dilution - Peak temperatures - Slow relaxations - Zero-field cooling
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 801.4 Physical Chemistry - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids
Numerical data indexing: Frequency 1.00e+03Hz, Temperature 5.56e+02K, Temperature 7.00e+00K
DOI: 10.1039/c8dt03565b
Funding text: This work was supported financially by the Natural Science Basic Research Plan in Shaanxi Province of China (No. 2017JQ2009), the Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 16JK1598 and No. 18JK0607) and the 111 project (B12015).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

288. A Spiking Neural Network for Classification of Visual Color Features

Accession number: 20194807740982
Title of translation:
Authors: Su, Yali (1); Wu, Jianxing (2); Hui, Wei (3); Zhang, Guohe (2)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Microelectronics, Xi'an Jiaotong University, Xi'an; 710049, China; (3) School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an; 710049, China

Corresponding author: Zhang, Guohe
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Pages: 115-121
Language: Chinese
ISSN: 0253987X
CODEN: HCTPDW
Document type: Journal article (JA)
Publisher: Xi'an Jiaotong University
Abstract: A spiking neural network with high precision based on a new RGB-HSV preprocessing model is proposed to solve the problem of low accuracy of spiking neural networks in the field of the classification of visual color features. The proposed network extracts cluster color features by combining the features of the simplicity of RGB color channels and intuitive of HSV color space and enhances the recognition ability. A training method with weight momentum is also proposed based on Tempotron supervised learning rules. The method updates weights with new calculations while some of last weights is retained, so that the convergence of network weights is speeded up and the simulation time is saved. Experimental results show that the classification accuracy of the proposed network is up to 96.21%, and the accuracy reaches about 84% after 6 training iterations. © 2019, Editorial Office of Journal of Xi'an Jiaotong University. All right reserved.
Number of references: 20
Main heading: Neural networks
Controlled terms: RGB color model - Classification (of information)
Uncontrolled terms: Classification accuracy - Color features - Convergence of networks - HSV color spaces - Network weights - Recognition abilities - Spiking neural networks - Training methods
Classification code: 716.1 Information Theory and Signal Processing - 741.1 Light/Optics - 903.1 Information Sources and Analysis
Numerical data indexing: Percentage 9.62e+01%, Percentage 8.40e+01%
DOI: 10.7652/xjtuxb201910016
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

289. Optimization of models for rapid identification of oil and water layers during drilling - A win-win strategy based on machine learning

Accession number: 20190306390795
Authors: Sun, Jian (1); Li, Qi (1); Chen, Mingqiang (2); Ren, Long (2); Sun, Fengrui (1); Ai, Yong (3); Tang, Kang (2)
Author affiliation: (1) School of Petroleum Engineering, China University of Petroleum, Beijing, China; (2) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China; (3) Exploration and Development Institution Tarim Oil Field, Korla, China
Source title: Society of Petroleum Engineers - Abu Dhabi International Petroleum Exhibition and Conference 2018, ADIPEC 2018
Abbreviated source title: Soc. Pet. Eng. - Abu Dhabi Int. Pet. Exhib. Conf., ADIPEC
Part number: 1 of 1
Issue title: Society of Petroleum Engineers - Abu Dhabi International Petroleum Exhibition and Conference 2018, ADIPEC 2018
Issue date: 2019
Publication year: 2019
Report number: SPE-192833-MS
Language: English
ISBN-13: 9781613996324
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Conference name: Abu Dhabi International Petroleum Exhibition and Conference 2018, ADIPEC 2018
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Conference location: Abu Dhabi, United arab emirates
Conference code: 143431

Publisher: Society of Petroleum Engineers
Abstract: The identification of oil and water layers (OWL) from well log data is an important task in petroleum exploration and engineering. At present, the commonly used methods for OWL identification are time-consuming, low accuracy or need better experience of researchers. Therefore, some machine learning methods have been developed to identify the lithology and OWL. Based on logging while drilling data, this paper optimizes machine learning methods to identify OWL while drilling. Recently, several computational algorithms have been used for OWL identification to improve the prediction accuracy. In this paper, we evaluate three popular machine learning methods, namely the one-against-rest support vector machine, one-against-one support vector machine, and random forest. First, we choose apposite training set data as a sample for model training. Then, GridSearch method was used to find the approximate range of reasonable parameters' value. And then using k-fold cross validation to optimize the final parameters and to avoid overfitting. Finally, choosing apposite test set data to verify the model. The method of using machine learning method to identify OWL while drilling has been successfully applied in Weibei oilfield. We select 1934 groups of well logging response data for 31 production wells. Among them, 198 groups of LWD data were selected as the test set data. Natural gamma, shale content, acoustic time difference, and deep-sensing logs were selected as input feature parameters. After GridSearch and 10-fold cross validation, the results suggest that random forest method is the best algorithm for supervised classification of OWL using well log data. The accuracy of the three classifiers after the calculation of the training set is greater than 90%, but their differences are relative large. For the test set, the calculated accuracy of the three classifiers is about 90%, with a small difference. The one-against-rest support vector machine classifier spends much more time than other methods. The one-against-one support vector machine classifier is the classifier which training set accuracy and test set accuracy are the lowest in three methods. Although all the calculation results have diffierences in accuracy of OWL identification, their accuracy is relatively high. For different reservoirs, taking into account the time cost and model calculation accuracy, we can use random forest and one-against-one support vector machine models to identify OWL in real time during drilling. © Copyright 2018, Society of Petroleum Engineers.
Number of references: 29
Main heading: Support vector machines
Controlled terms: Gasoline - Infill drilling - Logging while drilling - Vectors - Lithology - Learning algorithms - Birds - Classification (of information) - Decision trees - Oil well logging - Petroleum prospecting - Well testing
Uncontrolled terms: 10-fold cross-validation - Computational algorithm - K fold cross validations - Machine learning methods - One-against-one support vector machines - Supervised classification - Support vector machine classifiers - Water layers
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 903.1 Information Sources and Analysis - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
Numerical data indexing: Percentage 9.00e+01%
Funding Details: Number: 51704235, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

290. A Simple Wet-Chemical Route for the Preparation of Silver Dendrites on Commercial Silicon Wafer and Their Applica- tion in SERS Detection

Accession number: 20193907482052
Title of translation: SERS
Authors: Huang, Jian (1); Ma, Dayan (2); Xu, Kewei (2, 3)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory for Mechanical Behavior of Material, Xi'an Jiaotong University, Xi'an; 710049, China; (3) Xi'an University, Xi'an; 710065, China
Corresponding author: Huang, Jian(huangjian1290@163.com)
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Language: English
ISSN: 1002185X
CODEN: XJCGEA
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Design and preparation of various rational silver micro-nanostructures has been recognized as a promising solution for the surface-enhanced Raman scattering (SERS) signal amplification. Here, a simple wet-chemical method was reported for the synthesis of high-density Ag dendrites structures on silicon wafer by rapidly mixing silver nitrate and hydrofluoric acid aqueous solutions. The reductive Si-H surfaces are oxidized while silver ions are reduced, yielding a final Ag dendrites structure that offers an excellent SERS enhancement. The EDS measurements confirm the metallic nature of the formed Ag dendrites. Researches also show that the pure and low-cost Ag dendrites are about several micrometers in size and can be rapidly and reproducibly produced in high yield. There are no organic contaminants on the surface of the resulting dendrites structure. Additionally, the influence of experimental parameters on the morphology of dendrites was also investigated, such as hydrofluoric acid concentration, silver nitrate concentration, and the reaction time. Importantly, the fabricated Ag dendrites substrates can be used for accurate and reliable determination of Sudan I, Sudan II, and Sudan III.
Number of references: 30
Main heading: Fabrication
Controlled terms: Substrates - Hydrofluoric acid - Morphology - Raman scattering - Nitrates - Silicon wafers - Silver compounds - Surface scattering - Metal ions - Silicon compounds
Uncontrolled terms: Acid concentrations - Experimental parameters - Micro-nano structures - SERS - Signal amplifications - Silver dendrites - Surface enhanced Raman Scattering (SERS) - Wet-chemical method
Classification code: 531.1 Metallurgy - 714.2 Semiconductor Devices and Integrated Circuits - 741.1 Light/Optics - 804.2 Inorganic Compounds - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Funding Details: Number: 51171145, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

291. Study on source analysis of the cation in produced water from sulige gas field and anti-scaling measures

Accession number: 20201808599534
Authors: Chang, Peng (1); Shi, Ruixue (1); Wang, Li (1); Han, Wei (1); Ye, Congdan (2); Ma, Yun (3, 4, 5)
Author affiliation: (1) The fifth gas production plant, Changqing Oilfield Company, Xi’an; Shaanxi; 710003, China; (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi’an; Shaanxi; 710065, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi’an; Shaanxi; 710065, China; (4) Engineering Research Center of Development and Management for Low to Ultra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Xi’an; Shaanxi; 710065, China; (5) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, Xi’an; Shaanxi; 710065, China
Corresponding author: Ma, Yun(mayun9401@xsyu.edu.cn)
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Conference date: April 18, 2019 - April 19, 2019
Conference location: Hong Kong, Hong kong
Conference code: 230449
Publisher: Trans Tech Publications Ltd
Abstract: A large amount of foreign matter appears in the Sulige gas well, causing blockage and corrosion of the pipeline, increasing the pressure difference in the wellbore and seriously affecting the normal production of the gas well. The gas wells with serious conditions mentioned above were selected to analyze the quality of single well produced water and the composition of blockage and core. Combined with the XRD analysis results of the cuttings, the long-term leaching experiments on the cuttings in different simulated solutions were carried out to study the sources of scaled ions in the gas wells. The experimental results showed that the extracted water from SD6-1 had high salinity and high content of scale ions Ca2+, Ba2+ and Sr2+; the main component of blockage is the acid insoluble strontium sulfate (barium) scale, and contains a small amount of corrosion products. The easily scalable Ca2+ Mg2+ Ba2+ and Sr2+ produced from the dissolution of the core in the formation water or working fluids, especially the acid erosion dissolves. According to the scaling mechanism, two kinds of Sr/Ba scale inhibitor were selected. The results showed that the barium scale inhibitor performance is relatively good, and at the concentration of 40 mg/L, and the scale inhibition rate was more than 95%. The clogging of a single well can be reduced by adding a scale inhibitor. © 2019 Trans Tech Publications Ltd, Switzerland.
Number of references: 15
Main heading: Sulfur compounds
Controlled terms: Gas industry - Ion sources - Natural gas well production - Produced Water - Strontium compounds - Barium sulfate - Gases - X ray diffraction analysis - Natural gas wells - Pipeline corrosion
Uncontrolled terms: Corrosion products - Long-term leaching - Pressure differences - Scale inhibition - Scaling mechanism - Simulated solution - Strontium sulfate - Sulige gas field
Classification code: 452.3 Industrial Wastes - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 539.1 Metals Corrosion - 804.2 Inorganic Compounds - 932.1 High Energy Physics
Numerical data indexing: Mass_Density 4.00e-02kg/m3, Percentage 9.50e+01%
DOI: 10.4028/www.scientific.net/KEM.814.505
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Compendex references: YES
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Data Provider: Engineering Village

292. Wild boar's tusk enamel: Structure and mechanical behavior

Accession number: 20191106617063
Authors: Wang, Xu (1); Zhang, Nan (1); Zhong, Yujie (2); Yan, Fuxue (1); Jiang, Bailing (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Technology, 5 South Jinhua Road, Xi'an; 710048, China; (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Xu(xwang@alum.imr.ac.cn)
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Pages: 354-362
Language: English
ISSN: 09284931
E-ISSN: 18730191
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Natural bio-ceramics have attracted extensive interests due to its high strength and high toughness, which can hardly be achieved in artificial ceramics simultaneously. In this work, the microstructure and properties of the wild boar's tusk enamel were investigated. The enamel was found to exhibit a hierarchical structure ranging from the hydroxyapatite (HAP) fibers (single or poly-crystals, nano-scale), enamel rods (micro-scale), enamel types (meso-scale) to enamel patterns (macro-scale). It is worth mentioning that the high-density and high-order hierarchical nanotwins were observed in the HAP fibers. The mechanical properties of the wild boar's tusk enamel showed strong

anisotropy and were higher along the longitudinal direction than along the transverse direction. The mechanical properties varied from the dentin-enamel junction (DEJ) to the outer surface. The elastic modulus increased with the distance from the DEJ and then kept invariant. The nano-hardness increased in inner enamel but decreased in outer enamel. There was a peak of nano-hardness in inner enamel area. The fracture toughness showed an opposite tendency. It exhibited high values in inner enamel, but fell in the outer enamel zone. The irregular, decussating texture of the enamel, as well as the nanotwins/hierarchical nanotwins was considered as the main reason for its excellent mechanical properties. These unique structures of the wild boar's tusk enamel are expected to cast light on the design of medical materials and provide some guidelines to improve their mechanical properties. © 2019 Elsevier B.V.
Number of references: 42
Main heading: Hydroxyapatite
Controlled terms: Enamels - Hardness - Nanotechnology - Structural properties - Fracture toughness - Textures - Crystal structure
Uncontrolled terms: Dentin-enamel junctions - Hierarchical structures - Hydroxyapatite (HAp) - Longitudinal direction - Mechanical behavior - Microstructure and properties - Nanotwins - Wild boars
Classification code: 408 Structural Design - 761 Nanotechnology - 804.2 Inorganic Compounds - 813.2 Coating Materials - 933.1.1 Crystal Lattice - 951 Materials Science
DOI: 10.1016/j.msec.2019.03.017
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

293. Molecular dynamics study of the tensile behaviors of Ti(0001)/Ni(111) multilayered nanowires

Accession number: 20184706121320
Authors: Su, M.J. (1); Deng, Q. (1); An, M.R. (2); Liu, L.T. (1); Ma, C.B. (1)
Author affiliation: (1) Fundamental Science on Aircraft Structural Mechanics and Strength Laboratory, Northwestern Polytechnical University, Xi'an; Shaanxi; 710072, China; (2) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Deng, Q.(dengqiong24@nwpu.edu.cn)
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Language: English
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Publisher: Elsevier B.V., Netherlands
Abstract: The tensile behaviors of Ti(0 0 0 1)/Ni(1 1 1) multilayered nanowires are investigated by the molecular dynamics. The results indicate modulation structures may affect the mechanical behaviors of the nanowires dramatically, and plastic deformations are determined by surface effect and interface effect. For isochoric nanowires, deformation behaviors transform from interface driving behavior to surface driving behavior with increasing layer thickness, and an optimal layer thickness of 2.34 nm is discovered. At this size, the interface and Ti layer yield simultaneously at the first yield point, the subsequent plastic behavior is mainly determined by interface rotation and shear offset. For the minimum sample size of 1.31 nm, interface rotation and shear offset dominate the plastic deformations. Nevertheless, plastic deformations are related with grain reorientation, phase transformation and dislocations propagation in Ti layer for the sample size is greater than 2.34 nm, while Ni layer deforms elastically all the time. For non-isochoric nanowires, the results depict modulation ratios significantly influence the elastic modulus and yield strength, but rarely affect the plastic behaviors of the nanowires. The results in present work can provide a guidance to design and exploit high performance metallic multilayered materials. © 2018 Elsevier B.V.

Number of references: 43
Main heading: Nanowires
Controlled terms: Rotation - Plastic deformation - Molecular dynamics - Modulation
Uncontrolled terms: Deformation behavior - Deformation mechanism - Grain reorientation - Modulation structure - Multilayered materials - Multilayered nanowires - Optimal layer thickness - Tensile behaviors
Classification code: 761 Nanotechnology - 801.4 Physical Chemistry - 931.1 Mechanics - 933 Solid State Physics
Numerical data indexing: Size 1.31e-09m, Size 2.34e-09m
DOI: 10.1016/j.commatsci.2018.11.019
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016KW-049, Acronym: -, Sponsor: -;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant No. 11572259), and the Program for International Cooperation and Exchanges of Shaanxi Province (Grant No. 2016KW-049).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

294. Gravity inversion for V-shaped density interface based on Lp-norm regularization

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Title of translation: LpV
Authors: Feng, Xuliang (1, 2); Wang, Wanyin (2); Song, Lijun (1); Yuan, Bingqiang (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Institute of Gravity and Magnetic Technology, College of Geology Engineering and Geomatics, Chang'an University, Xi'an; 710054, China
Corresponding author: Wang, Wanyin(wwy7902@chd.edu.cn)
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Issue: 3
Issue date: March 1, 2019
Publication year: 2019
Pages: 1022-1036
Language: Chinese
ISSN: 00015733
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The V-shaped density interface is commonly seen such as the ocean trench, half-graben, and the Moho beneath a subduction zone. Delineating the relief of these V-shaped density interfaces is of significance in regional tectonic research, physical oceanography and oil and gas exploration. Among inversion methods of the density interface, the regularization approach, which applies prior information, can guarantee the inversion result to fit the known depth of the interface to be estimated. It can also control the shape of the interface via the model constraint function in the regularization item, making the inversion result agree with the real geologic feature. We have designed a model constraint function in the form of Lp-norm and then integrated it with the gravity data misfit function and the known depth constraint function to establish an objective function for V-shaped density interface inversion. Subsequently, we have derived the gradient of the objective function and built the inversion process taking the nonlinear conjugate gradient algorithm as the core. The effect of our proposed inversion method is related to the value of p. The test results conducted with a two-dimensional simple model show that the method can be used to accurately estimate the V-shaped density interface relief when p=5, and the correctness of the proposed method is further confirmed by a two-dimensional V-shaped density interface with complex shape. The test results of a three-dimensional V-shaped density interface show that our proposed method is also appropriate for three-dimensional inversion. At the end of this article, the inversion method is tested with real gravity data of the Challenger Deep and adjacent regions. The gravity anomalies caused by the Moho were calculated by removing extra gravity effects layer by layer from the free-air gravity anomalies under the constraint of the submarine topography and sedimentary thickness data in this area. Inversion of these gravity anomalies using our proposed method shows that the method is able to delineate the relief of a V-shaped Moho under a subduction zone. The estimated depth of the Moho beneath the Challenger Deep ranges 18 km to 20 km, while the depth at the edge of the western Pacific Ocean is 8 km to 12 km, which, to some extent, suggests crustal complexity in the study area. Furthermore, a large inclination of the Pacific subduction slab is inferred from the locations of the maximum of the submarine topography and Moho depth in this area, indicating a relatively slow convergence between the Pacific and Philippine plates. © 2019, Science Press. All right reserved.

Number of references: 46
Main heading: Phase interfaces
Controlled terms: Geophysics - Petroleum prospecting - Oceanography - Topography - Gravitation
Uncontrolled terms: Density interface - Gravity anomalies - Lp-norm - Non linear inversion - Regularization
Classification code: 471.1 Oceanography, General - 481.3 Geophysics - 512.1.2 Petroleum Deposits : Development Operations - 801.4 Physical Chemistry - 931.5 Gravitation, Relativity and String Theory - 951 Materials Science
Numerical data indexing: Size 1.80e+04m to 2.00e+04m, Size 8.00e+03m to 1.20e+04m
DOI: 10.6038/cjg2019L0719
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

295. Prediction of drug-target interaction by integrating diverse heterogeneous information source with multiple kernel learning and clustering methods

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Authors: Yan, Xiao-Ying (1, 2); Zhang, Shao-Wu (1); He, Chang-Run (1)
Author affiliation: (1) Key Laboratory of Information Fusion Technology of Ministry of Education, School of Automation, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Zhang, Shao-Wu(zhangsw@nwpu.edu.cn)
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Abbreviated source title: Comput. Biol. Chem.
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Issue date: February 2019
Publication year: 2019
Pages: 460-467
Language: English
ISSN: 14769271
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Background: Identification of potential drug-target interaction pairs is very important for pharmaceutical innovation and drug discovery. Numerous machine learning-based and network-based algorithms have been developed for predicting drug-target interactions. However, large-scale pharmacological, genomic and chemical datum emerged recently provide new opportunity for further heightening the accuracy of drug-target interactions prediction. Results: In this work, based on the assumption that similar drugs tend to interact with similar proteins and vice versa, we developed a novel computational method (namely MKLC-BiRW) to predict new drug-target interactions. MKLC-BiRW integrates diverse drug-related and target-related heterogeneous information source by using the multiple kernel learning and clustering methods to generate the drug and target similarity matrices, in which the low similarity elements are set to zero to build the drug and target similarity correction networks. By incorporating these drug and target similarity correction networks with known drug-target interaction bipartite graph, MKLC-BiRW constructs the heterogeneous network on which Bi-random walk algorithm is adopted to infer the potential drug-target interactions. Conclusions: Compared with other existing state-of-the-art methods, MKLC-BiRW achieves the best performance in terms of AUC and AUPR. MKLC-BiRW can effectively predict the potential drug-target interactions. © 2018 Elsevier Ltd
Number of references: 41
Main heading: Heterogeneous networks
Controlled terms: Cluster analysis - Random processes - Drug interactions - Forecasting
Uncontrolled terms: Bi-random walks - Clustering - Drug-target interactions - Heterogeneous information sources - Multiple Kernel Learning - Network-based algorithm - Pharmaceutical innovations - State-of-the-art methods
Classification code: 461.6 Medicine and Pharmacology - 723 Computer Software, Data Handling and Applications - 802.2 Chemical Reactions - 922.1 Probability Theory
DOI: 10.1016/j.compbiolchem.2018.11.028
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Compendex references: YES
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296. Study on reasonable gas recovery rate and adjustment scheme of bottom water gas reservoir (*Open Access*)

Accession number: 20194107518751
Authors: Zhi, Ji-Qiang (1); Liu, Yi-Kun (1); Bai, Ming-Xing (1, 2); Jiang, Nan (3); Gao, Shuo (1)
Author affiliation: (1) School of Petroleum Engineering, Northeast Petroleum University, Daqing; 163318, China; (2) School of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (3) School of Electrical Engineering and Information, Northeast Petroleum University, Daqing; 163318, China
Corresponding author: Bai, Ming-Xing(baimingxing@hotmail.com)
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Publication year: 2019
Article number: 032003
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Conference name: 2019 2nd International Conference of Green Buildings and Environmental Management, GBEM 2019
Conference date: June 14, 2019 - June 16, 2019
Conference location: Guiyang, China
Conference code: 152070
Publisher: IOP Publishing Ltd
Abstract: During the exploitation of bottom water gas reservoirs, the gas wells have a serious impact on the development of gas reservoirs. Based on the systematic analysis of the production dynamics and water intrusion characteristics of the bottom water gas reservoir in the XS gas field, combined with seismic, geological, well logging, production testing and other data, a numerical simulation model was established to demonstrate the rational gas production rate after gas reservoir seeing water. Research on the mechanism of water control. The gas reservoir numerical simulation technology is used to determine the reasonable gas production speed of the gas well, which can alleviate the bottom water coning rate and prolong the waterless gas production period. Combined with measures such as drainage, water shutoff, and shut-in, the rational gas production rate and adjustment measures for the bottom water gas reservoir are formulated. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 8
Main heading: Gases
Controlled terms: Gas industry - Natural gas well production - Petroleum reservoirs - Well logging - Natural gas wells - Numerical models - Well testing
Uncontrolled terms: Gas productions - Gas recovery - Gas reservoir - Production testing - Systematic analysis - Water control - Water intrusions - Water shut off
Classification code: 512.1.1 Oil Fields - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 921 Mathematics
DOI: 10.1088/1755-1315/310/3/032003
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Funding text: This study was supported by Major Project of China National Offshore Oil Corporation 13th five-year plan (Grant No. CCL2018ZJFN0462), National Natural Science Foundation of China (Grant No.: 51774095), and PetroChina Innovation Foundation (Grant No.: 2018D-5007-0215).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
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297. Differences and origin of micro-pore throat characteristics for tight sandstone reservoir of Yanchang Formation, Ordos Basin

Accession number: 20191306691453
Title of translation:
Authors: Gao, Hui (1, 2); Zhugeng, Bolun (1, 2); Wang, Xuanyi (3, 4); Shi, Hua (3, 4); Wang, Minglei (5); He, Mengqing (1, 2); Dou, Liangbin (1, 2); Wang, Chen (1, 2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Engineering Research Center of Development & Management of Western Low & Ultra-Low Permeability Oilfield, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) Oil and Gas Technology Institute of Changqing Oilfield Branch Company, PetroChina, Xi'an; Shaanxi; 710018, China; (4) National Engineering Laboratory of Low Permeability Oil & Gas Fields Exploration and Development, Xi'an; Shaanxi; 710018, China; (5) Research Institute of Petroleum Exploration and Development, PetroChina, Beijing; 100083, China
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Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: By adopting quantitative evaluation of pore throat parameters under different depositional and diagenetic conditions, and with reference to the test results of physical property, casting section, SEM, constant speed mercury injection, particle size and X diffraction, the pore throat types of Chang 8 reservoir of Heshui Region and Chang 6 reservoir of Xuecha Region in Ordos Basin were analyzed, contrasted and reasons for how they were formed were revealed. Results show that the pores are better developed in Chang 8 reservoir in Heshui Region, with a high quantity of intergranular, dissolved, intercrystalline and micro pores, as well as necking down throats with weak compaction, tube-shaped throats with dissolution and clay cementation; while pores are less developed in terms of both types and range in Chang 6 reservoir of Xuecha Region, with high quantity of lamellar and curved lamellar throats with compaction. For the two studied reservoirs, the differences in pore parameters are not as significant as those in throat parameters. Compared to Chang 6 reservoir, Chang 8 reservoir developed better and larger throats with apparent differences, bigger pore-throat ratio, and wider distribution of throats that are conducive to permeability. Under the condition of same permeability, the average throat radius, main flow throat radius and pore-throat ratio of Chang 8 reservoir are all bigger than those of Chang 6 reservoir. It can be concluded that the hydrodynamic conditions in sediments, particle size, detrital component, interstitials, diagenesis types and their respective influence degrees, are the main reasons for the differences in the development of pores, throat types and pore throat parameters.
Number of references: 27
Main heading: Textures
Controlled terms: Tight gas - Petroleum reservoir engineering - Compaction - Parameter estimation - Particle size - Metamorphic rocks - Sandstone
Uncontrolled terms: Hydrodynamic conditions - Mercury injection - Ordos Basin - Pore throat - Quantitative evaluation - Tight sandstone reservoirs - Tight sandstones - Yanchang Formation
Classification code: 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels
DOI: 10.11743/ogg20190209
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

298. Preparation of a Styrene-acrylic Emulsion for Waterborne Paint and Its Film Properties

Accession number: 20200107964007
Title of translation:
Authors: Cheng, Hang-Hang (1); Shen, Yi-Ding (1); Ma, Guo-Yan (2); Yang, Kai (1); Hou, Xu-Ming (1)

Author affiliation: (1) Shaanxi Key Laboratory of Chemical Additives for Industry, Shaanxi University of Science & Technology, Xi'an; Shaanxi; 710021, China; (2) College of Chemistry & Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Shen, Yi-Ding(ydshen@sust.edu.cn)
Source title: Jingxi Huagong/Fine Chemicals
Abbreviated source title: Jingxi Huagong
Volume: 36
Issue: 11
Issue date: November 15, 2019
Publication year: 2019
Pages: 2302-2308
Language: Chinese
ISSN: 10035214
CODEN: JIHUFJ
Document type: Journal article (JA)
Publisher: Fine Chemicals
Abstract: A waterborne styrene-acrylic dispersion emulsion with core-shell structure was prepared by semi-continuous solution and phase inversion emulsion polymerization using methacrylic acid (MAA) as hydrophilic monomer, hydroxypropyl methacrylate (HPMA) as crosslinking monomer, styrene (St), methyl methacrylate (MMA) and butyl acrylate (BA) as monomers. Subsequently, the styrene-acrylic emulsion film was further prepared. The effects of the MAA core-shell mass ratio, the amount of monomers such as MAA, St and HPMA on the properties of waterborne styrene-acrylic dispersion emulsion and film were discussed. The structure and thermal stability of the emulsion film were characterized by FTIR and TGA. The size and morphology of the styrene-acrylic emulsion particles were characterized by DLS and TEM. The results showed that when the mass ratio of MAA in the core shell was 2:8, the mass fraction of MAA was 7% (based on the mass of all monomers, the same below), the mass fraction of HPMA was 10%, and the mass ratio of St to MMA was 3:1, the prepared copolymer emulsion had excellent properties, with a particle size of 259.65 nm, viscosity of 349.1 mPas, filming hardness of 72.4°, tensile strength of 1.422 MPa, and elongation at break 59.355%. The film water resistance time could approach 90 h, and the adhesion level was 1.
Number of references: 23
Main heading: Styrene
Controlled terms: Emulsion polymerization - Particle size - Thermodynamic stability - Tensile strength - Acrylic monomers - Hydrophilicity - Esters - Film preparation - Shells (structures) - Emulsification - Dispersions
Uncontrolled terms: Core shell structure - Crosslinking monomers - Elongation at break - Film properties - Hydrophilic monomers - Methyl methacrylates - Styrene-acrylic emulsion - Waterborne paints
Classification code: 408.2 Structural Members and Shapes - 641.1 Thermodynamics - 802.3 Chemical Operations - 804.1 Organic Compounds - 815.2 Polymerization - 951 Materials Science
Numerical data indexing: Percentage 1.00e+01%, Percentage 5.94e+01%, Percentage 7.00e+00%, Pressure 1.42e+06Pa, Size 2.60e-07m, Time 3.24e+05s
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

299. Core mismatching based in-fiber Michelson interferometer for liquid refractive index sensing

Accession number: 20200308041930
Authors: Han, Liang (1); Shao, Min (1); Sun, Haonan (1); Liu, Yinggang (1); Qiao, Xueguang (2)
Author affiliation: (1) School of Science, Ministry of Education Key Laboratory on Photoelectric Oil-Gas Logging and Detecting, Xi'An Shiyou University, Xi'an; 710072, China; (2) Department of Physics, Northwest University, Xi'an; 710069, China
Corresponding author: Shao, Min(shaomin@sxyu.edu.cn)
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 11185
Part number: 1 of 1
Issue title: Optical Design and Testing IX
Issue date: 2019
Publication year: 2019

Article number: 1118510
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510630871
Document type: Conference article (CA)
Conference name: Optical Design and Testing IX 2019
Conference date: October 21, 2019 - October 22, 2019
Conference location: Hangzhou, China
Conference code: 156317
Sponsor: Chinese Optical Society (COS); The Society of Photo-Optical Instrumentation Engineers (SPIE)
Publisher: SPIE
Abstract: An in-fiber Michelson interferometer based on core mismatching for liquid refractive index sensing is proposed and demonstrated. The sensor can be simply fabricated by fusion splicing a section of thinned core fiber (TCF) to a standard single mode fiber (SMF) without any reflection coating. The experimental results show that the sensor possesses RI sensitivity of -111.58 dB/RIU in the RI range of 1.333-1.380 RIU. The liquid temperature cross-sensitivity is experimentally analyzed and reveals that the measurement error of the liquid RI caused by temperature is -0.89×10-6 RIU/°C in water temperature range of 25°C-80°C. The advantages of easy fabrication, high sensitivity, working on reflective intensity detection and compact size make the proposed sensor can offer promising applications in chemical, biomedical and petrochemical fields. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.
Number of references: 15
Main heading: Michelson interferometers
Controlled terms: Refractometers - Water temperature - Antireflection coatings - Single mode fibers - Chemical detection - Refractive index - Liquids - Reflective coatings
Uncontrolled terms: Fiber Sensor - Intermodal interferences - Liquid refractive index - Liquid temperature - Reflective intensity - Refractive index sensor - Standard single mode fibers - Water temperatures
Classification code: 641.1 Thermodynamics - 741.1 Light/Optics - 741.1.2 Fiber Optics - 801 Chemistry - 813.2 Coating Materials - 941.3 Optical Instruments
Numerical data indexing: Temperature 2.98e+02K to 2.73e+02K
DOI: 10.1117/12.2537306
Funding Details: Number: YCS18111009, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundation of China (61805197) and Graduate Student Innovation Fund of Xi'an Shiyou University (YCS18111009).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

300. A liquid refractive index sensor based on 3-core fiber Michelson interferometer

Accession number: 20193307323901
Authors: Shao, Min (1); Han, Liang (1); Sun, Haonan (1); Yin, Xunli (1); Qiao, Xueguang (2)
Author affiliation: (1) School of Science, Ministry of Education Key Laboratory on Photoelectric Oil–Gas Logging and Detecting, Xi'an Shiyou University, Xi'an; 710072, China; (2) Department of Physics, Northwest University, Xi'an; 710069, China
Corresponding author: Shao, Min(shaomin@xsyu.edu.cn)
Source title: Optics Communications
Abbreviated source title: Opt Commun
Volume: 453
Issue date: 15 December 2019
Publication year: 2019
Article number: 124356
Language: English
ISSN: 00304018
CODEN: OPCOB8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands

Abstract: A liquid refractive index (RI) sensor based on in-fiber Michelson interferometer (MI) is proposed and experimentally demonstrated, which consists of a segment of 3-core fiber (3CF) fusion spliced with a short piece of multimode fiber (MMF). The operation principle of the MI lies in the intermodal interference of the 3CF via employing MMF to excite high-order modes, and the 3CF end face reflects the interference spectrum which loaded the surrounding RI information. By measuring the reflection spectrum variation, the RI can be determined. Experimentally, a linearly RI sensitivity of -151.56 dB/RIU is achieved in the sensing range of 1.3335-1.3720 RIU, and the temperature sensitivity in water is 0.048 nm/°C. © 2019
Number of references: 19
Main heading: Michelson interferometers
Controlled terms: Refractive index - Refractometers - Multimode fibers - Liquids
Uncontrolled terms: Fiber Michelson interferometer - Fiber-optical sensors - Interference spectrum - Intermodal interferences - Liquid refractive index - Liquid refractive index sensors - Multi-mode fibers (MMF) - Temperature sensitivity
Classification code: 741.1 Light/Optics - 741.1.2 Fiber Optics - 941.3 Optical Instruments
DOI: 10.1016/j.optcom.2019.124356
Funding Details: Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Natural Science Foundation of China under Grant (61805197).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

301. Cluster analysis of Xi'an restaurants by Self-organizing maps (*Open Access*)

Accession number: 20193207295871
Authors: Kong, Jie (1); Ren, Meng (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022121
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: To investigate the segmentation features of restaurants in Xi'an, China, the Self-organizing maps are applied in this study to analyse the information of online reviews obtained from Dazhong Dianping, which is a famous Chinese social network. Through the clustering and visualization performed by Self-organizing maps, 10 segments of restaurants are identified and some representative features are summarized. The findings of this study could help managers to improve restaurant competitiveness, as well as customers' decision making. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 16
Main heading: Self organizing maps
Controlled terms: Conformal mapping - Cluster analysis - Decision making
Uncontrolled terms: Online reviews
Classification code: 723 Computer Software, Data Handling and Applications - 912.2 Management
DOI: 10.1088/1742-6596/1237/2/022121
Funding Details: Number: 2013BS025, Acronym: -, Sponsor: -; Number: 17JK0614, Acronym: -, Sponsor: Education Department of Shaanxi Province;

Funding text: This work is supported by the Science Research Project of Shaanxi Provincial Department of Education (Grant No: 17JK0614) and the Youth Innovation Fund of Xian Shiyou University (Grant No: 2013BS025).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

302. Numerical simulation of the geo-steering electromagnetic wave measurement while drilling in inclined wells

Accession number: 20193607404620
Title of translation:
Authors: Xie, Xicao (1); Wu, Jie (1); Gao, Jianshen (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Xie, Xicao(xiexicao@xsyu.edu.cn)
Source title: Shiyou Diqiu Wuli Kantan/Oil Geophysical Prospecting
Abbreviated source title: Shiyou Diqiu Wuli Kantan
Volume: 54
Issue: 3
Issue date: June 15, 2019
Publication year: 2019
Pages: 676-684 and 699
Language: Chinese
ISSN: 10007210
CODEN: SDWKEP
Document type: Journal article (JA)
Publisher: Science Press
Abstract: The electromagnetic wave measurement while drilling tool in the directional well mining identifies the drilled formation and the formation to be drilled, and ensures the bit in a right tracjectory, so the oil and gas recovery will be greatly improved. We conduct a study on the electromagnetic wave measurement while drilling tool in inclined wells. The following understandings are obtained: The distance from the surrounding rock layer to the target can be judged by the positive or negative of the directional response signal; The influence of formation inclination and formation anisotropy on the directional response can be reduced or eliminated with symmetric coil arrangement for measurement. The directional measurements of two pairs of single emissing and single receiving coil system should be superimposed together. When the tool is located near the formation boundary, the directional response signal is only sensitive to the inclination, and when the tool is far from the formation boundary, the directional response signal is less affected by anisotropy and inclination, and the directional response curve is simple; A numerical simulation for the directional measurement response of formation dip angle less than 20° is carried out. If the target thickness is less 6m, the geo-steering signals are very sensitive to well dip angle. The proposed method has a high real-time measurement accuracy and compensates the shortage of the current borehole imaging. © 2019, Editorial Department OIL GEOPHYSICAL PROSPECTING. All right reserved.
Number of references: 22
Main heading: Anisotropy
Controlled terms: Infill drilling - Electromagnetic waves - Circular waveguides
Uncontrolled terms: Borehole Imaging - Coil systems - Directional measurement - Directional response - Directional well - Formation anisotropy - Real time measurements - Wave measurement
Classification code: 511.1 Oil Field Production Operations - 711 Electromagnetic Waves - 714.3 Waveguides - 931.2 Physical Properties of Gases, Liquids and Solids
Numerical data indexing: Size 6.00e+00m
DOI: 10.13810/j.cnki.issn.1000-7210.2019.03.022
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

303. Higher-order Knudsen's permeability correction model for rarefied gas in micro-scale channels

Accession number: 20192607089036

Title of translation:
Authors: Lu, Yinbin (1)
Author affiliation: (1) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Lu, Yinbin(yblu@xsyu.edu.cn)
Source title: Natural Gas Industry
Abbreviated source title: Natur. Gas Ind.
Volume: 39
Issue: 3
Issue date: March 25, 2019
Publication year: 2019
Pages: 65-71
Language: Chinese
ISSN: 10000976
CODEN: TIGOE3
Document type: Journal article (JA)
Publisher: Natural Gas Industry Journal Agency
Abstract: Rarefaction effect appears when gas flows in micro- or nano-scale channels, so it is difficult to accurately predict the real gas flow rate by using the classical theory. To solve this problem, it is necessary to establish a more accurate and universal permeability correction model to describe the flowing behavior of rarefied gas. In this paper, the gas flow in a parallel microchannel was numerically simulated using R26 moment method, and the simulation results were compared with those of the direct simulation Monte Carlo method (DSMC method) and R13 moment method. Then, a gas permeability correction model for parallel microchannels and circular microtubes was established based on the simulation results of the R26 moment method, and used to describe the flowing behavior of rarefied gas in micro-scale channels. Finally, the gas permeability correction coefficient for different Knudsen numbers was calculated and compared with the prediction results of the Tang model, the experimental data and the solution of linearized Boltzmann equation. And the following research results were obtained. First, when the R26 moment method is used to describe the rarefaction effect of gas, its result is accordant with the calculation result of the DSMC method, and its calculation accuracy is higher than that of R13 moment method. Second, the gas permeability correction coefficient which is calculated by using the higher-order Knudsen's gas permeability correction model for parallel microchannels is in accordance with the experimental data and the solution of linearized Boltzmann equation. Third, the gas permeability correction coefficient which is calculated by using the higher-order Knudsen's gas permeability correction model for circular microtubes is accordant with the solution of linearized Boltzmann equation. In conclusion, this higher-order Knudsen's gas permeability correction model is advantageous with high prediction precision and universality, and it can be used to describe the rarefaction effect of gas in micro/nano-scale channels. © 2019, Natural Gas Industry Journal Agency. All right reserved.
Number of references: 39
Main heading: Gases
Controlled terms: Method of moments - Boltzmann equation - Forecasting - Linearization - Nanotechnology - Microchannels - Flow of gases - Monte Carlo methods
Uncontrolled terms: Correction models - Knudsen numbers - Prediction precision - Rarefied gas - Universality
Classification code: 631.1.2 Gas Dynamics - 761 Nanotechnology - 921 Mathematics - 922 Statistical Methods - 922.2 Mathematical Statistics
DOI: 10.3787/j.issn.1000-0976.2019.03.008
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

304. Application of Improved Non-local Mean Filtering Algorithm in Detection of Oil and Gas Wells (*Open Access*)

Accession number: 20200207987405
Authors: Cuan, Ying (1); Wang, Sijie (1); Han, Jiaxin (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou Universit, Xi'an Shaanxi; 710065, China
Corresponding author: Wang, Sijie(602164057@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1345
Part number: 4 of 6
Issue: 4

Issue title: 2nd International Conference on Computer Information Science and Application Technology, CISAT 2019 - 3. Advanced Algorithms and Artificial Intelligence
Issue date: November 28, 2019
Publication year: 2019
Article number: 042051
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Information Science and Application Technology, CISAT 2019
Conference date: August 30, 2019 - September 1, 2019
Conference location: Guangzhou, China
Conference code: 156052
Publisher: IOP Publishing Ltd
Abstract: As the oil and gas exploration in most parts of China has entered into the middle and late stages, the aging and wear problems of mining equipment have become increasingly prominent. In the process of visual image acquisition of oil and gas well casing damage, due to the influence of the complex environment of light and dust, the image data source noise is serious, and the image recognition model has low accuracy. This paper improves the neighbourhood filtering algorithm block search process with the ant colony pheromone correlation theory, optimizes the block matching process with the Pearson algorithm, and eventually applies the optimized non-local mean filtering algorithm to the oil and gas well casing damage visual detection process. The experimental results show that the improved non-local mean filtering algorithm has a significant impact on the adaptability and effectiveness of the noise reduction effect. © Published under licence by IOP Publishing Ltd.
Number of references: 11
Main heading: Noise abatement
Controlled terms: Ant colony optimization - Damage detection
Uncontrolled terms: Complex environments - Filtering algorithm - Image-recognition model - Noise reduction effect - Non local means - Oil and gas exploration - Oil and gas well - Visual detection
Classification code: 751.4 Acoustic Noise - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1345/4/042051
Funding Details: Number: 51707158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019KW-045, Acronym: -, Sponsor: Key Research and Development Program of Jiangxi Province;
Funding text: This work was supported by the Key Research Development Program of Shaanxi Province (2019KW-045) and the National Natural Science Foundation of China (51707158).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

305. Bifurcation Analysis of a Quarter Car Vehicle System

Accession number: 20203809213830
Title of translation:
Authors: Tong, Lin-Jun (1); Zeng, Wei (2)
Author affiliation: (1) PingXiang University, Pingxiang; 337055, China; (2) Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Tong, Lin-Jun
Source title: Journal of the Chinese Society of Mechanical Engineers, Transactions of the Chinese Institute of Engineers, Series C/Chung-Kuo Chi Hsueh Kung Ch'eng Hsuebo Pao
Abbreviated source title: J Chin Soc Mech Eng Trans Chin Inst Eng Ser C
Volume: 40
Issue: 4
Issue date: August 1, 2019
Publication year: 2019
Pages: 423-429
Language: English
ISSN: 02579731
Document type: Journal article (JA)
Publisher: Chinese Mechanical Engineering Society

Abstract: A systematic analysis of the effects of non-linear, hysteretic, tire damping and stiffness forces, on the nonlinear, dynamic response of a two degrees of freedom, quarter-car suspension system. The dynamics of the system were evaluated through analysis of dynamic trajectories, power spectra, Poincare maps, bifurcation maps and frequency responses, respectively. The quasi-periodic solution for the twisting of the natural frequency was detected, and the coexistence of quasi-periodic and periodic solutions, due to the fold bifurcation, was also observed. Two resonances were found in the frequency response. The first resonance is the main resonance due to the lower natural frequency, and the second resonance is a subharmonic resonance of the higher natural frequency. The tire damping, combined with excitation amplitude and frequency, strongly impacted the dynamic characteristics. The results presented in this study provide a better understanding of the operating conditions under which undesirable dynamic motion takes place in a quarter-car system, and would therefore serve as a useful source of reference for engineers interested in designing and controlling such systems to extend the expected lives of automobiles. © 2019, Chinese Mechanical Engineering Society. All right reserved.
Number of references: 31
Main heading: Frequency response
Controlled terms: Damping - Bifurcation (mathematics) - Degrees of freedom (mechanics) - Natural frequencies - Automobile suspensions - Stiffness - Hysteresis
Uncontrolled terms: Bifurcation analysis - Dynamic characteristics - Dynamic trajectories - Excitation amplitudes - Operating condition - Quasi-periodic solution - Sub-harmonic resonances - Two degrees of freedom
Classification code: 662.4 Automobile and Smaller Vehicle Components - 931.1 Mechanics - 951 Materials Science - 961 Systems Science
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

306. An improved evolutionary multi-objective optimization algorithm based on decomposition (*Open Access*)

Accession number: 20194907784081
Authors: Han, Jiaxin (1); He, Manman (1); Cuan, Ying (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Han, Jiaxin(jxhan@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1325
Part number: 1 of 1
Issue: 1
Issue title: 2019 International Conference on Artificial Intelligence Technologies and Applications
Issue date: November 7, 2019
Publication year: 2019
Article number: 012158
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 International Conference on Artificial Intelligence Technologies and Applications, ICAITA 2019
Conference date: July 5, 2019 - July 7, 2019
Conference location: Qingdao, China
Conference code: 155154
Publisher: IOP Publishing Ltd
Abstract: Multi-objective optimization (MOP) is a hot and difficult problem in the field of industrial production and scientific research, involving simultaneous optimization of multiple objectives. In this paper, an improved decomposition-based multi-objective evolutionary algorithm is proposed to solve MOP. Firstly, the Latin hypercube sampling method is used to generate the initial population in order to improve the diversity of the initial population and the probability of convergence to the global optimal solution. Secondly, the adaptive differential crossover operator is used to adjust the parameter settings adaptively for different problems, including the differential proportionality factor and crossover probability, so as to improve the performance of the algorithm. Finally, the reference point is set to coordinate origin, which can pull the population back to the real front faster and accelerate the convergence speed of the population. In a group of benchmark problems, ZDT and DTLZ test problems, the algorithm is widely compared

with four most advanced algorithms. The experimental results show that the algorithm has better ability to solve MOP problems.
Number of references: 11
Main heading: Multiobjective optimization
Controlled terms: Industrial research - Artificial intelligence - Evolutionary algorithms
Uncontrolled terms: Cross-over probability - Evolutionary multiobjective optimization - Global optimal solutions - Latin hypercube sampling methods - Multi objective evolutionary algorithms - Probability of convergences - Proportionality factors - Simultaneous optimization
Classification code: 723.4 Artificial Intelligence - 901.3 Engineering Research - 912.1 Industrial Engineering - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1325/1/012158
Funding Details: Number: 2019kw-045, Acronym: -, Sponsor: -; Number: 2018JM6093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

307. Experimental Study on Deep Hole Drilling of TC18 Titanium Alloy Based on BTA (*Open Access*)

Accession number: 20202008673315
Authors: Liu, Zhanfeng (1); Song, Ziyang (1); Li, Wenjie (1); Li, Zhong (1)
Author affiliation: (1) Department of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shan'xi; 710065, China
Corresponding author: Song, Ziyang(228428583@qq.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 688
Part number: 3 of 5
Issue: 3
Issue title: 3rd International Conference on Traffic Engineering and Transportation System - 2. Vehicle Engineering
Issue date: December 6, 2019
Publication year: 2019
Article number: 033067
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 3rd International Conference on Traffic Engineering and Transportation System, ICTETS 2019
Conference date: September 20, 2019 - September 22, 2019
Conference location: Jiaozuo, China
Conference code: 156507
Publisher: IOP Publishing Ltd
Abstract: TC18 titanium alloy has problems such as difficult chip removal and chip removal, severe tool wear and skew of the hole axis during deep hole machining, which seriously affects the surface quality of the inner hole. Therefore, this test carried out the BTA deep hole drilling test for TC18 titanium alloy, and studied and analyzed the problems of chip shape change, tool wear and hole axis deflection during machining. The test results show that the chip shape is longer and more developed with the increase of the spindle speed, and the bending is longer and more curved with the decrease of the feed amount; the tool wear is serious during the drilling process, and the reasonable process parameters can reduce the wear of the tool; The cutting force, the rigidity of the drill pipe and the arrangement of the guide blocks are important factors affecting the deflection of the hole axis. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Wear of materials
Controlled terms: Infill drilling - Cutting tools - Titanium alloys
Uncontrolled terms: Chip removal - Cutting forces - Deep hole drilling - Deep holes - Drilling process - Process parameters - Spindle speed - Tc18 titanium alloys

Classification code: 511.1 Oil Field Production Operations - 542.3 Titanium and Alloys - 603.2 Machine Tool Accessories - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/1757-899X/688/3/033067
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

308. Supervised Kernel Based Nonlinear Unmixing of Hyperspectral Data (*Open Access*)

Accession number: 20193207295607
Authors: Xiao, Hong (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University Shannxi, Xi'an; 710065, China
Corresponding author: Xiao, Hong(xiaohong@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
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Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022007
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In hyperspectral imagery problem, pixels are mixtures of spectral component associated with pure materials. Recently, nonlinear models have been taken into consideration to surmount some limitations of linear model. In this paper, the nonlinear hyperspectral image unmixing problem is formulated with kernel learning theory, with the number of kernels being controlled by the coherence rule. To be more physically interpretable, a relationship between endmembers and abundance vectors is introduced as a constraint of the optimization problem. An iterative learning algorithm derived from augmented Lagrangian method is proposed to solve the defined problem. Simulation results show the efficacy of the proposed model and algorithm. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Iterative methods
Controlled terms: Remote sensing - Lagrange multipliers - Spectroscopy - Learning algorithms - Constrained optimization
Uncontrolled terms: Augmented Lagrangian methods - Hyper-spectral imageries - Hyperspectral Data - Iterative learning algorithms - Model and algorithms - Non-linear unmixing - Optimization problems - Spectral components
Classification code: 723.4.2 Machine Learning - 921.6 Numerical Methods - 961 Systems Science
DOI: 10.1088/1742-6596/1237/2/022007
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

309. Measurement of core permeability in 'reservoir physics' by virtual simulation experiment

Accession number: 20200107952600
Authors: Li, Gaohe (1); Xu, Bo (1); Zhang, Yanli (1)

Author affiliation: (1) School of Economic Management, Xi'an Shiyou University, Xi'an 710065, China School of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China International Business School, Shaanxi Normal University, Xi'an 710119, China
Source title: Proceedings - 2019 International Conference on Virtual Reality and Intelligent Systems, ICVRIS 2019
Abbreviated source title: Proc. - Int. Conf. Virtual Real. Intell. Syst., ICVRIS
Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Virtual Reality and Intelligent Systems, ICVRIS 2019
Issue date: September 2019
Publication year: 2019
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Article number: 8920791
Language: English
ISBN-13: 9781728150505
Document type: Conference article (CA)
Conference name: 2019 International Conference on Virtual Reality and Intelligent Systems, ICVRIS 2019
Conference date: September 14, 2019 - September 15, 2019
Conference location: Jishou, China
Conference code: 155690
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Using OpenCV image processing library and VC++ programming language, this paper realizes the virtual simulation experiment measurement of core permeability of 'Reservoir Physics'. The permeability measurements of several core samples were completed, the experimental data were recorded dynamically, and the experimental data points were fitted linearly. Resource sharing is realized, the cost of the experiment is saved and minimize the risk factors in the real experiment that needs to be completed next. By guiding students to complete virtual simulation experiments before class, teachers can more actively cultivate students' learning initiative and enable students to complete real experiments with questions. Virtual simulation experiment is a new teaching mode completed by modern and contemporary technologies. It emphasizes the cultivation of talents' innovative ability, promotes the improvement of talents' quality and effectively improves the quality of running a school. © 2019 IEEE.
Number of references: 16
Main heading: Students
Controlled terms: Image processing - Digital libraries - Mechanical permeability - Petroleum reservoir engineering
Uncontrolled terms: Core permeability - Cultivation of talents - Image processing libraries - Innovation abilities - Permeability measurements - Physics experiments - VC+ + programming language - Virtual simulations
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 903.4.1 Libraries
DOI: 10.1109/ICVRIS.2019.00014
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

310. Enhancement of GPR Diffracted Waves Processing: A Case Study from Taiyuan, China

Accession number: 20192907208095
Authors: Shen, Hongyan (1); Yan, Yueying (1); Li, Xinxin (1); Wan, Xin (1); Li, Qin (1); Li, Yidong (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Environmental and Engineering Geophysics
Abbreviated source title: J. Environ. Eng. Geophys.
Volume: 24
Issue: 2
Issue date: June 1, 2019
Publication year: 2019
Pages: 237-247
Language: English
ISSN: 10831363
E-ISSN: 19432658
Document type: Journal article (JA)
Publisher: Society of Exploration Geophysicists
Abstract: Mined-out areas, caves, voids and cavities usually appear as diffracted waves on ground penetrating radar (GPR) profiles. Therefore, the complete extraction of diffracted waves forms the foundation of the efficient usage of the GPR technique in geological surveys. We propose a method of enhancing GPR diffracted waves via singular value

decomposition (SVD) filtering and establish an effective GPR data processing flowchart. First, the shallow and deep signal energies were controlled within a certain dynamic range by energy scaling in the traces. Next, the SVD filtering process was employed to suppress air waves and multiples with better transverse coherence and to extract GPR diffracted waves. Third, background noise was suppressed via band-pass filtering to further improve the signal-to-noise ratio (SNR) of the GPR data. Finally, fitting a diffraction time-distance hyperbola allow us to obtain a diffraction velocity. Constant velocity migration processing for the diffracted waves was based on the Kirchhoff migration technique. The feasibility and effectiveness of this GPR processing technique were verified with the discovery of geological flaws beneath the Mengshan Giant Buddha in China during a cavity survey. Our proposed flowchart efficiently extracts GPR diffracted waves and increases the data SNR. The resulting images are more readily interpreted within the local geological context.
Number of references: 37
Main heading: Singular value decomposition
Controlled terms: Flowcharting - Geological surveys - Geophysical prospecting - Signal to noise ratio - Geology - Data mining - Ground penetrating radar systems - Data handling - Diffraction
Uncontrolled terms: Band pass filtering - Constant velocities - Diffracted waves - Filtering process - GPR data processing - Ground penetrating radar (GPR) - Kirchhoff migration - Transverse coherence
Classification code: 481.1 Geology - 481.4 Geophysical Prospecting - 716.1 Information Theory and Signal Processing - 716.2 Radar Systems and Equipment - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 921 Mathematics
DOI: 10.2113/JEEG24.2.237
Funding Details: Number: 13JS093, Acronym: -, Sponsor: -; Number: 2017JZ007, Acronym: -, Sponsor: -;
Funding text: This research is supported by the Shaanxi Province Natural Science Basic Research Project (No. 2017JZ007) and Key Laboratory Research Project of Shaanxi Provincial Department of Education (No. 13JS093). We thank Dr. Bingqiang Yuan, Yiming Chang and Zhonghua Ning for giving us some suggestions. Dr. David Huntley (Geological Survey of Canada)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

311. Prediction of Corrosion Rate in Submarine Multiphase Flow Pipeline Based on PSO-SVM Model (*Open Access*)

Accession number: 20202008673216
Authors: Wang, Panfeng (1); Quan, Qing (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an, Shaanxi Province; 710065, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 688
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Issue: 4
Issue title: 3rd International Conference on Traffic Engineering and Transportation System - 3. Logistics Engineering
Issue date: December 6, 2019
Publication year: 2019
Article number: 044015
Language: English
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Document type: Conference article (CA)
Conference name: 3rd International Conference on Traffic Engineering and Transportation System, ICTETS 2019
Conference date: September 20, 2019 - September 22, 2019
Conference location: Jiaozuo, China
Conference code: 156507
Publisher: IOP Publishing Ltd
Abstract: In view of the internal corrosion rate of submarine multiphase flow pipelines, this paper analyzes the related factors affecting the corrosion rate of this type of pipeline, and introduces PSO algorithm and SVM algorithm respectively. Based on the PSO-SVM combination model, the 44 groups of data was used to study the influencing factors and corrosion rate, meanwhile the 10 groups of data was used to predict. The predictions are compared with the GA-SVM model, the LS-SVM model and the CV-SVM model to verify the advancement and feasibility of

the proposed method. The results show that the temperature has a relatively large influence on the corrosion rate of the multiphase flow pipeline in the seabed. The influence of pressure on the corrosion rate of the multiphase flow pipeline in the seabed is relatively small. The PSO-SVM combined model is used in the submarine multiphase flow pipeline. The e error of corrosion rate prediction is only 1.848% on average, and the model training time is only 3.17s, both of which are smaller than other models. The research proves that the PSO-SVM combination model has strong advancement and feasibility for the prediction of the internal corrosion rate of submarine multiphase flow pipelines. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Corrosion rate
Controlled terms: Multiphase flow - Internal corrosion - Forecasting - Pipelines - Submarines
Uncontrolled terms: Combination models - Combined model - Model training - PSO algorithms - Rate predictions - Related factors - SVM algorithm - SVM model
Classification code: 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 672.1 Combat Naval Vessels
Numerical data indexing: Percentage 1.85e+00%, Time 3.17e+00s
DOI: 10.1088/1757-899X/688/4/044015
Funding Details: Number: 221516001, Acronym: -, Sponsor: -;
Funding text: Fund Project: Fund by Shaanxi Province Science and Technology Coordination Innovation Project (221516001)
Compendex references: YES
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Database: Compendex
Data Provider: Engineering Village

312. Single crystal structure, hydrogen bonding interaction, charge transfer and thermal properties of a new guanidine derivative crystal: Phosphate bis-guanidinoacetate

Accession number: 20192507078951
Authors: Wang, Lei (1); Xiao, Meixia (1); Wang, Danghui (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Lei(leiw@xsyu.edu.cn)
Source title: Journal of Molecular Structure
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Volume: 1195
Issue date: 5 November 2019
Publication year: 2019
Pages: 883-890
Language: English
ISSN: 00222860
CODEN: JMOSB4
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: In order to understand deeply the interaction between guanidine and phosphate groups in crystal, phosphate bis-guanidinoacetate (PBGA) crystal was synthesized and grown by aqueous solvent evaporation method, which belongs to the triclinic crystallographic system, space group P-1, with unit cell parameters: a = 7.776 Å, b = 8.113 Å, c = 12.459 Å, α = 89.591°, β = 89.146°, γ = 61.370°, Z = 1. The crystal structure studies and vibrational spectral analysis showed that the special shift of C-N stretching vibration is caused by the hydrogen bonding interaction between phosphate and guanidine groups in crystal. Through quantum chemical calculation, we investigated the Independent Gradient Model, hydrogen bond energy (EHB) from Quantum Theory of Atoms in Molecules method, the atom dipole moment corrected Hirshfeld population, the electron density difference and electron localization function difference for PBGA dimer model, which provide deeper insight into the position, type, strength and charge transfer for the interaction between phosphate and guanidine groups. Thermal stability of the title crystal was evaluated by thermogravimetric and differential scanning calorimetry. Our results indicate that the rich electrostatic interaction between phosphate and guanidine groups has great impact on the structure, charge distribution and thermal stability of PBGA. © 2019 Elsevier B.V.
Number of references: 90
Main heading: Hydrogen bonds
Controlled terms: Stretching - Single crystals - Crystal structure - Quantum theory - Quantum chemistry - Thermodynamic stability - Charge transfer - Differential scanning calorimetry - Spectrum analysis - Vibration analysis - Dimers

Uncontrolled terms: Electron localization function - Hydrogen bond energy - Hydrogen bonding interactions - Interaction between groups - Quantum chemical calculations - Quantum Theory of Atoms in Molecules - Quantum-chemical methods - Stretching vibrations
Classification code: 535.2 Metal Forming - 641.1 Thermodynamics - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 815.1.1 Organic Polymers - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice - 944.6 Temperature Measurements
Numerical data indexing: Size 1.25e-09m, Size 7.78e-10m, Size 8.11e-10m
DOI: 10.1016/j.molstruc.2019.06.036
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

313. Low-frequency generation-recombination noise behaviors of blue/violet-light-emitting diode (*Open Access*)

Accession number: 20193507380049
Title of translation: -
Authors: Wang, Dang-Hui (1); Xu, Tian-Han (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Dang-Hui(wdhyxp@163.com)
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Volume: 68
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Publication year: 2019
Article number: 128104
Language: Chinese
ISSN: 10003290
CODEN: WLHPAR
Document type: Journal article (JA)
Publisher: Institute of Physics, Chinese Academy of Sciences
Abstract: During the past two decades, GaN-based light-emitting diode has been used as a high-quality light-source. Low-frequency noise as a diagnostic tool for quality control and reliability estimation has been widely accepted and used for semiconductor devices. Understanding the origin of efficiency-droop effect is key to developing the ultimate solid-state light source. Various mechanisms that may cause this effect have been suggested, including carriers' escape, loses due to dislocations, and the Auger effect. In this study, we investigate the low-frequency noise behaviors of GaN-based blue light-emitting diode with InGaN/GaN multiple quantum wells. The measured currents range from 0.1 mA to 180 mA. According to the characteristics of power spectral density of current noise and the generation-combination mechanism between electrons and holes in the active region of light-emitting diode (LED), we adopt the well-known model of low-frequency noise to fit the relationship between power spectral density of current and frequency, and find that there exists a transition between generation-combination and 1/f noise when the light-emitting diode begins to work. In other words, it can be derived that the low-frequency noise behaviors are dominated by generation-combination noise when the currents are between 0.1 mA and 27 mA; with the current gradually increasing, the origin source of low-frequency noise in blue/violet-light LED will transit to the 1/f noise. Through the analysis of the transport and recombination mechanism of the carriers, and combination with the model of low-frequency noise, we analyze the corner frequency of the generation-recombination noise. The results of this paper provide an effective tool and method to study the conversion of light-emitting diodes. © 2019 Chinese Physical Society.
Number of references: 24
Main heading: Light emitting diodes
Controlled terms: Spurious signal noise - III-V semiconductors - Gallium nitride - Frequency estimation - Quality control - Bias voltage - Power spectral density - Wide band gap semiconductors

Uncontrolled terms: Blue light emitting diodes - Combination mechanisms - GaN-based light-emitting diodes - Generation-recombination noise - Low-Frequency Noise - Recombination mechanisms - Reliability estimation - Solid-state light sources
Classification code: 712.1 Semiconducting Materials - 713 Electronic Circuits - 714.2 Semiconductor Devices and Integrated Circuits - 913.3 Quality Assurance and Control
Numerical data indexing: Electric_Current 1.00e-04A to 1.80e-01A
DOI: 10.7498/aps.68.20190189
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

314. Optimization of Radiation Model of Infrared Decoy with Neural Network (*Open Access*)

Accession number: 20194107527256
Authors: Zhou, Guanwu (1)
Author affiliation: (1) College of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi Province; 710065, China
Corresponding author: Zhou, Guanwu(Zhougw@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
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Volume: 1302
Part number: 4 of 4
Issue: 4
Issue title: 4th Annual International Conference on Information System and Artificial Intelligence - Chapter 3: Integrated Applications and Other Related Fields
Issue date: September 3, 2019
Publication year: 2019
Article number: 042027
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th Annual International Conference on Information System and Artificial Intelligence, ISAI 2019
Conference date: May 17, 2019 - May 18, 2019
Conference location: Changsha, Hunan, China
Conference code: 152110
Publisher: IOP Publishing Ltd
Abstract: In this paper, a numerical model is proposed to calculate the infrared radiation characteristics based on the solution of radioactive transport. However, due to the demand of the real-time, a method with back-propagation neural network (BPNN) is developed to optimize the proposed model. The results of simulation experiments show that BPNN possesses good prediction accuracy, and can make the numerical model achieve the real-time requirement. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 9
Main heading: Numerical models
Controlled terms: Backpropagation - Information use - Infrared radiation - Neural networks
Uncontrolled terms: Back-propagation neural networks - Infrared decoy - Infrared radiation characteristic - Prediction accuracy - Radiation modeling - Real time - Real time requirement
Classification code: 723.4 Artificial Intelligence - 741.1 Light/Optics - 903.3 Information Retrieval and Use - 921 Mathematics
DOI: 10.1088/1742-6596/1302/4/042027
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

315. Ab Initio Study on the Interaction Between Groups in Phosphate bis-Guanidinoacetate Molecule

Accession number: 20194507632144
Title of translation:
Authors: Wang, Lei (1); Wang, Danghui (1); Xiao, Meixia (1)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Wang, Lei(leiw@xsyu.edu.cn)
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Volume: 33
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Issue date: October 25, 2019
Publication year: 2019
Pages: 3508-3511
Language: Chinese
ISSN: 1005023X
Document type: Journal article (JA)
Publisher: Cailiao Daobaoshe/ Materials Review
Abstract: Based on the importance of the interaction between phosphate and guanidine in crystal specificity and biochemical functions, phosphate bis-guanidinoacetate (PBGA) crystal containing the similar groups has attracted much attention. In this paper, four related molecular models (PBGA, PGA1, PGA2, BGA) were established based on the group composition of PBGA molecular, their structural optimization, the frontier molecular orbital analysis, dipole moment, polarizability and first-order hyperpolarizability were investigated by ab initio. The results show that the phosphate group could attract the guanidine end of charged guanidine acetate, which has changed its conformation and molecular orientation, and has also caused the symmetry deformation of the phosphorus-oxygen tetrahedron. The interaction between phosphate and guanidine could affect the LUMO energy level contributed by guanidine group, but the effect of charged guanidine acetate is greater, which could reduce the energy gap of PBGA molecular orbital, and increase the probability of intramolecular electron transition. The charged guanidine acetate has the greatest positive contribution on the dipole moment and the first-order hyperpolarizability while the phosphate group has a negative contribution. All groups have the positively contributed to the average polarizability. The static first-order hyperpolarizability of PBGA molecule is 1.717 24×10-30 esu, which is about 2.3 times of urea, indicating that PBGA crystal is a potential nonlinear optical material. In conclusion, this research can established a good theoretical foundation for further understanding and studying the interaction between phosphate and guanidine groups in crystal.

Number of references: 19
Main heading: Amino acids
Controlled terms: Dielectric properties - Dichroism - Electron transitions - Molecular orientation - Optical materials - Polarization - Structural optimization - Urea - Dipole moment - Molecular orbitals
Uncontrolled terms: Biochemical functions - First-order hyperpolarizability - Frontier molecular orbitals - L-arginine phosphate - LUMO energy levels - Non-linear optical material - Nonlinear optical crystal - Theoretical foundations
Classification code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 801.4 Physical Chemistry - 804.1 Organic Compounds - 921.5 Optimization Techniques - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 933.3 Electronic Structure of Solids
DOI: 10.11896/cldb.18090048
Funding Details: Number: ys37020203, Acronym: -, Sponsor: -; Number: 51702257, Acronym: IUSS, Sponsor: National Outstanding Youth Science Fund Project of National Natural Science Foundation of China; Number: 2018JQ5123, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20160221, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology;
Funding text: (Supplementary Information) :(51702257);(2018JQ5123); (20160221);(ys37020203) This work was financially supported by the National Natural Science Foundation Youth Fund of China (51702257), Natural Science Basic Research Plan in Shaanxi Province of China (2018JQ5123), Young Talent Fund of University Association for Science and Technology in Shaanxi, China (20160221), Provincial Superiority Discipline of Materials Science and Engineering of Xian Shiyou University (ys37020203).This work was financially supported by the National Natural Science Foundation Youth Fund of China (51702257), Natural Science Basic Research Plan in Shaanxi Province of China (2018JQ5123), Young Talent Fund of University Association for Science and Technology in Shaanxi, China (20160221), Provincial Superiority Discipline of Materials Science and Engineering of Xi'an Shiyou University (ys37020203).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

316. Characterization of Ni2P/rGO-Al2O3 Catalyst and Its Catalytic Performance in Hydrodeoxygenation

Accession number: 20191706819350
Title of translation: Ni2P/rGO-Al2O3
Authors: Xu, Haisheng (1); Wang, Hao (1); He, Lijuan (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)
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Abbreviated source title: Shiyou Xuebao Shiyou Jiagong
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Issue date: January 25, 2019
Publication year: 2019
Pages: 35-39
Language: Chinese
ISSN: 10018719
CODEN: SXSHEY
Document type: Journal article (JA)
Publisher: Science Press
Abstract: Using flake graphite as raw material, graphite oxide (GO) was synthesized by hummer method, and GO was mixed with pseudo-boehmite solution to synthesize reduced graphene oxide-alumina (rGO-Al2O3) composite support. Then, Ni2P/rGO-Al2O3 catalyst was prepared by impregnated method. The catalysts were characterized by scanning electron microscopy (SEM), physical adsorption (BET) and X-ray diffraction (XRD). The performance of Ni2P catalyst supported on rGO-Al2O3 composite support and rGO or Al2O3 alone in hydrodeoxygenation (HDO) was compared, under the conditions of reaction temperature of 300, pressure of 2.5 MPa and reaction time of 4 h with benzaldehyde as substrate. Results show that the rGO-Al2O3 has abundant of pore structure and large surface area, and the Ni2P/rGO-Al2O3 catalyst shows excellent catalytic activity and selectivity.
Number of references: 21
Main heading: Catalyst selectivity
Controlled terms: Nickel compounds - Scanning electron microscopy - Catalyst supports - Graphene oxide - Catalyst activity - Aluminum oxide - Corundum - Graphite - Pore structure
Uncontrolled terms: Adsorption desorption - Benzaldehyde - Catalytic performance - Composite support - Hydrodeoxygenation - Large surface area - Physical adsorption - Reaction temperature
Classification code: 482.2 Minerals - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 2.50e+06Pa, Time 1.44e+04s
DOI: 10.3969/j.issn.1001-8719.2019.01.005
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

317. WO3 nanocrystal prepared by self-assembly of phosphotungstic acid and dopamine for photocatalytic degradation of Congo red

Accession number: 20191506758342
Authors: Li, Hong (1); Zhao, Yuanyuan (1); Yin, Chang (1); Jiao, Long (1); Ding, Liqin (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, 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.
Volume: 572
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Publication year: 2019
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Language: English
ISSN: 09277757
E-ISSN: 18734359

CODEN: CPEAEH
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: WO3 nanocrystal was prepared through a simple calcination treatment of hierarchical nanostructures self-assembled from phosphotungstic acid and dopamine. The morphology, composition, and formation process of WO3 nanoparticles were characterized in detail. The results showed that as-prepared WO3 nanoparticles were highly crystallized and 40–50 nm in size with quite smooth surface. Moreover, the photocatalytic property of WO3 nanocrystal was investigated by the decomposition of typical azo dye under UV light irradiation (254 nm). Pure WO3 nanocrystal showed a high photodegradation efficiency for Congo red even under quite low UV irradiation. In view of its simplicity and low-cost, the present work provides a new way for fabrication of WO3 nanoparticles in the photocatalysis field. © 2019 Elsevier B.V.
Number of references: 23
Main heading: Nanocrystals
Controlled terms: Morphology - Neurophysiology - Amines - Nanoparticles - Irradiation - Photocatalytic activity - Self assembly - Azo dyes - Tungsten compounds
Uncontrolled terms: Calcination treatment - Dopamine - Hierarchical Nanostructures - Phosphotungstic acid - Photo catalytic degradation - Photocatalytic property - Photodegradation efficiency - UV-light irradiation
Classification code: 461.6 Medicine and Pharmacology - 761 Nanotechnology - 801.4 Physical Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics - 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Size 2.54e-07m
DOI: 10.1016/j.colsurfa.2019.03.092
Funding Details: Number: 21703169,21775118, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM2018,2018JM2035,2018JQ2047, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: We acknowledge the financial support from the National Natural Science Foundation of China (Nos. 21703169 and 21775118) and the Natural Science Foundation of Shaanxi Province of China (Nos. 2018JQ2047 , 2018JM2018 , and 2018JM2035).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

318. Experimental study on the effect of high-molecular polymer as drag reducer on drag reduction rate of pipe flow

Accession number: 20191506758714
Authors: Quan, Qing (1); Wang, Shouxi (1); Wang, Li (1); Shi, Ying (1); Xie, Jin (1); Wang, Xiaodan (1); Wang, Suwen (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shannxi Province; 710065, China
Corresponding author: Quan, Qing(qingqing.lf@163.com)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 178
Issue date: July 2019
Publication year: 2019
Pages: 852-856
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Three types of relatively high-molecular polymer were used to investigate drag reduction in single-phase flow through a horizontal, 12.7-mm pipe. Diesel oil and a mixture of diesel oil and model oil were employed as the oil phase. The effect of various factors on the drag reduction rate was investigated. These factors included the oil and drag reducer polymer type, polymer concentration, Reynolds number, temperature, and shear under turbulent flow (Reynolds number: 3000–12000). The experimental results indicated that the drag reduction rate increases initially (when the polymer concentration increases from 1 ppm to 4 ppm) and then stabilizes at some maximum value. The maximum rate occurred at the maximum concentration (i.e., 5 ppm) in the experiment considering the diameter of the pipeline. The experimental results also indicated that, for a given concentration of a given drag reducer, the

drag reduction rate differs with the type of oil system. Similarly, for a given oil system with a given concentration, the reduction rate varied with the type of drag reducer. In addition, the Reynolds number and shear have a significant effect on the drag reduction rate, but the effect of oil temperature can be ignored. © 2019 Elsevier B.V.
Number of references: 24
Main heading: Reynolds number
Controlled terms: Shear flow - Drag reduction - Diesel engines
Uncontrolled terms: Drag reducers - Drag-reduction rate - High-molecular polymers - Maximum concentrations - Oil temperature - Polymer concentrations - Reduction rate - Single-phase flow
Classification code: 612.2 Diesel Engines - 631.1 Fluid Flow, General
Numerical data indexing: Size 1.27e-02m
DOI: 10.1016/j.petrol.2019.04.013
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

319. A heuristic virtual machine scheduling algorithm in cloud data center

Accession number: 20192607109415
Authors: Liang, Bin (1, 2); Dong, Xiaoshe (1); Zhang, Xingjun (1)
Author affiliation: (1) Xi'An Jiaotong University, Xi'an; 710049, China; (2) Xi'an Shiyou University, Xi'an; 710065, China
Source title: Proceedings of 2019 IEEE 3rd Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2019
Abbreviated source title: Proc. IEEE Inf. Technol., Netw., Electron. Autom. Control Conf., ITNEC
Part number: 1 of 1
Issue title: Proceedings of 2019 IEEE 3rd Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2019
Issue date: March 2019
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Language: English
ISBN-13: 9781538662434
Document type: Conference article (CA)
Conference name: 3rd IEEE Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2019
Conference date: March 15, 2019 - March 17, 2019
Conference location: Chengdu, China
Conference code: 148626
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: As a new model of data storage and computing, cloud data center attracts much attention. Task scheduling is always a hot topic in the research of cloud data center. At the same time, As the cost of cloud data center increases, the cost for users to use cloud data center becomes higher and higher. Less execution time means lower cost. Based on the above reasons, a short average execution time task scheduling algorithm is proposed in this paper, which can reduce the average execution time of the cloud data center according to the difference of the execution time of cloud tasks in the data center, and the effect of this method is more obvious with the increase of cluster size and the increase of the number of tasks. Finally, the algorithm is simulated in cloudsim to verify the effectiveness of the algorithm. © 2019 IEEE.
Number of references: 7
Main heading: Scheduling algorithms
Controlled terms: Virtual machine - Cloud computing - Digital storage - Costs - Multitasking - Clustering algorithms

Uncontrolled terms: Average Execution Time - Cloud data centers - Cluster sizes - Data storage - Low costs - Task-scheduling - Task-scheduling algorithms - Virtual machine scheduling
Classification code: 722.1 Data Storage, Equipment and Techniques - 722.4 Digital Computers and Systems - 723.5 Computer Applications - 903.1 Information Sources and Analysis - 911 Cost and Value Engineering; Industrial Economics
DOI: 10.1109/ITNEC.2019.8729201
Funding Details: Number: 61572394, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016YFB0200902, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: This work was supported by the National Key Research and Development Program [No. 2016YFB0200902 to X. Zhang], and the National Natural Science Foundation of China [No. 61572394 to X. Dong].
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

320. Spatially Constrained Fuzzy c-Means Clustering Algorithm for Image Segmentation (*Open Access*)

Accession number: 20193307300248
Authors: Li, Xiaohe (1, 2); Qu, Zhan (2); Yang, Xiaojing (1)
Author affiliation: (1) College of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) Key Lab. of Well Stability and Fluid and Rock Mechanics in Oil and Gas Reservoir of Shaanxi Province, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The fuzzy c-means (FCM) clustering is an unsupervised clustering method, which has been widely used in image segmentation. In this paper, a spatially constrained fuzzy c-means clustering algorithm for image segmentation is proposed to overcome the sensitivity of the FCM clustering algorithm to noises and other imaging artifacts. Firstly, the local prior probabilities of pixel classification are defined according to the fuzzy membership function values of neighbouring pixels, and then those local prior probabilities are incorporated into the objective function of the standard FCM. Thus, the local spatial information embedded in the image is incorporated into the FCM algorithm. Experimental results on the synthetic and real images are given to demonstrate the robustness and validity of the proposed algorithm. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 12
Main heading: Image segmentation
Controlled terms: Fuzzy clustering - Pixels - Clustering algorithms - Membership functions
Uncontrolled terms: Fuzzy C means clustering - Fuzzy c-means clustering algorithms - Fuzzy membership function - Imaging artifacts - Objective functions - Pixel classification - Spatial informations - Unsupervised clustering methods
Classification code: 723 Computer Software, Data Handling and Applications - 903.1 Information Sources and Analysis - 921 Mathematics
DOI: 10.1088/1742-6596/1237/3/032024

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Funding text: This work was supported by the National Natural Science Foundation of China under grant no. 51674200 and The Youth Foundation of Xi'an Shiyou University under grant no. 2013BS021.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

321. Band structures and optical properties of Ag and Al co-doped ZnO by experimental and theoretic calculation

Accession number: 20192507079034
Authors: Chen, Haixia (1); Qu, Yongfeng (1); Sun, Liang (2); Peng, Jianhong (3); Ding, Jijun (1)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) College of Materials Science and Engineer, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) College of Physics and Electronic Engineer, Qinghai Nationalities University, Xining; Qinghai; 810007, China
Corresponding author: Chen, Haixia(chxia8154@163.com)
Source title: Physica E: Low-Dimensional Systems and Nanostructures
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Volume: 114
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Publication year: 2019
Article number: 113602
Language: English
ISSN: 13869477
CODEN: PELNFM
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Crystal structures, band structures, density of states (DOS), optical properties including dielectric function, absorption, loss function, refractive index, reflectivity and photoluminescence (PL) emission are investigated by combining experimental results with theoretic calculation. Results indicated that crystal quality of ZnO is improved after Al and Ag doping. In addition, compared with Al-doped and Ag-doped ZnO, Ag-Al co-doped ZnO have smaller bandgap. It imply that Ag-Al co-doping can adjust the bandgap more flexibly, and then change the electronic structure and optical properties. At the same time, Al-3p and Ag-5s states have stronger interaction in Ag-Al co-doped ZnO, which makes the conduction band wider, so the DOS further moves toward lower energy. For Ag-doped ZnO, a very narrow peak at around 0.21 eV is observed in dielectric function spectra, which is associated with the electron transition between Ag-4d states and partially filled valence band. PL spectra of pure ZnO shows a broad blue emission band at 421 nm, and its intensity increases and the full-width at half maximum (FWHM) decreases after Al and Ag doping. Interestingly, emission band red shifts toward green waveband as Al and Ag is co-doped in ZnO. © 2019 Elsevier B.V.
Number of references: 29
Main heading: Energy gap
Controlled terms: Aluminum - Electronic structure - Silver - Binary alloys - Red Shift - Doping (additives) - Electron transitions - Refractive index - II-VI semiconductors - Zinc oxide - Structural properties
Uncontrolled terms: Blue emission bands - Co-doped ZnO - Crystal qualities - Density of state - Dielectric function spectra - Dielectric functions - Electronic structure and optical properties - Photoluminescence emission
Classification code: 408 Structural Design - 541.1 Aluminum - 547.1 Precious Metals - 712.1 Semiconducting Materials - 741.1 Light/Optics - 804.2 Inorganic Compounds - 951 Materials Science
Numerical data indexing: Electron_Volt 2.10e-01eV, Size 4.21e-07m
DOI: 10.1016/j.physe.2019.113602
Funding Details: Number: 2016BS12, Acronym: -, Sponsor: -; Number: 2016JQ5037,2019GY-170, Acronym: -, Sponsor: -; Number: 16JK1601, Acronym: -, Sponsor: -; Number: 11447116,11804273, 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. 11804273 ; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170 ; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (Grant No. 2016BS12), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS18211019).

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

322. Recent advances in hydrodeoxygenation catalysts for phenols

Accession number: 20194207539309
Title of translation:
Authors: Qiu, Zegang (1); Yin, Chanjuan (1); Li, Zhiqin (1); Feng, Yuekuo (1)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Zhiqin(lizhiqin@xsyu.edu.cn)
Source title: Huagong Jinzhan/Chemical Industry and Engineering Progress
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Volume: 38
Issue: 8
Issue date: August 5, 2019
Publication year: 2019
Pages: 3658-3669
Language: Chinese
ISSN: 10006613
Document type: Journal article (JA)
Publisher: Materials China
Abstract: Hydrodeoxygenation (HDO) of phenols is an essential process in the conversion of crude oil, coal-based liquid fuel and bio-oil. Catalysts play a key role in this process. The HDO catalysts for phenols include the transition metal sulfides, the reduced metal catalysts, the metal phosphides, carbides and nitrides. Recent research on these catalysts was summarized in terms of the activity, selectivity, stability and catalytic mechanism. The supported CoMoS catalysts and unsupported MoS2 were introduced emphatically as the transition metal sulfides. The crystalline MoS2 had excellent activity and selectivity. The catalysts of the supported non-noble metals (Ni, Mo and Co), noble metals (Rh, Ru, Pd and Pt) and bimetals (NiRu, Ni-Fe, Mo-Pt and Pd-X) were introduced. The performance of different metal catalysts was compared. The catalysts of Ni2P, MoP and CoP supported on SiO2 were introduced as the metal phosphides, among which the Ni2P/SiO2 exhibited the highest catalytic activity and selectivity. In the metal carbides, Mo2C had a high selectivity to the aromatics, while the HDO activity of the Mo2N should be improved. The stability of all catalysts is not good enough. As to the transition metal sulfides, the stability to water should be strengthened. For the reduced metal catalysts, the impurities, especially sulfur, should be considered. The reduced metal catalysts were suggested to be used together with the desulfurization catalysts. In the case of the metal phosphides, more attention should be paid to the carbon deposition and particle agglomeration. © 2019, Chemical Industry Press. All right reserved.
Number of references: 81
Main heading: Phenols
Controlled terms: Binary alloys - Carbides - Catalyst activity - Catalyst selectivity - Catalyst supports - Coal tar - Cobalt alloys - Molybdenum alloys - Molybdenum compounds - Phosphorus compounds - Precious metals - Raman scattering - Silica - Sulfur compounds
Uncontrolled terms: Bio-oils - Fuels oil - Hydrodeoxygenation - Metal catalyst - Metal nitrides - Metal phosphides - Metal-carbide - Recent researches - Transition metal sulfides -]+ catalyst
Classification code: 411.2 Coal Tar - 543.3 Molybdenum and Alloys - 547.1 Precious Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 741.1 Light/Optics - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 812.1 Ceramics
Numerical data indexing: Force 2.00E+00N
DOI: 10.16085/j.issn.1000-6613.2018-1987
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

323. Summary of research on the application of big data in auditing

Accession number: 20193707424285
Authors: Zhu, Yangpeng (1); Huang, Bingbing (1)

Author affiliation: (1) School of Economic and Management, Xi'an Shiyou University, Xi'an City, Shaanxi Province, China
Source title: Proceedings - 2019 International Conference on Communications, Information System, and Computer Engineering, CISCE 2019
Abbreviated source title: Proc. - Int. Conf. Commun., Inf. Syst., Comput. Eng., CISCE
Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Communications, Information System, and Computer Engineering, CISCE 2019
Issue date: July 2019
Publication year: 2019
Pages: 674-677
Article number: 8805885
Language: English
ISBN-13: 9781728136813
Document type: Conference article (CA)
Conference name: 2019 International Conference on Communications, Information System, and Computer Engineering, CISCE 2019
Conference date: July 5, 2019 - July 7, 2019
Conference location: Haikou, China
Conference code: 151067
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Audit refers to the independent economic supervision activities conducted by special organs in accordance with the law to examine the major projects and financial revenues and expenditures of governments at all levels, financial institutions, enterprises and institutions pre and post the event. The traditional method of auditing makes the audit work time not free, and the audit work cannot be carried out flexibly, accurately and efficiently. The application of big data in audit solves the problems existing in the traditional audit method. Big data audit is the inevitable choice of the development from traditional audit to modern audit and the transformation from traditional data to electronic data. Under the support of big data technology, auditors can directly obtain data information and analyze and verify it with only one computer and corresponding authority, thus enhancing audit flexibility and improving efficiency. © 2019 IEEE.
Number of references: 19
Main heading: Big data
Controlled terms: Economics - Metadata
Uncontrolled terms: Certified public accountants - Data informations - Data technologies - Electronic data - Financial institution - Improving efficiency - Internal audit - State audit
Classification code: 723.2 Data Processing and Image Processing - 971 Social Sciences
DOI: 10.1109/CISCE.2019.00156
Funding Details: Number: 15JZ047, Acronym: -, Sponsor: -; Number: 2015R026, Acronym: -, Sponsor: Social Science Foundation of Shaanxi Province;
Funding text: We thank for support from Science and Technology Department Research Plan of Shanxi province Granted number2016GY-106, Social Science Foundation of Shanxi province Granted Number 2015R026, and Education Department Research Plan of Shanxi province Granted Number 15JZ047. We thank to reviewers for their valuabl.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

324. Urban House Detection Using SAM and SIFT on Hyperspectral Remote Sensing Images (*Open Access*)

Accession number: 20193307300253
Authors: Wang, Cailing (1); Yang, Fan (1); Wang, Hongwei (2); Guo, Pu (1); Hou, Jiale (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) Engineering University of CAPF, Xi'an; 710086, China
Source title: Journal of Physics: Conference Series
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Article number: 032029
Language: English
ISSN: 17426588
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The detection and identification of urban object targets have always been a research hotspot. In recent years, the spectral, spatial and temporal resolution of remote sensing images have been continuously increased, making hyperspectral remote sensing images widely used in urban object recognition. We proposed a new method for urban house detection by combining the spectral mapping results and spatial features. Firstly, the target spectral information is used to distinguish the targets in spectral domain. Then, the spatial SIFT feature algorithm is used on the results of spectral mapping, which can improve the accuracy of urban housing target recognition. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Object recognition
Controlled terms: Remote sensing - Photomapping - Object detection
Uncontrolled terms: Detection and identifications - Hyperspectral Remote Sensing Image - Remote sensing images - SIFT feature algorithms - Spatial and temporal resolutions - Spectral information - Spectral mappings - Target recognition
Classification code: 405.3 Surveying - 723.2 Data Processing and Image Processing - 742.1 Photography
DOI: 10.1088/1742-6596/1237/3/032029
Funding Details: Number: 41301382,61401439, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

325. Drilling fluid invasion degree and its impact evaluation in ultra-low permeability sandstone reservoir

Accession number: 20195007823947
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; Shaanxi; 710065, China
Corresponding author: Wang, Jianmin(wangjm@xsyu.edu.cn)
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Abbreviated source title: Shiyou Xuebao
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Publication year: 2019
Pages: 1095-1103
Language: Chinese
ISSN: 02532697
CODEN: SYHPD9
Document type: Journal article (JA)
Publisher: Science Press

Abstract: Based on geological logging, experimental analysis, fracturing and test mining, etc., in combination with dynamic analysis, seepage theory and material balance principle, as well as dynamic and static analyses, this study explores the invasion degree of drilling fluid (mud filtrate) in ultra-low permeability sandstone reservoirs and the evaluation method of its impact. The production dynamics of ultra-low permeability reservoirs are divided into two stages, i.e., initial production and stable production, by using the characteristics of fracturing pilot production curves. The initial production stage is mainly characterized with the rapid return flow of massive external fluids along artificial and natural fracture systems, and a rapid change in water production and water content. The stable production stage is mainly characterized by the relative seepage of the original layer fluid under saturation control, and the change of water production and water content in a low-stability state; the normal oil layer has a single-porous medium, there is usually no obvious drilling fluid invasion; the amount of water invaded is roughly equal to the amount produced by the formation in the initial production stage. The low-resistance oil layer has a micro-crack-porosity dual-porous medium, showing significant drilling fluid invasion, and the difference in formation water throughput at the initial production stage is approximately equal to the invasion volume of drilling fluid. The invasion degree of drilling fluid in the ultra-low permeability sandstone reservoir is determined by the difference in the initial formation fluid throughput. Meanwhile, the properties of the reservoir are quantified by formation fluid throughput, the invasion depth of drilling fluid and the characteristics of fracturing curve. A map of oil layer resistivity and drilling fluid invasion depth is established to quantitatively evaluate the influence of drilling fluid invasion and analyze the genesis of low-resistivity oil layer. The results show that the deeper the invasion depth of drilling fluid is, the smaller the resistivity of oil layer will be. The low-resistance oil layer is the result of the ultra-deep invasion of drilling fluid. Due to the development of the dual-porous medium and its micro-cracks, the drilling fluid invasion depth of the low-resistance oil layer often exceeds the radial detection radius of the sensing series, thus leading to the occurrence of low resistance.
Number of references: 38
Main heading: Oil resistance
Controlled terms: Mechanical permeability - Petroleum reservoir engineering - Porous materials - Sandstone - Low permeability reservoirs - Cracks - Infill drilling - Pilot plants - Seepage - Throughput
Uncontrolled terms: Experimental analysis - Formation fluids - Low resistance - Material balance principle - Natural fracture system - Ultra low permeability - Ultra-low permeability reservoirs - Ultra-low permeability sandstone reservoir
Classification code: 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 951 Materials Science
DOI: 10.7623/syxb201909007
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Compendex references: YES
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Data Provider: Engineering Village

326. A prediction model for fracture pressure in shallow stratum of deep water area

Accession number: 20194407601718
Authors: Wang, Xiaoming (1); Chen, Junbin (2); Huang, Hai (2); Huang, Rui (2); Jiang, Xu (2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi’an, Shaanxi; 710065, China; (2) College of Petroleum Engineering, Key Laboratory of Well Stability and Fluid and Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi’an, Shaanxi; 710065, China
Source title: 53rd U.S. Rock Mechanics/Geomechanics Symposium
Abbreviated source title: U.S. Rock Mech./Geomech. Symp.
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Issue title: 53rd U.S. Rock Mechanics/Geomechanics Symposium
Issue date: 2019
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Report number: ARMA 29
Language: English
Document type: Conference article (CA)
Conference name: 53rd U.S. Rock Mechanics/Geomechanics Symposium
Conference date: June 23, 2019 - June 26, 2019
Conference location: Brooklyn, NY, United states
Conference code: 152203
Publisher: American Rock Mechanics Association (ARMA)

Abstract: Shallow stratum of deep water area is mainly dominated by mudstone, which is poorly diagenetic and easy to cause damage. Borehole instability easily occurs during drilling. In view of this problem, considering the consolidated and undrained conditions of shallow soil in the elastic region of stratum and combining with the Mohr-Column failure criterion and rock tensile fracture criterion, the prediction model for fracture pressure in shallow stratum of deep water area is established. To verify the accuracy of the model, the pore pressure coefficient under the action of deviatoric stress is inversed, which is based on actual measured fracture pressure data. And the lithologic characteristics of shallow stratum of deep water is confirmed by empirical value. Finally, based on actual measured fracture pressure values, the error analysis and comparison of the calculation results of Eaton model, Huang Rongzun model and prediction model show that average relative errors of the three models are 39.56%, 8.18% and 5.29% respectively. The prediction model established in this paper has the minimum error, the fluctuation range of relative error is less than 10%, and it's closest to the actual measured fracture pressure Therefore, it can reasonably predict fracture pressure in shallow stratum of deep water area.
Number of references: 12
Main heading: Error analysis
Controlled terms: Rock mechanics - Rocks - Forecasting - Fracture
Uncontrolled terms: Average relative error - Borehole instability - Calculation results - Deviatoric stress - Fracture pressures - Modeling and predictions - Pressure coefficients - Undrained conditions
Classification code: 483.1 Soils and Soil Mechanics - 951 Materials Science
Numerical data indexing: Percentage 1.00e+01%, Percentage 3.96e+01%, Percentage 5.29e+00%, Percentage 8.18e+00%
Funding Details: Number: 51674197,51874239,51874240, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

327. Urban Trunk Roads Extraction Using Hough Transform and NDVI in Airborne Hyperspectral Remote Sensing Images (*Open Access*)

Accession number: 20193307300254
Authors: Wang, Cailing (1); Guo, Pu (1); Wang, Hongwei (2); Yang, Fan (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) Engineering University of CAPF, Xi'an; 710086, China
Source title: Journal of Physics: Conference Series
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to extract urban main road in hyperspectral remote sensing images, this paper first employs Hough transform in three main different band of hyperspectral image datasets to identify and extract urban main road. Then, Normalized difference vegetation index (NDVI) is calculated to extract vegetation information and eliminate the disturbance brought by vegetation such as trees along roads and others vegetation landscape. The experiments use two real airborne hyperspectral datasets and results show that method proposed can effectively extract the main road

in airborne hyperspectral remote sensing images by Hough transform and NDVI.
Number of references: 7
Main heading: Hough transforms
Controlled terms: Spectroscopy - Roads and streets - Vegetation mapping - Image processing - Remote sensing - Feature extraction
Uncontrolled terms: Airborne hyperspectral remote sensing - HyperSpectral - Hyperspectral Remote Sensing Image - Main roads - Normalized difference vegetation index - Trunk roads - Vegetation landscape
Classification code: 405.3 Surveying - 406.2 Roads and Streets - 723.2 Data Processing and Image Processing - 921.3 Mathematical Transformations
DOI: 10.1088/1742-6596/1237/3/032030
Funding Details: Number: 41301382,41604113,41711530128,61401439, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
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328. Microseismic event location using time reversed imaging based on decoupled wavefields in VTI media

Accession number: 20194307568499
Authors: Li, M. (1); Li, H. (1); Tao, G. (2)
Author affiliation: (1) Xi'an Shiyou University, China; (2) Khalifa University of Science and Technology, United Arab Emirates
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Abbreviated source title: EAGE Conf. Exhib.
Part number: 1 of 1
Issue title: 81st EAGE Conference and Exhibition 2019
Issue date: June 3, 2019
Publication year: 2019
Report number: Tu_P03_13
Language: English
ISBN-13: 9789462822894
Document type: Conference article (CA)
Conference name: 81st EAGE Conference and Exhibition 2019
Conference date: June 3, 2019 - June 6, 2019
Conference location: London, United kingdom
Conference code: 151734
Sponsor: bp; ExxonMobil; Saudi Aramco; Shearwater; Shell
Publisher: EAGE Publishing BV
Abstract: Locating microseismic events in a reservoir monitoring system is of great significance due to its capacity of delineating the induced fractures. Time reversed imaging (TRI) method, which refocuses the back-propagated seismic energy to its real origin, has been demonstrated as a reliable location technique especially in noisy data processing. However, the time reversed images are often contaminated with strong imaging artifacts due to the cross talk of coupled wave modes coinciding in time and space especially in anisotropic media, leading to unreliable location estimations. To minimize the interference of strong imaging artifacts, we present a TRI technique based on decoupled wavefields. Spatial filters constructed based on Christoffel equation are applied to separate qP and SV wave modes. The auto and cross-correlations of decoupled qP and SV potentials are then applied as the image conditions to form the final location images. The synthetic example has shown that the spatial filters can fully separate the wave modes in 2D VTI medium compared to Helmholtz decomposition, leading to an improved location images with a much sharper focus.
Number of references: 5
DOI: 10.3997/2214-4609.201900675
Funding Details: Number: -, Acronym: CUPB, Sponsor: China University of Petroleum, Beijing;
Funding text: The authors would like to thank He Liu from China University of Petroleum (Beijing) for providing technical support on wave-mode separation.

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

329. Optimization of models for a rapid identification of lithology while drilling - A win-win strategy based on machine learning

Accession number: 20190506439677
Authors: Sun, Jian (1); Li, Qi (1); Chen, Mingqiang (2); Ren, Long (2); Huang, Guihua (2); Li, Chenyang (2); Zhang, Zixuan (2)
Author affiliation: (1) China University of Petroleum, Beijing, Beijing; 102249, China; (2) Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Sun, Jian(xjkelsj@163.com)
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Volume: 176
Issue date: May 2019
Publication year: 2019
Pages: 321-341
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The identification of lithology from well log data is an important task in petroleum exploration and development. However, due to the complexity of the sedimentary environment and reservoir heterogeneity, the traditional lithology identification methods can not meet the needs of real-time and accurate prediction and identification with logging while drilling (LWD) equipment. The basic data of this paper are derived from conventional wireline logging (CWL) data and the LWD data in Yan'an Gas Field. The main research goal is to compare and analyse three popular machine learning algorithms, which are one-versus-rest support vector machines (OVR SVMs), one-versus-one support vector machines (OVO SVMs) and random forest (RF), and to optimize a more practical method in the field for LWD systems. To reduce the dimensions of the input data, the characteristic parameters of the training data are obtained by a correlation analysis of the logging data. The optimal parameter values of each algorithm are determined by grid search method and 10-fold cross-validation method. On this basis, the lithology predictions of the actual LWD data are carried out by using three classifiers. Considering the time consumption of the model training and the lithology identification accuracy of the model, the best lithology identification model while drilling is selected. The results show that the characteristic parameters of the training data after the correlation analysis are AC, CAL, GR, K, RD and SP logs. The overall classification and recognition performance of the RF classifier is better than that of the other two classifiers, and its accuracy is even greater than 90%. The evaluation matrix shows that the OVR SVMs and RF classifiers yield lower prediction errors than the OVO SVMs classifier in each single lithology identification, but the RF classifier spends much less time in the training process. Based on the comprehensive comparative analysis, it is considered that the RF classifier has the characteristics of a short training time and high recognition accuracy in practical production applications, so it is an ideal optimization classifier for lithology identification while drilling. The research results provide not only a theoretical basis for the drilling geosteering of oilfield development but also valuable information for future basic research. © 2019 Elsevier B.V.
Number of references: 45
Main heading: Logging while drilling
Controlled terms: Gas industry - Petroleum prospecting - Correlation methods - Learning algorithms - Oil well logging - Forecasting - Lithology - Decision trees - Classification (of information) - Drilling equipment - Infill drilling - Support vector machines
Uncontrolled terms: 10-fold cross-validation - Classification and recognition - Correlation analysis - Lithology identification - Petroleum exploration - Reservoir heterogeneity - Sedimentary environment - While drillings
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels - 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 961 Systems Science
Numerical data indexing: Percentage 9.00e+01%
DOI: 10.1016/j.petrol.2019.01.006
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

330. A study on the applications of intelligent control in communications of commercial spaces

Accession number: 20201308346284
Authors: Liang, Huang (1)
Author affiliation: (1) Department of Industrial Design, College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liang, Huang(hlpro@163.com)
Source title: Proceedings - 2019 12th International Conference on Intelligent Computation Technology and Automation, ICICTA 2019
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Part number: 1 of 1
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Article number: 9017006
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Document type: Conference article (CA)
Conference name: 12th International Conference on Intelligent Computation Technology and Automation, ICICTA 2019
Conference date: October 26, 2019 - October 27, 2019
Conference location: Xiangtian, Hunan, China
Conference code: 158235
Sponsor: Department of Urban Management, Hunan City College; Hunan University of Science and Technology
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In the era of pan-communication over the Internet, the increasingly diversified means of communication in commercial space have arisen, the purposes of commercial space design are no longer limited to serving the immersive experience, and the designs have started to put more emphasis on the effect of communication. Therefore, the creation of light environments, especially the design of variable and dimmable light is becoming increasingly essential. Designing commercial space lighting with ZigBee in the context that traditional lighting wiring cannot adapt to the requirements of the present is the focus of this paper. © 2019 IEEE.
Number of references: 6
Main heading: Lighting
Controlled terms: Intelligent control
Uncontrolled terms: Commercial Space - Immersive - Light environment - Space design
Classification code: 723.4.1 Expert Systems - 731.1 Control Systems
DOI: 10.1109/ICICTA49267.2019.00129
Compendex references: YES
Database: Compendex
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331. Improvement of the method for calculating downhole weight on bit and its application in autodriller systems

Accession number: 20195007799055
Authors: Wu, Zebing (1); Guo, Longlong (1); Zhang, Shuai (1); Wu, Yuanping (2); Lv, Lantao (1); Wang, Wenjuan (1); Pan, Yujie (1); Wang, Yongyong (1); El Mokhtari, Adnane (1)
Author affiliation: (1) Xi'an Shiyou University, Xi'an, Shaanxi, China; (2) Drilling Research Institute of CNPC, Jingzhou, Hubei, China

Source title: Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE
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Volume: 8
Volume title: Polar and Arctic Sciences and Technology; Petroleum Technology
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Conference name: ASME 2019 38th International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2019
Conference date: June 9, 2019 - June 14, 2019
Conference location: Glasgow, United kingdom
Conference code: 154931
Sponsor: Ocean, Offshore and Arctic Engineering Division
Publisher: American Society of Mechanical Engineers (ASME), United States
Abstract: The accuracy of downhole weight on bit (DWOB) is one of the most important factors in the improvement of drilling efficiency, especially in horizontal well drilling. This paper introduced an analytical model and developed a corresponding program to calculate DWOB using drilling data on the surface. A well with field data measured was utilized to verify the model. The results indicate that the calculated friction factors are reasonable, and the DWOB calculated using the analytical model is consistent with those measured by the measurement tool. To satisfy the requirement of real-time drilling monitoring, a least square fitting (LSF) model for the relationship between the DWOB and surface weight on bit (SWOB) measured by deadline sensor on the surface was established to improve the calculation speed. Compared to the analytical method, the LSF model features much faster calculation speed, and the DWOB predicted by LSF model shows much better agreement with the measured DWOB. In addition, the influence of friction factors and standpipe pressure on the coefficients of LSF model was analyzed. The method and calculation technique proposed have applications potential, such as integration with present autodriller systems, post-drilling analysis, drilling operation monitoring, drilling optimization and automation. © 2019 ASME.
Number of references: 28
Main heading: Analytical models
Controlled terms: Friction - Horizontal drilling - Arctic engineering - Infill drilling - Oil well drilling - Horizontal wells - Offshore oil well production
Uncontrolled terms: Calculation speed - Calculation techniques - Drilling efficiency - Drilling operation - Drilling optimization - Least square fitting (LSF) - Modeling features - Real time drilling
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics
DOI: 10.1115/OMAE2019-96784
Funding Details: Number: 2018KW-012, Acronym: -, Sponsor: -;
Funding text: (1) A comprehensive analytical model of drag for horizontal well drilling is established. The friction factors and DWOB were back-calculated using the developed analytical model and corresponding C# program. The results show that the friction factors calculated are reasonable, and that the change trends We would like to thank Hundred-Talent Program Lab at Mechanical Engineering College, Xi'an Shiyou University for publication funding. Thanks are also given to the funding of Shanxi Provincial Key Project-International Collaboration Project of Science and Technology (No. 2018KW-012).
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Database: Compendex
Data Provider: Engineering Village

332. A New Model of Displacement Efficiency of Gas Hydrate Considering the Influence of Temperature (*Open Access*)

Accession number: 20191606808178
Authors: He, J. (1); Chen, M.Q. (1); Ren, L. (1); He, B.Y. (1)
Author affiliation: (1) M Q CHEN, College of Petroleum Engineering, Xi'an ShiYou University, Shanxi Xi'an; 710065, China

Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
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Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Energy Equipment Science and Engineering, ICEESE 2018
Conference date: December 28, 2018 - December 30, 2018
Conference location: Xi'an, China
Conference code: 147102
Publisher: IOP Publishing Ltd
Abstract: The model of natural gas hydrate displacement failed to accurately analysis the influence degree of temperature, and it is not accurate enough to calculate the volume of gas under high pressure owing to the influence of compressibility factor, which leading to a result that the model has great error in calculating the displacement efficiency. In this paper, a new model of displacement efficiency affected by temperature is derived in the design of displacement experiment based on the law of conservation of mass, Multicomponent gas equation of state, Multicomponent thermodynamic phase equilibrium principle at the first. Next, several methods for calculating the compressibility factor of natural gas at different temperatures and pressures are compared by using Visual Basic software, and the Setzmann equation with the smallest error is selected. Finally, compared with the new model, the traditional model as well as the experimental data, the results show that the new model is closer to the experimental data. At the same time, the displacement efficiency of natural gas hydrate at different temperatures is analyzed. It is suggested that higher displacement efficiency can be obtained by reasonably increasing the temperature of the displacement reaction system. © Published under licence by IOP Publishing Ltd.
Number of references: 24
Main heading: Temperature
Controlled terms: Equations of state of gases - Gases - Hydration - Natural gas - Visual BASIC - Efficiency - Gas hydrates
Uncontrolled terms: Compressibility factor - Conservation of mass - Displacement efficiency - Displacement experiments - Displacement reactions - Equation of state - Influence degree - Traditional models
Classification code: 512.2 Natural Gas Deposits - 522 Gas Fuels - 641.1 Thermodynamics - 723.1.1 Computer Programming Languages - 913.1 Production Engineering
DOI: 10.1088/1755-1315/242/2/022026
Funding Details: Number: 20180417, Acronym: -, Sponsor: -; Number: NO51704235, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Data Provider: Engineering Village

333. Origin of abnormal pressure in the Upper Paleozoic shale of the Ordos Basin, China

Accession number: 20193007220531
Authors: Li, Jun (1, 2); Zhao, Jingzhou (1, 2); Wei, Xinshan (3); Chen, Mengna (1, 2); Song, Ping (1, 2); Han, Zaihua (1, 2); Wu, Weitao (1, 2)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Lab of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (3) Exploration & Development Research Institute of PetroChina Changqing Oilfield Company, Xi'an; Shaanxi; 710018, China
Corresponding author: Zhao, Jingzhou(jzzhao@xsyu.edu.cn)
Source title: Marine and Petroleum Geology

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Volume: 110
Issue date: December 2019
Publication year: 2019
Pages: 162-177
Language: English
ISSN: 02648172
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Overpressure in the Upper Paleozoic shale of the Ordos Basin (UPSOB) in China occurred mainly in the Early Cretaceous, and is modeled using the PetroMod simulation method in this paper. The origin of paleo-overpressure was analyzed based on the multiple-logging combination method, Bowers' method, and the velocity–density cross-plot method using logging data and shale porosity. The causes of the underpressure and normal pressure, and the history of their evolution were investigated based on a large amount of drilling and pressure data for the basin. The results indicate that paleo-overpressure in the UPSOB produced in the Early Cretaceous was not the cause of disequilibrium compaction, but this occurred owing to increased hydrocarbon generation. Since the Late Cretaceous, during the overall uplift of the Ordos Basin, the decrease in temperature has led to a reduction in pore pressure of 23.93–34.35 MPa, accounting for 56.69%–69.47% of total pressure loss. A combination of the expansion and diffusion of natural gas has led to a decrease in pore pressure of 9.52–22.60 MPa, accounting for 27.63%–41.83% of total pressure loss. The effects of pore rebound on pressure loss were weak. Therefore, temperature decrease alone could not have led to the current underpressure and normal pressure, and the expulsion of gas owing to tectonic uplifting might have been the most important factor. The UPSOB likely had a relatively high gas expulsion efficiency, especially during late-stage tectonic uplifting, which may be a major risk for shale gas exploration. © 2019 Elsevier Ltd
Number of references: 67
Main heading: Gases
Controlled terms: Hydrocarbons - Tectonics - Pore pressure - Shale - Metamorphic rocks - Petroleum prospecting
Uncontrolled terms: Combination method - Hydrocarbon generation - Ordos Basin - Ordos basin , China - Overpressure - Temperature decrease - Total-pressure loss - Underpressure
Classification code: 481.1 Geology - 483.1 Soils and Soil Mechanics - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
DOI: 10.1016/j.marpetgeo.2019.07.016
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334. A new approach to evaluate fault-sliding potential with reservoir depletion

Accession number: 20200308031384
Authors: Zhao, Kai (1); Li, Xiaorong (2); Yan, Chuanliang (3); Feng, Yongcun (2); Dou, Liangbin (4); Li, Jing (3)
Author affiliation: (1) Xi'an Shiyou University, Shanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, China; (2) Department of Petroleum and Geosystems Engineering, University of Texas at Austin, United States; (3) China University of Petroleum, China; (4) Xi'an Shiyou University, China
Corresponding author: Zhao, Kai
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Language: English
ISSN: 1086055X
CODEN: SPJRFW
Document type: Journal article (JA)

Publisher: Society of Petroleum Engineers (SPE)
Abstract: Fault reactivation caused by reservoir depletion has been an important issue faced by the oil and gas industry. Traditional views suggest that with reservoir depletion, only normal faults can be activated and fault stability either monotonically decreases or increases, which are not consistent with field observations. In this paper, a fault-sliding-potential (FSP) model was developed to analyze fault stability during reservoir depletion for different types of faults. The evolution trend of fault stability with reservoir depletion and the corresponding judging criteria were obtained by calculating the derivatives of FSP. The influences of reservoir depletion on nonsealing and sealing faults were investigated. Case studies were performed to analyze FSP for different types of nonsealing and sealing faults with different fault properties and attitudes. The results show that reverse and strike faults might also be reactivated with reservoir depletion. The fault stability might not monotonically decrease or increase; instead, four evolution patterns of fault stability might occur, with reservoir depletion dependent on the parameters of the faults. Reservoir depletion usually leads to a higher sliding risk for sealing faults than for nonsealing faults. The results also indicate that fault stability is a strong function of fault attitudes, including the dip and strike of the fault. © 2019 Society of Petroleum Engineers.
Number of references: 39
Main heading: Stability criteria
Controlled terms: Gas industry
Uncontrolled terms: Evolution patterns - Evolution trend - Fault reactivation - Field observations - New approaches - Normal faults - Oil and Gas Industry - Reservoir depletion
Classification code: 522 Gas Fuels - 731.4 System Stability - 961 Systems Science
DOI: 10.2118/194197-PA
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Compendex references: YES
Database: Compendex
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335. Design and investigation of the fiber Bragg grating pressure sensor based on square diaphragm and truss-beam structure

Accession number: 20194107524834
Authors: Jia, Zhen'An (1, 2); Fan, Qinggeng (1, 2); Feng, Dequan (1, 2); Yu, Dakuan (1, 2); Zhao, Xianfeng (1, 2); Yang, Kaiqing (1, 2)
Author affiliation: (1) Xi'An Shiyou University, School of Science, Shaanxi Engineering Research Center of Oil and Gas Resource Optical Fiber Detection, Xi'an, China; (2) Xi'An Shiyou University, Shaanxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'an, China
Corresponding author: Jia, Zhen'An(jiazhen_an@xsyu.edu.cn)
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Article number: 097109
Language: English
ISSN: 00913286
E-ISSN: 15602303
CODEN: OPEGAR
Document type: Journal article (JA)
Publisher: SPIE
Abstract: A fiber Bragg grating (FBG) pressure sensor using a composite structure comprising a square diaphragm, steel trusses, and vertical beams is proposed and studied. The deflection of the square diaphragm due to the applied pressure is transferred as an axial force on the FBG mounted at the end of the vertical beams. Measurement principle

and stress analysis of the pressure sensor are introduced. The experimental results indicate that the pressure sensitivity of the sensor is 622.71 pm / MPa across the range of 0 to 2 MPa with a good linearity recorded at 99.996%, and the hysteresis and repeatability of the pressure sensor are calculated to be 0.6639% full-scale output (FSO) and 0.2773% FSO, respectively. In addition, the relative error of the sensor after temperature compensation was found to be 1.46%, which indicates an effective elimination of the effect of the temperature on pressure measurement. © 2019 Society of Photo-Optical Instrumentation Engineers (SPIE).
Number of references: 20
Main heading: Pressure sensors
Controlled terms: Fiber Bragg gratings - Error compensation - Steel fibers - Trusses - Diaphragms - Stress analysis
Uncontrolled terms: Applied pressure - Axial forces - linearity - Pressure sensitivities - Relative errors - Steel truss - Temperature compensation - Vertical beams
Classification code: 408.2 Structural Members and Shapes - 601.2 Machine Components - 819.4 Fiber Products - 944.3 Pressure Measuring Instruments - 951 Materials Science
Numerical data indexing: Percentage 1.00e+02%, Percentage 1.46e+00%, Percentage 2.77e-01%, Percentage 6.64e-01%, Pressure 0.00e+00Pa to 2.00e+06Pa
DOI: 10.1117/1.OE.58.9.097109
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336. A high sensitivity D-type surface plasmon resonance optical fiber refractive index sensor with graphene coated silver nano-columns

Accession number: 20185206285630
Authors: Fu, Haiwei (1); Zhang, Min (1); Ding, Jijun (1); Wu, Jie (2); Zhu, Yi (1); Li, Huidong (1); Wang, Qiqi (1); Yang, Chong (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; Shaanxi; 710065, China; (2) Ministry of Education Key Laboratory on Photoelectric Oil-gas Logging and Detecting, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Fu, Haiwei(hwfu@xsyu.edu.cn)
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CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: A high sensitivity surface plasmon resonance (SPR) fiber sensor with graphene coated silver nano-columns on the surface of the D-type single mode fiber has been proposed and simulated in this paper. The sensor uses evanescent wave on the surface of the fiber to excite free electrons on the metal surface to generate surface plasmon waves (SPW), and the change of refractive index (RI) is measured by monitoring the variation of the resonance absorption peak. The COMSOL Multiphysics software is used to optimize the diameter of sliver nano-column, the width of air gap between sliver columns, and to study the effect of graphene sensing layer thickness on sensor sensitivity. The simulation results show that the sensitivity of the sensor can be greatly improved with graphene coated sliver nano-columns. The maximum external RI response sensitivity of the sensor proposed in this paper can reach 8860.93 nm/RIU in the RI range of 1.33–1.39 when the diameter of silver nano-column is 90 nm, the graphene is 23 layers and the width of air gap between columns is 53.82 nm. When the RI is 1.39, the sensitivity of the sensor with 23 layers of graphene can be increased by 28% compared with the sensor without the graphene layer. The simulation results will be helpful for design and fabrication of optical fiber SPR refractive index sensor. © 2018 Elsevier Inc.

Number of references: 25
Main heading: Surface plasmon resonance
Controlled terms: Optical fiber fabrication - Single mode fibers - Refractive index - Fiber optic sensors - Silver - Graphene - Refractometers
Uncontrolled terms: Change of refractive index - Fiber optics sensors - Nano-columns - Optical fiber refractive indices - Refractive index sensor - Resonance absorption - Response sensitivity - Surface plasmon waves
Classification code: 547.1 Precious Metals - 741.1 Light/Optics - 741.1.2 Fiber Optics - 761 Nanotechnology - 804 Chemical Products Generally - 941.3 Optical Instruments
Numerical data indexing: Percentage 2.80e+01%, Size 5.38e-08m, Size 9.00e-08m
DOI: 10.1016/j.yofte.2018.12.017
Funding Details: Number: 12JS077,14JS073, Acronym: -, Sponsor: -; Number: 41474108, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: YCS18112030, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work is supported by the National Natural Science Foundation of China (No. 41474108), the Research Foundation of Education Bureau of Shaanxi Province , China (Nos. 12JS077 and 14JS073), and the Innovative and Practical Ability Training Program for Postgraduates of Xi'an Shiyou University (No. YCS18112030).This work is supported by the National Natural Science Foundation of China (No. 41474108), the Research Foundation of Education Bureau of Shaanxi Province, China (Nos. 12JS077 and 14JS073), and the Innovative and Practical Ability Training Program for Postgraduates of Xi'an Shiyou University (No. YCS18112030).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

337. AC Microgrid Small-Signal Modeling: Hierarchical Control Structure Challenges and Solutions

Accession number: 20195007812558
Authors: Wu, Ying (1); Wu, Yanpeng (2); Guerrero, Josep M. (2); Vasquez, Juan C. (2); Li, Jiao (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, China; (2) Department of Energy Technology, Aalborg University, Denmark
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Abbreviated source title: IEEE Electrif. Mag.
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Issue: 4
Issue date: December 2019
Publication year: 2019
Pages: 81-88
Article number: 8917849
Language: English
ISSN: 23255897
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Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Looking at today's energy development, the traditional singlepower generation and transmission phase is gone forever. We are now in the Internet of Smart Energy era, which requires clean, intelligent, efficient, and reliable power. With the largescale adoption of renewable sources and Internet of Things technology, the development of the energy Internet has become irreversible. Global newenergy companies are urgently exploring and actively responding to this trend. © 2013 IEEE.
Number of references: 9
Uncontrolled terms: Energy development - Energy internet - Hierarchical control structure - Internet of things technologies - Renewable sources - Small signal model - Smart energies - Transmission phase
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338. Study on Strength Characteristics of Microporous Clay in Shale Based on Homogenization Theory

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Title of translation:
Authors: Han, Qiang (1, 2); Qu, Zhan (1, 2); Ye, Zhengyin (3)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Shaanxi Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoirs, Xi'an Shiyou University, Xi'an; 710065, China; (3) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China
Source title: Lixue Xuebao/Chinese Journal of Theoretical and Applied Mechanics
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ISSN: 04591879
CODEN: LHHPAE
Document type: Journal article (JA)
Publisher: Chinese Society of Theoretical and Applied Mechanics
Abstract: As one of the basic parameters necessary for shale oil and development, the analysis of shale strength is carried out in the whole process of drilling and hydraulic fracturing. Macroscopic experiments have problems such as sample preparation and time consuming. Limited by downhole conditions, not only the quality of data obtained by geophysical method is not good enough for mechanical analysis, but also it increases the risk of equipment stuck and buried in downhole. In this paper, the strength evaluation method of microporous clay in shale was proposed based on the homogenization theory. The composition and mechanical analysis of porous clay was carried out. Based on dissipative energy principle and Drucker-Prager criterion, the strength evaluation of porous clay was transformed into a solution to the strain of the microscopic π function. The mechanical properties of the intergranular pores of clay were discussed and the homogenization strain energy of porous clay was established. The microscopic nonlinear function was constructed based on the strength homogenization theory. A homogenization π function was established in relation to parameters such as the composition of porous clay, coefficient of friction and cohesion. Based on nanomechanical experiments, dimensional analysis and finite element simulation, the intrinsic relationship between hardness, strength and composition of porous clay was evaluated. The results show that the elastic modulus and hardness of microporous clay in shale are positively correlated with the packing density of shale. The ratio of hardness to cohesion coefficient exhibits a nonlinear increase with increasing friction coefficient when the clay packing density is constant. The π function of porous clay with respect to hardness, strength and clay packing density is solved by dimensional analysis and finite element simulation. The composition and mechanical relationship of shale microporous clay are described. It lays a foundation for further research on shale meso-strength parameters and macro-strength prediction. © 2019, Editorial Office of Chinese Journal of Theoretical and Applied Mechanics. All right reserved.
Number of references: 35
Main heading: Textures
Controlled terms: Energy dissipation - Function evaluation - Microporosity - Risk assessment - Friction - Quality control - Strain energy - Finite element method - Homogenization method
Uncontrolled terms: Coefficient of frictions - Drucker Prager criterion - Finite element simulations - Homogenization theory - Micromechanical tests - Microporous - Strength characteristics - Strength parameters
Classification code: 525.4 Energy Losses (industrial and residential) - 913.3 Quality Assurance and Control - 914.1 Accidents and Accident Prevention - 921 Mathematics - 921.6 Numerical Methods - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.6052/0459-1879-18-214
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

339. Study on Distribution Characteristics of Gas-Liquid Two-Phase Flow in Pitot tube Sampler (*Open Access*)

Accession number: 20193307306255
Authors: Yang, Miao (1); Deng, Zhian (1); Cao, Zhibo (2); Li, Jun (2); Wen, Zi Yan (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Xinjiang Oilfield Company, 834000, China
Corresponding author: Yang, Miao(1169004952@qq.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 252
Part number: 3 of 5
Issue: 3
Issue title: 2018 4th International Conference on Environmental Science and Material Application - Energy Science and Power Engineering
Issue date: July 9, 2019
Publication year: 2019
Article number: 032113
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Environmental Science and Material Application, ESMA 2018
Conference date: December 15, 2018 - December 16, 2018
Conference location: Xi'an, China
Conference code: 149894
Publisher: IOP Publishing Ltd
Abstract: Gas-liquid two-phase current systems are widely existed in the petroleum, the chemical industry, the metallurgy, the nuclear power and many industrial fields. Two-phase's phase distribution and measurement can't be avoided in two phase current system. And it is also a difficult problem that has not been solved. In this paper, we designed a pitot-distributor. Experimental measurement and theory analysis were carried out to study the distribution data and situation of the distributor in gas-liquid two-phase flow. Firstly, a special experimental device for pitot-distributor was designed and experiments were carried out at air-water two-phase flow loop. The main text pipeline's diameter is 50mm, the system pressure is 0.24#0.28MPa, there are five branches in the pitot-distributor, each branch's diameter is 8mm. The paper has first analyzed the influencing factors of gas extraction ratios and liquid extraction ratios, which were effected by four different types of pitot-separator. Next, it analyzed different efforts under two kind of pressure. Then, we established the math model and calculated the coefficients. Last, we analyzed the erroneous. The experimental result indicated that the tube-12345 structure is the perfect one which can keep extraction ratios more stable in a quite wide rang. Liquid extraction ratios (KL) mainly are affecting by the pressure and its structure. The gas extraction ratios (KG) mainly are affecting by the pressure.
Number of references: 21
Main heading: Chemical industry
Controlled terms: Liquids - Air - Two phase flow - Extraction - Gases - Petroleum industry
Uncontrolled terms: Air-water two phase flows - Distribution characteristics - Experimental devices - Extraction ratio - Gas - liquid two-phase flows - Industrial fields - Liquid extraction - Phase distribution
Classification code: 631.1 Fluid Flow, General - 802.3 Chemical Operations - 804 Chemical Products Generally - 805 Chemical Engineering, General
Numerical data indexing: Size 5.00e-02m, Size 8.00e-03m
DOI: 10.1088/1755-1315/252/3/032113
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

340. Summary of research on distribution network reconfiguration (*Open Access*)

Accession number: 20193207297466
Authors: Wu, Xiaomeng (1, 2); Li, Xinqiao (1); Li, Chong (1); Dang, Jian (1)

Author affiliation: (1) School of Electric Engineering, Xian Shiyou University, China; (2) Key Laboratory of Measurement and Control Technique of Oil, Gas Wells of Shaanxi Province, Xian, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 4 of 5
Issue: 4
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Automation Engineering and Intelligent Application
Issue date: July 12, 2019
Publication year: 2019
Article number: 042022
Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Distribution network reconfiguration is an important means to optimize the operation of distribution network. The the reconfiguration of distribution network can change the opening and closing state of segmentation switch and tie switch in the distribution network without increasing investment. It can achieve the purpose of reducing network loss, balancing load to eliminate overload and light load, improving power supply reliability and improving power supply voltage quality. Therefore, it has important practical significance to accelerate the problem of distribution network reconfiguration. In this paper, the mathematical model of distribution network reconfiguration is given for the characteristics of distribution network, and various algorithms for distribution network reconfiguration are introduced. The advantages and disadvantages of various algorithms are analyzed, and the distribution network is more comprehensively reflected. © Published under licence by IOP Publishing Ltd.
Number of references: 14
Uncontrolled terms: Balancing loads - Distribution network reconfiguration - Improving power - Light loads - Network loss - Reconfiguration of distribution networks - Tie switch
Classification code: 601 Mechanical Design - 716.1 Information Theory and Signal Processing - 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/4/042022
Funding Details: Number: 18JS094, Acronym: -, Sponsor: -; Number: 2017081CGRC044, Acronym: -, Sponsor: -; Number: YCS18251002, Acronym: -, Sponsor: -;
Funding text: This paper is supported by the Key Project of Shaanxi Provincial Education Department(18JS094), the Science and Technology Project of Xi'an(2017081CGRC044), Xi'an Shiyou University Graduate Innovation and Practice Ability Training Project(YCS18251002).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

341. Modeling and Design of a Wideband Electromagnetic Logging Detector (*Open Access*)

Accession number: 20193307300187
Authors: Song, Xinai (1); Chen, Hong (2); Cheng, Xi (1); Cao, Xing (1); Gui, Pengfei (3)
Author affiliation: (1) Xian Shiyou University, Xian; 710065, China; (2) CNPC Chuanqing Drilling and Exploration Engineering Co. LTD, Chengdu; 610051, China; (3) CNPC Well Logging Co. LTD, Xian; 710077, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 5 of 5
Issue: 5
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
Issue date: July 12, 2019

Publication year: 2019
Article number: 052012
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Due to the increasing complexity of oil and gas exploration objects, it is necessary to study the electrical properties of rocks in different frequency bands. At present, electrical properties of formation such as resistivity and phase change of electromagnetic propagation have attracted great attention in petroleum industry. In this paper, the influence of working frequency for tools, coil distance, mud in borehole, formation conductivity and other measuring conditions on detector signal is studied through numerical modeling, and the key circuit design technology of data acquisition of detector for wideband electromagnetic logging is preliminarily discussed. The modeling results can provide theoretical analysis for the design of parameters and data acquisition circuit of the detector, and lay a foundation for the accurate study of oil saturation of rock and the determination of reservoir fluid properties. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 12
Main heading: Data acquisition
Controlled terms: Technology transfer - Electromagnetic logging - Petroleum prospecting - Electric network analysis - Integrated circuit manufacture - Oil well logging - Petroleum industry
Uncontrolled terms: Data acquisition circuit - Detector signals - Different frequency - Electromagnetic propagation - Measuring conditions - Oil and gas exploration - Reservoir fluid - Working frequency
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism - 703.1.1 Electric Network Analysis - 714.2 Semiconductor Devices and Integrated Circuits - 723.2 Data Processing and Image Processing
DOI: 10.1088/1742-6596/1237/5/052012
Funding Details: Number: 2019kw-056, Acronym: -, Sponsor: -; Number: 16JK1607, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This work was financially supported by the Shaanxi Province Key R & D Program (2019kw-056) and Special Scientific Research Project of Education Department of Shaanxi Province (16JK1607).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

342. An Azimuth Frequency Domain NCS Algorithm for Missile-borne SAR (*Open Access*)

Accession number: 20193207296130
Authors: Zhang, Yan (1); Shi, Xiaomin (1); Zhang, Mingxuan (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) Xi'An Institute of Applied Optics, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022080
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019

Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: SAR data in highly squint mode features large range walk and small range curvature. Therefore, an advanced Frequency Phase Filtering Algorithm based on line range walk correction is proposed in this paper. Firstly, range walk is removed in range frequency and azimuth time domain. Then, a chirp scaling (CS) algorithm is adopted to correct range curvature. Based on the above operation, a novel high-order of phase filtering factor is introduced into the azimuth time and frequency domain in order to correct the azimuth-dependence. Finally, the signal is focused in the Doppler domain by SPECtral Analysis technique. Simulation results illustrate that it satisfies the imaging quality of SAR in high squint mode and large scene swath.
Number of references: 9
Main heading: Spectrum analysis
Controlled terms: Frequency domain analysis - Geology - Time domain analysis - Synthetic aperture radar
Uncontrolled terms: Azimuth dependence - Frequency domains - Imaging quality - Missile-borne sar - Mode features - Phase filtering - Spectral analysis techniques - Time and frequency domains
Classification code: 481.1 Geology - 716.2 Radar Systems and Equipment - 921 Mathematics - 921.3 Mathematical Transformations
DOI: 10.1088/1742-6596/1237/2/022080
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

343. Development and Realization of 'Xi Ma' Moving Target Detection and Tracking

Accession number: 20195207902064
Authors: Cuan, Ying (1); Xie, Xiaoxi (1); Xue, Xinyu (2)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China; (2) Xi'an Jiaotong University Health Science Center, China
Source title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Abbreviated source title: Proc. - Int. Conf. Comput. Network, Electron. Autom., ICCNEA
Part number: 1 of 1
Issue title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Issue date: September 2019
Publication year: 2019
Pages: 406-409
Article number: 8911913
Language: English
ISBN-10: 0769566847
ISBN-13: 9780769566849
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Conference date: September 27, 2019 - September 29, 2019
Conference location: Xi'an, China
Conference code: 155651
Sponsor: James Cook University Australia; LANMC; Missouri Western State University; National University of Singapore (NUS); University of Huddersfield; Xi'an Technological University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In recent years, marathons have been held frequently in Xi'an, Xi' an marathon for the promotion of urban visibility and the development of urban culture have played a positive role in promoting. With the development of computer vision and image coding technology, the detection and tracking of moving targets has become a hot topic in the field of research. The target detection and tracking system based on 'Xi Ma' movement combines XI' an marathon with moving target detection and tracking technology, which provides an effective solution to the problems such as the detection and trajectory tracking of marathon athletes in real competition. The system realizes the construction of the whole frame using Electron frame technology, and realizes the detection and tracking function of the target in the system by means of inter-frame difference method, regional-based convolution neural network and CamShift algorithm.

Thus, it provides an effective scheme for the detection and trajectory tracking of marathon runners in real competitions. © 2019 IEEE.
Number of references: 13
Main heading: Image coding
Controlled terms: Target tracking
Uncontrolled terms: Cam-shift algorithms - Convolution neural network - Detection and tracking - Inter-frame difference methods - Moving target detection - Moving targets - Target detection and tracking - Xi'an Marathon
DOI: 10.1109/ICCNEA.2019.00080
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

344. Research and Simulation on Resistivity Measurement in Downhole

Accession number: 20195207902080
Authors: Tian, Dou (1); Jiang, Liming (2); Wu, Jie (1); Lin, Xin (2)
Author affiliation: (1) Xi'an Shiyou University, School of Electrical Engineering, Xi'an, China; (2) China Petroleum Logging CO. LTD., Technology Center, Xi'an, China
Source title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Abbreviated source title: Proc. - Int. Conf. Comput. Network, Electron. Autom., ICCNEA
Part number: 1 of 1
Issue title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Issue date: September 2019
Publication year: 2019
Pages: 491-496
Article number: 8911994
Language: English
ISBN-10: 0769566847
ISBN-13: 9780769566849
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Conference date: September 27, 2019 - September 29, 2019
Conference location: Xi'an, China
Conference code: 155651
Sponsor: James Cook University Australia; LANMC; Missouri Western State University; National University of Singapore (NUS); University of Huddersfield; Xi'an Technological University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In this paper, a downhole in-situ experimental technique is proposed to measure rock physical parameters by placing a measuring probe into the borehole. Based on COMSOL multi-physics finite element software, the five detector structures were simulated and the structural parameters of the detector were determined according to the detection depth performance index. The experimental measurement of the probe in solution and rock was carried out by constructing a physical simulation experiment platform. The measurement of the probe in nine different salinity solutions showed that the resistivity probe constant K and the measured voltage were consistent with the numerical simulation results. Further, the probe was measured in the rock, and the results showed that the resistivity measured in the hole and the drilled column was measured. The resistivity of the plug core is less than 5%, and the result lays the foundation for the development of the downhole in-situ experimental measurement system. © 2019 IEEE.
Number of references: 10
Main heading: Probes
Controlled terms: Simulation platform - Numerical models
Uncontrolled terms: Evaluation - Experimental techniques - Finite element software - Performance indices - Physical experiments - Physical simulation experiment - Resistivity measurement - Structural parameter
Classification code: 723.5 Computer Applications - 921 Mathematics
Numerical data indexing: Percentage 5.00e+00%
DOI: 10.1109/ICCNEA.2019.00096
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

345. Study on Tunable Ring Erbium-doped Fiber Laser (*Open Access*)

Accession number: 20193207297414
Authors: Yan, Bai (1, 2); Hong, Gao (1); Feng, Dequan (1, 2)
Author affiliation: (1) School of Science, Xian Petroleum University, Xian, China; (2) School of Physics, Northwest University, Xian, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 4 of 5
Issue: 4
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Automation Engineering and Intelligent Application
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Article number: 042055
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Based on the characteristics of erbium-doped fiber (EDF), the wavelength tuning of ring-fiber laser can be realized. Moreover, the laser can work well and stably even when a simple structure of tuning device is adopted. As the pump power of 300 mA is adopted, the output power of the laser is 6.747 mW, and the laser wavelength can be tuned in the range of from 1546.326 nm to 1549.736 nm, as the temperature is elevated from 18.3°C to 109.8°C. The drift of center wavelength is linearly related with the temperature. The tuning wavelength have potential applications in the field of photoelectric devices. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Fiber lasers
Controlled terms: Photonics - Erbium - Optoelectronic devices - Pumping (laser)
Uncontrolled terms: Center wavelength - Erbium doped fiber laser - Erbium doped fibers - Laser wavelength - Ring fiber lasers - Simple structures - Tuning devices - Wavelength tuning
Classification code: 547.2 Rare Earth Metals - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 744.1 Lasers, General - 744.4 Solid State Lasers
Numerical data indexing: Electric_Current 3.00e-01A, Power 6.75e-03W, Size 1.55e-06m, Temperature 2.91e+02K to 3.83e+02K
DOI: 10.1088/1742-6596/1237/4/042055
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

346. Numerical simulation of separation characteristics of separator guide plate for CO2 flooding fluid (*Open Access*)

Accession number: 20191306712803
Authors: Li, Yu (1); Yang, Miao (2); Cao, Zhibo (1); Li, Jun (1)
Author affiliation: (1) Infrastructure Project Department, Xinjiang Oilfield Company, China; (2) 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: 227
Part number: 4 of 6
Issue: 4

Issue title: 3rd International Conference on Energy Engineering and Environmental Protection - Energy and Scientific Research
Issue date: March 4, 2019
Publication year: 2019
Article number: 042003
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 3rd International Conference on Energy Engineering and Environmental Protection, EEEP 2018
Conference date: November 19, 2018 - November 21, 2018
Conference location: Sanya, China
Conference code: 146116
Publisher: IOP Publishing Ltd
Abstract: In order to investigate the influence of the guide plate placement angle on the separation efficiency of CO2 flooding fluid, the separation characteristics of the horizontal separator guide plate were simulated by using ANSYS Fluent. Fitted the physical parameters of CO2 flooding fluid under the running condition of the separator, adopted the Mixture model of multiphase flow, and carried out the simulation of the guide plate placed at four placement angles (15°, 30°, 45°, 60°). The simulation results can provide a basis for designing a more efficient separator for CO2 flooding fluid. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Separators
Controlled terms: Carbon dioxide - Floods
Uncontrolled terms: Guide plates - Mixture model - Physical parameters - Placement angles - Running conditions - Separation characteristics - Separation efficiency
Classification code: 804.2 Inorganic Compounds
DOI: 10.1088/1755-1315/227/4/042003
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

347. Intra-layer heterogeneity of sandstone with different origins in deep-water environment and its causes

Accession number: 20184806146934
Authors: Yang, Shasha (1); Huang, Xuri (1); Yin, Cheng (1); Xu, Yongqiang (2); Zhao, Yonggang (3); Yan, Jian (4)
Author affiliation: (1) School of Earth Science and Technology, Southwest Petroleum University, Chengdu; 610500, China; (2) South Sulige Operating, Petro China Changqing Oilfield, Xi'an; 710018, China; (3) School of Earth Science and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Huang, Xuri
Source title: Sustainable Computing: Informatics and Systems
Abbreviated source title: Sustainable Computing: Informatics and Systems
Volume: 21
Issue date: March 2019
Publication year: 2019
Pages: 10-18
Language: English
ISSN: 22105379
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: In recent years, a lot of analysis and discussions on the origins, flow mechanisms, and sedimentation models of deep-water sandstone have been conducted. However, the intra-layer heterogeneity of different sandstone lacks of study. Intra-layer heterogeneity refers to the change of vertical reservoir characteristics within a single sandstone. The degree of change is often the internal cause of intra-layer contradictions in oil and gas production. After analyzing a large number of the core samples and well logging data of the Chang 6 reservoir in the Zhengning area, southern Ordos Basin in central China, it is believed that the Chang 6 reservoir in the study area is of deep-water sediments. The sandstone's origins include sandy debris flow, sandy slumping and turbidity current. Based

on the statistical data of the 554 physical property tests, a comprehensive evaluation of the heterogeneity within the study area was conducted using the BP neural network method for the first time, and the test accuracy rate reached 89.47%. It is considered that the intra-layer heterogeneity of the three types sandstone from weak to strong is sandy debris flow, sandy slumping and turbidity current. After an in-depth analysis of sedimentation, it is believed that the main factors affecting the intra-layer heterogeneity of different deep water environment sandstones are sedimentation processes, granular rhythm and bedding structure. A combination of qualitative and quantitative studies on these three influencing factors were conducted. It is considered that laminar flow, coarser grain size, homogeneous rhythm and massive structure make the weak intra-layer heterogeneity of sandy debris flow. While, laminar flow, finer granularity, homogeneous rhythm and abundant stratified structure forming a moderate intra-layer heterogeneity of sandy slumping. Finally, turbulent suspension, the dominant features of the positive rhythm, followed by the reverse rhythm, and the laminar structure, followed by the stratified structure, resulted in a strong intra-layer heterogeneity of the turbidity current. © 2018 Elsevier Inc.
Number of references: 33
Main heading: Sandstone
Controlled terms: Debris - Ocean currents - Sediment transport - Turbidity - Well logging - Sedimentation - Neural networks
Uncontrolled terms: Chang 6 formation - Comprehensive evaluation - Deep Water - Intra-layer - Oil and gas production - Ordos Basin - Reservoir characteristic - Sedimentation process
Classification code: 471.4 Seawater, Tides and Waves - 482.2 Minerals - 741.1 Light/Optics - 802.3 Chemical Operations
Numerical data indexing: Percentage 8.95e+01%
DOI: 10.1016/j.suscom.2018.11.003
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

348. High-spatial-resolution ultrasonic sensor using a fiber-optic Fabry–Perot interferometer

Accession number: 20193407344403
Authors: Yin, Xunli (1); Shen, Yedi (1); Su, Dan (1); Shao, Zhihua (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, 710065, China; Department of Physics, Northwest University, Xi'an, 710069, China
Corresponding author: Shao, Zhihua(2013optics_szh@stumail.nwu.edu.cn)
Source title: Optics Communications
Abbreviated source title: Opt Commun
Volume: 453
Issue date: 15 December 2019
Publication year: 2019
Article number: 124422
Language: English
ISSN: 00304018
CODEN: OPCOB8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: An all-optical micro ultrasound sensor, consisting of a rigid, fiber-coupled Fabry–Perot interferometer (FPI) with an open micro-cavity is proposed and experimentally demonstrated. The sensor structure comprises a rectangular gold membrane on micro scale that is formed by ultrafast machining technology using femtosecond laser. The processed membrane is easy to be deformed or deflected by the external pressure, making it be a cantilever beam to perceive the dynamic acoustic pressure. The sensing principle relies exclusively on the detection of pressure-induced changes of the interference phase of FPI. This enables inherently linear signal detection over a broad bandwidth by using spectral band-side filtering technology. The theoretical analysis and experimental demonstration are characterized in detail. Thanks to the ultrahigh sensitivity and micro-scale structure of sensor, the sensor presents a high spatial resolution. © 2019 Elsevier B.V.
Number of references: 23
Main heading: Fiber optic sensors
Controlled terms: Fiber optics - Ultrasonic applications - Image resolution
Uncontrolled terms: Acoustic pressures - Experimental demonstrations - External pressures - High spatial resolution - Interference phase - Machining technology - Micro-scale structures - Ultra-high-sensitivity
Classification code: 741.1.2 Fiber Optics - 753.3 Ultrasonic Applications
DOI: 10.1016/j.optcom.2019.124422

Funding Details: Number: 2018JQ6011, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20170111, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology;
Funding text: This work was supported by: Young Talent Fund of University Association for Science and Technology in Shaanxi,China. (No. 20170111); National Natural Science Foundation of Shaanxi Province, China (No. 2018JQ6011).This work was supported by: Young Talent Fund of University Association for Science and Technology in Shaanxi ,China. (No. 20170111); National Natural Science Foundation of Shaanxi Province , China (No. 2018JQ6011).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

349. Study on Preparation of Activated Carbon from Sludge (*Open Access*)

Accession number: 20191406741088
Authors: Du, Mingming (1); Yu, Tao (1); Wang, Feifei (1); Qu, Chengtun (1)
Author affiliation: (1) Shaanxi Oil and Gas Pollution Control and Reservoir Protection Key Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Chengtun(xianquct@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 484
Part number: 1 of 1
Issue: 1
Issue title: 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Issue date: March 19, 2019
Publication year: 2019
Article number: 012013
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2018 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Conference date: December 14, 2018 - December 16, 2018
Conference location: Wuhan, China
Conference code: 146480
Publisher: IOP Publishing Ltd
Abstract: Sludge, a carbon-rich material and favourable precursor of activated carbon, has stimulated new methods for the production of activated carbons for water gas treatment. Herein, various influence factors, concluding sludge resource, pyrolysis process and the type of activators, of the preparation of sludge-based activated carbon have been compiled. Moreover, the mechanism of chemical and physical activation was analyzed. Finally, Then the main research directions of preparation of activated carbons from pyrolytic sludge also were proposed. © Published under licence by IOP Publishing Ltd.
Number of references: 18
Main heading: Activated carbon
Controlled terms: Activated carbon treatment - Chemical analysis
Uncontrolled terms: A-carbon - Physical activation - Pyrolysis process - Water gas
Classification code: 804 Chemical Products Generally
DOI: 10.1088/1757-899X/484/1/012013
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

350. A Review of the Mechanism of Microbial Degradation of Petroleum Pollution (*Open Access*)

Accession number: 20191406740478
Authors: Li, Xiaokang (1); Li, Hong (1); Qu, Chengtun (1)

Author affiliation: (1) Shaanxi Oil and Gas Pollution Control and Reservoir Protection Key Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Chengtun(xianquct@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 484
Part number: 1 of 1
Issue: 1
Issue title: 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Issue date: March 19, 2019
Publication year: 2019
Article number: 012060
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2018 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Conference date: December 14, 2018 - December 16, 2018
Conference location: Wuhan, China
Conference code: 146480
Publisher: IOP Publishing Ltd
Abstract: A large amount of petroleum hydrocarbon pollutants will be produced during the oilfield exploitation process. If traditional treatment methods of physical or chemical methods are used, problems such as incomplete treatment and secondary pollution will occur. In order to achieve better treatment effects, the microbial degradation method is currently used to treat petroleum hydrocarbon pollutants. Studying the mechanism of microbial degradation of petroleum hydrocarbon pollutants is conducive to exploring the path of petroleum pollution remediation technology and improving the efficiency of pollution control. In this review, the degradation mechanism of alkanes, alkenes and aromatics is discussed in detail, and the research directions of microbial pollution control are analyzed and discussed.

Number of references: 14
Main heading: Hydrocarbons
Controlled terms: Remediation - Biodegradation - Gasoline - Degradation
Uncontrolled terms: Degradation mechanism - Microbial degradation - Microbial pollution - Oilfield exploitation - Petroleum hydrocarbons - Petroleum pollutions - Remediation technologies - Secondary pollution
Classification code: 454.2 Environmental Impact and Protection - 461.8 Biotechnology - 523 Liquid Fuels - 801.2 Biochemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds
DOI: 10.1088/1757-899X/484/1/012060
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

351. Study on the Existence Form and Removal of Boron Acid (*Open Access*)

Accession number: 20191406740477
Authors: He, Rongrong (1); Yu, Tao (1); Du, Jiajia (1); Qu, Chengtun (1)
Author affiliation: (1) Shaanxi Oil and Gas Pollution Control and Reservoir Protection Key Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Chengtun(1805762285@qq.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
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Issue title: 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
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Article number: 012059
Language: English
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Document type: Conference article (CA)
Conference name: 2018 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Conference date: December 14, 2018 - December 16, 2018
Conference location: Wuhan, China
Conference code: 146480
Publisher: IOP Publishing Ltd
Abstract: Boron, as a microelement, in the form of boric acid, borate, borosilicate in aqueous solution, has advantages and disadvantages for human production and life. When the concentration of boron is too high, it will affect the surrounding environment and biological survival. The chemical precipitation, adsorption (mainly resin method) and membrane separation method are the main methods for removing boron from sewage. The paper introduces the existence form of boron acid and the principle of these methods, but with the development of science and technology, we need to upgrade and optimize the original method to achieve efficient, energy-saving, environmentally friendly environmental governance. © Published under licence by IOP Publishing Ltd.
Number of references: 25
Main heading: Boron
Controlled terms: Energy conservation - Environmental technology - Boric acid - Precipitation (chemical) - Sewage
Uncontrolled terms: Chemical precipitation - Development of science and technologies - Environmental governances - Membrane separation - Microelements - Surrounding environment
Classification code: 452.1 Sewage - 454 Environmental Engineering - 525.2 Energy Conservation - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 802.3 Chemical Operations - 804.2 Inorganic Compounds
DOI: 10.1088/1757-899X/484/1/012059
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

352. Highly Sensitive Displacement Sensor Using Open Fiber-Optics Air Bubbles

Accession number: 20193907466249
Authors: Yin, Xunli (1); Shen, Yedi (2); Wang, Wen (2); Shao, Zhihua (2); Rong, Qiangzhou (2)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Physics, Northwest University, Xi'an; 710069, China
Corresponding author: Shao, Zhihua(2013optics_szh@stumail.nwu.edu.cn)
Source title: IEEE Sensors Journal
Abbreviated source title: IEEE Sensors J.
Volume: 19
Issue: 20
Issue date: October 15, 2019
Publication year: 2019
Pages: 9249-9254
Article number: 8744552
Language: English
ISSN: 1530437X
E-ISSN: 15581748
Document type: Journal article (JA)
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: A microfiber-optics interferometer was proposed, and the theoretical analysis and experimental demonstration were characterized in detail. The device comprised a Fabry-Perot interference (FPI) structure with an open-cavity, whereby a hollow core fiber (HCF), spliced to the single mode fiber (SMF), was collapsed and swelled into a thin-wall air bubble by multiple discharge operations. The closed bubble was then partially opened by using a micromachining technology, i.e., the focused femtosecond laser was utilized to ensure that the removed portion of the wall was precisely positioned over the cavity. The remaining wall was acted as a support beam that was easy to deform by external pressure. The smooth inside surfaces of the opened air cavity reflected light backwards to the leading-in SMF, resulting in a well-defined interference spectrum. For exerting the micropressure on the top of the open cavity and making the support beam bend, the proposed sensor shows a high resolution of 0.42μ m for the detection of displacement by simply monitoring the interference wavelength shift. © 2001-2012 IEEE.
Number of references: 21

Main heading: Single mode fibers
Controlled terms: Fiber optic sensors - Fiber optics - Micromachining - Fabry-Perot interferometers
Uncontrolled terms: Displacement sensor - Experimental demonstrations - Fabry Perot interference - Focused femtosecond lasers - Hollow core fiber - Interference spectrum - Laser micro processing - Micromachining technologies
Classification code: 604.2 Machining Operations - 741.1.2 Fiber Optics - 941.3 Optical Instruments
DOI: 10.1109/JSEN.2019.2924646
Funding Details: Number: 61605159, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JQ6011, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 20170111, Acronym: SUST, Sponsor: Shaanxi University of Science and Technology;
Funding text: Manuscript received April 7, 2019; accepted June 19, 2019. Date of publication June 24, 2019; date of current version September 18, 2019. This work was supported in part by the funds of the National Natural Science Foundation of China under Grant 61605159, in part by the Young Talent Fund of University Association for Science and Technology in Shaanxi, China, under Grant 20170111, and in part by the National Natural Science Foundation of Shaanxi Province, China, under Grant 2018JQ6011. The associate editor coordinating the review of this paper and approving it for publication was Dr. Minghong Yang. (Corresponding author: Zhihua Shao.) X. Yin is with the School of Science, Xi'an Shiyou University, Xi'an 710065, China (e-mail: lixunyin@163.com).This work was supported in part by the funds of the National Natural Science Foundation of China under Grant 61605159, in part by the Young Talent Fund of University Association for Science and Technology in Shaanxi, China, under Grant 20170111, and in part by the National Natural Science Foundation of Shaanxi Province, China, under Grant 2018JQ6011.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

353. Multiconstrained routing based on artificial bee colony algorithm and dynamic fireworks algorithm (*Open Access*)

Accession number: 20193207296108
Authors: Zhang, Xianwei (1); Hu, Youbing (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xian, China; (2) School of Computer Science and Technology, Xidian University, Xian, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
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Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
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Article number: 022058
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In this paper, a mathematical model for multiconstrained routing optimization problem is established. The multi-objective optimization problem is transformed into a single-objective optimization problem by adding a penalty function. Then the artificial bee colony algorithm (ABC) is used for route search. Because the ABC algorithm is easy to fall into the local optimal deficiencies, the dynamic fireworks algorithm (dynFWA) is introduced for local search, which can ensure fast global search and fast guarantee. In the process of searching for the optimal solution, the success rate is improved by about 1.05% compared with the PSO-ACO algorithm optimized by the ant colony algorithm, which is 6.18% higher than the standard PSO algorithm and the standard ABC algorithm. The minimum average cost of the search is about 0.53% higher than the PSO-ACO algorithm, which is about 1.87% higher than the other two algorithms.

The simulation results show that the algorithm can effectively solve the multiconstrained routing problem under large-scale networks.
Number of references: 18
Main heading: Ant colony optimization
Controlled terms: Routing algorithms - Multiobjective optimization - Particle swarm optimization (PSO) - Explosives - Artificial intelligence
Uncontrolled terms: Ant colony algorithms - Artificial bee colony algorithms - Artificial bee colony algorithms (ABC) - Fireworks algorithms - Large-scale network - Multi-objective optimization problem - Routing optimization - Single objective optimization problems
Classification code: 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 921.5 Optimization Techniques
Numerical data indexing: Percentage 1.05e+00%, Percentage 1.87e+00%, Percentage 5.30e-01%, Percentage 6.18e+00%
DOI: 10.1088/1742-6596/1237/2/022058
Funding Details: Number: 16JK1596, Acronym: -, Sponsor: -;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

354. New electromagnetic transmitter for EM-MWD system based on embedded RTOS: Uc-OS III

Accession number: 20194507628558
Authors: Liu, Keman (1); Li, Xiaolong (1); Wang, Tao (1); Zhang, Yinghao (1); Li, Lipin (1)
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Keman(coreman2005@126.com)
Source title: 2019 IEEE 4th International Conference on Signal and Image Processing, ICSIP 2019
Abbreviated source title: IEEE Int. Conf. Signal Image Process., ICSIP
Part number: 1 of 1
Issue title: 2019 IEEE 4th International Conference on Signal and Image Processing, ICSIP 2019
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Publication year: 2019
Pages: 299-303
Article number: 8868881
Language: English
ISBN-13: 9781728136608
Document type: Conference article (CA)
Conference name: 4th IEEE International Conference on Signal and Image Processing, ICSIP 2019
Conference date: July 19, 2019 - July 21, 2019
Conference location: Wuxi, China
Conference code: 152896
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: A downhole electromagnetic transmitter is an important part of the EM-MWD telemetry, which is transmits low frequency electromagnetic waves to the ground to obtain downhole information. In this paper, a novel transmitter of EM-MWD telemetry is developed. Firstly, the hardware platform is well constructed with TMS320F2S12 controller; Secondly, a voltage and current loop PI (Proportional-Integral) controller for PWM (pulse width modulation) downhole electromagnetic transmitter is built by root-locus method. Finally, the crucial technic of transmitter of EM-MWD tool based on Embedded RTOS: uc-OS III is researched in detail. Simulation results show that the proposed downhole electromagnetic transmitter can work well in downhole complex environment narrow with batteries. The voltage and current loop PI PWM (pulse width modulation) downhole electromagnetic transmitter control can achieve low total harmonic distortion under linear loading condition, small steady state error and good dynamic response under any disturbance change in load. The developed downhole electromagnetic transmitter based on Embedded RTOS: uc-OS III can be used for EM-MWD and LWD system designs as well as the improvement of these systems performance through optimization studies.
Number of references: 12

Main heading: Transmitters
Controlled terms: Floors - Telemetering equipment - Embedded systems - Pulse width modulation - Two term control systems - Voltage control - Root loci
Uncontrolled terms: Complex environments - Electromagnetic measurement while drilling - Low-frequency electromagnetic waves - Optimization studies - Proportional integral - Steady state errors - Systems performance - Total harmonic distortion (THD)
Classification code: 402 Buildings and Towers - 731.1 Control Systems - 731.3 Specific Variables Control
DOI: 10.1109/SIPROCESS.2019.8868881
Funding Details: Number: 2014BS10, Acronym: -, Sponsor: -; Number: 41774081, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 14JS074, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: No.2014K05-45, Acronym: -, Sponsor: Shaanxi Key Science and Technology Innovation Team Project;
Funding text: ACKNOWLEDGEMENT This work is supported by the National Natural Science Foundation of China under Grant (No. 41774081), Key Science and Technology Program of Shaanxi Province (No.2014K05-45), Key laboratory project of Shaanxi Provincial Department of Education (No. 14JS074) and Doctoral Innovation Fund of Xi'an Petroleum University(No.2014BS10).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

355. Development of a new parallel polymer flooding simulator for conventional and naturally fractured reservoirs

Accession number: 20191506773450
Authors: Liu, Hui (1); Chen, Zhangxin (1); Shen, Lihua (1); Zhong, He (1); Liu, Huaqing (2); Yang, Bo (1); Ji, Dongqi (1); Zhu, Zhouyuan (3); Zhan, Jie (4)
Author affiliation: (1) University of Calgary, Canada; (2) AMSS, Chinese Academy of Sciences, China; (3) China University of Petroleum, China; (4) Xi'an Shiyou University, China
Source title: International Petroleum Technology Conference 2019, IPTC 2019
Abbreviated source title: Int. Pet. Technol. Conf., IPTC
Part number: 1 of 1
Issue title: International Petroleum Technology Conference 2019, IPTC 2019
Issue date: 2019
Publication year: 2019
Report number: IPTC-19170-MS
Language: English
ISBN-13: 9781613996195
Document type: Conference article (CA)
Conference name: International Petroleum Technology Conference 2019, IPTC 2019
Conference date: March 26, 2019 - March 28, 2019
Conference location: Beijing, China
Conference code: 146421
Publisher: International Petroleum Technology Conference (IPTC)
Abstract: This paper deals with the development of our parallel reservoir simulator that is designed for giant reservoir models. It considers oil, water and polymer, and a reservoir can be a conventional reservoir without fractures or a naturally fractured reservoir. For polymer flooding, the simulator can model polymer retention, adsorption, an aqueous phase permeability reduction and viscosity increase, and an inaccessible pore volume. Here fractures are modeled by the dual porosity and dual permeability method. The finite difference (volume) method is applied to discretize the model, upstream techniques are employed to deal with rock-fluid properties, and the fully implicit method in time is applied. The linear systems from the Newton method are ill-conditioned and a scalable CPR-type preconditioner is employed to accelerate the solution of these linear systems. The computed results are compared with those from commercial simulators, and they match very well. The scalability of the simulator is good. © 2019, International Petroleum Technology Conference
Number of references: 46
Main heading: Linear systems
Controlled terms: Floods - Petroleum reservoirs - Fracture - Gasoline - Porosity - Simulators - Petroleum reservoir engineering - Reservoirs (water) - Newton-Raphson method
Uncontrolled terms: Commercial simulators - Dual-permeability - Fully implicit methods - Naturally fractured reservoirs - Permeability reduction - Polymer retention - Reservoir simulator - Viscosity increase

Classification code: 441.2 Reservoirs - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science - 961 Systems Science
DOI: 10.2523/iptc-19170-ms
Funding Details: Number: -, Acronym: -, Sponsor: Compute Canada;
Funding text: The support of Department of Chemical and Petroleum Engineering, University of Calgary and Reservoir Simulation Group is gratefully acknowledged. The research is partly supported by NSERC/Energi Simulation, Alberta Innovates (iCore), IBM Thomas J. Watson Research Center, and the Energi Simulation/ Frank and Sarah Meyer Collaboration Centre for Visualization and Simulation. The research is also enabled in part by support provided by WestGrid (www.westgrid.ca), SciNet (www.scinethpc.ca) and Compute Canada Calcul Canada (www.computecanada.ca).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

356. A Contrastive Study of Chinese Text Segmentation Tools in Marketing Notification Texts (*Open Access*)

Accession number: 20194107521285
Authors: Zhang, Xianwei (1, 2); Wu, Peng (1); Cai, Jiuming (1); Wang, Kun (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China; (2) School of Computer Science and Technology, Xidian University, Xi'an, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1302
Part number: 2 of 4
Issue: 2
Issue title: 4th Annual International Conference on Information System and Artificial Intelligence - Chapter 1: Computer Science and Information System
Issue date: September 3, 2019
Publication year: 2019
Article number: 022010
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th Annual International Conference on Information System and Artificial Intelligence, ISAI 2019
Conference date: May 17, 2019 - May 18, 2019
Conference location: Changsha, Hunan, China
Conference code: 152110
Publisher: IOP Publishing Ltd
Abstract: It is necessary to analyze and mining marketing notification texts because there are various commercial information. The base of the operation is Chinese word segmentation. The speed and accuracy of word segmentation have important influence on the subsequent texts mining. We compared accuracy, recall, and F-value of four open-source Chinese word segmentation tools (Ansj, HanLP, Word and Jieba) on the third-party datasets. Then, we compared the segmentation speed of the four tools on one million marketing notification texts. Finally, we segmented 5, 000 marketing notification texts artificially. We evaluated the performance of these segmentation tools by the results of artificial segmentation, which are known as evaluate standard. The experiments show the Base mode of the Ansj is the fastest. The HanLP is a best segmentation tool for balancing speed and accuracy of word segmentation. After adding a custom dictionary, the effect of word segmentation has been significantly improved. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Marketing
Controlled terms: Computational linguistics - Commerce
Uncontrolled terms: Chinese text segmentation - Chinese word segmentation - Commercial information - F values - Open sources - Segmentation tool - Third parties - Word segmentation
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 911.4 Marketing

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

357. Study on Extreme Microbial Degradation of Petroleum Hydrocarbons (*Open Access*)

Accession number: 20191406741115
Authors: Li, Hong (1); Li, Xiaokang (1); Yu, Tao (1); Wang, Feifei (1); Qu, Chengtun (1)
Author affiliation: (1) Shaanxi Oil and Gas Pollution Control and Reservoir Protection Key Laboratory, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Qu, Chengtun
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 484
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Issue title: 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
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Article number: 012040
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Document type: Conference article (CA)
Conference name: 2018 5th Annual International Conference on Material Engineering and Application, ICMEA 2018
Conference date: December 14, 2018 - December 16, 2018
Conference location: Wuhan, China
Conference code: 146480
Publisher: IOP Publishing Ltd
Abstract: Some oil-contaminated areas are often accompanied by extreme environments including high salinity, low temperature, and high temperature. The petroleum-degrading microorganisms isolated from these extreme environments can quickly adapt to extreme environments, grow and metabolize in extreme environments, and show great potential in the field of oil pollution control. This article reviews species, adaptation mechanism and research progress of oil-degrading bacteria in three extreme environments of hypersaline, low temperature and high temperature, so as to provide theoretical basis for further research and application. © Published under licence by IOP Publishing Ltd.
Number of references: 19
Main heading: Temperature
Controlled terms: Gasoline - Biodegradation - Pollution control
Uncontrolled terms: Adaptation mechanism - Contaminated areas - Extreme environment - High temperature - Microbial degradation - Oil-degrading bacteria - Petroleum hydrocarbons - Research and application
Classification code: 461.8 Biotechnology - 523 Liquid Fuels - 641.1 Thermodynamics - 801.2 Biochemistry
DOI: 10.1088/1757-899X/484/1/012040
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

358. Analysis of Reinjection Water to Improve Water-flooding Effect for Low-permeability Sandstone Reservoirs (*Open Access*)

Accession number: 20193307319457
Authors: Gao, Pengpeng (1, 2); Qu, Le (1, 2); Sun, Wei (2)

Author affiliation: (1) Xi'An Shiyou University, Xi'an; 710065, China; (2) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an; 710069, China
Corresponding author: Gao, Pengpeng(ycsygp@126.com)
Source title: IOP Conference Series: Earth and Environmental Science
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Volume: 295
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Issue date: July 26, 2019
Publication year: 2019
Article number: 042090
Language: English
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Conference name: 2019 5th International Conference on Energy Materials and Environment Engineering, ICEMEE 2019
Conference date: April 12, 2019 - April 14, 2019
Conference location: Kuala Lumpur, Malaysia
Conference code: 150130
Publisher: IOP Publishing Ltd
Abstract: Years of oilfield development practice indicates that the quality of injected water plays an important role in the water-injection process to improve the development effect. The low-permeability reservoirs have low yields and strict requirements on water quality indicators, and it is urgent to study the process of oilfield produced water treatment. The damage source and mechanism of re-injection water was discussed, and the compatibility between the reinjection water and the formation of water was analyzed and evaluated. The treatment process of water reinjection was studied, and the recommended indexes on injection water quality for low-permeability reservoirs for water-flooding development was given in this paper that provides a theoretical basis for the research of oilfield water-flooding development and injection water quality indicators for the future.
Number of references: 8
Main heading: Low permeability reservoirs
Controlled terms: Floods - Petroleum reservoir engineering - Reservoirs (water) - Water quality - Water treatment - Mechanical permeability - Planning
Uncontrolled terms: Development effect - Injection process - Injection water quality - Low-permeability sandstone reservoirs - Oilfield produced waters - Treatment process - Water quality indicators - Water-flooding development
Classification code: 441.2 Reservoirs - 445.1 Water Treatment Techniques - 445.2 Water Analysis - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 912.2 Management
DOI: 10.1088/1755-1315/295/4/042090
Funding Details: Number: ZGWYCPJJ2018137B, Acronym: -, Sponsor: -; Number: 41702146, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

359. Selecting sweet spots for the exploitation of tight oil reservoirs from logs: Case studies

Accession number: 20192807156539
Authors: Liu, Zhidi (1); Shi, Yujiang (2); Zhou, Jinyu (2); Wang, Changsheng (2); Zhang, Peng (1); Ma, Tinghao (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an, China; (2) Changqing Oilfield Exploration and Development Institute, Xi'an, China
Corresponding author: Liu, Zhidi(liuzhidi@xsyu.edu.cn)
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Publication year: 2019
Pages: 396-407
Language: English
ISSN: 08123985
E-ISSN: 18347533
Document type: Journal article (JA)
Publisher: Taylor and Francis
Abstract: The optimal selection of sweet spots for the exploitation of tight oil reservoirs is very important when formulating a development programme. Sweet spots for the exploitation of tight oil reservoirs are closely related to reservoir quality, hydrocarbon source rock quality and completion quality. In this study, criteria for the classification of sweet spots are established using a tight reservoir of fine sandstone in the first member of the Qingshankou Formation in Daqingzijing Oilfield, China as the study site. The results indicate that the vast majority of the research area includes type I and type II sweet spots. Type I sweet spots are located in the west and northwest of the research area and in the central region around wells H71 and H116; type II are located in the northeast and south of the research area, as well as in the region around the type I sweet spots. In the well region of type I sweet spots, the oil/gas is relatively enriched, and the fracability of the reservoir stratum is strong; these are key areas for tight oil development in the research area. Comparison of the evaluation results with well testing data indicates that the effect of well fracturing is obvious for type I sweet spots and the corresponding oil yield is high. The results of well fracturing are also adequate for type II sweet spots and the oil output can reach industry standards, although the corresponding yield is relatively low. Wells in non-sweet spots are unlikely to be fractured successfully, and even if they are, the oil output cannot reach industry standards. © 2019 Australian Society of Exploration Geophysics.
Number of references: 16
Main heading: Well testing
Controlled terms: Oil field development - Petroleum reservoirs - Oil well logging - Petroleum prospecting - Fracture - Petroleum reservoir engineering
Uncontrolled terms: Development programmes - Evaluation results - Hydrocarbon source rocks - Industry standards - Logging techniques - Oil exploitation - Optimal selection - Tight oil
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 951 Materials Science
DOI: 10.1080/08123985.2019.1606201
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

360. Research on Explosive Fracturing Technology of Liquid Explosives in Micro-cracks in Low Permeability Reservoirs (*Open Access*)

Accession number: 20194307563002
Authors: Wu, Jinjun (1, 2); Liu, Jing (1); Zhao, Junzhong (1, 2); Du, Fangli (1, 2)
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an, China; (2) Key Laboratory of China National Petroleum Corporation Reservoir Reconstruction, Xi'an, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
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Issue title: International Conference on Manufacturing Technology, Materials and Chemical Engineering
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Publication year: 2019
Article number: 012100
Language: English
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Conference name: 2019 2nd International Conference on Manufacturing Technology, Materials and Chemical Engineering, MTMCE 2019
Conference date: June 14, 2019 - June 16, 2019
Conference location: Wuhan, China

Conference code: 152411
Publisher: IOP Publishing Ltd
Abstract: In this paper, the experimental methods and related explosion parameters calculation methods for liquid explosive explosion technology satisfying the explosion critical dimension of 2 mm are introduced. Studies have shown that the developed liquid medicine meets the needs of explosion reconstruction joints with seam crack width greater than 2 mm, it basically determined its formulation and performance optimization parameters. The detonation speed of 1500-3500m/s can be applied to the process test design requirements of different lithological characteristics; The safety and feasibility of on-site construction were verified by the horizontal well CZ44-58 process test application, which provided a reference for optimizing the performance design of liquid drug performance, which laid a foundation for the experimental application research of micro-crack explosion stimulation technology and technology in low permeability oil layer. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Explosions
Controlled terms: Shock waves - Horizontal wells - Mechanical permeability - Explosives - Low permeability reservoirs - Lithology - Petroleum reservoir engineering - Liquids - Cracks
Uncontrolled terms: Critical dimension - Experimental application - Experimental methods - Low permeability oil layer - On-site construction - Parameters calculations - Performance design - Performance optimizations
Classification code: 481.1 Geology - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Size 2.00e-03m, Velocity 1.50e+03m/s to 3.50e+03m/s
DOI: 10.1088/1757-899X/592/1/012100
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

361. Ion Distribution at Steel/Concrete Interface in Steel Reinforced CSA Concrete by Newly Updated Image Analysis Technique (*Open Access*)

Accession number: 20193807441204
Authors: Song, Meimei (1); Wang, Chuanlin (2)
Author affiliation: (1) Department of Mechanical Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Engineering, Shantou University, Shantou; 515063, China
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Conference code: 151212
Publisher: IOP Publishing Ltd
Abstract: Calcium sulfoaluminate (CSA) cement is potential low-carbon cement; therefore investigation on ion exchange property at the steel/concrete interface is of great importance to understand the corrosion resistance and long-term durability properties of steel reinforced CSA concrete. Moreover, there is still a lack of standard procedure for quantitative imaging analysis in the study of cementitious materials so far. In this study, we developed an updated imaging analysis technique to investigate the atomic information in steel reinforced CSA concrete by using quantified elemental mappings. Microstructure of steel reinforced CSA concretes were characterized by SEM/EDX. The results indicated that there was less active ion distribution at the steel/concrete interface in CSA concrete than that for OPC

concrete. Al/Ca ratio decreased over the interfacial zone gradually with ageing period of up to 1.5 years, but Al still dominated in the CSA concrete compared to the OPC concrete. © Published under licence by IOP Publishing Ltd.
Number of references: 19
Main heading: Corrosion resistance
Controlled terms: Calcium - Cements - Ion exchange - Steel corrosion - Calcium compounds - Low carbon steel - Ions
Uncontrolled terms: Cementitious materials - Image analysis techniques - Ion distributions - Ion exchange properties - Long term durability - Low carbon cements - Quantitative imaging analysis - Standard procedures
Classification code: 412.1 Cement - 539.1 Metals Corrosion - 545.3 Steel - 549.2 Alkaline Earth Metals - 802.2 Chemical Reactions
Numerical data indexing: Age 1.50e+00yr
DOI: 10.1088/1757-899X/585/1/012079
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362. Review and analysis on the development and applications of electrical imaging logging in oil-based mud

Accession number: 20194407610600
Authors: Gao, Jianshen (1); Jiang, Liming (2); Liu, Yanping (1); Chen, Yunxia (2)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) China Petroleum Logging CO. LTD, Xi'an; 710077, China
Corresponding author: Gao, Jianshen(gjs1109@126.com)
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Publication year: 2019
Article number: 103872
Language: English
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: This review focuses on the overall development and applications of the electrical imaging logging in oil-based mud (OBM) with the aims to help researchers learn more from past and extend more relevant study. Because of the normally larger resistivity of OBM than that of water-based mud (WBM), the imaging quality of conventional electrical imaging logging method is poor in OBM, resulting in the imperative requirement of the electrical imaging logging method and technology in OBM. The electrical imaging logging in WBM is initially summarized. Then, the emphasis is on the attempt to acquire clear imaging in OBM. The main methods include the development of conductive OBM, the mudcake-scrapped method, the four-terminal measurement method, the capacitive coupling method and inversion processing etc. On the perspective of imaging results, the clear and quantitative resistivity imaging is more popular than the only qualitative results, and furthermore, more information can be obtained to uncover additional formation features, such as the formation dielectric permittivity image and the standoff image between the imaging pad and formation, which extends the interpretation and applications of electrical imaging logging in OBM. This study will contribute to the development of electromagnetic logging technique in OBM. The sufficient verification and interpretation of the imaging results in OBM and artificial intelligence-based data processing may be the improvement direction in the future. © 2019 Elsevier B.V.
Number of references: 65
Main heading: Data handling
Controlled terms: Permittivity - Image processing
Uncontrolled terms: Capacitive couplings - Development and applications - Dielectric permittivities - Electrical imaging - Four-terminal measurements - Quantitative formation - Resistivity imaging - Water-based muds
Classification code: 723.2 Data Processing and Image Processing

DOI: 10.1016/j.jappgeo.2019.103872
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363. A method of oil well production prediction based on PCA-GRU

Accession number: 20201508400328
Authors: Hu, Hongtao (1); Feng, Jinrong (1); Guan, Xin (2)
Author affiliation: (1) Xi'An Shiyou University, School of Computer Science, Xi'an, Shaanxi, China; (2) Research Institute of Petroleum, Exploration Development, Beijing, China
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Abbreviated source title: Proc.IEEE Int. Conf. Software Eng. Serv. Sci., ICSESS
Volume: 2019-October
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Conference name: 10th IEEE International Conference on Software Engineering and Service Science, ICSESS 2019
Conference date: October 18, 2019 - October 20, 2019
Conference location: Beijing, China
Conference code: 158662
Sponsor: IEEE Beijing Section; The Institute of Electrical and Electronics Engineers
Publisher: IEEE Computer Society
Abstract: Accurately predicting oil well production is an important task in the process of oilfield development. It is the key to formulate oilfield development plans and achieve reasonable development goals. In order to improve the prediction accuracy of oil well production, this paper proposed a recurrent neural network prediction model based on Principal Component Analysis and Gated Recurrent Unit to accurately predict the oil well production quantity. The prediction model is built with the dynamic changing pattern of production data with respect to time series. Firstly, analyze and select the main factors that affect the production in the process of oil well production, then reduce the dimension of the selected factors through the principal component analysis method to eliminate the correlation between the influencing factors. Secondly, take the main factors after dimension reduction as the neurons to the network input layer. Finally, establish the PCA-GRU oil well production neural network prediction with python. Experimental results show that this model provides a more accurate, more stable and more valid prediction result compared with other oil prediction models, proving that it is applicable to industry oil well production. © 2019 IEEE.
Number of references: 10
Main heading: Time series
Controlled terms: Network layers - Recurrent neural networks - Oil wells - Principal component analysis - Forecasting - Oil field development
Uncontrolled terms: Dimension reduction - Neural network prediction model - Neural network predictions - Prediction accuracy - Prediction model - Principal component analysis method - Production data - Well production
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723 Computer Software, Data Handling and Applications - 922.2 Mathematical Statistics
DOI: 10.1109/ICSESS47205.2019.9040779

Compendex references: YES
Database: Compendex
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364. Sequence-net Circuit model Extension for Common Information Model

Accession number: 20201108285394
Authors: Zhao, Yuanpeng (1); Yao, Lixiao (1); Dong, Zhangzhuo (2)
Author affiliation: (1) Xi'An University of Technology, Water Resources and Hydropower School, Xi'an, China; (2) Xi'An Shiyou University, School of Electronic Engineering, Xi'an, China
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ISBN-13: 9781728119076
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Conference code: 157790
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section; School of Science, Lanzhou University of Technology
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: It is necessary to extend the information model of the sequence-net circuit based on the Common Information Model (CIM) for realizing power system analysis and calculation based on the energy management system (EMS). First, based on the analysis of CIM grid description and traditional sequence-net circuit equivalent method, this paper reconstructs the equivalent method of the sequence-net circuit with the conducting equipment in CIM as the basic unit. Furthermore, the information model of the sequence-net circuit is designed by the Unified Modeling Language (UML). According to the relationship between the CIM and the sequence-net circuit, the mapping from the CIM to the sequence-net circuit is established. Finally, a module devoted to the sequence-net circuit was compiled, realizing the auto-generation of the sequence-net circuit from sequence-net information in CIM. The module applied in a platform of distribution power grid analysis based on CIM. Test results verified the correctness of the design, and the module operation efficiency lives up to the application requirement. © 2019 IEEE.
Number of references: 16
Main heading: Unified Modeling Language
Controlled terms: Energy management systems - Systems analysis - Information theory - Timing circuits - Electric power transmission networks - Information management - Electric network analysis
Uncontrolled terms: Application requirements - Circuit modeling - Common information model - Distribution power grids - IEC 61970 - Information Modeling - Operation efficiencies - Power system analysis
Classification code: 703.1.1 Electric Network Analysis - 706 Electric Transmission and Distribution - 706.1.1 Electric Power Transmission - 713.4 Pulse Circuits - 716.1 Information Theory and Signal Processing - 723.1.1 Computer Programming Languages - 912.3 Operations Research - 961 Systems Science
DOI: 10.1109/IAEAC47372.2019.8997650
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Compendex references: YES
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365. The Perfect Numbers of Pell Number (*Open Access*)

Accession number: 20193207295641
Authors: Fu, Ruiqin (1); Yang, Hai (2); Wu, Jing (2)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Science, Xi'An Polytechnic University, Xi'an; 710049, China
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022041
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: For any positive integer n, let Pn , Qn denote the Pell sequence and Pell Lucas sequence respectively. The main purpose of this paper is using the elementary methods to study that Pn does not contain any even perfect numbers, Qn just contains one perfect number and this number is Q 2 = 6. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Uncontrolled terms: Elementary methods - Lucas sequence - Pell numbers - Positive integers
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence
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366. Design and implementation of intelligent construction engineering information management system supporting mobile platform

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Authors: Shi, Dong (1); Zhang, Limei (2)
Author affiliation: (1) Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Water (Group) Planning and Design Research Institute Co.Ltd, Xi'an; 710082, China
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Conference name: 2019 International Conference on Smart Grid and Electrical Automation, ICSGEA 2019
Conference date: August 10, 2019 - August 11, 2019
Conference location: Xiangtan, China
Conference code: 154790
Sponsor: Communications Research Institute of Changsha University of Science and Technology; Department of Urban Management, Hunan City College
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: This paper introduces the contents and requirements of construction project management, the guiding ideology, popular mode and characteristics of the development of MIS. The intelligent construction project management system uses object-oriented software development method and UML as modeling tool to develop the system. According to the standard process of software engineering, this paper elaborates the whole process of development from the aspects of requirement analysis, design, code implementation and testing. The system modeling runs through the whole development process and UML use case diagrams, activity diagrams, class diagrams are provided. The designed system adopts B/S architecture to support various mainstream browsers, and it also supports Android smart mobile terminal to provide mobile office platform. The test and trial running results show that the system runs reliably, stably and easily, which reduces manpower cost and improves management level achieving the expected object. © 2019 IEEE.
Number of references: 8
Main heading: Software testing
Controlled terms: Software design - Android (operating system) - Information management - Object oriented programming - Project management
Uncontrolled terms: AJAX - Android - class - Construction engineering - Construction project management - Design and implementations - Intelligent constructions - Object oriented software development
Classification code: 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.5 Computer Applications - 912.2 Management
DOI: 10.1109/ICSGEA.2019.00119
Compendex references: YES
Database: Compendex
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367. Applications of fully coupled well/near-well modeling to reservoir heterogeneity and formation damage effects

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Authors: Cao, Jie (1, 2); Zhang, Nan (1, 2); Johansen, Thormod E. (3)
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Shiyou University Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, China; (3) Upstream Petroleum Research and Consulting Inc., St. John's, Canada
Corresponding author: Zhang, Nan(nanz@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
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Volume: 176
Issue date: May 2019
Publication year: 2019
Pages: 640-652
Language: English
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Publisher: Elsevier B.V., Netherlands
Abstract: Applications of a new well/near-well fluid flow modeling scheme to heterogeneous reservoirs and formation damage are presented in this paper. This well/near-well model is based on an analytically solution of an axial-radial productivity model for steady state flow in wells and near-well reservoirs, in which wellbore hydraulics and heterogeneity in the near-well region are incorporated. The numerical model includes a reservoir region describing

both radial and axial reservoir flow. It can be used as a stand alone simulator, or it can be coupled with a reservoir simulator, using a new iterative coupling scheme described in this paper. When coupling with the reservoir simulator, the reservoir region in the well/near-well model is shared by and computed in both models, which ensures the stability and convergence of the iterative coupling scheme. A new coupling approach is presented without needing to determine any partial derivatives. The capabilities of the modeling methodology are demonstrated through applications in three challenging cases: highly heterogeneous reservoir, well/reservoir crossflow, and formation damaged reservoirs. In the highly heterogeneous near-well reservoir case, results show that the model is stable for a wide range of permeabilities with large contrasts. The detailed permeability information from well logging can be fully taken into account in this model. The model determines pressure distribution and volumetric flow rates including flow directions, therefore enabling the model to estimate crossflow as negative flow rates, for example when the well is producing from several non-communicating regions. Furthermore, the well/near-well model is iteratively coupled with a reservoir simulator such that the well completion effects are taken into consideration in large scale simulations. The transient case of this coupling to evaluate formation damage along a horizontal well is then presented. The model is not limited to single phase flow. A two phase flow example coupling the well/near-well model and a streamline reservoir model is finally presented. © 2019
Number of references: 43
Main heading: Horizontal wells
Controlled terms: Two phase flow - Simulators - Petroleum reservoirs - Iterative methods - Well completion - Well logging
Uncontrolled terms: Cross flows - Formation damage - Heterogeneity - Heterogeneous reservoirs - Iterative coupling - Large scale simulations - Reservoir heterogeneity - Stability and convergence
Classification code: 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 921.6 Numerical Methods
DOI: 10.1016/j.petrol.2019.01.091
Compendex references: YES
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368. Study on the Influence of Pulse Current Cathodic Protection Parameters of Oil Well Casing (*Open Access*)

Accession number: 20193007233838
Authors: Xu, Xiang-Qian (1); Zhou, Hao-Bin (1)
Author affiliation: (1) College of Materials Science and Engineering, Xi'An Shiyou University, No. 18, Electronic Second Road, Yanta District, Xi'an, Shaanxi, China
Corresponding author: Xu, Xiang-Qian(xxqlsd@126.com)
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Publication year: 2019
Article number: 2847345
Language: English
ISSN: 16878434
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Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: Pulse current cathodic protection had obvious advantages over traditional DC cathodic protection, but when square-wave pulse current was used for cathodic protection of oil well casing, the influence of pulse protection parameters on potential distribution was not very clear. Therefore, according to the current situation of oil fields in China, the typical formation characteristic structure of oil wells was selected and the cathodic protection model of pulse current for oil well casing was established. Based on the established model, the effects of pulse current parameters (frequency and duty cycle) and anode distance on the cathodic protection effect of square-wave pulse current were studied. The results showed that better protection effect could be obtained by choosing appropriate anode distance, high frequency, and moderate duty cycle. © 2019 Xiang-qian Xu and Hao-bin Zhou.
Number of references: 15
Main heading: Cathodic protection
Controlled terms: Oil wells - Anodes
Uncontrolled terms: Current situation - Formation characteristics - High frequency HF - On potentials - Protection effect - Pulse currents - Square wave pulse - Structure of oil wells

Classification code: 512.1.1 Oil Fields - 539.2 Corrosion Protection - 714.1 Electron Tubes
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369. A CA-NCS algorithm in curve trajectory for smart global village

Accession number: 20193007220063
Authors: Zhang, Yan (1); Qu, Tan (2)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Electronic Engineering, Xidian University, Xi'an; 710071, China
Corresponding author: Zhang, Yan(yzhang@xsyu.edu.cn)
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Publication year: 2019
Article number: 101687
Language: English
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The development of embedded system makes it convenient to process SAR data in curve trajectory which caused by maneuvers with acceleration. To eliminate the effect of acceleration on imaging, a constant acceleration nonlinear chirp scaling (CA-NCS) algorithm in curve trajectory based on motion compensation is proposed. Through dividing the acceleration into forward-looking and cross-track acceleration, which could be divided into the acceleration vertical to the imaging plane and the other one in imaging plane further, we use vectorial methods to compensate the phase errors caused by acceleration. Moreover, for range migration we compensate it through NCS approach based on the accurate 2-D spectrum acquired by the method of series reversion (MSR). The system integrated with this algorithm can process SAR data in curve trajectory and reduce computation burden. In addition, the integration of the research in this paper and the machine learning will further identify the motion curve of the aircraft with cross-track acceleration quickly, and real-time SAR imaging can be realized which helps to achieve fast target localization in smart global village. © 2019 Elsevier Ltd
Number of references: 24
Main heading: Trajectories
Controlled terms: Acceleration - Motion compensation - Rural areas - Radar imaging
Uncontrolled terms: Computation burden - Constant acceleration - Embedded device - Non-linear chirp scaling - Nonlinear chirp - Scaling algorithm - Series reversion - Trajectory-based
Classification code: 716.2 Radar Systems and Equipment
DOI: 10.1016/j.scs.2019.101687
Funding Details: Number: 2019JQ-405, Acronym: -, Sponsor: -; Number: 61601355, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016M602770, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: -, Sponsor: Shaanxi Province Postdoctoral Science Foundation; Number: XJS190209, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work was funded by the National Natural Science Foundation of China (No. 61601355), China Postdoctoral Science Foundation (2016M602770), Scientific Research Program Funded by Shaanxi Provincial Education Department , the National Natural Science Foundation in Shannxi Province of China (2019JQ-405), Postdoctoral Science Foundation in Shaanxi Province and the Fundamental Research Funds for the Central Universities (XJS190209).
Compendex references: YES
Database: Compendex
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370. Influence of infiltration pressure on the microstructure and properties of 2D-CFRP prepared by the vacuum infiltration hot pressing molding process (*Open Access*)

Accession number: 20200708159492
Authors: Ma, Yuqin (1); Zhao, Yatao (1); Zhang, Yun (1); Wang, Jie (1); Chen, Yi (1); Li, Kaifu (1); Ju, Luyan (2); Yu, Ying (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)
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Publication year: 2019
Article number: 2014
Language: English
E-ISSN: 20734360
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: The critical infiltration pressures of the matrix in a two-dimensional (2D) carbon fiber preform were calculated theoretically, and the calculated values of the static and dynamic models were 0.115 and 0.478 MPa, respectively. Compared with the dynamic model, there is no viscous resistance or infiltration front gas pressure in the static model, so the static value is obviously lower than the dynamic value. To verify the rationality of theoretical calculation, 2D carbon fiber reinforced plastics (2D-CFRP) with infiltration pressures of 0.5, 0.6, 0.7, 0.8, and 0.9 MPa were prepared by the vacuum infiltration hot pressing molding process. The microstructure of the composite was observed and the bending strength was tested by three-point bending test. The results show that the infiltration pressure has an important influence on the infiltration effect and the bending fracture morphology. When the infiltration pressure is 0.7 MPa, the composite has an excellent infiltration effect. The fibers distribute reasonable in the fracture. Stress can be effectively transferred when the composite material is loaded. And the bending strength of the composite material reaches 627 MPa at this time. © 2019 by the authors.
Number of references: 21
Main heading: Hot pressing
Controlled terms: Dynamic models - Bending strength - Microstructure - Pressure effects - Morphology - Carbon fiber reinforced plastics
Uncontrolled terms: Infiltration pressure - Influence - Microstructure and properties - Molding process - Static and dynamic models - Theoretical calculations - Three-point bending test - Two Dimensional (2 D)
Classification code: 817.1 Polymer Products - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Numerical data indexing: Pressure 1.15e+05Pa, Pressure 4.78e+05Pa, Pressure 6.27e+08Pa, Pressure 7.00e+05Pa, Pressure 9.00e+05Pa
DOI: 10.3390/polym11122014
Funding Details: Number: 2017GY-051, Acronym: -, Sponsor: -; Number: 51905426, Acronym: -, Sponsor: -; Number: 2018JQ5013, Acronym: -, Sponsor: -; Number: 51705389, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017M613062, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 5004-20109195867, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: Funding: The authors are grateful for the financial support from the National Natural Science Foundation of China (no. 51705389), the Project Supported by Natural Science Basic Research Plan in Shaanxi Province of China (program no. 2018JQ5013), Project funded by China Postdoctoral Science Foundation (no. 2017M613062), Key Research and Development Program in Shaanxi Province of China (no. 2017GY-051, National Nature Science Foundation of China (no. 51905426) and supported by the Fundamental Research Funds for the Central Universities and Innovation Fund of Xidian University (no. 5004-20109195867).
Compendex references: YES
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371. Dynamic response analysis of a perforated pipe string under detonation impact load

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Authors: Li, Mingfei (1); Xu, Fei (1); Dou, Yihua (2)
Author affiliation: (1) School of Aeronautics, Northwestern Polytechnical University, Xi'an; 710072, China; (2) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Dou, Yihua
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Abbreviated source title: J Vib Shock
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Publication year: 2019
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Language: Chinese
ISSN: 10003835
Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society
Abstract: The dynamic responses of perforated tubular columns under the huge shock waves generated by the detonation process of shaped perforation were analysed by using the finite element modeling and theoretical method in order to provide a basis for the strength and safety analysis of tubular columns. Applying the cantilever beam theory and considering the effect of the column's own weight and axial impact load, a dynamic model of the pipe column was established, and the longitudinal vibration differential equation of the pipe string was derived. The variable separation method was used to solve the natural frequency and main vibration mode of the pipe string. Using the Workbench module, based on the finite element transient dynamics method, the 3D finite element model of a 27/8×5.51 mm P110 oil pipe was built. The impact load was measured in situ and the dynamic responses of the pipe string were analyzed. The results show that the relative deviation between the finite element solution and the analytical solution with respect to the natural frequency of the pipe string is 4.18%, which indicates that the finite element method satisfies the accuracy requirement. The displacement, velocity, and acceleration vary with a time period of 15 ms, and at 9 ms, the maximum compression value of the column is 19.15. At 95 ms, the maximum column elongation is 9.1 mm, the free end velocity reaches a maximum of 5.45 m/s, the acceleration reaches a maximum of 2.85 km/s2, and the propagation velocity of the stress wave of the column is about 4 930 m/s, which is very close to the theoretical result of 5 123 m. The results provide a basis for theoretically studing the behaviors of slender rods in under water explosion and also give a reference to guide the actual production.
Number of references: 29
Main heading: Dynamic response
Controlled terms: Differential equations - Finite element method - Natural frequencies - Transient analysis - Shock waves
Uncontrolled terms: 3D finite element model - Dynamic response analysis - Finite element solution - Impact loadings - Longitudinal vibrations - Oil and gas well - Perforated pipes - Variable separation method
Classification code: 921.2 Calculus - 921.6 Numerical Methods - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Acceleration 2.85e+03m/s2, Percentage 4.18e+00%, Size 5.12e+03m, Size 9.10e-03m, Time 1.50e-02s, Time 9.00e-03s, Time 9.50e-02s, Velocity 4.93e+03m/s, Velocity 5.45e+00m/s
DOI: 10.13465/j.cnki.jvs.2019.18.026
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

372. Numerical and Analytical Comparison of Dispersion Relations of Weakly Modulated Fibonacci Sequence One-dimensional Photonic Crystals (*Open Access*)

Accession number: 20193807441290
Authors: Li, Yan (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, No. 18, Eastern Section of Electronic Road 2, Xi'an, Shaanxi Province; 710065, China
Corresponding author: Li, Yan(liyan67@xsyu.edu.cn)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 585

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Issue: 1
Issue title: 5th Annual International Workshop on Materials Science and Engineering
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Language: English
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Document type: Conference article (CA)
Conference name: 5th Annual International Workshop on Materials Science and Engineering, IWMSE 2019
Conference date: May 17, 2019 - May 18, 2019
Conference location: Hunan, Changsha, China
Conference code: 151212
Publisher: IOP Publishing Ltd
Abstract: The photonic band and the equifrequency surface of the weakly modulated one-dimensional Fibonacci sequence photonic crystal have been calculated by the finite difference time domain method and the analytical method, respectively, where the analytical method is based on the transfer matrix method. The results show that the equifrequency surface of the photonic crystals calculated by numerical method may lead to a completely wrong conclusion. Therefore, in the study of weakly modulated photonic crystals, the study of analytical methods is very necessary. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Photonic crystals
Controlled terms: Photonics - Optoelectronic devices - Numerical methods - Transfer matrix method - Finite difference time domain method
Uncontrolled terms: Analytical method - Dispersion relations - Equi-frequency surface - Fibonacci sequences - One dimensional photonic crystal - Photonic bands
Classification code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1088/1757-899X/585/1/012030
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

373. Prediction of Drug-Target Interaction with Graph Regularized Non-Negative Matrix Factorization (*Open Access*)

Accession number: 20193307300241
Authors: Yan, Xiao-Ying (1, 2); Li, Run-Zhou (1); Kang, Lei (1)
Author affiliation: (1) College of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) School of Automation, Northwestern Polytechnical University, Xi'an; 710072, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
Publication year: 2019
Article number: 032017
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China

Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Identification of drug-target Interactions (DTIs) is very important for drug discovery, which can help to find the new uses for an old drug or to discover the off-targets for a given drug. Currently, algorithms have difficulty in finding interactions for new drugs and new targets. We proposed a novel method that uses graph regularized nonnegative matrix factorization framework to predict potential targets/drugs for new drugs/targets by using clustering approaches to construct interaction profiles for new drugs/targets. Compared with other methods, our method obtained the best performance in terms of AUPR. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 12
Main heading: Non-negative matrix factorization
Controlled terms: Data mining - Drug interactions - Artificial intelligence - Matrix algebra
Uncontrolled terms: Clustering approach - Drug discovery - Drug-target interactions - Interaction profiles - Nonnegative matrix factorization - Potential targets
Classification code: 461.6 Medicine and Pharmacology - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 802.2 Chemical Reactions - 921 Mathematics - 921.1 Algebra
DOI: 10.1088/1742-6596/1237/3/032017
Funding Details: Number: 17JK0603, Acronym: -, Sponsor: -; Number: 51707158, 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

374. Analysis and comparison of azimuthal resistivity measurement modes for laterolog tool

Accession number: 20191606776321
Authors: Gao, Jianshen (1); Rao, Liting (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
Corresponding author: Gao, Jianshen(gjs1109@126.com)
Source title: Journal of Petroleum Science and Engineering
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Volume: 178
Issue date: July 2019
Publication year: 2019
Pages: 921-929
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Though proposed previously, the azimuthal focusing modes applied to laterolog tool still need to be researched. A three-dimensional numerical simulation process is first applied to analyze the azimuthal resistivity measurement of deep measurement of dual laterolog tool adopting four modes, i.e., independent current-emitting mode, passive equipotential mode, independent current-adjusting mode and potential-measuring mode. Afterwards, three typical formation models, i.e., a formation model with a resistivity anomaly contacting the borehole wall, a formation model with a resistivity anomaly non-contacting the borehole wall and a formation model with asymmetrical horizontal or downward mud invasion in horizontal well, are developed to test the four modes and the integrated performances of the four modes are revealed. Two tests are carried out to test the independent current-adjusting mode. It has been demonstrated that overall the potential-measuring mode manifests the least ideal measured results, and it only possesses slightly qualitative measurement in the formation model with a resistivity anomaly non-contacting the borehole wall. The independent current-emitting mode can realize qualitative measurement in all the three formation models, but the measured azimuthal difference is indistinctive especially in the case of asymmetrical mud invasion in horizontal well. The passive equipotential mode exhibits an indigent effect, nevertheless it can quantitatively characterize the electrical difference in the formation model with a resistivity anomaly contacting borehole wall. The independent adjustable current mode is the optimum choice because it possesses the relatively perfect performance in all the three cases, especially in the extremely common asymmetrical mud invasion occurring in horizontal well. It has a relative measured error changing from 0.10% to 4.09% and can be adopted to uncover formation characteristics, and

it should be the best azimuthal focusing mode employed by the laterolog tool for the azimuthal resistivity measurement.

Number of references: 28
Main heading: Horizontal wells
Controlled terms: Boreholes - Numerical models
Uncontrolled terms: Current mode - Electrode arrays - Formation characteristics - Formation model - Measured results - Qualitative measurements - Resistivity measurement - Three-dimensional numerical simulations
Classification code: 512.1.1 Oil Fields - 921 Mathematics
Numerical data indexing: Percentage 1.00e-01% to 4.09e+00%
DOI: 10.1016/j.petrol.2019.04.008
Funding Details: Number: 2018JQ4007,2018JQ4008, Acronym: -, Sponsor: -; Number: 41804115,41804125, Acronym: NNSFC, NNSF, NSF, NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shanxi Province;
Funding text: The author would like to thank the anonymous reviewers for their valuable suggestions and comments, and the support by the China Natural Science Foundation (no. 41804115, 41804125) and Natural Science Foundation of Shanxi Province, China (no. 2018JQ4008, 2018JQ4007).The author would like to thank the anonymous reviewers for their valuable suggestions and comments, and the support by the China Natural Science Foundation (no. 41804115 , 41804125) and Natural Science Foundation of Shanxi Province, China (no. 2018JQ4008 , 2018JQ4007).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

375. An improved endmember extraction method of mathematical morphology based on PPI algorithm

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Title of translation: PPI
Authors: Xu, Jun (1); Wang, Cailing (2); Wang, Li (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Aeronautical University, Xi'an; 710077, China; (2) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China
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Abbreviated source title: Cehui Xuebao
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Issue date: August 1, 2019
Publication year: 2019
Pages: 996-1003
Language: Chinese
ISSN: 10011595
CODEN: CEXUER
Document type: Journal article (JA)
Publisher: SinoMaps Press
Abstract: Automated morphological endmember extraction(AMEE) algorithm defines the spectral angular distance between the purest pixel and the most mixed pixel in the structural element as the morphological eccentricity index(MEI) to quantitatively denote the purity of the pixel. However, the most mixed pixels as the reference standard are not the same in different structural elements, especially when the pure pixels account for the majority of the structural elements, the mean spectrum of all the pixels will be closer to the pure pixels. At this time, the higher the MEI, the lower the purity of the pixel. To solve this problem, a novel endmember extraction algorithm is proposed in this paper which combines the pixel purity index (PPI) algorithm with AMEE algorithm and is named PPI-AMEE. In the structural element, the PPI is used to replace the MEI index in the AMEE algorithm to find the purest pixel. When the structural element is transformed, only the purest pixel can always be projected to the two ends of the randomly generated line, therefore the PPI value of the purest pixel will increase continuously, while the PPI value of the other pixels will not increase continuously. The PPI value of each pixel is accumulated and recorded until the iterative termination condition is satisfied, and a PPI image is finally obtained. The endmembers are selected from the pixels with higher PPI value. The PPI-AMEE algorithm runs the PPI algorithm in relatively small structural elements, and then processes the whole image with the expansion operation of mathematical morphology, which takes into account both the spectral and spatial information of the image. In the experiment, AVIRIS hyperspectral data from Cuprite area, Nevada, USA are used to validate the proposed PPI-AMEE algorithm. The experimental results show that the

endmember extraction accuracy of PPI-AMEE algorithm is better than that of AMEE algorithm and PPI algorithm on the whole.
Number of references: 26
Main heading: Mathematical morphology
Controlled terms: Pixels - Spectroscopy - Iterative methods - Extraction
Uncontrolled terms: Endmember extraction - Endmember extraction algorithms - Hyperspectral Data - Pixel purity index - Pure pixel - Spatial informations - Structural elements - Termination condition
Classification code: 802.3 Chemical Operations - 921.6 Numerical Methods
DOI: 10.11947/j.AGCS.2019.20180475
Funding Details: Number: 2019GY-112, Acronym: -, Sponsor: -; Number: 61763010, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The National Natural Science Foundation of China(No. 61763010); Key R&D Program Project of Shannxi Province (No. General Project-Industrial Field 2019GY-112).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

376. Fabrication of dual-parameter fiber-optic sensor by cascading FBG with FPI for simultaneous measurement of temperature and gas pressure

Accession number: 20191306676351
Authors: Liu, Yinggang (1); Yang, Danqing (1); Wang, Yuxi (1); Zhang, Ting (1); Shao, Min (1); Yu, Dakuan (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)
Source title: Optics Communications
Abbreviated source title: Opt Commun
Volume: 443
Issue date: 15 July 2019
Publication year: 2019
Pages: 166-171
Language: English
ISSN: 00304018
CODEN: OPCOB8
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: A dual-parameter fiber-optic sensor based on fiber Bragg grating (FBG) cascaded with Fabry–Pérot interferometer (FPI) structure is described and demonstrated to measure temperature and gas pressure simultaneously. The proposed sensing structure consists of an extrinsic FPI in the form of hemispherical ultraviolet (UV) curing glue capped on a FBG end face. The spectral interference peak produced by the UV glue FPI is sensitive to ambient temperature and gas pressure variations, whereas the reflection spectrum of FBG only depends on temperature and insensitive to pressure change, therefore, the temperature and gas pressure can be simultaneously measured by this cascaded sensor. Experimental results show that the sensor has higher temperature and gas pressure sensitivities of 223.4 pm/° C and 24.99 nm/MPa in a range from 30 C to 110 C and from 0.1 MPa to 0.7 MPa. Utilizing the temperature-dependent sensitivity of FBG, a constructed sensitivity matrix is used to distinguish measurement of temperature and gas pressure, and the measurement resolutions are determined to be 0.086 C and 0.730 KPa. This sensing architecture is not only an effective method for single-point multi-parameter measurement, but also has merits of high sensitivity, compactness, ease of fabrication and low cost, which make it valuable for biosensors and medical applications.
Number of references: 20
Main heading: Fiber optic sensors
Controlled terms: Medical applications - Fabrication - Fiber optics - Structure (composition) - Gluing - Glues - Fiber Bragg gratings - Gases - Parameter estimation
Uncontrolled terms: Measurement of temperature - Measurement resolution - Multi-parameter measurement - Parameter measurement - Simultaneous measurement - Spectral interference - Temperature dependent - Ultraviolet curing
Classification code: 741.1.2 Fiber Optics - 951 Materials Science
Numerical data indexing: Pressure 1.00e+05Pa to 7.00e+05Pa

DOI: 10.1016/j.optcom.2019.03.034
Funding Details: Number: 2013JM8032, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 18JS093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: YCS18211020, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China (Grant No. 18JS093) and Graduate Student Innovation Fund of Xi'an Shiyou University, China (Grant No. YCS18211020).This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China (Grant No. 18JS093) and Graduate Student Innovation Fund of Xi'an Shiyou University, China (Grant No. YCS18211020).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

377. Applications of bootstrap method for drilling site noise analysis and evaluation

Accession number: 20192106945897
Authors: Liu, Keman (1); Zhang, Yinghao (1); Wang, Xiaoxin (1)
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Keman(liukm@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 180
Issue date: September 2019
Publication year: 2019
Pages: 96-104
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: In order to evaluate the influence of well site noise on MWD telemetry system more accurately and effectively, this paper develops an efficient noise acquisition system to acquire the drilling site noise, which consists of low-noise coupling transformer, low noise preamplifier and tunable filter, usb6259 acquisition card, computer and other components. Although, most methods can be used to estimate noise statistical characteristics and model based on large samples, the Bootstrap method is a computer method, which only requires very little in the way of modelling or analysis noise. Through electromagnetic noise examples from an operating oil field, located near Northwest of China, we demonstrate the drilling site noise data with different drill rigs and in different drill operations were analyzed based on the Bootstrap method and Welch's method. The trial result shows that (i) the system can work easily for the well-site electromagnetic noise real-time acquisition, signal processing and analysis, display and storage; (ii) the power spectral density of well site noise were strongly dependent on the noise which is generated by the industrial equipment operating and drilling conditions in the well site and (iii) the maximum kurtosis of drilling site noise of Electro-Mechanical Drilling Rig is 7.437, which indicate it is not Gauss distribution, but super-Gauss distribution. The findings of our work can help for better understanding of characteristics of drilling site noise. Furthermore, the Bootstrap method is a powerful tool for analysis and evaluation drilling site noise with low cost, and can solve the problem that the practical drilling process data can not be obtained repeatedly. The results can be used to improve MWD, EM-MWD and LWD system designs and optimization studies. © 2019 Elsevier B.V.
Number of references: 38
Main heading: Digital storage
Controlled terms: Drilling rigs - Drills - Infill drilling - Spectral density - Signal processing
Uncontrolled terms: Analysis and evaluation - Bootstrap method - Electromagnetic measurement while drilling - Electromagnetic noise - Low noise preamplifiers - Noise characteristic - Real time acquisition - Statistical characteristics
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 716.1 Information Theory and Signal Processing - 722.1 Data Storage, Equipment and Techniques
DOI: 10.1016/j.petrol.2019.05.030

Funding Details: Number: .2014K05-45, Acronym: -, Sponsor: -; Number: 2014BS10, Acronym: -, Sponsor: -; Number: 41774081, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2017JM5103, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: -, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 14JS074, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
Funding text: This work is supported by the National Natural Science Foundation of China under Grant (No. 41774081), Key laboratory project of Shaanxi Provincial Department of Education (No. 14JS074), Key Science and Technology Program of Shaanxi Province (No .2014K05-45), Natural Science Foundation of Shaanxi Province (No. 2017JM5103) and Doctoral Innovation Fund of Xi'an Petroleum University (No. 2014BS10).This work is supported by the National Natural Science Foundation of China under Grant (No. 41774081), Key laboratory project of Shaanxi Provincial Department of Education (No. 14JS074), Key Science and Technology Program of Shaanxi Province (No.2014K05-45), Natural Science Foundation of Shaanxi Province (No.2017JM5103) and Doctoral Innovation Fund of Xi'an Petroleum University (No.2014BS10). We would like to thank the anonymous reviewer for every useful comment and suggestion that helped us improve the quality of our paper. We acknowledge Master Li Xiaolong and Wang Tao for their contribution in the fleld experiment.
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Database: Compendex
Data Provider: Engineering Village

378. Modeling of Downhole Weight on Bit Using Finite Element Method and Its Verification (*Open Access*)

Accession number: 20191306697171
Authors: Wu, Zebing (1); Guo, Longlong (1); Zhang, Shuai (1); Wu, Yuanping (2); Lv, Lantao (1); Wang, Wenjuan (1); Pan, Yujie (1); Wang, Yongyong (1); Mokhtari, Adnane El (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an; 710065, China; (2) Jianghan Machinery Research Institute, Drilling Research Institute of CNPC, Jingzhou, China
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 234
Part number: 1 of 1
Issue: 1
Issue title: 6th Annual 2018 International Conference on Geo-Spatial Knowledge and Intelligence
Issue date: March 8, 2019
Publication year: 2019
Article number: 012072
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 6th Annual 2018 International Conference on Geo-Spatial Knowledge and Intelligence, GSKI 2018
Conference date: December 16, 2018
Conference location: Wuhan, Hubei, China
Conference code: 146117
Publisher: IOP Publishing Ltd
Abstract: During the drilling process of oil and gas well, drag and torque play a very important role in designing configuration of the well, diagnosing drilling states, and optimizing operations. Because of the drag between the drillstring and wellbore, the actual downhole weight on bit (DWOB) is unknown, especially for the horizontal well. In this study, a 3D finite element model was developed to calculate friction factor and DWOB. To validate the rationality of the developed finite element model, simulated data was compared with that of measured. The result indicates that the simulated data shows a good match with the measured data with average accuracy as high as 90%. It is concluded that the developed finite element model is reasonable and can be used to calculate and predict the friction factor and DWOB with high accuracy. © Published under licence by IOP Publishing Ltd.
Number of references: 19
Main heading: Drag
Controlled terms: Finite element method - Infill drilling - Oil wells - Horizontal wells - Oil well drilling - Friction
Uncontrolled terms: 3D finite element model - Downholes - Drilling process - Friction factors - High-accuracy - Oil and gas well - Weight on bits - Wellbore

Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921.6 Numerical Methods
Numerical data indexing: Percentage 9.00e+01%
DOI: 10.1088/1755-1315/234/1/012072
Funding Details: Number: 290088247, Acronym: -, Sponsor: -; Number: 2018KW-012, Acronym: -, Sponsor: -;
Funding text: Would like to thank Hundred-Talent Program Lab at Mechanical Engineering College, Xi'an Shiyou University for publication funding (No. 290088247). Thanks are also given to the funding of Shanxi Provincial Key Project-International Collaboration Project of Science and Technology (No. 2018KW-012).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

379. Simplified Method for Electrical Capacitance Tomography Sensitivity Coefficient Computation with Specific-Electrode-Excited Field Quantities Rotation Transformation

Accession number: 20192507062883
Title of translation:
Authors: Tang, Kaihao (1); Hu, Hongli (1); Li, Lin (1); Wang, Xiaoxin (2)
Author affiliation: (1) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an; 710049, China; (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Hu, Hongli
Source title: Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University
Abbreviated source title: Hsi An Chiao Tung Ta Hsueh
Volume: 53
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Issue date: March 10, 2019
Publication year: 2019
Pages: 75-80 and 87
Language: Chinese
ISSN: 0253987X
CODEN: HCTPDW
Document type: Journal article (JA)
Publisher: Xi'an Jiaotong University
Abstract: To reduce the complexity of electrical capacitance tomography sensitivity coefficient computation, a sensitivity coefficient computation method with potential rotation transformation is proposed. This method requires only once numerical computation to obtain the potential excited by a specific electrode, and then the sensitivity coefficients can be computed by the proposed potential rotation transformation algorithm. The proposed method is more convenient than the traditional method, which requires several numerical computations, to obtain the potential functions excited by each electrode. The sensitivity coefficients obtained by the traditional method and the proposed method are compared via simulation, and the reconstructed images obtained by the two methods are compared via experiment. The simulation and experiment show that the sensitivity coefficients and the reconstructed images obtained by the two methods are consistent, which verifies the correctness and effectiveness of the proposed method.

Number of references: 17
Main heading: Electrodes
Controlled terms: Image reconstruction - Numerical methods - Capacitance - Rotation - Electric impedance tomography
Uncontrolled terms: Computation methods - Electrical Capacitance Tomography - Forward problem - Numerical computations - Potential function - Reconstructed image - Rotation transformation - Sensitivity coefficient
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 921.6 Numerical Methods - 931.1 Mechanics
DOI: 10.7652/xjtuxb201903011
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

380. Palaeostructure, evolution and tight oil distribution of the Ordos Basin, China (*Open Access*)

Accession number: 20191506764006
Authors: Gao, Shengli (1); Yang, Jinxia (2)
Author affiliation: (1) Xi'an Shiyou University, Xi'an Shaanxi; 710065, China; (2) School of Mathematics and Information Science, Shaanxi Normal University, Xi'an Shaanxi; 710062, China
Corresponding author: Gao, Shengli(gshl@xsyu.edu.cn)
Source title: Oil and Gas Science and Technology
Abbreviated source title: Oil Gas Sci. Technol.
Volume: 74
Issue date: 2019
Publication year: 2019
Article number: 2019010
Language: English
ISSN: 12944475
E-ISSN: 19538189
CODEN: RFPTBH
Document type: Journal article (JA)
Publisher: Editions Technip
Abstract: Whether or not the tight oil in the Triassic Yanchang Formation of the Ordos Basin is controlled by structural factors is a controversial issue, the relationship between the structural factors of the strata and the distribution of tight oil is limited to the study of current structures. The traditional view is that structural factors have no obvious control over the formation and distribution of the oil reservoir. Taking the Chang 8 member of the Triassic Yanchang Formation in the Ordos Basin as an example, this paper studies respectively the burial of strata-hydrocarbon generation history of the individual well and the structural evolution history of strata in the basin by using software tools of the Genex burial-hydrocarbon generation history restoration and TemisFlow evolution of stratigraphic structures. It is considered that the hydrocarbon generation period of the source rock of the Triassic Yanchang Formation in the Ordos Basin is from early Middle Jurassic to end of Early Cretaceous. By reconstructing the evolution and structure of the Chang 8 member during the hydrocarbon accumulation period, combined with a comprehensive analysis on the distributional characteristics of the Chang 8 oil reservoir, we found the palaeoslopes and palaeohighs of the Chang 8 reservoir to represent areas in which tight oils were distributed. Palaeo-structural characteristics of the target layer exhibit control over the Chang 8 reservoir. The new theory underlying tight oil exploration, which is based on the recovery of the palaeogeomorphology of the target layer during the hydrocarbon generation period, incorporates the vital roles of key controlling factors over tight oil accumulation, so that the mind-set on tight oil exploration in the Ordos Basin has evolved. © 2019 S. Gao & J. Yang, published by IFP Energies nouvelles.
Number of references: 20
Main heading: Stratigraphy
Controlled terms: Petroleum reservoir engineering - Metamorphic rocks - Petroleum prospecting - Petroleum reservoirs - Hydrocarbons
Uncontrolled terms: Comprehensive analysis - Hydrocarbon accumulation period - Hydrocarbon generation - Hydrocarbon-generation history - Key controlling factors - Ordos basin , China - Structural characteristics - Structural evolution
Classification code: 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
DOI: 10.2516/ogst/2019010
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

381. Research on reflection characteristics for a rectangular laser pulse passing through a Fabry-Perot interferometer

Accession number: 20190706489026
Authors: Xu, Shichao (1); Luo, Mingshi (2); Zhang, Lu (1)
Author affiliation: (1) Monitoring Center, Shaanxi Earthquake Agency, Xi'an, Shanxi; 710068, China; (2) School of Computer Science, Xi'an Shiyou University, Xi'an, Shanxi; 710065, China
Corresponding author: Xu, Shichao(ultraxu@stu.xjtu.edu.cn)
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 10839

Part number: 1 of 1
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Sponsor: Chinese Academy of Sciences, Institute of Optics and Electronics (IOE); The Chinese Optical Society (COS)
Publisher: SPIE
Abstract: Rectangular laser pulse has a steep rising and falling edge, and the time scale of the rising or falling rate can reach nanosecond, which is close to the single round-trip time of light traveling in the Fabry-Perot interferometer. When the falling edge of the rectangular laser pulse is incident to the Fabry-Perot interferometer, the reflection intensity of the Fabry-Perot interferometer drops down to zero or near-zero at some point due to the rapid decline of amplitude. Moreover, the reflected light intensity shows the different decline rates under the different phase difference of the light propagating through the Fabry-Perot interferometer before the build-up of steady state for multiple-beam interferences, which provides a new way of thinking for the new measurement technology of Fabry-Perot interferometer. In this paper, the time response of the reflection intensity of the Fabry-Perot interferometer is studied. The dependence of the reflection intensity and energy on the phase difference in the Fabry-Perot interferometer is obtained. By optimizing the parameters of the rectangular laser pulse and the Fabry-Perot interferometer, the sensitivity of the reflected light intensity to the phase difference of the Fabry-Perot interferometer could be improved. © 2019 SPIE.
Number of references: 10
Main heading: Laser pulses
Controlled terms: Incident light - Fabry-Perot interferometers
Uncontrolled terms: Light traveling - Measurement technologies - Multiple beam interference - Phase difference - Reflected light intensity - Reflection characteristics - Reflection intensity - Round-trip time
Classification code: 741.1 Light/Optics - 744.1 Lasers, General - 941.3 Optical Instruments
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

382. Performance comparison of novel chemical agents in improving oil recovery from tight sands through spontaneous imbibition

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Authors: Huang, Hai (1); Babadagli, Tayfun (2); Chen, Xin (2); Li, Huazhou (2)
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, China; (2) University of Alberta, Canada
Source title: Proceedings - SPE International Symposium on Oilfield Chemistry
Abbreviated source title: Proc SPE Int Symp Oilfield Chem
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Conference location: Galveston, TX, United states
Conference code: 148094
Publisher: Society of Petroleum Engineers (SPE)
Abstract: Tight sands are abundant in nanopores leading to a high capillary pressure and normally a low fluid injectivity. As such, spontaneous imbibition might be an effective mechanism for improving oil recovery from tight sands after fracturing. The chemical agents added to the injected water can alter the interfacial properties, which could help further enhance the oil recovery by spontaneous imbibition. This study explores the possibility of using novel chemicals to enhance oil recovery from tight sands via spontaneous imbibition. We experimentally examine the effects of more than ten different chemical agents on spontaneous imbibition, including a cationic surfactant (C12TAB), two anionic surfactants (O242 and O342), an ionic liquid (BMMIM BF4), a high pH solution (NaBO2), and a series of house-made deep eutectic solvents (DES3-7, 9, 11 and 14). Experimental results indicate that the ionic liquid and cationic surfactant used in this study are detrimental to spontaneous imbibition and decrease the oil recovery from tight sands. The high pH NaBO2 solution does not demonstrate significant effect on improving oil recovery, even though it significantly reduces oil-water interfacial tension (IFT). The anionic surfactants (O242 and O342) are effective in enhancing oil recovery from tight sands through oil-water IFT reduction and emulsification effects. The DESs drive the rock surface to be more water-wet and a specific formulation (DES9) leads to much improvement on oil recovery under counter-current imbibition condition. This preliminary study would provide some knowledge about how to optimize the selection of chemicals for improving oil recovery from tight reservoirs. Copyright 2019, Society of Petroleum Engineers.
Number of references: 37
Main heading: Anionic surfactants
Controlled terms: Cationic surfactants - Dyes - Biophysics - Emulsification - Oil well flooding - Sodium compounds - Sand - Ionic liquids
Uncontrolled terms: Chemical agent - Counter-current imbibition - Deep eutectic solvents - Effective mechanisms - Enhance oil recoveries - Performance comparison - Spontaneous imbibition - Tight sands
Classification code: 461.9 Biology - 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds
DOI: 10.2118/193553-ms
Funding Details: Number: -, Acronym: -, Sponsor: BASF; Number: RES0011227,RGPIN 05394, Acronym: NSERC, Sponsor: Natural Sciences and Engineering Research Council of Canada; Number: 51874240, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 15JS086, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2016ZX05047003-004, Acronym: -, Sponsor: Science and Technology Major Project of Guangxi;
Funding text: This research was conducted under the second author's NSERC Industrial Research Chair in Unconventional Oil Recovery (industrial partners are Petroleum Development Oman, Total E&P Recherché Développement, SIGNa Oilfield Canada, Husky Energy, Saudi Aramco, Devon, APEX Eng. and BASF), with additional support provided through a NSERC Discovery Grant (No: RES0011227) to T. Babadagli and a NSERC Discovery Grant (No: NSERC RGPIN 05394) to H. Li. We gratefully acknowledge these supports. Dr. Huang is also grateful for the financial supports provided by National Natural Science Foundation of China (No: 51874240), National Science and Technology Major Project (No: 2016ZX05047003-004) and the Key Laboratory Fund of Education Department of Shaanxi Province (No: 15JS086). Finally, we would like to extend our appreciation to Lixing Lin for his intensive work during the preparation of core samples and collection of experimental data.
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383. Block-diagonal subspace clustering with laplacian rank constraint

Accession number: 20192607109592
Authors: Yang, Yifang (1); Zhang, Xiaobo (2)
Author affiliation: (1) College of Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) Institute of Graghics and Image Processing, Xianyang Normal University, 712000, China
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Conference name: 3rd IEEE Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2019
Conference date: March 15, 2019 - March 17, 2019
Conference location: Chengdu, China
Conference code: 148626
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: How to construct the block-diagonal affinity matrix is a focus in subspace clustering based on spectral clustering. Most of existing methods pursue the block-diagonal affinity matrix by indirect methods. In this paper, we propose a directly pursuing block-diagonal affinity matrix method, called Block-Diagonal Subspace Clustering with Laplacian Rank Constrain-t(BDLRC), for subspace clustering. Specifically, a block-diagonal structure of an ideal graph is recovered from its affinity matrix by imposing a rank constraint on the Laplacian matrix. Meanwhile, an adaptive affinity matrix learning approach is employed to construct exactly block-diagonal affinity matrix. BDLRC method is superior to previous subspace clustering methods in that: 1) BDLRC is able to generate an exactly block-diagonal affinity matrix by pursuing block diagonal priors; 2) a simple and efficient solver is proposed for solving the problem of complex non-convex rank constraint. Experimental results on both synthetic and real-world data sets demonstrate the effectiveness of the proposed algorithm. © 2019 IEEE.
Number of references: 13
Main heading: Matrix algebra
Controlled terms: Laplace transforms - Computer vision - Clustering algorithms
Uncontrolled terms: Efficient solvers - Laplacian matrices - Learning approach - Low-rank representations - Sparse representation - Spectral clustering - Sub-Space Clustering - Sub-space segmentation
Classification code: 723.5 Computer Applications - 741.2 Vision - 903.1 Information Sources and Analysis - 921.1 Algebra - 921.3 Mathematical Transformations
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Data Provider: Engineering Village

384. Constructed fiber-optic FPI-based multi-parameters sensor for simultaneous measurement of pressure and temperature, refractive index and temperature

Accession number: 20190806517232
Authors: Zhang, Ting (1); Liu, Yinggang (1); Yang, Danqing (1); Wang, Yuxi (1); Fu, Haiwei (1); Jia, Zhenan (1); Gao, Hong (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)
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CODEN: OFTEFV
Document type: Journal article (JA)
Publisher: Academic Press Inc.
Abstract: In paper, a multi-parameter measurement sensor based on single-mode fiber and ultra violet (UV) curable adhesive is proposed and fabricated for simultaneously distinguish gas temperature and pressure, liquid refractive index (RI) and temperature. The proposed sensor consists of a fiber Bragg grating (FBG) and three Fabry-Pérot interferometers (FPIs) that are fabricated from a tiny segment of single-mode fiber, a section of UV curable adhesive and their integrations. The whole size of experimental sensor is below 1 mm since the combinations of micro-cavity. Interrogation of the sensor utilized Fourier band-pass filter (FBPF) and fast Fourier transform (FFT) signal processing of the reflection spectrum, allows for free extraction of individual cavity resonators' frequency. Results show that the sensor not only has four different temperature response sensitivities, but also has higher resolutions as it is used in simultaneous distinguishing measurement of pressure and temperature, refractive index and temperature. The maximum resolutions of temperature, pressure and liquid RI are 0.07 °C, 6 × 10-3 MPa and 3 × 10-4 RIU, respectively. The sensor might be applied to distinguish physical parameters related to gas or liquid environment, and work in complex environments such as high pressure. © 2019 Elsevier Inc.
Number of references: 19
Main heading: Fabry-Perot interferometers
Controlled terms: Curing - Single mode fibers - Liquids - Parameter estimation - Refractive index - Bandpass filters - Fiber Bragg gratings - Fiber optic sensors - Signal processing - Adhesives
Uncontrolled terms: Complex environments - Gas pressures - Liquid refractive index - Multi-parameter measurement - Physical parameters - Pressure and temperature - Simultaneous measurement - Temperature response
Classification code: 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 741.1 Light/Optics - 741.1.2 Fiber Optics - 802.2 Chemical Reactions - 941.3 Optical Instruments
Numerical data indexing: Size 1.00e-03m, Temperature 2.73e+02K
DOI: 10.1016/j.yofte.2019.02.007
Funding Details: Number: 2013JM8032, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 17JS105, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education; Number: YCS18211018, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China [Grant No. 17JS105], and Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS18211018).This work was supported by the National Natural Science Foundation of China (Grant No. 61805197), Natural Science Basic Research Plan in Shaanxi Province of China (Grant No. 2013JM8032), Scientific Research Program Funded by Shaanxi Provincial Education Department of China [Grant No. 17JS105], and Graduate Student Innovation Fund of Xi'an Shiyou University (Grant No. YCS18211018).
Compendex references: YES
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Data Provider: Engineering Village

385. Semianalytical Coupled Model of Transient Pressure Behavior for Horizontal Well with Complex Fracture Networks in Tight Oil Reservoirs (*Open Access*)

Accession number: 20192707139500
Authors: Zongxiao, Ren (1); Kun, Du (1); Junfeng, Shi (3); Wenqiang, Liu (1, 2); Zhan, Qu (1); Jianping, Xu (1); Qing, Xie (1); Jiaming, Zhang (4); Shibao, Yuan (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Shiyou University, Shanxi Key Laboratory of Well Stability and Fluid and Rock Mechanics in Oil and Gas Reservoirs, China; (3) Research Institute of Petroleum Exploration and Development, Beijing; 100089, China; (4) CNPC Economics and Technology Research Institute, Beijing; 100724, China
Corresponding author: Shibao, Yuan(sbyuan@xsyu.edu.cn)
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Article number: 6524105
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Document type: Journal article (JA)
Publisher: Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract: Due to a large number of natural fractures in tight oil reservoir, many complex fracture networks are generated during fracturing operation. There are five kinds of flow media in the reservoir: "matrix, natural fracture, hydraulic fracture network, perforation hole, and horizontal wellbore". How to establish the seepage model of liquid in multiscale medium is a challenging problem. Firstly, this paper establishes the dual medium seepage model based on source function theory, principle of superposition, and Laplace transformation and then uses the "star-triangle" transform method to establish the transient pressure behavior model in the complex fracture network. After that, perforating seepage model and variable mass flow in horizontal wellbore were established. Finally, continuous condition was used to couple the seepage model of dual medium seepage model, transient pressure behavior model in the complex fracture network, perforation seepage model, and the variable mass seepage model in horizontal wellbore, to establish a semianalytical coupled seepage model for horizontal well in tight reservoir. This paper provides theoretical basis for field application of horizontal well with complex fracture networks. © 2019 Ren Zongxiao et al.
Number of references: 29
Main heading: Horizontal wells
Controlled terms: Petroleum reservoir engineering - Oil field equipment - Seepage - Boreholes - Complex networks - Laplace transforms - Oil wells - Natural fractures - Petroleum reservoirs
Uncontrolled terms: Field application - Fracturing operations - Laplace transformations - Principle of superposition - Source functions - Transform methods - Transient pressures - Variable mass flow
Classification code: 421 Strength of Building Materials; Mechanical Properties - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 722 Computer Systems and Equipment - 921.3 Mathematical Transformations
DOI: 10.1155/2019/6524105
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Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

386. Air inlet angle influence on the air-side heat transfer and flow friction characteristics of a finned oval tube heat exchanger

Accession number: 20193807448078
Authors: Tang, Linghong (1, 4); Du, Xueping (2); Pan, Jie (3); Sundén, Bengt (4)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Electric Power Engineering, China University of Mining and Technology, Xuzhou; 112226, China; (3) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) Division of Heat Transfer, Department of Energy Sciences, Lund University, P.O. Box 118, Lund; SE-22100, Sweden
Corresponding author: Sundén, Bengt(bengt.sunden@energy.lth.se)
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Article number: 118702
Language: English
ISSN: 00179310
CODEN: IJHMAK
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this study, the influence of various air inlet angles on the heat transfer and flow friction characteristics of a 2-row plain finned oval tube heat exchanger is analyzed by experimental and numerical methods. The experimental

results show that an air inlet angle 45° provides the best heat transfer performance, and an air inlet angle 90° provides the smallest pressure drop, while an air inlet angle 30° provides the worst heat transfer performance associated with the largest pressure drop. The 3-D numerical simulation results indicate that with the decrease of the air inlet angle, the uniformity of the air velocity distribution in the z-direction of the heat exchanger becomes worse. The heat transfer characteristics at different air inlet angles are analyzed from the prospective of the field synergy principle and the effect of the air velocity distribution uniformity. The overall heat transfer performance is also evaluated by the JF factor under the same air mass flow rate. The results show that the air inlet angle 45° offers the best overall heat transfer performance, next is the air inlet angle 60°, while the air inlet angle 30° has the worst overall heat transfer performance. © 2019 Elsevier Ltd
Number of references: 29
Main heading: Pressure drop
Controlled terms: Drops - Air intakes - Velocity distribution - Air - Heat exchangers - Friction - Numerical methods
Uncontrolled terms: Air cooling - Air velocity distributions - Experimental and numerical methods - Heat transfer and flows - Heat transfer characteristics - Inlet angles - Oval tube - Overall heat transfer performance
Classification code: 616.1 Heat Exchange Equipment and Components - 631.1 Fluid Flow, General - 804 Chemical Products Generally - 921.6 Numerical Methods - 922.2 Mathematical Statistics
DOI: 10.1016/j.ijheatmasstransfer.2019.118702
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

387. The transient pressure behavior model of multiple horizontal wells with complex fracture networks in tight oil reservoir

Accession number: 20184305994716
Authors: Ren, Zongxiao (1, 2); Yan, Ruifeng (3); Huang, Xing (1, 2); Liu, Wenqiang (1, 2); Yuan, Shibao (1, 2); Xu, Jianping (1, 2); Jiang, Haiyan (1, 2); Zhang, Jiaming (4); Yan, Ruitao (1, 2); Qu, Zhan (1, 2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Xi'an Shiyou University Shaanxi Key Laboratory of Well Stability and Fluid & Rock Mechanics in Oil and Gas Reservoirs, China; (3) The No.3 Gas Production Plant PetroChina Changqing Oilfield Company, Xi'an; 710065, China; (4) CNPC Economics and Technology Research Institute, Beijing; 100724, China
Corresponding author: Ren, Zongxiao(765802228@qq.com)
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Abbreviated source title: J. Pet. Sci. Eng.
Volume: 173
Issue date: February 2019
Publication year: 2019
Pages: 650-665
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: There are often multiple volume fracturing horizontal wells producing simultaneously in the tight oil reservoir. However, from the published literature, there are a large number of seepage models for a single volume fracturing horizontal well, and there are few literature on the transient pressure behavior of multiple horizontal wells. In order to simulate the actual production of multiple horizontal wells in the field, the seepage model of multiple horizontal wells was established in this paper. In this paper, transient pressure behavior model of multiple horizontal wells is composed of two parts. One is the seepage model of reservoir and the other is seepage model in the fracture network. Firstly, based on a new plane source function, by virtue of superimposing method, the seepage model of dual medium reservoir is established considering interference between fractures. Secondly, the fluid seepage model of the complex fracture network is established by using "star-triangle" transformation method. Finally, based on the continuity equation, the reservoir model and the fracture flow model are coupled to form a complete transient pressure

behavior model for multiple volume fracturing horizontal wells. Using this model, we calculate the transient pressure behavior of multiple fracturing horizontal wells, and ten typical flow regimes are divided. The influences of some of the critical parameters on the transient pressure behavior were studied, including the distance between the multiple wells, storage ratio and cross flow coefficient et al. In a word, this paper provides a very useful model for reservoir engineers regarding evaluating the performance of multiple horizontal wells with complex fracture networks. © 2018 Elsevier B.V.
Number of references: 25
Main heading: Horizontal wells
Controlled terms: Petroleum reservoir engineering - Complex networks - Petroleum reservoirs - Seepage - Fracture
Uncontrolled terms: Continuity equations - Flow regimes - Fracture network - Oil reservoirs - Source functions - Superimposing methods - Transformation methods - Transient pressures
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 722 Computer Systems and Equipment - 951 Materials Science
DOI: 10.1016/j.petrol.2018.10.029
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Funding text: This work is funded by National Natural Science Foundation of China : The multi-scale and multi-mechanism coupled seepage model of volume fracturing horizontal well based on boundary element method in tight oil reservoir (Grant No. 51804258); Investigations on Fuel Transformation and Deposition Mechanism in the Process of In-Situ Combustion (Grant No. 51674198); Research on the instability deformation of borehole based on the configuration mechanics theory (Grant No. 51674200); Research on the microscopic flow law of polymer flooding based on molecular dynamics (Grant No. 51874241).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

388. Research and Analysis of Signal Injection Method for Measuring Capacitive Current in Distribution Network

Accession number: 20202008664368
Authors: Dong, Zhangzhuo (1); Peng, Junhua (1); Yang, Zhuang (2); Huo, Pengxiong (2)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an, China; (2) Xi'an University of Science and Technology, College of Electrical and Control Engineering, Xi'an, China
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Abbreviated source title: Proc. IEEE Int. Electr. Energy Conf., CIEEC
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Publication year: 2019
Pages: 1495-1498
Article number: 9076920
Language: English
ISBN-13: 9781728116754
Document type: Conference article (CA)
Conference name: 3rd IEEE International Electrical and Energy Conference, CIEEC 2019
Conference date: September 7, 2019 - September 9, 2019
Conference location: Beijing, China
Conference code: 159513
Sponsor: Beijing Jiaotong University (BJTU); China Electrotechnical Society (CES); Institute of Electrical and Electronics Engineers (IEEE) Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Effectively grasping the basic data of capacitive current of power distribution network and regularly checking arc suppression coil device are important tasks to ensure the safe and stable operation of distribution network. Therefore, a method of on-line measuring capacitive current of power distribution network (signal injection method) is introduced. The correctness of the principle is verified by simulation analysis. However, in the actual power distribution network measurement, the method has the practical engineering problem of serious deviation of measurement results. Therefore, a detailed analysis is carried out. © 2019 IEEE.
Number of references: 15
Main heading: Signal analysis

Controlled terms: Electric network analysis
Uncontrolled terms: Arc suppression coil - Capacitive currents - Power distribution network - Practical engineering problems - Research and analysis - Signal injection method - Simulation analysis - Stable operation
Classification code: 703.1.1 Electric Network Analysis - 716.1 Information Theory and Signal Processing
DOI: 10.1109/CIEEC47146.2019.CIEEC-2019541
Compendex references: YES
Database: Compendex
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389. Ferromagnetism induced by C doped graphene-like ZnO films with different concentrations

Accession number: 20192707141749
Authors: Wen, Jun-Qing (1); Tong, Xin (1); Lei, Yu-Tian (1); Tian, Peng-Hui (1); Wu, Hua (1); He, Wan-Lin (1); Zhang, Jian-Min (2)
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)
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Volume: 299
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Publication year: 2019
Article number: 113663
Language: English
ISSN: 00381098
CODEN: SSCOA4
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: The geometrical and magnetic properties of C atoms doped graphene-like ZnO (g-ZnO) monolayer supercell with the concentrations of 6.25%, 12.5% 18.75% and 25% has been calculated using the first-principles method. The calculated results indicate that C doped g-ZnO monolayer causes the structural distortion. G-ZnO monolayer with one O atom substituted by one C atom is ferromagnetic (FM) half-metal. When the doped concentration of C is 12.5% 18.75% and 25%, the models present strong FM metal properties. The hybridization between C atoms and neighboring host atoms results in the spin polarization between C(2p)-Zn(4d)-O(2p), which causes strong FM properties. © 2019 Elsevier Ltd
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Main heading: Electronic structure
Controlled terms: Magnetic properties - II-VI semiconductors - Monolayers - Spin polarization - Zinc oxide - Frequency modulation - Graphene - Ferromagnetism - Atoms
Uncontrolled terms: First principles method - Graphene likes - Half metals - Host atoms - Metal properties - Structural distortions - Super cell - ZnO films
Classification code: 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 712.1 Semiconducting Materials - 761 Nanotechnology - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 932.1 High Energy Physics
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Compendex references: YES
Database: Compendex
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390. Design of hydraulic driving experimental bench for automatic vertical drilling tool (*Open Access*)

Accession number: 20194907794629
Authors: Yan, Wenhui (1); Wu, Heng (1); Qu, Yinan (1); Yan, Yonghong (2)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Institute of Baoji Oilfield Machinery Co., Ltd., Baoji, Shaanxi; 721002, China
Source title: Journal of Physics: Conference Series
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Issue title: 3rd International Conference on Electrical, Mechanical and Computer Engineering
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Article number: 012121
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Conference code: 155153
Publisher: IOP Publishing Ltd
Abstract: It's introduced that the structure and function of automatic vertical drilling tool with independent intellectual property rights. The hydraulic driving experimental bench for automatic vertical drilling tool is a key experimental equipment, which is specially developed in the research and development of automatic vertical drilling tool. The experimental bench uses a water circulation system with centrifugal pump. It simulates the change of drilling fluid flow rate by frequency control. It uses an analog turnplate rotating device to simulate the working condition of the tool rotation. It introduces in detail the overall structure of the hydraulic driving experimental bench for automatic vertical drilling tool and the detail structure of the analog turnplate unit, the adjusting mechanism for analog hole deviation angle, and the testing unit for pushing force. The main technical parameters and design difficulties of the experimental bench are given in this paper. It has been proved in practice that the experimental bench can satisfy the functional test of automatic vertical drilling tool system. © Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Flow of fluids
Controlled terms: Laws and legislation - Drilling equipment - Hydraulic machinery - Infill drilling - Intellectual property - Drilling fluids
Uncontrolled terms: Adjusting mechanism - Experimental bench - Experimental equipments - Hydraulic driving - Intellectual property rights - Main technical parameters - Research and development - Water circulation system
Classification code: 511.1 Oil Field Production Operations - 631.1 Fluid Flow, General - 632.2 Hydraulic Equipment and Machinery - 902.3 Legal Aspects - 971 Social Sciences
DOI: 10.1088/1742-6596/1314/1/012121
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Funding text: This paper obtained financial support from the special fund project of the innovative four projects construction on the enterprise technology center in Shaanxi province (the project: Development of automatic vertical drilling system, Shaanxi industry and information technology and development, (2010) No.396) and the national oils and gases drilling equipment technology research center. (Project: Development of automatic Vertical drilling tools, New 2015-16). I would like to thank my colleagues in the Institute of Petroleum Machinery of Xi'an Shiyou University for their support in the design work. And I wanted to thank the Baoji Oilfield Machinery Company's strong support about processing, assembly, unit test and field test in the development of automatic vertical drilling tool.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

391. Effect of interface structure on deformation behavior of crystalline Cu/amorphous CuZr sandwich structures

Accession number: 20202208739599

Authors: Song, H.Y. (1, 2); Xu, J.J. (2); 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)
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Abbreviated source title: Phys Lett Sect A Gen At Solid State Phys
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Language: English
ISSN: 03759601
CODEN: PYLAAG
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The effect of interface types (namely, sharp interface and graded interface) and its thickness on the deformation behavior of crystalline/amorphous/crystalline sandwich structures (CACSSs) under tensile loading are studied using molecular dynamics simulation. Compared with the CACSSs with sharp interface, the CACSSs with gradient interface consistently exhibit good plasticity when the interface thickness is larger than 6 nm, due to the coupling effects among crystalline layer, amorphous layer and crystalline–amorphous interface. With the increase of interface thickness, the plastic deformation mechanism of CACSSs with gradient interface changes from the local plastic deformation in amorphous layer to the homogeneous plastic deformation. © 2018 Elsevier B.V.
Number of references: 39
Main heading: Molecular dynamics
Controlled terms: Crystalline materials - Zircaloy - Plasticity - Binary alloys - Copper alloys - Plastic deformation - Sandwich structures
Uncontrolled terms: Amorphous interfaces - Deformation behavior - Graded interfaces - Gradient interfaces - Interface structures - Local plastic deformation - Molecular dynamics simulations - Plastic deformation mechanisms
Classification code: 531 Metallurgy and Metallography - 544.2 Copper Alloys - 801.4 Physical Chemistry - 933.1 Crystalline Solids - 951 Materials Science
Numerical data indexing: Size 6.00e-09m
DOI: 10.1016/j.physleta.2018.10.019
Funding Details: Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

392. Design and Implementation of Distribution Network Setting Program Architecture

Accession number: 20201808605812
Authors: Zhangzhuo, Dong (1); Pengxiong, Huo (2); Junhua, Peng (2); Zhuang, Yang (2)
Author affiliation: (1) School of Electrical Engineering, Xi'An Shiyou University, Xi'an, China; (2) School of Electrical and Control Engineering, Xi'An University of Science and Technology, Xi'an, China
Source title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
Abbreviated source title: IEEE Int. Conf. Electron. Commun. Eng., ICECE
Part number: 1 of 1
Issue title: 2019 IEEE 2nd International Conference on Electronics and Communication Engineering, ICECE 2019
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Article number: 9058495
Language: English
ISBN-13: 9781728147840
Document type: Conference article (CA)
Conference name: 2nd IEEE International Conference on Electronics and Communication Engineering, ICECE 2019

Conference date: December 9, 2019 - December 11, 2019
Conference location: Xi'an, China
Conference code: 159156
Sponsor: IEEE
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Aiming at the limitations of traditional relay setting calculation process program, such as its universality, extensibility and maintainability. According to the characteristics of protection, setting calculation of protection area is carried out as a unit. The object model and dynamic model of distribution network setting calculation are established by using object-oriented virtual inheritance mechanism and UML unified modeling language. The program is programmed with VC++. The program realizes different setting calculation methods of line and transformer protection areas respectively. The setting calculation program is verified by an example. The results show that the model has good scalability and maintainability. © 2019 IEEE.
Number of references: 12
Main heading: Unified Modeling Language
Controlled terms: Object oriented programming - Relay protection - Transformer protection - Maintainability - Conservation - Electric power system protection
Uncontrolled terms: Design and implementations - Inheritance mechanisms - Network settings - Object model - Object oriented - Program architecture - Relay settings - Setting calculation
Classification code: 704.1 Electric Components - 706.1 Electric Power Systems - 723.1 Computer Programming - 723.1.1 Computer Programming Languages - 913.5 Maintenance - 914.1 Accidents and Accident Prevention
DOI: 10.1109/ICECE48499.2019.9058495
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

393. First-principles study of magnetic properties of alkali metals and alkaline earth metals doped two-dimensional GaN materials (*Open Access*)

Accession number: 20200408064446
Title of translation: GaN
Authors: Chen, Guo-Xiang (1); Fan, Xiao-Bo (1); Li, Si-Qi (1); Zhang, Jian-Min (2)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) School of Physics and Information Technology, Shanxi Normal University, Xi'an; 710062, China
Corresponding author: Chen, Guo-Xiang(guoxchen@xsyu.edu.cn)
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Abbreviated source title: Wuli Xuebao
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Publication year: 2019
Article number: 237303
Language: Chinese
ISSN: 10003290
CODEN: WLHPAR
Document type: Journal article (JA)
Publisher: Institute of Physics, Chinese Academy of Sciences
Abstract: We systematically study the electronic structure and magnetic properties of alkali metals (Li, Na, K and Rb) and alkaline earth metals (Be, Mg and Sr) doped two-dimensional GaN monolayers using the first-principles calculations based on density functional theory. The results show that Be atom is located in the plane of the GaN monolayer, and the other doped atoms reside slightly above the plane. It is found that doping is easier to achieve under the N-rich condition. The total magnetic moment of the alkali metals doped system and the alkaline earth metals doped system are 2μB and 1μB, respectively, which are presented mainly by the spin-polarized holes of the nearest N atoms of the impurity atoms. The band structures indicate that the four alkali metal atoms doped systems are magnetic semiconductors, and the three alkaline earth metal doped systems are all semi-metallic. For a double M-doped GaN monolayer system, there is a long-range ferromagnetic coupling in the seven elements doped systems, which are realized by the hole-mediated p-p hybrid interaction. The Heisenberg mean field model is used to estimate the Curie temperature. It is found that the long-range ferromagnetic coupling states of Li, Be, Mg and Sr are existent at higher than room temperature, indicating that the four atom-doped two-dimensional GaN monolayers are very good candidates for the room temperature ferromagnetic candidate materials. The alkali metals and alkaline earth metals

doped two-dimensional GaN monolayers are expected to play an important role in the studying of spintronics. © 2019 Chinese Physical Society.
Number of references: 55
Main heading: Room temperature
Controlled terms: Ferromagnetism - Gallium nitride - Monolayers - Atoms - Ground state - Group theory - Mean field theory - Semiconductor doping - III-V semiconductors - Calculations - Density functional theory - Magnesium - Magnetic moments - Electronic structure - Wide band gap semiconductors
Uncontrolled terms: Candidate materials - Ferromagnetic coupling - First principles - First-principles calculation - First-principles study - Mean field modeling - Room temperature ferromagnetism - Spin-polarized hole
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 641.1 Thermodynamics - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 712.1 Semiconducting Materials - 921 Mathematics - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.1 Probability Theory - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics
DOI: 10.7498/aps.68.20191246
Funding Details: Number: YCS17111020, Acronym: -, Sponsor: -; Number: 11304246,11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JQ-334, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
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Compendex references: YES
Open Access type(s): All Open Access, Hybrid Gold
Database: Compendex
Data Provider: Engineering Village

394. Superplastic dual-phase nanostructure Mg alloy: A molecular dynamics study

Accession number: 20190406423351
Authors: Song, H.Y. (1, 2); Zuo, X.D. (1, 2); An, M.R. (1); Xiao, M.X. (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: Computational Materials Science
Abbreviated source title: Comput Mater Sci
Volume: 160
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Publication year: 2019
Pages: 295-300
Language: English
ISSN: 09270256
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Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: The introduction of amorphous phase and amorphous-crystalline interfaces is a new approach for enhancing mechanical performance of the Mg-based composite materials. In this work, we use molecular dynamics simulation method to explore the effect of amorphous phase size on the mechanical behavior of dual-phase nanostructure Mg alloy under tensile loading. The results show that two different deformation mechanisms of the dual-phase nanostructure Mg alloy occur depending on crystalline phase size (d) and amorphous thickness (t). There is a critical amorphous thickness (tc) for each sample to achieve nearly perfect plasticity, regardless of d. When t c, the plasticity of dual-phase nanostructure Mg alloy is provided by amorphous and crystalline phase. However, the plasticity is provided only by amorphous phase, the crystalline phase hardly participates in plastic deformation when t > tc. The results also indicate that reducing d and increasing t is consistent for improving the plastic effect of the dual-phase nanostructure Mg alloy. The optimal matching relationship between d and t is given. Moreover, some qualitative and quantitative analysis about the plastic deformation behavior of dual-phase nanostructure Mg alloy are also presented. © 2019
Number of references: 35
Main heading: Molecular dynamics
Controlled terms: Plastic deformation - Plasticity - Crystalline materials - Graphene - Magnesium alloys - Glass ceramics - Nanostructures

Uncontrolled terms: Crystalline interfaces - Dual phase - Grain size - Mg-based composite material - Molecular dynamics simulation methods - Molecular dynamics simulations - Plastic deformation behavior - Qualitative and quantitative analysis
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 761 Nanotechnology - 801.4 Physical Chemistry - 804 Chemical Products Generally - 933 Solid State Physics - 933.1 Crystalline Solids - 951 Materials Science
DOI: 10.1016/j.commatsci.2019.01.027
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: YCS17111005, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work is supported by the National Natural Science Foundation of China (Grant No. 11572259), the Science Foundation of Shaanxi Province (No. 2018JM1013) and the Graduate Innovation and Practice Project of Xi'an Shiyou University (No. YCS17111005).This work is supported by the National Natural Science Foundation of China (Grant No. 11572259), the Science Foundation of Shaanxi Province (No. 2018JM1013) and the Graduate Innovation and Practice Project of Xi'an Shiyou University (No. YCS17111005).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

395. A method for recovering Jacobi matrices with mixed spectral data

Accession number: 20192006935043
Authors: Wei, Zhaoying (1); Wei, Guangsheng (2)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an; 710062, China
Corresponding author: Wei, Guangsheng(weimath@vip.sina.comm)
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Language: English
ISSN: 00963003
CODEN: AMHCBQ
Document type: Journal article (JA)
Publisher: Elsevier Inc.
Abstract: In this paper we employ the Euclidean division for polynomials to recover uniquely a Jacobi matrix in terms of the mixed spectral data consisting of its partial entries and the information given on its full spectrum together with a subset of eigenvalues of its truncated matrix obtained by deleting the last row and last column, or its rank-one modification matrix modified by adding a constant to the last element. A necessary and sufficient condition is provided for the existence of the inverse problem. A numerical algorithm and a numerical example are given. © 2019 Elsevier Inc.
Number of references: 17
Main heading: Inverse problems
Controlled terms: Jacobian matrices - Polynomials - Eigenvalues and eigenfunctions
Uncontrolled terms: Eigen-value - Eigenvalues - Euclidean division - Full spectrum - Jacobi matrix - Numerical algorithms - Spectral data
Classification code: 921.1 Algebra
DOI: 10.1016/j.amc.2019.04.050
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

396. Effect of stacking fault and amorphous boundary on plastic deformation mechanism of dual-phase nanostructure Mg alloys

Accession number: 20191006599588
Authors: Song, H.Y. (1); Wang, J.Y. (1); An, M.R. (1); Xiao, M.X. (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)
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Publication year: 2019
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Language: English
ISSN: 09270256
CODEN: CMMSEM
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Dual-phase nanostructure model is an effective method to improve the plasticity of Mg alloys. Here, molecular dynamics simulation is performed to investigate the influence of stacking fault (SF) and amorphous boundary (AB) on the deformation mechanism of dual-phase crystal/amorphous nanostructure Mg alloys under tensile loading. The results show that with the increase of AB spacing, the plastic deformation mode of dual-phase nanostructure Mg alloys containing SFs with large SF spacing converts from the generation and growth of new grains in crystalline phase to the plastic deformation dominated by amorphous phase. When the AB spacing reaches a critical value, the plastic deformation of dual-phase nanostructure Mg alloys is completely provided by amorphous phase, and the crystalline phase hardly participates in plastic deformation. However, the results also indicate that when the SF spacing in the crystalline phase is relatively small, the crystalline phase still contributes to the plastic deformation of Mg alloys to a certain extent, even if the AB spacing is large. These analysis shed light on that the introduction of SFs may promote the formation of new grains, and the deformation mechanism of dual-phase nanostructured Mg alloys is not only related to the AB spacing of amorphous phase, but also to the SF spacing of crystalline phase. © 2019 Elsevier B.V.
Number of references: 39
Main heading: Molecular dynamics
Controlled terms: Crystalline materials - Stacking faults - Magnesium alloys - Plastic deformation - Nanostructures
Uncontrolled terms: Crystalline phase - Deformation mechanism - Generation and growth - Mg alloy - Molecular dynamics simulations - Nano-structured - Plastic deformation mechanisms - Tensile loading
Classification code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 761 Nanotechnology - 801.4 Physical Chemistry - 933 Solid State Physics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
DOI: 10.1016/j.commatsci.2019.03.007
Funding Details: Number: 11572259, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM1013, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
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Database: Compendex
Data Provider: Engineering Village

397. Study on Mesh Adaptive Direct Search Algorithm for Distribution Network Reconfiguration with Distribution Generators

Accession number: 20202008664579
Authors: Dong, Zhangzhuo (1); Yang, Zhuang (2); Peng, Junhua (2); Huo, Pengxiong (2)
Author affiliation: (1) Xi'an Shiyou University, School of Electronic Engineering, Xi'an, China; (2) Xi'an University of Science and Technology, College of Electrical and Control Engineering, Xi'an, China
Source title: Proceedings of 2019 IEEE 3rd International Electrical and Energy Conference, CIEEC 2019
Abbreviated source title: Proc. IEEE Int. Electr. Energy Conf., CIEEC
Part number: 1 of 1
Issue title: Proceedings of 2019 IEEE 3rd International Electrical and Energy Conference, CIEEC 2019

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Publication year: 2019
Pages: 1281-1286
Article number: 9077300
Language: English
ISBN-13: 9781728116754
Document type: Conference article (CA)
Conference name: 3rd IEEE International Electrical and Energy Conference, CIEEC 2019
Conference date: September 7, 2019 - September 9, 2019
Conference location: Beijing, China
Conference code: 159513
Sponsor: Beijing Jiaotong University (BJTU); China Electrotechnical Society (CES); Institute of Electrical and Electronics Engineers (IEEE) Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Firstly, based on the distribution network connection model provided by IEC 61970-301 CIM, the mapping rules have been established, and the equivalent reconfiguration topology of the actual distribution network has been obtained, which omits the unnecessary switches to decrease the coding dimension. Secondly, aiming at the distribution network reconfiguration with distribution generators (DG), the multi-objective model, including power loss reduction, voltage deviation, and DG consumption, has been established; and the mesh adaptive direct search (MADS) algorithm has been applied, which has been improved by forming the self-adaptive updating mechanism for mesh size parameter. Finally, the algorithm has been programmed in Visual Studio 2015 with C++ tool. And combined with IEEE 33-bus distribution network, the improved method has been verified the feasibility and effectiveness. © 2019 IEEE.
Number of references: 17
Main heading: Topology
Controlled terms: C++ (programming language) - Mapping - Mesh generation
Uncontrolled terms: Distribution network reconfiguration - Mesh adaptive direct search algorithm (MADS) - Mesh adaptive direct search algorithms - Multi-objective modeling - Network connection - Power loss reduction - Reconfiguration topology - Voltage deviations
Classification code: 405.3 Surveying - 723.1.1 Computer Programming Languages - 723.5 Computer Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1109/CIEEC47146.2019.CIEEC-2019467
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

398. Transmission mechanism analysis of downhole drive reciprocating pump production system based on rack and pinion (*Open Access*)

Accession number: 20200107981166
Authors: Yan, Wenhui (1); Zhou, Jiangtao (2); Peng, Yong (1); Xie, Dong (1); Qu, Yinan (1)
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Shaanxi Shenwei Coal Pipeline Transportation Co. Ltd, Xi'an, Shaanxi; 710000, China
Corresponding author: Yan, Wenhui(ywh369@xsyu.edu.cn)
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Abbreviated source title: J. Phys. Conf. Ser.
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Part number: 3 of 6
Issue: 3
Issue title: 2nd International Conference on Computer Information Science and Application Technology, CISAT 2019 - 2. Computer Modelling and Multimedia Applications
Issue date: November 28, 2019
Publication year: 2019
Article number: 032066
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Information Science and Application Technology, CISAT 2019

Conference date: August 30, 2019 - September 1, 2019
Conference location: Guangzhou, China
Conference code: 156052
Publisher: IOP Publishing Ltd
Abstract: At present, the rod production system is difficult to meet the requirements of directional wells and cluster wells with large slant, the rod and pipe of these pumping wells suffer from serious wear, high energy consumption and low system efficiency. Downhole drive reciprocating pump production system, cancelling the sucker rob for transferring forces and motion, utilizing downhole submersible motor drives the reciprocating pump through the downhole drive mechanism, which can avoid the wear of the rod and pipe and improve the system's efficiency. The composition and working principle of downhole drive reciprocating pump production system are introduced. The scheme of downhole drive reciprocating pump production system based on rack and pinion drive is analyzed in detail. The dynamic model of rack and pinion is established. By the dynamic simulation of the downhole transmission mechanism, the vibration loads of the mechanism with start up different accelerations are analyzed, and it is concluded that it is better to start with the variable acceleration. The scheme can reduce the vibration load caused by the motion inertia to the mechanism and improve the service life of the whole oil production system. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 9
Main heading: Energy utilization
Controlled terms: Wear of materials - Vibration analysis - Pumps
Uncontrolled terms: Directional well - Drive mechanism - High energy consumption - Production system - Rack and pinions - System efficiency - Transmission mechanisms - Vibration loads
Classification code: 525.3 Energy Utilization - 618.2 Pumps - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/1742-6596/1345/3/032066
Funding Details: Number: -, Acronym: -, Sponsor: Agriculture Department of Shaanxi Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This paper is supported by "Shaanxi Province Key Discipline Of Mechanical and Electronic Engineering" and "Petroleum drill and exploitation equipment" engineering research center, Shaanxi province. Thanks for the support of colleagues from "Petroleum Machinery Research Institute", Xi'an Shiyou University.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

399. Research on the reservoir characteristics and lithology recognition based on asphalt sandstone (*Open Access*)

Accession number: 20191606807426
Authors: Qi, Tingting (1); Zhao, Hui (1); Fu, Jia (2)
Author affiliation: (1) Center of Logging Production, CNPC Logging, Xi'an; 710000, China; (2) School of Material Science and Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Fu, Jia(fujia@xsyu.edu.cn)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
Volume: 237
Part number: 3 of 6
Issue: 3
Issue title: 4th International Conference on Advances in Energy Resources and Environment Engineering - Geographic Information Science, Geotechnical Environment Engineering and Materials, Land Planning
Issue date: March 19, 2019
Publication year: 2019
Article number: 032044
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Advances in Energy Resources and Environment Engineering, ICAESEE 2018
Conference date: December 7, 2018 - December 9, 2018
Conference location: Chengdu, China

Conference code: 147104
Publisher: IOP Publishing Ltd
Abstract: Silurian lithology in tower is complex, and it is very difficult to identify with conventional logging data. Taking the 12 well areas in the Silurian tower as an example, reservoir characteristics were analyzed by thin slice, physical properties, oil washing, salt washing, asphalt washing, and litho-electrical experiments. On this basis, the logging data such as conventional logging, electro imaging, and ECS were combined by point-by-point matching, and the single well lithology recognition is carried out. The response characteristics of different lithology on logging curve are analyzed. The standard and plate of lithology recognition in the research area are established by means of the crossplot technique and discriminant analysis. The results show that the lithology of the study area is mainly rock debris sandstone and feldspar debris sandstone, and the reservoir is poor in physical properties. The asphalt is distributed in the detritus, miscellaneous matrix, colloidal particles and intergranular pores in three forms: Oily asphalt, colloidal asphalt and asphalt asphalt. A standard sample was established based on various logging data, and the complex lithology recognition of Silurian system was identified by Fisher discriminant analysis method, which was verified and the compliance rate meets the requirements. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Lithology
Controlled terms: Asphalt - Physical properties - Textures - Discriminant analysis - Hazards - Sols - Sandstone
Uncontrolled terms: Colloidal particle - Complex lithology - Conventional logging - Electrical experiments - Fisher discriminant analysis methods - Intergranular pores - Reservoir characteristic - Response characteristic
Classification code: 411.1 Asphalt - 481.1 Geology - 482.2 Minerals - 804 Chemical Products Generally - 903.1 Information Sources and Analysis - 914.1 Accidents and Accident Prevention - 922 Statistical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1088/1755-1315/237/3/032044
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

400. Selecting fracturing interval for the exploitation of tight oil reservoirs from logs: A case study (*Open Access*)

Accession number: 20200408072573
Authors: Liu, Zhidi (1); Shi, Yujiang (2); Zhou, Jinyu (2); Wang, Changsheng (2); Ma, Tinghao (1); Yang, Junru (1); Shi, Mengxuan (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Changqing Oilfield Exploration and Development Institute, Xi'an; 710021, China
Corresponding author: Liu, Zhidi(liuzhidi@xsyu.edu.cn)
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Abbreviated source title: Open Geosci.
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Issue date: January 1, 2019
Publication year: 2019
Pages: 969-981
Language: English
E-ISSN: 23915447
Document type: Journal article (JA)
Publisher: De Gruyter Open Ltd
Abstract: The optimal selection of fracturing interval for the exploitation of tight oil reservoirs is very important for formulating a development program. In this study, the reservoir quality and the reservoir fracability are evaluated, and the criteria for the optimal selection of the fracturing interval are established, using the tight reservoir in the the Qing I Member of Qingshankou Formation in the Daqingzijing Oilfield of China as the study site. The results indicate that the porosity, the oil saturation and the effective thickness of tight reservoir are keys to optimizing the fracturing interval. The brittleness index and the difference coefficient among the horizontal stresses in the reservoir have a strong influence on fracability. The stress difference coefficient in the reservoir is smaller and the reservoir develops microfractures, the complex mesh fractures are easier to occur during fracturing. The stress difference between the reservoir and the surrounding bed is small and the thickness of the surrounding bed is thin, it is easy to communicate with adjacent oil-bearing layers when fracturing. © 2019 Z. Liu et al., published by De Gruyter 2019.

Number of references: 22
Main heading: Fracture mechanics
Controlled terms: Petroleum reservoirs - Oil bearing formations - Site selection - Petroleum reservoir engineering - Petroleum prospecting - Fracture - Oil well logging
Uncontrolled terms: Development programs - Difference coefficients - Effective thickness - Oil bearing layers - Optimal selection - Reservoir quality - Stress difference - Tight oil
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931.1 Mechanics - 951 Materials Science
DOI: 10.1515/geo-2019-0075
Funding text: 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 tight oil development demonstration project of Ordos basin in China (2017 ZX05069) for its support during the completion of this paper.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

401. Multidimensional Analysis Model of Perforation Optimizing Design Platform (*Open Access*)

Accession number: 20193307300188
Authors: Li, Runzhou (1); Li, Mingfei (2); Song, Caili (1); Dou, Yihua (2); Yan, Xaoying (1)
Author affiliation: (1) School of Computer, Xian Shiyou University, Xian; 710065, China; (2) School of Mechanical Engineering, Xian Shiyou University, Xian; 710065, China
Source title: Journal of Physics: Conference Series
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Issue: 5
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
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Publication year: 2019
Article number: 052013
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The PODP is designed to optimize the perforation scheme and is characterized for specific oilfield. Many factors such as drilling, geology, fluid, perforation, and string mechanics are involved in the design process, and the parameter attributes are numerous, multidisciplinary and cross related. So, the PODP multi-dimensional analysis model is constructed to shield the high-dimensionality and the cross-correlation of the attributes to provide support for the evaluation of the perforation schemas, acquisition of perforation optimizing design knowledge and more characteristic improvement of algorithms. The application examples show that the model can provide multi-angle, multi-objective and multi-granularity analysis of perforation optimizing design parameters and conclusions. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: Design
Uncontrolled terms: Application examples - Characteristic improvement - Cross correlations - High dimensionality - Multi objective - Multi-dimensional analysis - Multi-granularity - Optimizing design
Classification code: 716.1 Information Theory and Signal Processing - 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/5/052013
Funding Details: Number: 17JK0603, Acronym: -, Sponsor: -; Number: 51374171, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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

402. LMS Adaptive Filtering of Drilling Tool Vibration Signal (*Open Access*)

Accession number: 20193207297462
Authors: Simin, Kang (1); Yuelong, Wang (1); Tao, Sun (2); Yi, Gao (1); Yan, He (1)
Author affiliation: (1) Departments of Electronic Engineering, Xian Shiyou University, Xian; 710065, China; (2) Departments of Computer Science, Xian Shiyou University, Xian; 710065, China
Source title: Journal of Physics: Conference Series
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: As the dynamic measurement of attitude parameter of the steerable drilling tool under vibration may be not accurate, the Least Mean Square (LMS) adaptive filtering algorithm is adopted to filter the influence of drilling tool vibration on the attitude measurement in this paper. The simulation results show that the measurement error of inclination angle after LMS adaptive filtering can be less than 0.1°, and the measurement error of tool face angle is less than 6°, which could effectively improve the attitude measurement accuracy of vertical steerable drilling tools; the results of inverse analysis on actual drilling data show that the actual measurement error of inclination angle after LMS adaptive filtering is about 3°, which is much smaller than that before filtering. It shows that LMS adaptive filtering can effectively filter the vibration signal of drilling tools and greatly improve the dynamic measurement accuracy of the tool attitude. © Published under licence by IOP Publishing Ltd.
Number of references: 11
Main heading: Adaptive filtering
Controlled terms: Measurement errors - Infill drilling - Manufacture - Adaptive filters
Uncontrolled terms: Actual measurements - Adaptive filtering algorithms - Attitude measurement - Dynamic measurement - Dynamic measurement accuracy - Inclination angles - Least mean square (LMS) - Steerable drillings
Classification code: 511.1 Oil Field Production Operations - 537.1 Heat Treatment Processes - 913.4 Manufacturing
DOI: 10.1088/1742-6596/1237/4/042018
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
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403. One improved burial history recovery method and computer model establishment (*Open Access*)

Accession number: 20182605360938
Authors: Zhu, Yangpeng (1); Li, Peng (1)

Author affiliation: (1) Xian Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Peng(mzlp_xa@126.com)
Source title: Journal of Petroleum Exploration and Production Technology
Abbreviated source title: J. Pet. Explor. Prod. Technol.
Volume: 9
Issue: 1
Issue date: March 1, 2019
Publication year: 2019
Pages: 75-86
Language: English
ISSN: 21900558
E-ISSN: 21900566
Document type: Journal article (JA)
Publisher: Springer Verlag
Abstract: This paper which depended on the foundation of back strip method has established mathematic model to simulate stratum burial history, which considered the computation of stratum skeleton depth based on max depth and the equation-depth point on the procedure to recover stratum by stripping each layer, and put forward the enhanced restoration method taking layers group as studying object. Finally, the method has been applied to build the computer model and program automatic back strip algorithm successfully. Experiments have proved that the method is accurate, applicable, and extensible under the conditions of various complex strata. © 2018, The Author(s).
Number of references: 24
Main heading: Restoration
Uncontrolled terms: Back-stripping technique - Burial history - Computer modeling - Mathematic model - Object oriented - Recovery methods - Restoration methods - Strip algorithm
DOI: 10.1007/s13202-018-0502-z
Funding Details: Number: 2016GY-106, Acronym: -, Sponsor: -; Number: 2015R026, Acronym: -, Sponsor: -; Number: YCS18111008, Acronym: -, Sponsor: -; Number: 15JZ047, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: Core algorithm to restore stratigraphic column Compute the stratigraphic column in time T Export the data of bottom boundary into CSV file Acknowledgements Thanks for support from Science and Technology Department Research Plan of Shaanxi province Granted number 2016GY-106, Social Science Foundation of Shaanxi province Granted Number 2015R026, and Education Department Research Plan of Shaanxi province Granted Number 15JZ047 and Xi'an Shiyou University Postgraduate Cultivation Plan of Innovation and Practical Ability with project ID YCS18111008. We thank to reviewers for their valuable comments very much.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

404. Research on Super-long Deep Hole Drilling Technology Based on 0Cr17Ni4Cu4Nb Stainless Steel (*Open Access*)

Accession number: 20191906901782
Authors: Han, Xiaolan (1); Liu, Zhanfeng (1)
Author affiliation: (1) Mechanical Engineering College, Xian Shiyou University, Xian, China
Corresponding author: Han, Xiaolan(hanxiaolang007@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
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Issue title: 2nd International Symposium on Application of Materials Science and Energy Materials, SAMSE 2018 - Chapter 4 Mechanical Engineering
Issue date: April 15, 2019
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Language: English
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Document type: Conference article (CA)
Conference name: 2nd International Symposium on Application of Materials Science and Energy Materials, SAMSE 2018
Conference date: December 17, 2018 - December 18, 2018
Conference location: Shanghai, China
Conference code: 147544
Sponsor: China University of Petroleum; Yanshan University
Publisher: IOP Publishing Ltd
Abstract: 0Cr17Ni4Cu4Nb stainless steel has problems such as severe work hardening, serious tool wear and difficulty in heat dissipation in the deep hole processing. Thus the super-long deep hole drilling of 0Cr17Ni4Cu4Nb stainless steel was studied. The material and geometric parameters of drilling bit were selected reasonably. The super-long deep hole drilling test of 0Cr17Ni4Cu4Nb material was designed and carried out. The drilling process and reason for the axis deviation were investigated. The experimental results show that reasonable parameters of drilling bit and drilling process can better control the hole axis deviation. It provides technical parameters and experience for actual production. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Strain hardening
Controlled terms: Chromium alloys - Copper alloys - Bits - Infill drilling - Stainless steel - Niobium alloys
Uncontrolled terms: Deep hole drilling - Deep hole processing - Drilling bit - Drilling process - Hole axis - Super longs - Tool wear
Classification code: 511.1 Oil Field Production Operations - 537.1 Heat Treatment Processes - 543.1 Chromium and Alloys - 544.2 Copper Alloys - 545.3 Steel - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 603.2 Machine Tool Accessories
DOI: 10.1088/1757-899X/490/5/052005
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

405. Host location technology of campus network based on MAC address (*Open Access*)

Accession number: 20193307300202
Authors: Ma, Ding (1); Wang, Xuelong (1)
Author affiliation: (1) Information Center, Xian Shiyou University, Xian, Shaanxi; 710065, China
Corresponding author: Ma, Ding(58761926@qq.com)
Source title: Journal of Physics: Conference Series
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: With the increasingly strong nature of campus network teaching and service in the university, network management and security management are slowly catching up with the development of campus network construction. How to strengthen network security and public opinion supervision, how to locate the suspected computer location in

the campus network has become an important problem. This paper proposes the campus network platform of colleges and universities as an example, expounds the process of computer physical location, analyzes the problems generated in the tracking process, and finally summarizes the application.
Number of references: 5
Main heading: Network security
Controlled terms: Social aspects - Location
Uncontrolled terms: Campus network - Catching-up - Colleges and universities - Host location - Physical locations - Public opinions - Security management - Tracking process
Classification code: 723 Computer Software, Data Handling and Applications - 901.4 Impact of Technology on Society
DOI: 10.1088/1742-6596/1237/5/052027
Funding Details: Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

406. Steepest descent method based LSSVM model (*Open Access*)

Accession number: 20193307300189
Authors: Liang, Jinjin (1)
Author affiliation: (1) Department of Sciences, Xian Shiyou University, Xian; 710071, China
Corresponding author: Liang, Jinjin(myonlyonly@126.com)
Source title: Journal of Physics: Conference Series
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
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Conference date: March 29, 2019 - March 31, 2019
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Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: A new least square support vector machine SPLSSVM is constructed in the primal space, and the steepest descent method is designed to figure out the optimal solution by defining the optimal condition as the energy of the system. We rewrite the objective function by replacing the two norms of the slack vector with the slack obtained from the equality constraints, and we derive an unconstrained optimization model. By setting gradient of the obtained objective function equal to zero, a linear system is derived. An energy function is defined and an interactive method is designed to figure out the optimal solution. The incomplete Cholesky factorization is used in the nonlinear space to approximate the kernel map before applying the steepest descent method. Numerical experiments demonstrate that the proposed SPLSSVM has higher precision and lower training time than SVM and LSSVM. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 8
Main heading: Steepest descent method
Controlled terms: Vector spaces - Optimal systems - Optimization - Linear systems - Support vector machines - Least squares approximations
Uncontrolled terms: Equality constraints - Incomplete cholesky factorizations - Interactive methods - Least square support vector machines - Numerical experiments - Objective functions - Optimal conditions - Unconstrained optimization

Classification code: 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.5 Optimization Techniques - 921.6 Numerical Methods - 961 Systems Science
DOI: 10.1088/1742-6596/1237/5/052014
Funding Details: Number: 2016JK1596, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by the Natural Science Foundation of Shaanxi Educational Commission (2016JK1596).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
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Data Provider: Engineering Village

407. Application Research of Parallel Optimization Technology in Hydrological Model (*Open Access*)

Accession number: 20193307300185
Authors: Liu, Fang (1); Zhou, Shuai (1)
Author affiliation: (1) College of Science, Xian Shiyou University, Xian; 710065, China
Corresponding author: Liu, Fang(3315245898@qq.com)
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Hydrological model parameters are generally considered to be a simplified representation that characterizes hydrologic processes, As hydrological models continue to deepen the application of hydrological processes in the basin, they face enormous calculations. Meanwhile, in pursuit calibrating the model parameters by optimal algorithms for higher accuracy, the computation burden of optical techniques has become much heavier. Therefore, in order to solve this problem of low efficiency of hydrological model calculation, this paper uses parallel PSO algorithm to calibrate the TOPMODEL model parameters, and then uses parallel computing to process the flow generation in each sub-basin. The results show that the daily runoff simulation value of tangnaihai hydrological station fits well with the measured hydrological process; Whether PSO or sub-basin all can improve computational efficiency by using parallel optimization techniques, the former and the latter increased by 3.22 and 2.57 times, respectively. The results provide a reference for further understanding the application of parallel computing in hydrological models.
Number of references: 26
Main heading: Computational efficiency
Controlled terms: Parameter estimation - Climate models - Hydrology - Particle swarm optimization (PSO) - Runoff
Uncontrolled terms: Application research - Computation burden - Hydrologic process - Hydrological modeling - Hydrological models - Hydrological process - Parallel optimization - Runoff simulation
Classification code: 442.1 Flood Control - 443 Meteorology - 444.1 Surface Water - 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1237/5/052010
Funding Details: Number: 2017C33013, Acronym: -, Sponsor: Zhejiang Province Public Welfare Technology Application Research Project;

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

408. 3D Reservoir Modeling Based on Mobile Platform and OpenGL ES (*Open Access*)

Accession number: 20193307300191
Authors: Zheng, Kaidong (1)
Author affiliation: (1) School of Computer Science, Xian Shiyou University, Xian; 710065, China
Corresponding author: Zheng, Kaidong(kdzheng@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
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Publisher: IOP Publishing Ltd
Abstract: This paper discusses 3D petroleum reservoir modeling based on android platform and development of relavite graphical software system for reservoir models on the mobile terminal. Using OpenGL ES graphical library to perform graphics processing and realize 3D rendering of the mobile reservoir models. Making use of the Kriging algorithm and Choleskly method to accomplish the interpolation calculation, it is the core of all grid vertexes algorithm and cutting operation for the reservoir models. On the basis of 3D reservoir modeling, complete several 3D reservoir geological model maps, and a serial of functional maps such as rotation, translation, scaling and grid displays, peeling, axis slicing, arbitrary slicing, well connected section, etc. The software system successfully passed the tests of some oil field data. The 3D reservoir modeling based on mobile platform enables the professional persons to analyse the reservoir distribution and direct the oil well drilling feasibly and easily, which will bring great convenience for technical exchanges of oil and gas exploration. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 11
Main heading: Software testing
Controlled terms: Interpolation - Oil well drilling - Petroleum reservoirs - Oil field development - Petroleum prospecting - Petroleum reservoir engineering - Application programming interfaces (API) - Oil wells - Three dimensional computer graphics
Uncontrolled terms: Cutting operations - Graphical libraries - Graphics processing - Oil and gas exploration - Petroleum reservoir modeling - Reservoir distribution - Reservoir geological models - Technical exchange
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 921.6 Numerical Methods
DOI: 10.1088/1742-6596/1237/5/052016
Compendex references: YES
Open Access type(s): All Open Access, Gold
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409. Research and Design of Lightweight Workflow Engine Based on SCA (*Open Access*)

Accession number: 20193307300181
Authors: Yang, Huaizhou (1); Lv, Bowen (1); Shi, Wenbo (1); Sun, Jingxin (1)
Author affiliation: (1) Department of Computer Science, Xian Shiyou University, Xian; 710065, China
Source title: Journal of Physics: Conference Series
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Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to overcome the shortcomings of the traditional workflow engine structure and defects, this study proposes a loosely coupled lightweight workflow engine based on SCA (Service Component Architecture) and BPEL (Business Process Execution Language for Web Service, also known as WS-BPEL or BPEL4WS) engine. The support for traditional workflow engines for heterogeneous is improved by the separation between business logic and transport protocol, so that the engine is no longer limited to a specific transport protocol. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: Engines
Controlled terms: Artificial intelligence - Web services
Uncontrolled terms: BPEL4WS - Business logic - Business process execution language for web services - Loosely coupled - Service component architecture - Transport protocols - Workflow engines - WS-BPEL
Classification code: 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/5/052006
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Funding text: This research was sponsored by Xi'an Science and Technology Project of China under the grant No.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, Bronze
Database: Compendex
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410. A micro-task model for user-oriented semantic service description (*Open Access*)

Accession number: 20193307300205
Authors: Wang, Wei (1); Li, Juanni (1); Bai, Liang (1)
Author affiliation: (1) School of Science, Xian Shiyou University, Xian, Shaanxi; 710065, China
Corresponding author: Wang, Wei(wangwei_sci@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
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Conference date: March 29, 2019 - March 31, 2019
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Publisher: IOP Publishing Ltd
Abstract: SOA (Service-Oriented Architecture) has become a popular technology for developing network application. However, the current problem is new service cannot be quickly discovered, orchestrated and composed to match customer needs for insufficient capacity of semantic description of Web services. There is thus a need for an efficient way to describe services from users' perspective, instead of only realization-oriented description, to make web service the most widely used. This paper proposes a user-oriented semantic service description method which combines task model with semantic service to find a novel way that is suitable and intuitive for a service consumer. A micro-task model is proposed to enhance the capacity of semantic service description from four dimensions: User goal, context, displayed variable, activity; simultaneously, a services description framework based on micro-task model is proposed to accurately map user task into services. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 11
Main heading: Web services
Controlled terms: Data mining - Information services - Information systems - Artificial intelligence - Semantics - Service oriented architecture (SOA) - Websites
Uncontrolled terms: Current problems - Four dimensions - Network applications - Semantic descriptions - Semantic service - Semantic service descriptions - Service consumers - Soa (serviceoriented architecture)
Classification code: 722.4 Digital Computers and Systems - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 903.2 Information Dissemination - 903.3 Information Retrieval and Use - 903.4 Information Services
DOI: 10.1088/1742-6596/1237/5/052030
Funding Details: Number: Z07074, Acronym: -, Sponsor: -; Number: 16JK1602, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: The research is supported by the Scientific Research Program Funded by Shaanxi Provincial Education Department (Granted No. 16JK1602) and the Innovation and Technology Fund of Xi'an Shiyou University (Granted No. Z07074).The research is supported by the Scientific Research Program Funded by Shaanxi Provincial Education Department (Granted No. 16JK1602) and the Innovation and Technology Fund of Xi'an Shiyou University (Granted No. Z07074).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

411. Research on Lost Circulation Risk Intelligent Identification and Processing System Based on CBR (*Open Access*)

Accession number: 20193207297469
Authors: Xiaorong, Gao (1); Yingzhuo, Xu (1)
Author affiliation: (1) Institute of Petroleum Engineering, Xian Shiyou University, Xian; 710065, China
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Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Due to the large number of complex and uncertain factors in the drilling process, it is very difficult to identify and deal with the risk of lost circulation by establishing an accurate mathematical model, and the existing intelligent methods are difficult to acquire or require large sample data. In view of the defects, an intelligent decision-making method based on case-based reasoning is proposed, and a software system for intelligent identification and processing of lost circulation risk is developed. In this system, the lost circulation cases of oil fields in the past are represented as case forms in the case base. The design idea of the case retrieval model is to design an improved similarity calculation model for different types of attributes, based on the traditional instance similarity calculation model, which can effectively solve the information uncertainty. The system was tested by field data and the results show that the lost circulation risk identification and processing method can meet the application requirements of the drilling site, and can effectively improve the intelligent level of lost circulation risk management. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Risk management
Controlled terms: Processing - Calculations - Information management - Decision making - Infill drilling - Oil fields - Case based reasoning
Uncontrolled terms: Application requirements - Based on case-based reasoning - Case retrieval model - Intelligent decision making - Intelligent identification - Intelligent method - Risk Identification - Similarity calculation
Classification code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 912.2 Management - 913.4 Manufacturing - 921 Mathematics
DOI: 10.1088/1742-6596/1237/4/042025
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Open Access type(s): All Open Access, Gold
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412. Research on Intelligent Energy-saving Algorithm of Oil Pumping Based on BP Neural Network (*Open Access*)

Accession number: 20193207297467
Authors: Liu, Tianshi (1); Shi, Mengdi (1)
Author affiliation: (1) School of Computer Science, Xian Shiyou University, Xian; 710065, China
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to enhance the international competitiveness of China's oilfields, this paper reduces the phenomenon of high energy consumption in low-permeability oilfields, reduce electricity costs, increase oil production, and improve oilfield efficiency. In this paper, an intelligent energy-saving algorithm based on BP neural network is proposed for continuous oil recovery. This algorithm analyzes the main influencing factors of oil production and collects sample data from two aspects of oil production and electricity consumption cost. The BP neural network model with single hidden layer is constructed. The number of hidden layer neurons is determined. The output of oil and the unit speed of oil pumping are predicted, and combined with the time-sharing electricity price to adjust the times of oil pumping unit time to reduce the cost of electricity. The experimental results show that the proposed intelligent pumping energy-saving algorithm effectively improves the pumping efficiency, can save the electricity cost to a certain extent, realizes the intelligent control of pumping unit, and makes the oil field achieve high production and efficiency. © Published under licence by IOP Publishing Ltd.
Number of references: 9
Main heading: Energy utilization
Controlled terms: Energy conservation - Pumps - Multilayer neural networks - Pumping plants
Uncontrolled terms: BP neural network model - Cost of electricity - Electricity-consumption - Hidden layer neurons - High energy consumption - Intelligent energies - International competitiveness - Low permeability oilfields
Classification code: 446 Waterworks - 525.2 Energy Conservation - 525.3 Energy Utilization - 618.2 Pumps
DOI: 10.1088/1742-6596/1237/4/042023
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

413. The Monitoring System Design of Oil Well Dynamic Fluid Level (*Open Access*)

Accession number: 20193207297465
Authors: Song, Caili (1); Guan, Xin (1)
Author affiliation: (1) School of Computer Science, Xian Shiyou University, Xian; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 4 of 5
Issue: 4
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Automation Engineering and Intelligent Application
Issue date: July 12, 2019
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Article number: 042021
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Dynamic fluid level is the most important indicator in the process of oil field development. By monitoring the dynamic fluid level of oil well, the working mode of pumping can be adjusted in time to maximize the utilization of resources. In this paper, a set of oil well dynamic liquid level monitoring system is introduced. The device collects sound wave data periodically and transmits data with the upper computer via WIFI and 4G to realize real-time monitoring of oil well dynamic liquid level. The monitoring software system of the upper computer is deployed on LAN and Aliyun server to realize remote users access to dynamic liquid level data in the oil field. © Published under licence by IOP Publishing Ltd.
Number of references: 5
Main heading: Oil wells

Controlled terms: Monitoring - Liquids - Oil field development
Uncontrolled terms: Dynamic fluids - Dynamic liquid levels - Monitoring system - Real time monitoring - Remote users - Software systems - Upper computer - Utilization of resources
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
DOI: 10.1088/1742-6596/1237/4/042021
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

414. Research on natural gas separation flow laws in a new type of supersonic cyclone separator

Accession number: 20191506773324
Authors: Liang, Huirong (1); Zhang, Shuai (2); Kang, Yong (2); Ling, Kegang (3)
Author affiliation: (1) University of North Dakota, Xi'an Shiyou University, China; (2) Xi'an Shiyou University, China; (3) University of North Dakota, China
Source title: International Petroleum Technology Conference 2019, IPTC 2019
Abbreviated source title: Int. Pet. Technol. Conf., IPTC
Part number: 1 of 1
Issue title: International Petroleum Technology Conference 2019, IPTC 2019
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Publication year: 2019
Report number: IPTC-19239-MS
Language: English
ISBN-13: 9781613996195
Document type: Conference article (CA)
Conference name: International Petroleum Technology Conference 2019, IPTC 2019
Conference date: March 26, 2019 - March 28, 2019
Conference location: Beijing, China
Conference code: 146421
Publisher: International Petroleum Technology Conference (IPTC)
Abstract: The supersonic separation is a new approach to dehydrate the natural gas in recent years. In the conventional structure, the straight tube is typically combined with a cyclone to create a strong vortex flow. The shock wave usually occurs near the swirling device in the supersonic separator, which can make the flow unstable and decrease the separation efficiency. Due to removing the negative effects of the shockwave, a new-type helical guide blade is designed as the swirling device, installed in the separate straight tube in the supersonic cyclone separator. The flow characteristics in the supersonic separator was investigated and the geometry structure was optimized by performing the computational fluid dynamics modeling methods. The optimization results showed that the model with a converging tube of 190 mm length, a diverging tube of half-cone angle of 5° and a single blade installed in the middle position, is the best supersonic separator model in the dehydration process, which can create the most stable flow field and achieve the optimum separation. In addition, when the outlet back pressure in the diffuser tube is 1 Mpa~1.5 Mpa, the separation performance will be better. © 2019, International Petroleum Technology Conference
Number of references: 25
Main heading: Computational fluid dynamics
Controlled terms: Natural gas - Shock waves - Tubes (components) - Cyclone separators - Dehydration - Gasoline - Computational geometry - Vortex flow
Uncontrolled terms: Computational fluid dynamics modeling - Conventional structures - Dehydration process - Flow charac-teristics - Natural gas separation - Separation efficiency - Separation performance - Supersonic separators
Classification code: 522 Gas Fuels - 523 Liquid Fuels - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 723.5 Computer Applications - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931 Classical Physics; Quantum Theory; Relativity - 931.1 Mechanics
Numerical data indexing: Size 1.90e-01m
DOI: 10.2523/iptc-19239-ms
Funding Details: Number: -, Acronym: -, Sponsor: Department of Science and Technology of Sichuan Province; Number: -, Acronym: -, Sponsor: Sichuan Province Youth Science and Technology Innovation Team; Number: 2012KTCG01-12, Acronym: -, Sponsor: Shaanxi Key Science and Technology Innovation Team Project;

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

415. A three-valued logic approach to partially known formal concepts

Accession number: 20193807441259
Authors: She, Yanhong (1); Wang, Wei (2); He, Xiaoli (1); Du, Yan (2); Liu, Yaoyao (2)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an, China; (2) College of Computer Science, Xi'an Shiyou University, Xi'an, China
Corresponding author: She, Yanhong(yanhongshe@gmail.com)
Source title: Journal of Intelligent and Fuzzy Systems
Abbreviated source title: J. Intelligent Fuzzy Syst.
Volume: 37
Issue: 2
Issue date: 2019
Publication year: 2019
Pages: 3053-3064
Language: English
ISSN: 10641246
E-ISSN: 18758967
Document type: Journal article (JA)
Publisher: IOS Press BV
Abstract: Formal concept analysis, originally proposed by Wille, is a mathematical tool to analyse and represent data in the form of complete formal context. However, in situations with incomplete information, one only has partial knowledge about a concept, recently, a common conceptual framework of the notions of interval sets and incomplete formal contexts for representing partially-known concepts were presented. In this study, we examine and reinterpret the existing studies on partially known concepts by means of three-valued logics. By treating an incomplete formal context as a three-valued formal context and considering the one-to-one correspondence between interval sets and three-valued mappings, we investigate the condition under which the four types of partially known concepts can be generated by using three-valued implication operators. Moreover, we also evaluate the role of three-valued logic in characterizing attribute implications. A sufficient and necessary condition for computing the true value of an implication correctly in the sense of Kriple semantics is provided. © 2019 - IOS Press and the authors. All rights reserved.
Number of references: 18
Main heading: Formal concept analysis
Controlled terms: Many valued logics - Semantics - Information analysis - Computer circuits
Uncontrolled terms: Attribute implications - Conceptual frameworks - Formal contexts - Implication operators - Incomplete information - partially-known concept - Sufficient and necessary condition - Three-valued logic
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 721.3 Computer Circuits - 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis
DOI: 10.3233/JIFS-190111
Funding Details: Number: 2017KJXX-60, Acronym: -, Sponsor: -; Number: 11531009,61472471, Acronym: -, Sponsor: -; Number: 18JK0625, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: 1This work is partially supported by the National Nature Science Fundation of China (Grant Nos. 61472471 and 11531009) and the Innovation Talent Promotion Plan of Shaanxi Province for Young Sci-Tech New Star (No. 2017KJXX-60). Funded by Scientific Research Program of Shaanxi Provincial Education Department (No.18JK0625).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

416. Design and Implementation of Intelligent Measurement Testing and Calibration Management Information System based on Big Data (*Open Access*)

Accession number: 20193207297482

Authors: Zhu, Yangpeng (1); Liu, Juanjuan (1)
Author affiliation: (1) School of Economic and Management, Xian Shiyou University, Xian; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
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Part number: 4 of 5
Issue: 4
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Automation Engineering and Intelligent Application
Issue date: July 12, 2019
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Language: English
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In recent years most testing and calibration laboratories in developed and developing countries have generally enhanced the awareness of information construction by adopting laboratory information management system to strengthen the information construction. This paper designs an intelligent measurement testing and calibration management information system based on large data, aiming at the problems of data connection and transfer, sample flow management, weak quality management and customer's informed inspection status in testing and calibration laboratory.The system adopts B/S and C/S mixed development mode, uses the current popular information technologies and utilize reasonably SQL Server database resources.Based on the network topology and architecture of the system, the system realizes function modules. In addition, this paper makes innovations in measurement equipment, sample testing, operation record, certificate life cycle management, multi-channel notification to customers, intelligent early warning.Therefore, the intelligent measurement and calibration management information system provides guarantee for improving refined management level of measuring and testing Institutes and third-party detection institutions, standardizing business processes, improving work efficiency and quality management, and providing better service to customers. © Published under licence by IOP Publishing Ltd.
Number of references: 6
Main heading: Quality management
Controlled terms: Big data - Management information systems - Sales - Information use - Information management - Life cycle - Calibration - Developing countries
Uncontrolled terms: Calibration laboratories - Calibration management - Design and implementations - Information construction - Intelligent measurement - Laboratory information management system - Life-cycle management - Measurement equipment
Classification code: 723.2 Data Processing and Image Processing - 903.3 Information Retrieval and Use - 912.2 Management
DOI: 10.1088/1742-6596/1237/4/042038
Funding Details: Number: 2016GY-106, Acronym: -, Sponsor: -; Number: 2015R026, Acronym: -, Sponsor: -; Number: 15JZ047, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: This research was finally supported by Science and Technology Department Research Plan of Shaanxi province(2016GY-106); Social Science Foundation of Shaanxi province(2015R026);Education Department Research Plan of Shaanxi province(15JZ047).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

417. Model of Green Evaluation Index of Petrochemical Enterprises by Consistency AHP (*Open Access*)

Accession number: 20193307300183
Authors: Tao, Sun (1)

Author affiliation: (1) School of Computer Science, Xian Shiyou University, Xian, Shaanxi; 710065, China
Corresponding author: Tao, Sun(765536036@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
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Issue: 5
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
Issue date: July 12, 2019
Publication year: 2019
Article number: 052008
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: AHP can be easily influenced by human subjective consciousness, which may lead to inconsistencies. So it is necessary to process AHP with mathematics methods to achieve logical compatibility. In this paper, the evaluation index model of petrochemical enterprises is constructed according to the improved consistency AHP method, so as to perform comprehensive evaluation for enterprises and strengthen the environmental pollution control. Based on the specific characteristics of petrochemical enterprises, the relevant green index model is established after the specific theoretical framework of index scoring, hierarchy and synthesis of indexes is perfected, and the indexes of green characteristics are decomposed. In order to realize the scientificity of index transfer, the power exponent with case analysis is used to calculate the specific values of indexes in this paper, and the scientifically evaluated green index which is easy to be compared is calculated, which provides the basis for policies of environmental protection in petrochemical industry.
Number of references: 9
Main heading: Hierarchical systems
Controlled terms: Environmental protection - Pollution control - Petrochemicals
Uncontrolled terms: Comprehensive evaluation - Environmental pollution control - Evaluation index - Green evaluation - Mathematics method - Petrochemical enterprise - Petrochemical industry - Theoretical framework
Classification code: 454.2 Environmental Impact and Protection - 513.3 Petroleum Products - 804.1 Organic Compounds - 961 Systems Science
DOI: 10.1088/1742-6596/1237/5/052008
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

418. An Improved Mapping and Optimization Method for Implication-based Memristive Circuits Using And-Inverter Graph (*Open Access*)

Accession number: 20193307300250
Authors: Wang, Xiaoxiao (1); Han, Jiaxin (1); Yang, Yifang (2); Li, Yu (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China; (2) College of Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Publication year: 2019
Article number: 032026
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Any logic operation can be realized in implication-based memristive circuits characterized by low energy consumption and nanometre level size. The synthesis method transforms And-Inverter Graphs (AIGs) representation for logic functions into implication-based networks. It includes a mapping process which converts a cascade of nodes in AIGs to a series of implication gates and detects fan-out nodes simultaneously. An optimized copy process is employed to reduce the delay and area of memristive circuits in occurrence of a fanout node. Experiments are carried out over a benchmark set including 33 functions with input variables from 3 to 41. Experimental results are compared with that from the original algorithm and another Majority-Inverter Graphs (MIG) based mapping method. It shows that the improved algorithm can obtain better performance in latency and area on most of the functions in the test set. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 13
Main heading: Energy utilization
Controlled terms: Computer circuits - Low power electronics - Mapping - Delay circuits - Timing circuits
Uncontrolled terms: And-inverter graph (AIGs) - Input variables - Logic functions - Logic operations - Low energy consumption - Optimization method - Original algorithms - Synthesis method
Classification code: 405.3 Surveying - 525.3 Energy Utilization - 713.4 Pulse Circuits - 721.3 Computer Circuits
DOI: 10.1088/1742-6596/1237/3/032026
Funding Details: Number: 17JK0595,17JK0610, Acronym: -, Sponsor: -; Number: 2016kw-047, Acronym: -, Sponsor: -; Number: 2018JM6093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by the Shaanxi Provincial International Co-operation and Exchanges in Science and Technology Plan Project (2016kw-047), Natural Science Basic Research Plan in Shaanxi Province of China (2018JM6093), and Scientific Research Plan of Shaanxi Committee of Education (17JK0595, 17JK0610).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

419. Dynamic prediction of gas wells based on feedback artificial neural network (*Open Access*)

Accession number: 20191906907406
Authors: Duan, Yilin (1); Chen, Jun-Bin (2); Li, Yuanjue (1)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Shaanxi, Xi'an, China; (2) College of Petroleum Engineering, Xi'an Shiyou University, Shaanxi, Xi'an, China
Corresponding author: Duan, Yilin(daleana@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 490
Part number: 4 of 7
Issue: 4
Issue title: 2nd International Symposium on Application of Materials Science and Energy Materials, SAMSE 2018 - Chapter 3 Artificial Intelligence
Issue date: April 15, 2019
Publication year: 2019
Article number: 042052
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2nd International Symposium on Application of Materials Science and Energy Materials, SAMSE 2018
Conference date: December 17, 2018 - December 18, 2018
Conference location: Shanghai, China
Conference code: 147544
Sponsor: China University of Petroleum; Yanshan University
Publisher: IOP Publishing Ltd
Abstract: Sudong gas wells vary hugely in production capacity, and meet extremely complex situation in dynamic changing. In view of Sudong gas wells with such characteristics, dynamic prediction of gas wells based on feedback artificial neural network is helpful to improve the exploitation productivity and management efficiency of the gas wells. In this paper, a prediction system based on feedback artificial neural network is developed, which can be used for analysis of dynamic changes of gas wells, forming gas well geological parameters and prediction model for production decline. The reliability, rationality and practicability of the prediction system are guaranteed through full verification and comparison of the predicted results. © 2019 Institute of Physics Publishing. All rights reserved.
Number of references: 12
Main heading: Neural networks
Controlled terms: Natural gas wells - Natural gas well production - Forecasting - Gases
Uncontrolled terms: Dynamic changes - Dynamic prediction - Geological parameters - Management efficiency - Prediction model - Prediction systems - Production capacity - Production declines
Classification code: 512.2.1 Natural Gas Fields
DOI: 10.1088/1757-899X/490/4/042052
Funding Details: Number: 51674197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: * Fund project National Natural Science Foundation of China "Study on the mechanism of brittle failure of shale reservoirs based on fine macro mechanics" (51674197). About the Author: Yi-lin Duan, woman, be born 1964, Senior engineer, Mainly engaged in oil and gas layer engineering development research.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

420. FEA of BTA Deep Hole Drilling Based on ANSYS (*Open Access*)

Accession number: 20194607695684
Authors: Liu, Xin (1); Feng, Yazhou (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an, China
Corresponding author: Liu, Xin
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 611
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Issue: 1
Issue title: 2019 International Conference on Advanced Material Research and Processing Technology, AMRPT 2019
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Publication year: 2019
Article number: 012021
Language: English
ISSN: 17578981
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Document type: Conference article (CA)
Conference name: 2019 International Conference on Advanced Material Research and Processing Technology, AMRPT 2019
Conference date: July 19, 2019 - July 21, 2019
Conference location: Wuhan, China
Conference code: 153557
Publisher: IOP Publishing Ltd
Abstract: This paper takes BTA deep hole drilling as the research object. ANSYS software is used in the static and dynamic analysis of the force of BTA deep hole drilling process from theory and in modeling and simulation. Firstly, According to the finite element analysis, the most concentrated stress and the largest deformation of the cutting tool are the cutting edge and the cutting surface of the tool block. The main vibration of drill stem is in the form of twist

and bending. Sceondly, it is concluded that the main vibration of drill stem is in the form of twist and bending through the modal analysis. Finally, the natural frequency of this type of BTA drill stem is obtained by analyzing the amplitude response curve, and it is suggested to avoid the rotational speed near the dangerous speed during machining to avoid resonance of the drill stem. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 10
Main heading: Finite element method
Controlled terms: Drills - Modal analysis - Vibration analysis - Manufacture - Computer software - Infill drilling
Uncontrolled terms: Amplitude response - ANSYS - Chip removal - Concentrated stress - Deep hole drilling - Model and simulation - Rotational speed - Static and dynamic analysis
Classification code: 511.1 Oil Field Production Operations - 537.1 Heat Treatment Processes - 603.2 Machine Tool Accessories - 723 Computer Software, Data Handling and Applications - 913.4 Manufacturing - 921 Mathematics - 921.6 Numerical Methods
DOI: 10.1088/1757-899X/611/1/012021
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

421. Numerical investigation on the heat transfer of supercritical water in non-uniform heating tube

Accession number: 20191906882446
Authors: Bai, Junhua (1); Pan, Jie (1); Wu, Gang (1); Tang, Linghong (2)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Pan, Jie(jackpan@xsyu.edu.cn)
Source title: International Journal of Heat and Mass Transfer
Abbreviated source title: Int. J. Heat Mass Transf.
Volume: 138
Issue date: August 2019
Publication year: 2019
Pages: 1320-1332
Language: English
ISSN: 00179310
CODEN: IJHMAK
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Aiming at the application problem of non-uniform heating on the supercritical boiler, a numerical investigation of non-uniform heating upward circular tube is presented in this paper. The turbulent model k-$_{E}$ (RNG) with enhanced wall treatment is employed after validating against the classic experimental results. Afterwards, the non-uniform heat transfer characteristics and mechanism, the influence factors and the criteria for onset of buoyancy effect on heat transfer of semi-heated tube are analyzed. The simulation results indicate that: (1) for non-uniform heating tube, the temperature distribution of cross section shows a great non-uniformity along the circumference, the heat transfer enhancement only appears in part area of cross section; (2) the key factors such as heated mode, heat flux, constant G/q and pressure are all influential on the thermal performance of non-uniform heating tube; and (3) investigate a good criterion standing out from three criterions to describe the onset of the secondary flow in non-uniform heating tube. © 2019 Elsevier Ltd
Number of references: 27
Main heading: Heat flux
Controlled terms: Buoyancy - Tubes (components) - Heating
Uncontrolled terms: Buoyancy effect - Heat transfer mechanism - Nonuniform heating - Numerical investigations - Supercritical water
Classification code: 619.1 Pipe, Piping and Pipelines - 641.2 Heat Transfer - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1016/j.ijheatmasstransfer.2019.04.108
Funding Details: Number: 51674198,51774237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This study was supported by the National Natural Science Foundation of China (Grant No. 51774237 , No. 51674198).

Compendex references: YES
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Data Provider: Engineering Village

422. Research and Improvement of Isolation Forest in Detection of Local Anomaly Points (*Open Access*)

Accession number: 20193307300198
Authors: Gao, Rongfang (1); Zhang, Tiantian (1); Sun, Shaohua (1); Liu, Zhanyu (1)
Author affiliation: (1) College of Computer Science and Technology, Xian Shiyou University, Xian; 710065, China
Corresponding author: Zhang, Tiantian(zhangtiancrystal@163.com)
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Three algorithms of classification-based, density-based, and isolation-based are researched and compared in this paper. It is concluded that Isolation Forest algorithm has characteristics of low time complexity and quantitative description of anomalies, which is obviously superior to other algorithms. However, it has disadvantage in detecting local anomaly point, which affects the accuracy of algorithm. Therefore, an improved algorithm based on Isolation Forest is proposed, of which the main idea is the K-means algorithm divides samples into different clusters, and the local anomalies before clustering are transformed into global anomalies of adjacent clusters, and finally the anomaly scores of the samples are calculated in each cluster. Experimental results are that the improved algorithm is better than Isolation Forest algorithm in detecting local anomaly points. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: K-means clustering
Controlled terms: Forestry - Artificial intelligence - Signal processing
Uncontrolled terms: Density-based - Quantitative description - Time complexity
Classification code: 716.1 Information Theory and Signal Processing - 723.4 Artificial Intelligence - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1237/5/052023
Funding Details:
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

423. Experimental study on erosion-corrosion of TP140 casing steel and 13Cr tubing steel in gas-solid and liquid-solid jet flows containing 2 wt % NaCl (*Open Access*)

Accession number: 20190506441375
Authors: Cheng, Jiarui (1); Li, Zhen (1); Zhang, Ningsheng (2); Dou, Yihua (1); Cui, Lu (1)

Author affiliation: (1) Department of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (2) Department of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Cheng, Jiarui(cjr88112@163.com)
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Abbreviated source title: Mater.
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Issue: 3
Issue date: January 24, 2019
Publication year: 2019
Article number: 358
Language: English
E-ISSN: 19961944
Document type: Journal article (JA)
Publisher: MDPI AG
Abstract: To study the erosion-corrosion characteristics of TP140 casing steel and 13Cr tubing steel in oil fields, we performed gas-solid and liquid-solid jet flow experiments to control particle addition, jet angle, and flow velocity and measure erosion and corrosion components. Meanwhile, we used a standard three-electrode system to study the changes in electrochemical parameters on a metal surface in a two-phase flow containing 2 wt % NaCl. Results showed that erosion is mainly dominated by the flow velocities and impact angles of particles, and corrosion rate is mainly affected by liquid flow rate. The erosion rates of the two materials increase with flow velocity, and the critical angle of maximum erosion rate exists. Meanwhile, flow velocity growth increases the current density on the TP140 surface while reducing the corrosion potential of 13Cr, but the effect of the angle on the two parameters is relatively small. The uniform corrosion of TP140 increases the erosion rate in the range of 10-20%, and the pitting of 13Cr increases the erosion rate in the range of 30-90%, indicating that the interaction between the erosion and corrosion of stainless steel is obvious. © 2019 by the authors.
Number of references: 21
Main heading: Flow velocity
Controlled terms: Steel corrosion - Two phase flow - Corrosion rate - Electrochemical electrodes - Liquids - Erosion - Sodium chloride - Velocity - Tubing
Uncontrolled terms: Erosion - corrosions - Gas-solid flows - Liquid-solid flow - Synergistic effect - Three electrode-system
Classification code: 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 631 Fluid Flow - 631.1 Fluid Flow, General - 943.2 Mechanical Variables Measurements
Numerical data indexing: Percentage 1.00e+01% to 2.00e+01%, Percentage 3.00e+01% to 9.00e+01%
DOI: 10.3390/ma12030358
Funding Details: Number: 2016ZX05031-002,51674199, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Author Contributions: J.C. and N.Z. designed the experiments and supervised experimental work; J.C. and Z.L. AwurothteotrhCeopnrotrgibraumti;oZn.sL:.Ja.Cnd. a Ln.dC.Nv.eZr.ifdieedsigannded chthaengeexdpetrhiemmenatnsuasncdripsut;p Ye.rDv.isperdoveixdpeedriemxpenertaiml wenotrakl; iJn.Cst.ruanmdeZnt.Ls.. wrote the program; Z.L. and L.C. verified and changed the manuscript; Y.D. provided experimental instruments. Funding: This research was funded by National Natural Science Foundation of China grant number 51674199. Funding: This research was funded by National Natural Science Foundation of China grant number 51674199. And The APC was funded by Research and Application of New Technologies for Efficient Development of Oil And The APC was funded by Research and Application of New Technologies for Efficient Development of Oil Sand and Improvement of SAGD Effect (grant no. 2016ZX05031-002).
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

424. Optimization of process parameters for pipeline CO2 transportation with impurities (*Open Access*)

Accession number: 20193507385086
Authors: Chen, Bing (1); Guo, Huanhuan (1); Bai, Shixing (1); Cao, Shuangge (1)
Author affiliation: (1) Xi'An Shiyou University, Shaanxi, China
Corresponding author: Guo, Huanhuan(2294774907@qq.com)
Source title: IOP Conference Series: Earth and Environmental Science

Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
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Issue: 2
Issue title: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019 - Resource Exploration and Utilization, Geography and Geological Engineering
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Article number: 022002
Language: English
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Document type: Conference article (CA)
Conference name: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019
Conference date: April 27, 2019 - April 28, 2019
Conference location: Ordos, China
Conference code: 150851
Publisher: IOP Publishing Ltd
Abstract: According to the actual engineering experience of many years of abroad, and impurities will have an impact on pipeline transportation parameters. This paper takes the 300,000 tons/year CCUS project of an oilfield in China as an example. The Pipe phase simulation software was used to simulate the supercritical dense phase carbon dioxide pipelines with different inlet diameters under the same inlet parameters, and analyze the most suitable pipeline transportation process parameters for impurities containing supercritical dense phase carbon dioxide. The feasibility plan of carbon dioxide pipeline transportation has laid a foundation for the comprehensive construction of carbon dioxide pipeline network in China. © Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Carbon dioxide
Controlled terms: Supercritical fluid extraction - Computer software - Pipelines
Uncontrolled terms: Dense phase carbon dioxide - Optimization of process parameters - Pipe-line transportations - Pipeline networks - Simulation software - Supercritical
Classification code: 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 802.3 Chemical Operations - 804.2 Inorganic Compounds
DOI: 10.1088/1755-1315/300/2/022002
Funding Details:
Funding text: This work was financially supported by Feasibility Study on the Dioxide Pipeline of Yanchang Oil Field (ycsy2015ky-B-02) fund.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

425. Numerical simulation technology study on automatic translation of foreign language images based on tesseract-ORC

Accession number: 20193707434185
Authors: Li, Gaohe (1); Li, Xinhao (1); Xu, Bo (2)
Author affiliation: (1) School of Economic Management, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Proceedings - 2019 International Conference on Robots and Intelligent System, ICRIS 2019
Abbreviated source title: Proc. - Int. Conf. Robot. Intell. Syst., ICRIS
Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Robots and Intelligent System, ICRIS 2019
Issue date: June 2019
Publication year: 2019
Pages: 86-89
Article number: 8806281
Language: English
ISBN-13: 9781728126326
Document type: Conference article (CA)

Conference name: 2019 International Conference on Robots and Intelligent System, ICRIS 2019
Conference date: June 15, 2019 - June 16, 2019
Conference location: Haikou, China
Conference code: 151017
Sponsor: Hainan Tropical Ocean University; Hainan University; Huaian Numerical Control Association; Hunan Internet of Things Association; Shenzhen Research Institute of Central South University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: First of all, Tesseract OCR technology is used to automatically identify English words on the picture, including English words in the horizontal direction, vertical direction and a certain tilt Angle direction on the picture. Then, the automatic translation system is used to translate English words into Chinese words. Finally, OpenCV technology is used to automatically fill the translated Chinese words into the corresponding position in the English of the original picture, replace the original English words, and realize the automatic recognition and translation of foreign words in the picture. This research greatly improves the efficiency of machine translation. The research content of the project can also be applied to the automatic translation of images between any other languages. © 2019 IEEE.
Number of references: 9
Main heading: Optical character recognition
Controlled terms: Computer simulation languages - Image processing
Uncontrolled terms: Automatic recognition - Automatic translation - Image translation - Machine translations - OpenCV - Simulation technologies - Tesseract - Vertical direction
Classification code: 723.1.1 Computer Programming Languages - 723.2 Data Processing and Image Processing - 741.1 Light/Optics
DOI: 10.1109/ICRIS.2019.00030
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

426. Design of Medical Examination Data Mining System Based on Decision Tree Model (*Open Access*)

Accession number: 20193207295622
Authors: Ma, Gang (1); Zhang, Liumei (1); Cui, Guangzhi (2); Cheng, Yimin (2)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi, China; (2) Hospital of xi'An Shiyou University, Xi'an Shaanxi, China
Source title: Journal of Physics: Conference Series
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
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Article number: 022022
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: This paper analyzes the system of OLAP physical examination data mining system, the concept of classification, and the nature of decision tree to define the implementation process of ID3 algorithm. Transaction data of the physical examination information management system of Xi'an Shiyou University Hospital from 2015 to 2018 are selected and prepared for cleaning and preprocessing, then the data is dimensionally reduced and transformed, to design a direct data model suitable for classification analysis. The sampling data set is classified and analyzed by ID3 algorithm, and the classification rules are extracted. Using the prediction conclusions of these classification rules, the medical examiner can quickly and scientifically predict the individual physique of each college teacher, so as to classify

college teachers of different physiques, and specifically guide the teacher's further treatment plan of exercise, diet and work. It has high reference value and promotion towards teachers' health.
Number of references: 8
Main heading: Decision trees
Controlled terms: Data mining - Classification (of information) - Information management - Diagnosis
Uncontrolled terms: Classification analysis - Classification rules - Data mining system - Decision tree modeling - Further treatments - Implementation process - Information management systems - Medical examination data
Classification code: 461.6 Medicine and Pharmacology - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
DOI: 10.1088/1742-6596/1237/2/022022
Funding Details: Number: 201809910007, Acronym: CSC, Sponsor: China Scholarship Council;
Funding text: This work was supported in part by the scholarship from China Scholarship Council(CSC) under the Grant CSC No.201809910007.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

427. Application and Analysis of Computer Simulation in Machining Process (*Open Access*)

Accession number: 20193307300200
Authors: Zhizhou, He (1); Jidong, Zhao (1)
Author affiliation: (1) Department of Computer Science, Xian Shiyou University, Xian City, Shaanxi Province; 710000, China
Corresponding author: Zhizhou, He(478739064@qq.com)
Source title: Journal of Physics: Conference Series
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Part number: 5 of 5
Issue: 5
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Computer simulation technology is one of the key technologies in computer simulation industry. It is widely used in the world and is one of the key technologies in global competition. The application of computer simulation technology in mechanical processing can effectively improve the accuracy and efficiency of machining, and its value is prominent. In this paper, the general situation of simulation technology will be introduced as a starting point, and the specific application of this technology in the process of mechanical processing will be discussed comprehensively. The purpose is to improve the application level of computer simulation technology and ensure the overall quality of domestic mechanical processing.
Number of references: 6
Main heading: Machining
Controlled terms: Artificial intelligence
Uncontrolled terms: Application level - Computer simulation technology - General situation - Global competition - Key technologies - Machining Process - Mechanical processing - Simulation technologies
Classification code: 604.2 Machining Operations - 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/5/052025

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

428. Improving Real Time Performance of Linux System Using RT-Linux (*Open Access*)

Accession number: 20193307300192
Authors: Wang, Cailing (1); Yang, Fan (1); Wang, Hongwei (2); Guo, Pu (1); Hou, Jiale (1)
Author affiliation: (1) Xian Shiyou University, Xian; 710065, China; (2) Engineering University of CAPF, Xian; 710086, China
Source title: Journal of Physics: Conference Series
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Issue: 5
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Computer Modeling and Performance Structure
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The Linux operating system is a general-purpose operating system, and its serious lack of real-time performance limits its development in the embedded field. This paper analyses the current development status of Linux system, and uses RT-Linux patch to improve its real time activity. In order to test the real-time differences between RT-Linux and Linux, the RT-test test tool is employed. The experimental results show that the Linux kernel optimized by RT-Linux patch consumes less delay than the Linux kernel in multi-thread scheduling, which fully verify the real-time optimization of RT-Linux patches.
Number of references: 10
Main heading: Linux
Controlled terms: Artificial intelligence - Data mining
Uncontrolled terms: Development status - Embedded fields - Linux systems - LINUX- operating system - Multi-thread scheduling - Paper analysis - Real time performance - Real-time optimization
Classification code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/5/052017
Funding Details: Number: 41301382,41604113,41711530128,61401439, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: This work has been supported by the National Science foundations of China (Grant Nos.: 41301382, 61401439, 41604113, 41711530128) and graduate student innovation and practice program, Xi'an Shiyou University.This work has been supported by the National Science foundations of China (Grant Nos.: 41301382, 61401439, 41604113, 41711530128) and graduate student innovation and practice program, Xi’an Shiyou University.
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Open Access type(s): All Open Access, Bronze
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429. Thermal performance analysis of submerged combustion vaporizer at supercritical pressure

Accession number: 20191606803464

Authors: Pan, Jie (1); Bai, Junhua (1); Tang, Linghong (2); Li, Ran (1); Wu, Gang (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China; (2) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an; Shaanxi Province; 710065, China
Corresponding author: Pan, Jie(jackpan@xsyu.edu.cn)
Source title: Cryogenics
Abbreviated source title: Cryogenics
Volume: 100
Issue date: June 2019
Publication year: 2019
Pages: 41-52
Language: English
ISSN: 00112275
CODEN: CRYOAX
Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In this paper, an energy balance-based model considering icing effects was established for estimating the heat transfer of submerged combustion vaporizer (SCV) under supercritical LNG pressure, where introduces some empirical correlations to evaluate the convection heat transfer of water bath-side and LNG-side. Based on this model, the thermal performance of a typical SCV was predicted numerically, and good agreement between the predicted and actual water bath temperatures indicates that the model is reliable. The results indicated that the operation parameters, such as LNG pressure, operating load, inlet LNG temperature, have significantly different influences on the thermal performance of SCV, including required minimum water bath temperature and flue gas flow rate, and the length and average thickness of ice layer outside the LNG tube bundle. The heat transfer enhancement techniques can improve the heat transfer efficiency markedly, although they also cause an increase in flow resistance. The wire coil insert with a helix angle of 75° is a better choice than the twisted tape insert with a helix angle of 45° and the wire coil insert with a helix angle of 45° considering its effects on both heat transfer and flow resistance. © 2019 Elsevier Ltd
Number of references: 18
Main heading: Heat convection
Controlled terms: Combustion - Flow of gases - Heat resistance - Heat transfer coefficients
Uncontrolled terms: Distributed-parameter model - Heat transfer efficiency - Heat Transfer enhancement - Submerged combustion vaporizers - Super-critical pressures - Thermal Performance - Thermal performance analysis - Thickness of ice layers
Classification code: 631.1.2 Gas Dynamics - 641.2 Heat Transfer
DOI: 10.1016/j.cryogenics.2019.04.004
Funding Details: Number: 51304160,51774237, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 15JK1581, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This study was supported by the National Natural Science Foundation of China (Grant No. 51774237 , 51304160) and the Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 15JK1581).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

430. Application of fuzzy control theory in the study of the macroscopic remaining oil distribution for a mature sandstone reservoir in the Tarim oilfield, China

Accession number: 20191506773339
Authors: Sun, Jian (1); Li, Chenyang (2); Zhang, Zekai (3); Ren, Long (2); Li, Qi (1); Chen, Mingqiang (2); Zhang, Bo (3); Tang, Kang (2)
Author affiliation: (1) Xi'an Shiyou University, China University of Petroleum-Beijing, China; (2) Xi'an Shiyou University, China; (3) Exploration and Development Research Institute, TarimOilfield Company, CNPC, China
Source title: International Petroleum Technology Conference 2019, IPTC 2019
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Report number: IPTC-19263-MS
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Conference name: International Petroleum Technology Conference 2019, IPTC 2019
Conference date: March 26, 2019 - March 28, 2019
Conference location: Beijing, China
Conference code: 146421
Publisher: International Petroleum Technology Conference (IPTC)
Abstract: Research on macroscopic remaining oil distribution (MROD) has become a worldwide issue and not yet been satisfactorily solved in oil industry. At present, the commonly used methods for determining MROD are heavy workload, long time consuming and greatly influenced by human factors. In the research of MROD, geological factors are uncontrollable and development factors are controllable. Therefore, under certain development conditions, geological factors determine the MROD. This paper mainly studies MROD in geological factors. The new approach is based on development geological principles. It uses fuzzy control theory to predict MROD. Firstly, according to structural location from high to low and clay content from much to less, the structural location parameters and sedimentary microfacies parameters are fuzzified into 5 grades respectively. Secondly, according to the hydrocarbon potential from good to poor, the oil and gas universe is fuzzified into 5 grades. Finally, fuzzy control rules were established. It can be calculated by characteristic expansion method. Complete governing equations are provided and the method is described in detail to permit readers to replicate all results. The method of using fuzzy control theory to predict MROD has been successfully applied in Tarim oilfield. According to the range of tectonic height and clay content, the membership degrees of structural location parameters and sedimentary microfacies parameters are assigned respectively. LN2-G well in research region is chosen as an example for study. The characteristic coefficients corresponding to LN2-G well under different structure and sedimentary conditions are respectively obtained. Through the fuzzy control statement, and combining the principle of maximum membership degree, the oil level in the target formation of well LN2-G can be calculated, which value is 5, corresponding to the oil layer. Then we use the existing exploration wells in research region, and use the above method to calculate them respectively. Based on the calculated results, we draw the remaining oil distribution level range prediction plan. Finally, we selected 3 wells to verify the accuracy of the prediction. It shows that the reservoirs drilled by LN2-X, LN2Y and LN2-Z wells are water layer, water layer and poor oil layer, respectively. The actual drilling results of these 3 wells are water layer, water layer and oil-bearing water layer, which are completely consistent with the prediction results. This research can accurately forecast the MROD based on the analysis of the essential factors (geological factors) affecting the MROD. The method is convenient and economical, which provides a reliable basis for the remaining oil development. © 2019, International Petroleum Technology Conference
Number of references: 20
Main heading: Forecasting
Controlled terms: Location - Petroleum prospecting - Petroleum reservoir engineering - Fuzzy control - Gasoline - Infill drilling - Oil field development - Sedimentology
Uncontrolled terms: Degree of membership - Fuzzy control rules - Geological factors - Hydrocarbon potential - Remaining oil distribution - Sandstone reservoirs - Sedimentary micro-facies - Structural locations
Classification code: 481.1 Geology - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 731 Automatic Control Principles and Applications
DOI: 10.2523/19263-ms
Funding text: This work was supported by the National Natural Science Foundation of China (NSFC) (No.51704235) and by Young Talent fund of University Association for Science and Technology in Shaanxi, China (No.20180417).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

431. Analysis of motion characteristics of fully rotating internal steering drilling tools (*Open Access*)

Accession number: 20193507385250
Authors: Zhang, Guangwei (1); Qiao, Yang (1); Xiang, Lin (1); Gao, Situ (1); Tian, Fan (1); Tian, Weikang (1)
Author affiliation: (1) School of xi'An Shiyou University, Shaanxi, China
Corresponding author: Qiao, Yang(1624127021@qq.com)
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Issue title: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019 - Resource Exploration and Utilization, Geography and Geological Engineering
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Conference name: 3rd International Symposium on Resource Exploration and Environmental Science, REES 2019
Conference date: April 27, 2019 - April 28, 2019
Conference location: Ordos, China
Conference code: 150851
Publisher: IOP Publishing Ltd
Abstract: The fully rotary internal steering drilling tool is a key execution component of the rotary steering drilling system, which is a new type of dynamic directional downhole closed loop rotary steering drilling tool. The study was aimed to investigate the motion of fully rotary steering drilling tool. According to the corresponding spatial mechanism, the kinematics model of the fully rotary built-in steering drilling tool was established, and the kinematics analysis of the system was carried out. The validity of the model was verified by comparing with the simulation results of SolidWorks. The basic kinematic parameters of the key components, such as inner and outer eccentric annulus, angular velocity and displacement of drill are obtained theoretically, and the kinematic characteristics of the guiding mechanism are revealed. In this paper, the relationship between rotational speed, eccentricity and trajectory of drill was studied, and the variation of various parameters in the system with time is obtained, which provides a theoretical basis for well trajectory control of fully rotary built-in steel drilling tools. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Drills
Controlled terms: Kinematics - Motion analysis - Infill drilling
Uncontrolled terms: Kinematic characteristics - Kinematic parameters - Kinematics analysis - Kinematics modeling - Motion characteristics - Rotary steering drilling tools - Rotational speed - Spatial mechanism
Classification code: 511.1 Oil Field Production Operations - 603.2 Machine Tool Accessories - 723.2 Data Processing and Image Processing - 931.1 Mechanics
DOI: 10.1088/1755-1315/300/2/022066
Funding Details: Number: 51174164, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018JM5015, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

432. Visible emission comparison from both ZnO thin films and nanoarrays spin-coated with GO layers

Accession number: 20200908245290
Authors: Chen, Haixia (1); Ding, Jijun (1); Zhang, Xuan (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Chen, Haixia(chxia8154@163.com)
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Part number: 1 of 1
Issue title: 19th IEEE International Conference on Nanotechnology, NANO 2019
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Conference name: 19th IEEE International Conference on Nanotechnology, NANO 2019
Conference date: July 22, 2019 - July 26, 2019
Conference location: Estrada do Istmo, Lote 3, Cotai Strip, Macau, China
Conference code: 157804
Sponsor: City University of Hong Kong (CityU); et al.; IEEE; IEEE Nanotechnology Council (NTC); Shenyang Institute of Automation, CAS; University of Macau
Publisher: IEEE Computer Society
Abstract: GO is spin-coated on ZnO films and ZnO nanoarrays, respectively. Results indicate that a strong blue emission band and two shoulder peaks are observed in PL spectra of ZnO films and ZnO nanoarrays. As GO is spin-coated on the ZnO films, the blue emission intensity decreases. However, as GO is spin-coated on the ZnO nanoarrays, the blue emission is drastically increased and attains the maximum. We proposed that the effective work function of GO sheets will also be decreased sharply as they are spin-coated on ZnO nanoarrays. In this case, the Fermi levels of GO locate above the conduction band of ZnO. The electrons on the Fermi levels of GO can easily transported to the conduction band of ZnO resulting in the increase PL emission in the GO spin-coated ZnO nanoarrays. © 2019 IEEE.
Number of references: 27
Main heading: Zinc oxide
Controlled terms: Metallic films - Conduction bands - Fermi level - Thin films - II-VI semiconductors
Uncontrolled terms: Blue emission - Blue emission bands - Blue emission intensity - Effective work function - PL emission - Shoulder peaks - Visible emissions - ZnO thin film
Classification code: 712.1 Semiconducting Materials - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 932.1 High Energy Physics
DOI: 10.1109/NANO46743.2019.8993888
Funding Details: Number: 2016BS12, Acronym: -, Sponsor: -; Number: 11447116,11804273, Acronym: -, Sponsor: -; Number: 2016JQ5037,2019GY–170, Acronym: -, Sponsor: -; Number: 16JK1601, Acronym: -, Sponsor: -;
Funding text: Resrach supported by the National Natural Science Foundations of China (grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (grant No. 2016BS12)*Resrach supported by the National Natural Science Foundations of China (grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY–170; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (grant No. 2016BS12) Haixia Chen is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (corresponding author to provide phone: 029-88382735; e-mail: chxia8154@163.com & chenhx@xsyu.edu.cn) Jijun Ding is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (e-mail: dingjj303@163.com & jjding@xsyu.edu.cn) Xuan Zhang is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (e-mail: 840707291@qq.com)
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

433. Functions, Values & Inadequacies--An Evaluative Discussion of Pigai Intelligent Online English Writing Correction System in View of Second Language Acquisition (*Open Access*)

Accession number: 20193207297446
Authors: Yan, Wang (1)
Author affiliation: (1) Humanities College, Xi'An ShiYou University, Xi'an, China
Corresponding author: Yan, Wang(402583455@qq.com)
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Conference date: March 29, 2019 - March 31, 2019
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Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The recent development of AI technology leads to either the belief that the possibility for it to replace human being has been increasing, or the disbelief that AI technology is still of that potency. This research is to evaluate an intelligent online English writing correction system known as Pigai from the perspective of the second language acquisition. The research is made available (1) in light with learning theories such the Input Hypothesis, as well as investigation of the learners in China; (2) by discussion of functions found in the system, and (3) with analysis of values and inadequacies as demonstrated with the system. The thesis finally argues that writing practice with Pigai system may improve learners' second language writing skills and language competence, but partially; and will not be of much help in promoting learners' humanities quality. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Learning systems
Controlled terms: Engineering education
Uncontrolled terms: AI Technologies - English writings - Human being - Learning Theory - Second language - Second language acquisition - Writing skills
Classification code: 901.2 Education
DOI: 10.1088/1742-6596/1237/4/042002
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

434. Investigation on visible emission of ZnO films deposited on copper nitride substrates

Accession number: 20200908245283
Authors: Ding, Jijun (1); Chen, Haixia (1); Li, Huidong (1); Fu, Haiwei (1)
Author affiliation: (1) Xi'An Shiyou University, Xi'An, Shaanxi, 710065, China
Source title: Proceedings of the IEEE Conference on Nanotechnology
Abbreviated source title: Proc. IEEE Conf. Nanotechnol.
Volume: 2019-July
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Issue title: 19th IEEE International Conference on Nanotechnology, NANO 2019
Issue date: July 2019
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Article number: 8993881
Language: English
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Conference name: 19th IEEE International Conference on Nanotechnology, NANO 2019
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Conference location: Estrada do Istmo, Lote 3, Cotai Strip, Macau, China
Conference code: 157804
Sponsor: City University of Hong Kong (CityU); et al.; IEEE; IEEE Nanotechnology Council (NTC); Shenyang Institute of Automation, CAS; University of Macau
Publisher: IEEE Computer Society

Abstract: ZnO films with different oxygen gas flow rate are deposited on copper nitride substrates by radio frequency magnetron sputtering. All samples are annealed in vacuum at 350 °C for 1h. Results indicates that Cu3N diffraction phase is observed in the XRD pattern of copper nitride substrates. As ZnO layer is deposited on copper nitride substrates, Cu3N diffraction peak disappears. PL spectra of all samples shows two blue emission peaks and a green emission. Under the unbalanced stoichiometric ratio, the blue peaks are enhanced. Especially, at a low oxygen gas flow rate of 5:25 sccm, two blue peak intensity reach maximum. In this case, there are overabundance Zn atoms due to a poor oxygen atmosphere. Both interstitial Zn and various substitution defects will appear in the deposited films, thus causing the intensity increment of visible emission peaks. © 2019 IEEE.
Number of references: 20
Main heading: Copper compounds
Controlled terms: Nitrides - Metallic films - Wide band gap semiconductors - II-VI semiconductors - Zinc - Zinc oxide - Diffraction - Flow of gases - Magnetron sputtering - Oxygen
Uncontrolled terms: Deposited films - Diffraction peaks - Green emissions - Oxygen atmosphere - Oxygen gas flow - Radio frequency magnetron sputtering - Stoichiometric ratio - Visible emissions
Classification code: 546.3 Zinc and Alloys - 631.1.2 Gas Dynamics - 712.1 Semiconducting Materials - 804 Chemical Products Generally - 804.2 Inorganic Compounds
Numerical data indexing: Temperature 6.23e+02K, Time 3.60e+03s
DOI: 10.1109/NANO46743.2019.8993881
Funding Details: Number: 2016BS12, Acronym: -, Sponsor: -; Number: 11447116,11804273, Acronym: -, Sponsor: -; Number: 2016JQ5037,2019GY–170, Acronym: -, Sponsor: -; Number: 2014KYCXTD02, Acronym: -, Sponsor: -; Number: 16JK1601, Acronym: -, Sponsor: -; Number: chxia8154@ 163, Acronym: -, Sponsor: -;
Funding text: Resrach supported by the National Natural Science Foundations of China (Grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (Grant No. 2016BS12) and Scientific Research Innovation Team Construction Plan of XSYU (Grant No. 2014KYCXTD02)*Resrach supported by the National Natural Science Foundations of China (Grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY–170; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Doctoral Scientific Research Startup Foundation of Xi'an Shiyou University (Grant No. 2016BS12) and Scientific Research Innovation Team Construction Plan of XSYU (Grant No. 2014KYCXTD02) Jijun Ding is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (corresponding author to provide phone: 029-88382735; e-mail: dingjj303@163.com & jjding@xsyu.edu.cn) Haixia Chen is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (e-mail: chxia8154@ 163.com & chenhx@xsyu.edu.cn) Huidong Li is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (e-mail: 123703316@qq.com) Haiwei Fu is with Xi'an Shiyou University, Xi'an, Shaanxi 710065 China (e-mail: hwfu@xsyu.edu.cn)
Compendex references: YES
Database: Compendex
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435. The impact of organic matter content on overpressure analysis and its correction method in the first member of Cretaceous Qingshankou Formation, Placanticline area, Songliao Basin

Accession number: 20193607409715
Title of translation:
Authors: Xu, Zeyang (1, 2); Zhao, Jingzhou (1, 2); Li, Jun (1, 2)
Author affiliation: (1) Provincial Key Lab of Hydrocarbon Accumulation Geology, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) College of Earth Sciences & Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, Jun(lijun@xsyu.edu.cn)
Source title: Oil and Gas Geology
Abbreviated source title: Oil Gas Geol.
Volume: 40
Issue: 4
Issue date: August 28, 2019
Publication year: 2019
Pages: 938-946
Language: Chinese
ISSN: 02539985

Document type: Journal article (JA)
Publisher: Editorial Department of Oil and Gas Geology
Abstract: The organic-rich shale is composed of three parts:non-organic mudstone system, solid organic matter and pore fluid. Given that the empirical analysis of source rock overpressure by logging parameters tends to be influenced by orga-nic matter, we proposed a set of logging parameter correction methods based on the content of organic matter for the identification of source rock overpressure origin. A case study of the shale in the first member of Qingshankou Formation (K1qn1) in Well Pu532 in Placanticline area, Songliao Basin shows that the knowledge of overpressure caused by disequilibrium compaction has been proven wrong by both porosity comparison and velocity-density cross plot under the effect of organic-matter correction. Furthermore, when measuring the pressure of a research target with its predicted buried depth less than the largest buried depth in history, it is necessary to correct the normal compaction trend by the difference between the maximum palaeoburied depth and the current one. Subsequently the prediction precision of typical wells' pressure will be better than 95% in line with corrected logging parameters.
Number of references: 17
Main heading: Shale
Controlled terms: Compaction - Organic compounds - Pore fluids - Biogeochemistry
Uncontrolled terms: Buried depth - Compaction curves - K1qn1 - Overpressure - Pressure predictions - Songliao basin
Classification code: 481.2 Geochemistry - 631.3 Flow of Fluid-Like Materials - 801.2 Biochemistry - 804.1 Organic Compounds
Numerical data indexing: Percentage 9.50e+01%
DOI: 10.11743/ogg20190421
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

436. Numerical investigation of dual-pumped optical frequency combs based on silicon-on-insulator microring resonator

Accession number: 20193107249790
Authors: Wen, Jin (1); Duan, Lina (1); Ma, Chengju (1); Fan, Wei (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, China
Corresponding author: Wen, Jin(wenjin@xsyu.edu.cn)
Source title: Microwave and Optical Technology Letters
Abbreviated source title: Microwave Opt Technol Lett
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Issue date: November 1, 2019
Publication year: 2019
Pages: 2640-2645
Language: English
ISSN: 08952477
E-ISSN: 10982760
CODEN: MOTLEO
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: Dual-pumped optical frequency combs (OFCs) based on silicon-on-insulator (SOI) microring and their characteristics are numerically investigated. This indicates that a relative low pump power is required to generate the comb modes effectively due to the high Q factor and large nonlinearity of the SOI microring. The number of generated comb modes reaches to 28, and the spacing of comb modes is over 300 nm. As the pump power enhances to 12 dBm, the bandwidth of the OFCs (over 800 nm) and the number of the comb modes (over 64) ranged from the infrared to mid-infrared wavelength region. Correspondingly, the field profile of the OFCs changes to irregular shape when the pump power increases. Meanwhile, it has been found that the intensity of the pedestal of the OFC is above -150 dBm when the Gaussian noise is introduced, which reduced the bandwidth and modes of the OFCs by affecting the pump powers' transferring efficiency. The OFCs based on SOI microring can be found applications in chip-scale oscillations, waveform generation, and ultrafast spectroscopy.
Number of references: 23
Main heading: Four wave mixing

Controlled terms: Silicon on insulator technology - Q factor measurement - Gaussian noise (electronic) - Natural frequencies - Optical materials - Bandwidth - Optical resonators
Uncontrolled terms: Irregular shape - Microring resonator - Mid-infrared wavelengths - Numerical investigations - Optical frequency combs - Silicon-on- insulators (SOI) - Ultra-fast spectroscopies - Waveform generation
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 716.1 Information Theory and Signal Processing - 741.3 Optical Devices and Systems - 942.2 Electric Variables Measurements
Numerical data indexing: Decibel_milliwatts 1.20e+01dBm, Size 3.00e-07m, Size 8.00e-07m
DOI: 10.1002/mop.31939
Funding Details: Number: 2016JQ6051,2019JM-084, Acronym: -, Sponsor: -; Number: 61505160, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018KJXX-042, Acronym: -, Sponsor: Shanghai City Youth Science and Technology Star Project;
Funding text: This work was supported by the Youth Science and Technology New Star Project of Shaanxi Province under Grant No. 2018KJXX-042, the National Natural Science Foundation of China under Grant No. 61505160 and the Natural Science Basic Research Program of Shaanxi under Grant No. 2019JM-084 and No. 2016JQ6051.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

437. Influence of supporting stiffness on critical speeds of a power turbine rotor system

Accession number: 20200708167621
Authors: Huang, Jingjing (1); Cui, Lu (1); Cheng, Kaikai (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an, China
Source title: Proceedings - 2019 4th International Conference on Mechanical, Control and Computer Engineering, ICMCCE 2019
Abbreviated source title: Proc. - Int. Conf. Mech., Control Comput. Eng., ICMCCE
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Issue title: Proceedings - 2019 4th International Conference on Mechanical, Control and Computer Engineering, ICMCCE 2019
Issue date: October 2019
Publication year: 2019
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Conference name: 4th International Conference on Mechanical, Control and Computer Engineering, ICMCCE 2019
Conference date: October 25, 2019 - October 27, 2019
Conference location: Hohhot, China
Conference code: 157156
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In this paper, the variation of critical speed with the supporting stiffness of a power turbine analogue rotor system is studied. The finite element method (FEM) is used to establish the model of the power turbine analogue rotor system and the modal analysis is carried out to reveal the relationship between the first three critical speeds and the supporting stiffness. The results indicate that the supporting stiffness shows a significant effect on the critical speeds of the power turbine rotor system. © 2019 IEEE.
Number of references: 6
Main heading: Stiffness
Controlled terms: Modal analysis - Speed - Turbine components
Uncontrolled terms: Critical speed - Power turbine rotor - Power turbines - Rotor systems
Classification code: 617 Turbines and Steam Turbines - 921 Mathematics - 951 Materials Science
DOI: 10.1109/ICMCCE48743.2019.00034
Funding Details: Number: 2019JQ-055,2019JQ-462, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: 18JK0613, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2019QNKYCXTD10, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: ACKNOWLEDGMENT This work was partially supported by the Scientific Research Program Funded by Shaanxi Provincial Education Department (No.18JK0613), the Natural Science Foundation of Shaanxi Province of China (No. 2019JQ-462 and No. 2019JQ-055) and the Youth Innovation Team of Xi'an Shiyou University (No.2019QNKYCXTD10).
Compendex references: YES

Database: Compendex
Data Provider: Engineering Village

438. An Improved Oversampling Algorithm Based on the Samples' Selection Strategy for Classifying Imbalanced Data (*Open Access*)

Accession number: 20192206972715
Authors: Xie, Wenhao (1, 2); Liang, Gongqian (1); Dong, Zhonghui (3); Tan, Baoyu (4); Zhang, Baosheng (5)
Author affiliation: (1) School of Management, Northwestern Polytechnical University, 710129, China; (2) School of Science, Xi'An Shiyou University, 710065, China; (3) School of Economics and Management, Xi'An Shiyou University, 710065, China; (4) School of Computer Science, Xi'An Shiyou University, 710065, China; (5) Management Institute, Harbin Normal University, 150000, China
Corresponding author: Xie, Wenhao(xwhaoxwhao@163.com)
Source title: Mathematical Problems in Engineering
Abbreviated source title: Math. Probl. Eng.
Volume: 2019
Issue date: 2019
Publication year: 2019
Article number: 3526539
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 imbalance data refers to at least one of its classes which is usually outnumbered by the other classes. The imbalanced data sets exist widely in the real world, and the classification for them has become one of the hottest issues in the field of data mining. At present, the classification solutions for imbalanced data sets are mainly based on the algorithm-level and the data-level. On the data-level, both oversampling strategies and undersampling strategies are used to realize the data balance via data reconstruction. SMOTE and Random-SMOTE are two classic oversampling algorithms, but they still possess the drawbacks such as blind interpolation and fuzzy class boundaries. In this paper, an improved oversampling algorithm based on the samples' selection strategy for the imbalanced data classification is proposed. On the basis of the Random-SMOTE algorithm, the support vectors (SV) are extracted and are treated as the parent samples to synthesize the new examples for the minority class in order to realize the balance of the data. Lastly, the imbalanced data sets are classified with the SVM classification algorithm. F-measure value, G-mean value, ROC curve, and AUC value are selected as the performance evaluation indexes. Experimental results show that this improved algorithm demonstrates a good classification performance for the imbalanced data sets. © 2019 Wenhao Xie et al.
Number of references: 36
Main heading: Classification (of information)
Controlled terms: Data mining - Support vector machines
Uncontrolled terms: Classification performance - Data reconstruction - Evaluation index - Imbalance datum - Imbalanced data - Imbalanced Data-sets - SMOTE algorithm - SVM classification
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: 10.1155/2019/3526539
Funding Details: Number: 71702039, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

439. Calculation of active source Rayleigh wave phase velocity by Aki's spectral formula

Accession number: 20190106343691
Authors: Li, Xinxin (1); Fang, Hongping (2)
Author affiliation: (1) Xi'an Shiyou University, China; (2) China Communications Construction Company, China
Corresponding author: Li, Xinxin
Source title: 2018 SEG International Exposition and Annual Meeting, SEG 2018

Abbreviated source title: SEG Int. Expo. Annu. Meet., SEG
Part number: 1 of 1
Issue title: 2018 SEG International Exposition and Annual Meeting, SEG 2018
Issue date: 2019
Publication year: 2019
Report number: SEG-2018-2996712
Pages: 2752-2756
Language: English
Document type: Conference article (CA)
Conference name: 88th Society of Exploration Geophysicists International Exposition and Annual Meeting, SEG 2018
Conference date: October 14, 2018 - October 19, 2018
Conference location: Anaheim, CA, United states
Conference code: 143290
Sponsor: BGP; Chevron; et al.; Kuwait Petroleum Corporation and Subsidiaries; Saudi Aramco; Shell
Publisher: Society of Exploration Geophysicists
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.
Number of references: 9
Main heading: Phase velocity
Controlled terms: Velocity - Dispersion (waves) - Surveys - Rayleigh waves - Surface structure
Uncontrolled terms: Critical steps - Different frequency - Low resolution - Nondestructive methods - Rayleigh surface waves - Rayleigh-wave phase velocity - Spatial autocorrelations - Structure detection
Classification code: 484 Seismology - 711.1 Electromagnetic Waves in Different Media - 931.2 Physical Properties of Gases, Liquids and Solids
DOI: 10.1190/segam2018-2996712.1
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

440. Quasi-continuous hydrocarbon accumulation: An alternative model for the formation of large tight oil and gas accumulations

Accession number: 20184606063558
Authors: Zhao, J. (1, 2); Li, J. (1, 2); Cao, Q. (1, 2); Bai, Y. (1, 2); Wu, W. (1, 2); Ma, Y. (1, 2)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China; (2) Shaanxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Li, J.(lijun@xsyu.edu.cn)
Source title: Journal of Petroleum Science and Engineering
Abbreviated source title: J. Pet. Sci. Eng.
Volume: 174
Issue date: March 2019
Publication year: 2019
Pages: 25-39
Language: English
ISSN: 09204105
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: It has been revealed that the formation of most giant tight oil and gas fields is inconsistent with both the typical basin-centered/continuous hydrocarbon accumulation (CHA) model and the discontinuous hydrocarbon accumulation (DHA) model. We argued that hydrocarbon accumulations in tight reservoirs are dominated by an

intermediate form between these two models, termed quasi-continuous hydrocarbon accumulation (QHA). This accumulation model is akin to the CHA in that both are extensively distributed with no distinct boundaries. However, oil and gas in the CHA occur within source rocks, accumulate mainly at or nearby where they are generated, have undergone no significant migration, and their occurrence is not controlled by traps. The QHA, however, occurs in tight reservoirs in the vicinity of source rocks. The accumulation of oil and gas occurs in multiple closely related lenticular or blanket-like reservoirs that are laterally adjacent and vertically stacked. Neither noticeable inversion of oil/gas and water nor complete bottom water or edge water is present. The charging of hydrocarbons is pervasive and the migration is mainly driven by overpressures, while the effects of buoyancy are limited. Hydrocarbon accumulation is not controlled by anticlinal traps but mainly governed by non-anticlinal traps. In fact, the CHA and DHA represent two end-member types of hydrocarbon accumulation and the QHA is a transitional mechanism by which most giant tight oil and gas fields are formed. © 2018 Elsevier B.V.
Number of references: 63
Main heading: Tight gas
Controlled terms: Natural gas fields - Hydrocarbons - Gases - Petroleum reservoirs - Petroleum reservoir engineering - Gas industry
Uncontrolled terms: Accumulation model - Continuous accumulation - Hydrocarbon accumulation - Oil and gas accumulation - Oil and gas fields - Quasi-continuous accumulations - Tigh treservoirs - Tight oil
Classification code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 804.1 Organic Compounds
DOI: 10.1016/j.petrol.2018.10.076
Funding Details: Number: 41402121,41502132, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2011ZX05007-004,2016ZX05050, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
Funding text: This work is funded by National Science and Technology Major Project of China (Project number: 2016ZX05050 , 2011ZX05007-004), and National Natural Science Foundation of China (Number: 41402121 , 41502132). We are grateful to these organizations for their support. The authors also wish to express their thanks to the reviewers of this manuscript for their constructive comments and suggestions.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

441. Study for Submerged Arc Welding Tracing Based on Hopfield Neural Network (*Open Access*)

Accession number: 20193207296118
Authors: Song, Nan (1); Wu, Xiaomeng (1)
Author affiliation: (1) Department of Electronic Engineering, Xi'An Shiyou University, Xi'an, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022068
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: This paper presents a new method based on Hopfield neural network to find out the welding center. The method transforms the problem of image processing into an optimization problem for searching the welding center. The energy function is constructed to meet the properties of welding image such as great noise. The algorithm combined

with median filtering and neural network is also put forward. Examples show that the algorithm is practice and effective in detecting the welding center.
Number of references: 7
Main heading: Hopfield neural networks
Controlled terms: Submerged arc welding - Image processing - Median filters
Uncontrolled terms: Energy functions - IS practices - Median filtering - Optimization problems
Classification code: 538.2.1 Welding Processes - 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing
DOI: 10.1088/1742-6596/1237/2/022068
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

442. Research on Intelligent Campus Monitoring Management System Based on Deep Neural Network Algorithm (*Open Access*)

Accession number: 20193207295893
Authors: Liu, Xia (1); Wang, Xuelong (1); Ren, Changlin (1)
Author affiliation: (1) Departmentof Information Center, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Liu, Xia(329507616@qq.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022143
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: With the development of the economy and the advancement of science and technology, the informationization of education management has become an inevitable trend, and the construction of a intelligent campus cannot be delayed. In order to comply with the current social development, major universities have invested heavily in IoT equipment to improve the management level of the school. Based on the large number of video cameras installed in colleges and universities, this paper uses the monitoring image big data and the CNN algorithm to train a set of graphical features that are easy to manage, without adding additional hardware purchases. In addition, combined with the camera position and other information, an intelligent campus monitoring system is built to help the campus administrator to understand the people flow, traffic flow and physical condition in real time, which is convenient for enhancing the effective monitoring and management of campus crowds, environment and security. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 7
Main heading: Informatization
Controlled terms: Deep neural networks - Economic and social effects - Video cameras - Information management - Monitoring
Uncontrolled terms: Colleges and universities - Education management - Management systems - Monitoring and management - Neural network algorithm - Physical conditions - Science and Technology - Social development
Classification code: 461.4 Ergonomics and Human Factors Engineering - 716.4 Television Systems and Equipment - 742.2 Photographic Equipment - 971 Social Sciences
DOI: 10.1088/1742-6596/1237/2/022143

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

443. Classification study for the imbalanced data based on Biased-SVM and the modified over-sampling algorithm (*Open Access*)

Accession number: 20193207296102
Authors: Zhang, Liumei (1); Tan, Baoyu (1); Liu, Tianshi (1); Sun, Xiaoqun (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, 710065, China
Source title: Journal of Physics: Conference Series
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Volume: 1237
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
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Article number: 022052
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: By combining the modified Random-SMOTE oversampling algorithm with the Biased-SVM classification method, this paper has proposed an improved classification approach for the imbalanced data sets. This algorithm is able to cluster the minority samples, and ensures the support vectors as the parent samples according to the distances between the cluster centers in the minority class and the majority class center. It then could generate the new samples for the minority class. The experiment is conducted upon the five imbalanced data sets from UCI data set and the proposed algorithm is compared with other algorithms. The experimental results show that the improved algorithm has significant classification effect for the imbalanced data sets. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 21
Main heading: Classification (of information)
Controlled terms: Clustering algorithms - Learning algorithms - Data mining - Support vector machines
Uncontrolled terms: Class Centers - Classification approach - Cluster centers - Imbalanced data - Imbalanced Data-sets - Over sampling - Support vector - SVM classification
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.4.2 Machine Learning - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1237/2/022052
Funding Details: Number: 201809910007, Acronym: CSC, Sponsor: China Scholarship Council;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

444. A K-means clustering approach for PCA-based web service QoS prediction

Accession number: 20200908240049
Authors: Yang, Huaizhou (1); Yan, Hongdan (1); Dong, Cuilian (1)
Author affiliation: (1) College of Computer Science, Xi'An Shiyou University, Xi'an, China

Source title: Proceedings - 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Abbreviated source title: Proc. - IEEE Int. Conf. Ubiquitous Comput. Commun. Data Sci. Comput. Intell. Smart Comput., Netw. Serv., IUCC/DSCI/SmartCNS
Part number: 1 of 1
Issue title: Proceedings - 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Issue date: October 2019
Publication year: 2019
Pages: 129-132
Article number: 8982566
Language: English
ISBN-13: 9781728152097
Document type: Conference article (CA)
Conference name: 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Conference date: October 21, 2019 - October 23, 2019
Conference location: Shenyang, China
Conference code: 157534
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Aiming at the problem of inaccurate Quality of service(QoS) Prediction results for Web service due to sparse matrix, a k-means clustering method is presented to predict Web service QoS through Principal Component Analysis(PCA). First, to obtain a QoS matrix without missing values, the original high-dimensional sparse matrix is filled by PCA dimensionality reduction. Second, the service users is clustered on the filled QoS matrix. Finally, the unknown service QoS values are predicted for the active users based on the clustering information. Comprehensive experiments are conducted on multiple real-world Web service QoS datasets. The experimental results indicate that our method achieves higher prediction accuracy in sparse matrix than other conventional methods. © 2019 IEEE.
Number of references: 12
Main heading: Principal component analysis
Controlled terms: Web services - Forecasting - Quality of service - Websites - K-means clustering
Uncontrolled terms: Clustering information - Conventional methods - High-dimensional - K-means clustering method - Prediction accuracy - Qos predictions - Real world web - Sparse matrices
Classification code: 903.1 Information Sources and Analysis - 922.2 Mathematical Statistics
DOI: 10.1109/IUCC/DSCI/SmartCNS.2019.00050
Funding Details: Number: 201805038YD16CG22, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This research was sponsored by Xi'an Science and Technology Project of China under the grant No. 201805038YD16CG22(2).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

445. Optimization of ICCP Anode Configuration Based on Multi Objective Genetic Algorithm

Accession number: 20195207902039
Authors: Zhang, Qizhi (1); Lei, Jia (1); Li, Lin (1)
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Source title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Abbreviated source title: Proc. - Int. Conf. Comput. Network, Electron. Autom., ICCNEA
Part number: 1 of 1
Issue title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Issue date: September 2019
Publication year: 2019
Pages: 46-51
Article number: 8912143
Language: English
ISBN-10: 0769566847

ISBN-13: 9780769566849
Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Conference date: September 27, 2019 - September 29, 2019
Conference location: Xi'an, China
Conference code: 155651
Sponsor: James Cook University Australia; LANMC; Missouri Western State University; National University of Singapore (NUS); University of Huddersfield; Xi'an Technological University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In the cathodic protection system, the distance between the anode and the structure is small, the resistivity of the environmental medium is high, and the protection current is high, which may result in uneven distribution of the potential on the structure. Aiming at this problem, based on the anti-corrosion design of long-distance pipeline with impressed current cathodic protection, an optimization model of anode position and anode output current is proposed to reduce the corrosion rate of long-distance pipeline and achieve cathodic protection. The boundary element method (BEM) is used to study the parameter optimization problem of the system based on the multi-objective genetic algorithm of cathodic protection potential distribution model. Then, through the COMSOL Mulitiphysics simulation software combined with genetic algorithm to optimize the anode position and current density, a cathodic protection optimization model that meets the cathodic protection requirements and has a uniform distribution is established. The feasibility of the model and the adaptability of the genetic algorithm in the optimization of anode configuration are verified by comparison with the measured data on site. © 2019 IEEE.
Number of references: 9
Main heading: Boundary element method
Controlled terms: Sailing vessels - Anodes - Cathodic protection - Genetic algorithms - Pipeline corrosion - Multiobjective optimization - Computer software - Corrosion rate - Pipelines
Uncontrolled terms: Cathodic protection potentials - Cathodic protection systems - Comsol Multiph - Impressed-current cathodic protections - Long distance pipelines - Multi-objective genetic algorithm - Parameter optimization problems - Protection requirements
Classification code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 619.1 Pipe, Piping and Pipelines - 674.1 Small Marine Craft - 714.1 Electron Tubes - 723 Computer Software, Data Handling and Applications - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1109/ICCNEA.2019.00019
Funding Details: Number: 2017ZDXM-GY-097, Acronym: -, Sponsor: -; Number: No.YCS19113047, Acronym: -, Sponsor: -;
Funding text: ACKNOWLEDGMENT This work was supported by the Shaanxi Provincial Key R&D Program "Drilling Machine Control Virtual Simulation Software Development, project number: 2017ZDXM-GY-097.This work was supported by the Xi'an Shiyou University Graduate Innovation and Practice Capacity Development Project under Grant No.YCS19113047.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

446. Improvement of Differential Evolution Multiobjective Optimization Algorithm Based on Decomposition (*Open Access*)

Accession number: 20193107262463
Authors: Han, Jiaxin (1); He, Manman (1); Wang, Xiaoxiao (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, 710065, China
Corresponding author: Han, Jiaxin(jxhan@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1213
Part number: 3 of 5
Issue: 3
Issue title: International Conference on Advanced Algorithms and Control Engineering, ICAACE 2019 - Algorithms and Data Structures
Issue date: June 19, 2019
Publication year: 2019
Article number: 032011
Language: English

ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 2nd International Conference on Advanced Algorithms and Control Engineering, ICAACE 2019
Conference date: April 26, 2019 - April 28, 2019
Conference location: Guilin, China
Conference code: 148935
Publisher: IOP Publishing Ltd
Abstract: Multi-objective optimization problem (MOP) is a challenging field of scientific research in real-life. The effective way to solve multi-objective optimization problems is Multi-objective Evolutionary Algorithm (MOEA). In this paper, enhancements to a Multi-objective Evolutionary algorithm MOEA/D-DE are proposed. The proposed improvement points help to improve both population distribution and algorithmic local search capabilities. In an existing study, in order to better distribute the population, the Monte Carlo method was used for population initialization. Adaptive differential evolution operators are used to improve the local search ability of the algorithm. The algorithm was tested on widely used ZDT and DTLZ family test problems. The experimental results show that the proposed algorithm is better than MOEA/D-DE and has better performance than other excellent multi-objective algorithms. © Published under licence by IOP Publishing Ltd.
Number of references: 15
Main heading: Multiobjective optimization
Controlled terms: Evolutionary algorithms - Artificial intelligence - Monte Carlo methods - Local search (optimization)
Uncontrolled terms: Adaptive differential evolutions - Differential Evolution - Multi objective algorithm - Multi objective evolutionary algorithms - Multi-objective optimization problem - Population initializations - Scientific researches - Test problem
Classification code: 723.4 Artificial Intelligence - 921.5 Optimization Techniques - 922.2 Mathematical Statistics
DOI: 10.1088/1742-6596/1213/3/032011
Funding Details: Number: 2016kw-047, Acronym: -, Sponsor: -; Number: 2018JM6093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
Funding text: Our thanks to the Shaanxi Provincial International Co-operation and Exchanges in Science and Technology Plan Project (2016kw-047) and Shaanxi Provincial Natural Science Foundation (2018JM6093).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

447. Humidity sensor based on twin-hole fiber filled with black phosphorus

Accession number: 20200508093056
Authors: Shao, Min (1); Han, Liang (1); Sun, Haonan (1); Liu, Yinggang (1); Fu, Haiwei (1)
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Proceedings of SPIE - The International Society for Optical Engineering
Abbreviated source title: Proc SPIE Int Soc Opt Eng
Volume: 11209
Part number: 1 of 1
Issue title: Eleventh International Conference on Information Optics and Photonics, CIOP 2019
Issue date: 2019
Publication year: 2019
Article number: 112093H
Language: English
ISSN: 0277786X
E-ISSN: 1996756X
CODEN: PSISDG
ISBN-13: 9781510631731
Document type: Conference article (CA)
Conference name: 11th International Conference on Information Optics and Photonics, CIOP 2019
Conference date: August 6, 2019 - August 9, 2019
Conference location: Xi'an, China
Conference code: 156655
Publisher: SPIE

Abstract: An in-line fiber Mach-Zehnder interferometer (MZI) based on twin-hole fiber for humidity sensing was proposed and experimentally demonstrated. The twin-hole fiber was filled in black phosphorus (BP) by capillary absorption method, and then was sandwiched in between two single mode fibers (SMFs) to form intermodal interference. Utilizing the sensitivity of BP to ambient humidity, the MI could realize humidity measurement. Experiment results reveal that the interference intensity changes in the RH range of 20-80%RH, and the sensitivity was -0.028 dB/%RH. This sensor has great potential for application in chemical and biology fields. © 2019 SPIE.
Number of references: 10
Main heading: Humidity sensors
Controlled terms: Phosphorus - Single mode fibers - Mach-Zehnder interferometers - Optical switches
Uncontrolled terms: Ambient humidity - Capillary absorption - Fiber Mach-Zehnder interferometers - Hole fibers - Humidity measurements - Humidity sensing - Interference intensity - Intermodal interferences
Classification code: 443.2 Meteorological Instrumentation - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 804 Chemical Products Generally - 941.3 Optical Instruments
DOI: 10.1117/12.2548844
Funding Details: Number: YCS18111009, Acronym: -, Sponsor: -; Number: 61805197, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work is supported by the National Science Foundation of China under Grant (61805197) and Postgraduate Innovation and Practice Ability Training Project of Xi'an Shiyou University under Grant (YCS18111009).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

448. Analysis of P2P Online Lending Default Based on Random Forest (*Open Access*)

Accession number: 20193207295646
Authors: Cai, Haojiang (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China
Corresponding author: Cai, Haojiang(imagic725@163.com)
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Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022046
Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: This article, based on Renren Loan website, will utilize SMOTE to process the debit and credit data in a balanced way. In addition, the importance for the variable-Random Forest and cross-validation conception will be applied for feature selection before the parameter optimization by grid searching, so that the model of basic Random Forest will be derived. Finally, featured modules of LDA will be added to further explore the reference value of loan description. The research findings show that the model has a satisfactory performance on test set in terms of predicting the results. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 18
Main heading: Decision trees
Uncontrolled terms: Credit data - Cross validation - Parameter optimization - Reference values - Test sets
Classification code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
DOI: 10.1088/1742-6596/1237/2/022046
Compendex references: YES
Open Access type(s): All Open Access, Bronze

Database: Compendex
Data Provider: Engineering Village

449. Video Logging Casing Damage Image Recognition Based on Improved Convolutional Neural Network (*Open Access*)

Accession number: 20193307300249
Authors: Hu, Hongtao (1); Cheng, Yiyao (1)
Author affiliation: (1) School of Computer Science xi'An Shiyou University, Xi'an, China
Source title: Journal of Physics: Conference Series
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Oil casing damage detection is the key point to ensure the smooth production of oil fields. In recent years, the automatic image recognition technology based on deep learning has become a researchful hot topic. But the common deep learning models have some defects in identifying the target features of casing damage images in the complex environment. This paper proposes an oil casing damage image recognition model based on DS-CNN(deep and shallow convolutional neural network). Based on VGG19, this model integrates the shallow convolution neural network. It combines global features extracted by the shallow network and the local features extracted by the deep network to form the input of the fully connected layer. The joint training of the shallow network and the deep network enables the image to be expressed in multiple scales to improve the recognition accuracy of the entire model. The experimental data is obtained from the downhole casing image dataset of an oil field in Sichuan. Experimental result shows that the macro-average F1 scores of the DS-CNN are 4.41 and 5.74 percentage points higher than those of the VGG19 model and the GoogleNet model, indicating that this model improves the recognition accuracy of oil casing damage images. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: Damage detection
Controlled terms: Convolution - Deep learning - Image recognition - Well logging - Image enhancement - Oil fields - Convolutional neural networks
Uncontrolled terms: Complex environments - Convolution neural network - Image recognition technology - Learning models - Multiple scale - Oil casing damages - Percentage points - Recognition accuracy
Classification code: 461.4 Ergonomics and Human Factors Engineering - 512.1.1 Oil Fields - 716.1 Information Theory and Signal Processing
DOI: 10.1088/1742-6596/1237/3/032025
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

450. A new improved FSVM algorithm based on SVDD

Accession number: 20184706113595
Authors: Xie, Wenhao (1, 2); Liang, Gongqian (1); Guo, Qiao (3)

Author affiliation: (1) School of Management, Northwestern Polytechnical University, Xi'an; 710129, China; (2) School of Science, Xi'an Shiyou University, Xi'an; 710065, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Xie, Wenhao(xwhaoxwhao@163.com)
Source title: Concurrency and Computation: Practice and Experience
Abbreviated source title: Concurr. Comput. Pract. Exper.
Volume: 31
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Issue date: May 10, 2019
Publication year: 2019
Article number: e4893
Language: English
ISSN: 15320626
E-ISSN: 15320634
CODEN: CCPEBO
Document type: Conference article (CA)
Publisher: John Wiley and Sons Ltd
Abstract: SVM (Support Vector Machine) is a popular machine-based learning method, with wide applicability and excellent generalization performance in a large number of real-time classification problems. However, SVM is sensitive to the noise and outliers. As an improved algorithm based on SVM, FSVM (Fuzzy Support Vector Machine) gives the training samples different fuzzy membership values in order to reduce the interference of the noise and outliers. However, like the normal SVM algorithm, the FSVM algorithm still needs to solve the problems such as how to improve the accuracy of classification and how to accurately recognize the noise and outliers. In this paper, an improved FSVM of data classification algorithm (IFSVM) has been proposed. Firstly, this algorithm deletes the outliers or noise based on the average density algorithm and removes them from the samples, thus avoiding the influence of the noise to the classification accuracy. Secondly, the centers and radiuses of the two minimum hyperspheres are extracted based on the SVDD algorithm. Finally, this algorithm sets the membership function values by comparing the distance between each sample and the center of the sample's hypersphere, the distance between the sample and the opposite hypersphere center, and the distance between the two hypersphere centers. In this way, this algorithm highlights the importance of the boundary vectors, which could be support vectors for classification, and improves the classification accuracy. The experimental results show that this algorithm has improved the anti-noise ability and the accuracy of classification when compared with the normal SVM algorithm and three other FSVM algorithms. © 2018 John Wiley & Sons, Ltd.
Number of references: 54
Main heading: Support vector machines
Controlled terms: Membership functions - Vectors - Statistics
Uncontrolled terms: Accuracy of classifications - De-noising algorithm - FSVM - Fuzzy membership - Fuzzy support vector machines - Generalization performance - SVDD - SVM(support vector machine)
Classification code: 723 Computer Software, Data Handling and Applications - 921 Mathematics - 921.1 Algebra - 922.2 Mathematical Statistics
DOI: 10.1002/cpe.4893
Funding Details: Number: U1404702, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors would like to thank the anonymous reviewers for their constructive comments and suggestions. This work is supported by the National Natural Science Foundation of China (U1404702).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

451. The Generalized Power Graph of a Finite Group (*Open Access*)

Accession number: 20193207295640
Authors: Ma, Xuanlong (1); Fu, Ruiqin (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining

Issue date: July 12, 2019
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Graphs associated with groups and other algebraic structures have been actively investigated, since they have valuable applications in data mining. For a finite group G, let #G be the graph with the non-identity elements of G as the vertex set, and two vertices are adjacent if they respectively lie in two conjugate proper subgroups of G. #G is called the generalized power graph with respect to G. This paper explores how the graph theoretical properties of #G can affect on the group theoretical properties of G. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 11
Main heading: Data mining
Controlled terms: Group theory - Graph theory
Uncontrolled terms: Algebraic structures - Finite groups - Identity elements - Power graphs - Vertex set
Classification code: 723.2 Data Processing and Image Processing - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1088/1742-6596/1237/2/022040
Funding Details: Number: 11801441, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 18JK0623, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: This research was supported by National Natural Science Foundation of China (Grant No. 11801441) and Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 18JK0623).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

452. Special Waveform Analysis in Detecting Dynamic Fluid Level of Oil Well

Accession number: 20195207902083
Authors: Zhang, Nailu (1); Ren, Wukun (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electrical Engineering, Xi'an, China
Source title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
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Part number: 1 of 1
Issue title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Issue date: September 2019
Publication year: 2019
Pages: 506-510
Article number: 8911998
Language: English
ISBN-10: 0769566847
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Conference name: 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Conference date: September 27, 2019 - September 29, 2019
Conference location: Xi'an, China
Conference code: 155651
Sponsor: James Cook University Australia; LANMC; Missouri Western State University; National University of Singapore (NUS); University of Huddersfield; Xi'an Technological University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States

Abstract: A slice of special waveforms often appear in the echo signal of oil well dynamic fluid level detected by acoustic wave, but there is no relevant research on that at present. In order to deeply study these special waveforms, this paper studies and analyzes them by combining the theory of acoustic wave detection with several special waveforms collected in the process of acoustic wave detection of dynamic fluid level. Through the field verification, the relationship between the several special waveforms and the actual situation is determined, which provides another way to judge the down hole and the field situation, and has certain practical value in the future. © 2019 IEEE.
Number of references: 7
Main heading: Oil wells
Controlled terms: Signal detection - Acoustic waves
Uncontrolled terms: Acoustic detection - Acoustic wave detection - Down holes - Dynamic fluids - Echo signals - Field verifications - Wave forms
Classification code: 512.1.1 Oil Fields - 716.1 Information Theory and Signal Processing - 751.1 Acoustic Waves
DOI: 10.1109/ICCNEA.2019.00099
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

453. Application Research on Magnetic Coupling Stress Testing Technique for In-service Steel Bridge (*Open Access*)

Accession number: 20194707722142
Authors: Weng, Guangyuan (1); Shi, Yun (1); Zhang, Yumin (1); Dai, Jianbo (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an; 710065, China
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
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Issue title: World Symposium on Smart Materials and Applications, WSSMA 2019
Issue date: October 17, 2019
Publication year: 2019
Article number: 012030
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2019 World Symposium on Smart Materials and Applications, WSSMA 2019
Conference date: July 5, 2019 - July 7, 2019
Conference location: Harbin, China
Conference code: 154351
Sponsor: Harbin Engineering University (HEU); Incheon Disaster Prevention Research Center (IDPRC)
Publisher: IOP Publishing Ltd
Abstract: Magnetic effect of ferromagnetic materials was discussed, the magneto-mechanical properties of ferromagnetic materials were studied, as well, Jiles Atherton constitutive mode was studied. Through the establishment of concrete filled steel tubular arch bridge structure calculation model, analysis the boom in tension and compression of the magnetic coupling. Results show that the resultant magnetic coupling model of Q345 steel derrick, the boom and load changes, the change of the magnetic parameters is more sensitive, can be better applied to the stress testing of such components. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Ferromagnetic materials
Controlled terms: Arch bridges - Ferromagnetism - Testing - Steel bridges - Steel testing
Uncontrolled terms: Application research - Concrete filled steel tubular arch bridges - Constitutive modes - Jiles-Atherton - Magnetic effects - Magnetic parameters - Stress Testing - Tension and compression
Classification code: 401.1 Bridges - 545.3 Steel - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials
DOI: 10.1088/1757-899X/649/1/012030
Funding Details: Number: 2018JQ5073,2018JQ5184, Acronym: -, Sponsor: -; Number: 2016-29, Acronym: -, Sponsor: -; Number: 51808446, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number:

-, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province; Number: No.2019SF-266, Acronym: -, Sponsor: Key Technologies Research and Development Program;
Funding text: The work was funded by Key Research and Development Program of Shaanxi (Program No.2019SF-266), Science Project of YuLin government (Grant No. 2016-29), Shaanxi Natural Science Foundation (Grant No. 2018JQ5184, 2018JQ5073) and National Natural Science Foundation of China ((Grant No.51808446).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

454. Stick-Slip Vibration Suppression of Drill String Based on Fractional Order PID

Accession number: 20195207902028
Authors: Zhang, Qizhi (1); Xv, Shuai (1)
Author affiliation: (1) Xi'an Shiyou University, School of Electrical Engineering, Xi'an, China
Source title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Abbreviated source title: Proc. - Int. Conf. Comput. Network, Electron. Autom., ICCNEA
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Issue title: Proceedings - 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
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Pages: 468-473
Article number: 8912120
Language: English
ISBN-10: 0769566847
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Document type: Conference article (CA)
Conference name: 2nd International Conference on Computer Network, Electronic and Automation, ICCNEA 2019
Conference date: September 27, 2019 - September 29, 2019
Conference location: Xi'an, China
Conference code: 155651
Sponsor: James Cook University Australia; LANMC; Missouri Western State University; National University of Singapore (NUS); University of Huddersfield; Xi'an Technological University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: Stick-slip vibration of drill string system is one of the important reasons leading to damage of drilling tools, decrease of drilling safety and decrease of drilling efficiency. In order to suppress stick-slip vibration and analyze the mechanism of stick-slip vibration, a torsional model of drill string system with four degrees of freedom is established. A fractional order PID controller is designed. The simulation results show that the control effect of the fractional-order PID controller is better than that of the traditional PID controller, which can control the drill string system faster and better, and effectively suppress the stick-slip vibration. © 2019 IEEE.
Number of references: 12
Main heading: Drill strings
Controlled terms: Proportional control systems - Infill drilling - Three term control systems - Vibration analysis - Degrees of freedom (mechanics) - Drills - Slip forming - Controllers - Stick-slip - Electric control equipment
Uncontrolled terms: Drill string systems - Drilling efficiency - Four-degrees-of-freedom - Fraction-order PID - Fractional order - Fractional-order PID controllers - Stick-slip vibration - Torsional models
Classification code: 412 Concrete - 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 704.2 Electric Equipment - 731.1 Control Systems - 732.1 Control Equipment - 931.1 Mechanics
DOI: 10.1109/ICCNEA.2019.00092
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

455. Web service QoS prediction via exploiting locatoin and trustworthy information

Accession number: 20202308784583

Authors: Yang, Huaizhou (1); Yan, Hongdan (1); Dong, Cuilian (1)
Author affiliation: (1) Xi'an Shiyou University, College of Computer Science, Xi'an, China
Source title: 2019 IEEE 3rd International Conference on Electronic Information Technology and Computer Engineering, EITCE 2019
Abbreviated source title: IEEE Int. Conf. Electron. Inf. Technol. Comput. Eng., EITCE
Part number: 1 of 1
Issue title: 2019 IEEE 3rd International Conference on Electronic Information Technology and Computer Engineering, EITCE 2019
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Publication year: 2019
Pages: 1957-1961
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Language: English
ISBN-13: 9781728135847
Document type: Conference article (CA)
Conference name: 3rd IEEE International Conference on Electronic Information Technology and Computer Engineering, EITCE 2019
Conference date: October 18, 2019 - October 20, 2019
Conference location: Xiamen, China
Conference code: 160020
Sponsor: Global Scientific Research Association (GSRA); IEEE; Jimei University; Shanghai University of Engineering Science
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: When historical matrix is very sparse and matrix data is unreliable due to untrustworthy service users, the QoS prediction results is inaccurate. In this study, a method to prediction Web service QoS is presented through exploiting location and trustworthy information. Firstly, for obtaining candidate untrustworthy users, QoS similar users and geographically similar users, the QoS information and user geographic information are divided by K-means clustering algorithm. And then, the unknown service QoS values are predicted by using the QoS information of similar users only from trustworthy users. Comprehensive experiments are conducted on a real-world Web service QoS dataset. The experimental results indicate that our method outperforms the other QoS prediction methods. © 2019 IEEE.
Number of references: 17
Main heading: Web services
Controlled terms: Forecasting - Matrix algebra - Websites - K-means clustering
Uncontrolled terms: Geographic information - Qos predictions - Real world web
Classification code: 903.1 Information Sources and Analysis - 921.1 Algebra
DOI: 10.1109/EITCE47263.2019.9094937
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

456. Seismic Effect Research of Seismic Measures for Beam Bridge under Different Earthquakes (*Open Access*)

Accession number: 20194707722143
Authors: Zhang, Yu-Min (1); Weng, Guang-Yuan (1); Shi, Yun (1); Dai, Jian-Bo (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an; 710065, China
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Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
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Language: English
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Conference location: Harbin, China
Conference code: 154351
Sponsor: Harbin Engineering University (HEU); Incheon Disaster Prevention Research Center (IDPRC)
Publisher: IOP Publishing Ltd
Abstract: Collision, collapse and expansion device damage are very likely to occur in bridge structures under large earthquakes. Earthquake waves with exceeding probability of 63.2%, 10%, and 2% in 100 years, as well as the Northridge earthquake and Kobe earthquake have been used to analyze the seismic response under earthquakes. The result shows that collision and collapse damage of bridge can be effectively controlled by the seismic measures. When the peak acceleration of earthquake is large and the control ability of the limit device to the excessive displacement of the structure is insufficient, the unseating prevention device can effectively make up the deficiency of the limit device to limit the excessive displacement of bridge.
Number of references: 6
Main heading: Earthquakes
Controlled terms: Seismic response
Uncontrolled terms: Bridge structures - Earthquake wave - Expansion devices - Kobe earthquake - Large earthquakes - Northridge earthquakes - Peak acceleration - Seismic effect
Classification code: 484 Seismology - 484.2 Secondary Earthquake Effects
Numerical data indexing: Age 1.00e+02yr, Percentage 1.00e+01%, Percentage 2.00e+00%, Percentage 6.32e+01%
DOI: 10.1088/1757-899X/649/1/012031
Funding Details: Number: 51808446, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2016-29,2018JQ5073,2018JQ5184, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: The work was funded by Shaanxi Natural Science Foundation (No. 2018JQ5184, 2018JQ5073), Science Project of YuLin government (No. 2016-29) and National Natural Science Foundation of China ((No.51808446).
Compendex references: YES
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Data Provider: Engineering Village

457. BrCl+ elimination from Coulomb explosion of 1,2-bromochloroethane induced by intense femtosecond laser fields (*Open Access*)

Accession number: 20194207557985
Authors: Wu, Hua (1); Xue, Yuanxin (1); Wen, Junqing (1); Wang, Hui (1); Bai, Lihua (1); He, Wanlin (1); Sun, Ruijuan (1); Zheng, Wenli (1)
Author affiliation: (1) School of Sciences, Xi'An Shiyou University, Shanxi; 710065, China
Corresponding author: Wu, Hua(whua@xsyu.edu.cn)
Source title: RSC Advances
Abbreviated source title: RSC Adv.
Volume: 9
Issue: 55
Issue date: 2019
Publication year: 2019
Pages: 31853-31859
Language: English
E-ISSN: 20462069
CODEN: RSCACL
Document type: Journal article (JA)
Publisher: Royal Society of Chemistry
Abstract: By using a dc-slice imaging technique, photodissociation of 1,2-C2H4BrCl was investigated at 800 nm looking for heteronuclear unimolecular ion elimination of BrCl+ in an 80 fs laser field. The occurrence of fragment ion BrCl+ in the mass spectrum verified the existence of a unimolecular decomposition channel of BrCl+ in this experiment. The relative quantum yield of the BrCl+ channel was measured to be 0.8%. By processing and analyzing the velocity and angular distributions obtained from the corresponding sliced images of BrCl+ and its partner ion C2H4+, we concluded that BrCl+ came from Coulomb explosion of the 1,2-bromochloroethane dication 1,2-C2H4BrCl2+. With the aid of quantum chemical calculations at the M06-2X/def2-TZVP level, the potential energy surface for BrCl+

detachment from 1,2-C2H4BrCl2+ has been examined in detail. According to the ab initio calculations, two transition state structures tended to correlate with the reactant 1,2-C2H4BrCl2+ and the products BrCl+ + C2H4+. In this entire dissociation process, the C-Br and C-Cl bond lengths were observed to elongate asymmetrically, that is, the C-Br chemical bond broke firstly, and subsequently a new Br-Cl chemical bond started to emerge while the C-Cl bond continued to exist for a while. Hence, an asynchronous concerted elimination mechanism was favored for BrCl+ detachment. © The Royal Society of Chemistry 2019.
Number of references: 33
Main heading: Chlorine compounds
Controlled terms: Quantum chemistry - Bromine compounds - Calculations - Ions - Photodissociation - Mass spectrometry - Femtosecond lasers - Potential energy
Uncontrolled terms: Ab initio calculations - Coulomb explosion - Dissociation process - Femtosecond laser field - Heteronuclear - Quantum chemical calculations - Transition state structure - Unimolecular decompositions
Classification code: 744.1 Lasers, General - 801 Chemistry - 801.4 Physical Chemistry - 921 Mathematics
Numerical data indexing: Percentage 8.00e-01%, Size 8.00e-07m, Time 8.00e-14s
DOI: 10.1039/c9ra07498h
Funding Details: Number: 2016JQ1027,2019JM296, Acronym: -, Sponsor: -; Number: 19JK0667, Acronym: -, Sponsor: -; Number: 201810705019, Acronym: -, Sponsor: -; Number: 11747111,11847138, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by University Students' Innovation and Entrepreneurship Training Program of Xi'an Shiyou University (201810705019), National Natural Science Foundation of China (Grant No. 11747111, 11847138), Natural Science Basic Research Plan in Shanxi Province of China (Grant No. 2016JQ1027, 2019JM296), and Scientic Research Program Funded by Shannxi Provincial Education Department (Grant No. 19JK0667). The authors wish to acknowledge Prof. Zhen-rong Sun and Dr Yan Yang of East China Normal University for their help on experimental design.
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

458. Image Analysis and Processing of Skin Cell Injury Based on OpenCV (*Open Access*)

Accession number: 20193307300227
Authors: Li, Gaohe (1); Zhang, Yanli (2); Xu, Bo (3); Li, Xinhao (3)
Author affiliation: (1) School of Economic Management, Xi'An Shiyou University, Xi'an; 710065, China; (2) International Business School, Shaanxi Normal University, Xi'an; 710119, China; (3) School of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
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Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
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Language: English
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: OpenCV is an open source computer vision and machine learning software library that provides a common infrastructure for computer vision applications and accelerates their use of machine awareness in commercial products[1].This paper uses the visual processing algorithm provided by OpenCV to analyze and process the image of skin cells in detail, and quantitatively determine the percentage of damaged cells in the image. First, dilation, opening operation, closing operation, coarsening, refinement, skeleton, tailoring, boundary extraction, holes filling,

connected components and so on of a variety of morphological methods are used in the process of corrosion for the graphics pretreatment. Then the watershed algorithm is adopted to image segmentation. This paper expounds the ridge algorithm to water in detail. Finally, in order to determine the proportion of damaged cells in the segmented cells, the polygonal fitting method in graphic image processing was creatively used, and the polygonal fitting method was described in detail, which successfully solved the task of the research topic.
Number of references: 8
Main heading: Application programs
Controlled terms: Computer vision - Open systems - Corrosion - Cells - Cytology - Image analysis - Coarsening - Image segmentation - Open source software
Uncontrolled terms: Boundary extraction - Closing operation - Commercial products - Computer vision applications - Connected component - Machine learning software - Visual-processing - Water-shed algorithm
Classification code: 461.2 Biological Materials and Tissue Engineering - 461.9 Biology - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 741.2 Vision - 951 Materials Science
DOI: 10.1088/1742-6596/1237/3/032003
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

459. Object Detection under Natural Illumination Conditions using Superpixels and Local Binary Pattern Feature (*Open Access*)

Accession number: 20193307300251
Authors: Zhao, Chuanyuan (1); Li, Xiangjuan (1); Zhao, Yue (1); Shi, Xiaomin (1)
Author affiliation: (1) School of Computer, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Journal of Physics: Conference Series
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Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Publication year: 2019
Article number: 032027
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: This paper proposes a novel object detection method under natural illumination conditions in which a set of features, texture features and Local Binary Pattern (LBP) features, are extracted from the images acquired by a colour camera. The goal of this study is to develop a robust and fast algorithm to detect immature green citrus fruit in individual trees from colour images acquired under natural outdoor conditions. Colour and shape features are used to remove the complex background as much as possible. Since leaves share much more similarities with green citrus fruit in colour and to some extent in the shape, texture features are used for citrus detection. Statistical features, Tamura features and LBP features are used to build the KNN classifier. Experimental results show that the proposed approach provides fairly good object detection performance and confirms an efficient way for outdoor green citrus detection.
Number of references: 17
Main heading: Object detection
Controlled terms: Citrus fruits - Image acquisition - Color - Feature extraction - Textures - Object recognition - Superpixels - Local binary pattern - Trees (mathematics)

Uncontrolled terms: Citrus detection - Complex background - Detection performance - Local binary patterns - Natural illumination - Object detection method - Statistical features - Texture features
Classification code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 821.4 Agricultural Products - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
DOI: 10.1088/1742-6596/1237/3/032027
Funding Details: Number: 61602290, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 16JK1607, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2017JQ6038, Acronym: -, Sponsor: Natural Science Basic Research Program of Shaanxi Province;
Funding text: This work was supported in part by NSFC under Grant No. 61602290, Natural Science Basic Research Program of Shaanxi Province under Grant No. 2017JQ6038, Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No. 16JK1607).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

460. Change Detection Method based on Block Similarity Measure (*Open Access*)

Accession number: 20193207295647
Authors: Li, Yu (1); Sun, Tao (1)
Author affiliation: (1) Departments of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022047
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Due to the random distribution of speckle noises in SAR images, the method based on direct pixel contrast cannot correctly judge the change of the pixels. In this paper, Convolutional Neural Network (CNN) is used to describe the multitemporal image blocks. Then the learned image block features are input into the decision network for further learning. The change detection of the whole image is completed on the basis of comparing the image blocks. The innovation of this method is that the input of the network is not the difference image produced by traditional methods, but the corresponding multitemporal image blocks. The output of the network is the judgment of the change between blocks. In addition, CNN is adopted to describe the features, which can extract the main features of the image blocks and is more robust to coherent speckle noises. This method has excellent performance in the accuracy of change detection. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 30
Main heading: Change detection
Controlled terms: Synthetic aperture radar - Pixels - Speckle - Radar imaging - Neural networks
Uncontrolled terms: Block similarity - Change detection - Decision network - Difference images - Image block feature - Multi-temporal image - Random distribution - Speckle noise
Classification code: 716.2 Radar Systems and Equipment - 741.1 Light/Optics
DOI: 10.1088/1742-6596/1237/2/022047
Funding Details: Number: 17JK0595, Acronym: -, Sponsor: -; Number: 2018JM6093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;

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

461. A data transmission method of digital oilfield monitoring system based on Internet of Things (*Open Access*)

Accession number: 20193207296115
Authors: Wang, Jingyi (1); Sun, Xuhua (1); Bu, Hongbo (1); Fu, Xu (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Article number: 022065
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: To combat the effects that artificial patrols oilfield, artificial inputs production data and the accident is not handed in time, a novel data transmission method is proposed for digital oilfield to make data safe and reliable. Firstly, an oilfield monitoring system based on the Internet of Thing is introduced. Then the proposed method introduces a threshold and only forwards those data which meet the requirements. Furthermore, the proposed data transmission strategy is discussed in detail. It is shown in simulation that the gap between the gain performance of the proposed strategy with the optimal threshold and error-free relay station is only 0.01 dB at BER = 10-6. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 7
Main heading: Internet of things
Controlled terms: Data communication systems - Oil fields - Data transfer - Monitoring - Artificial intelligence
Uncontrolled terms: Data transmission strategies - Digital oilfield - Gain performance - Monitoring system - Optimal threshold - Production data - Relay stations
Classification code: 512.1.1 Oil Fields - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence
Numerical data indexing: Decibel 1.00e-02dB
DOI: 10.1088/1742-6596/1237/2/022065
Funding Details: Number: 201819040, Acronym: -, Sponsor: -; Number: 18JK0626, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by Innovation and Entrepreneurship Training program for college student of Shaanxi Province (201819040) and Special Scientific Research project of education department of Shaanxi Province (18JK0626).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

462. Research on the Algorithm of Oil Well Liquid Level Depth Measurement Based on the Echo Method (*Open Access*)

Accession number: 20193207295605
Authors: Wang, Kuisheng (1); Guan, Xin (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022005
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Measuring the depth of oil well fluid level is an important basis for realizing the reasonableness of oil well mining method, and measuring it accurately can provide an important guarantee for the reasonableness of oil well mining method. In this paper, several methods of measuring the depth of oil well liquid level are briefly introduced, and a method of calculating the depth of oil well liquid level based on the location of tubing coupling by The Echo Method is proposed, and the method is proved to be accurate. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 5
Main heading: Liquids
Controlled terms: Oil wells - Data mining
Uncontrolled terms: Echo methods - Liquid level - Mining methods - Well fluids
Classification code: 512.1.1 Oil Fields - 723.2 Data Processing and Image Processing
DOI: 10.1088/1742-6596/1237/2/022005
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

463. Discussion on bearing capacity inspection of prefabricated concrete components (*Open Access*)

Accession number: 20195207942375
Authors: Cheng, Kaikai (1); Song, Meimei (1); Shi, Yun (1); Zhang, Yumin (1); Huang, Jingjing (1)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an Shannxi; 710065, China
Corresponding author: Cheng, Kaikai(chengkaikai_1990@126.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.
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Issue title: 2019 International Conference on Advances in Civil Engineering, Energy Resources and Environment Engineering - 2. Building Technology Science, Structural Engineering and Underground Facilities
Issue date: November 11, 2019
Publication year: 2019
Article number: 022090
Language: English
ISSN: 17551307

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Document type: Conference article (CA)
Conference name: 2019 International Conference on Advances in Civil Engineering, Energy Resources and Environment Engineering, ACCESE 2019
Conference date: June 28, 2019 - June 30, 2019
Conference location: Changchun, Jilin, China
Conference code: 155900
Publisher: IOP Publishing Ltd
Abstract: The main inspection projects of prefabricated components are its structural performance inspection. For prefabricated concrete components, its structural performance inspection items include strength index (capacity), stiffness index (deformation) and crack resistance index. This paper described the performance inspection of profabricated concrete components in detail, discussed the bearing capacity inspection and some suggestion are given. All this can provide references for prefabricated yard, supervision department and quality assurance department.

Number of references: 9
Main heading: Inspection
Controlled terms: Concretes - Quality assurance - Bearing capacity
Uncontrolled terms: Concrete components - Crack resistance - Prefabricated components - Prefabricated concrete components - Quality Assurance Department - Stiffness index - Strength indexes - Structural performance
Classification code: 412 Concrete - 913.3 Quality Assurance and Control
DOI: 10.1088/1755-1315/330/2/022090
Funding Details: Number: 2019JQ-055,2019JQ-462, Acronym: -, Sponsor: -;
Funding text: Authors wishing to acknowledge assistance from the Natural Science Basic Research Program of Shaanxi (Program No. 2019JQ-055 and 2019JQ-462).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

464. Performance Analysis of Various Activation Functions in Artificial Neural Networks (*Open Access*)

Accession number: 20193207295630
Authors: Feng, Jianli (1); Lu, Shengnan (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
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Article number: 022030
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ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The development of Artificial Neural Networks (ANNs) has achieved a lot of fruitful results so far, and we know that activation function is one of the principal factors which will affect the performance of the networks. In this work, the role of many different types of activation functions, as well as their respective advantages and disadvantages

and applicable fields are discussed, so people can choose the appropriate activation functions to get the superior performance of ANNs.
Number of references: 16
Main heading: Neural networks
Controlled terms: Activation analysis - Chemical activation
Uncontrolled terms: Activation functions - Know-that - Performance analysis - Principal factors
Classification code: 802.2 Chemical Reactions - 804 Chemical Products Generally
DOI: 10.1088/1742-6596/1237/2/022030
Funding Details: Number: 2018SF-409, Acronym: -, Sponsor: -;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

465. Adaptive iterative learning control for a class of fractional-order nonlinear systems (*Open Access*)

Accession number: 20194607694792
Authors: Hao, Xiuqing (1); Liu, Xiaoli (1)
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
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Part number: 1 of 1
Issue: 1
Issue title: 2nd International Conference on Physics, Mathematics and Statistics
Issue date: October 14, 2019
Publication year: 2019
Article number: 012079
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2nd International Conference on Physics, Mathematics and Statistics, ICPMS 2019
Conference date: May 22, 2019 - May 24, 2019
Conference location: Hangzhou, China
Conference code: 153685
Publisher: IOP Publishing Ltd
Abstract: Based on the discussions on the properties of fractional integral and Caputo fractional derivative, an adaptive iterative learning control approach is proposed for a class of fractional-order nonlinear system (FONS) with unknown time-varying parameter. With the design of learning controller and adaptive learning law for unknown parameter, the tracking error sequence converges to zero in the iteration domain while all the closed-loop signals remain bounded. Finally, a numerical example is given to verify the validity of the designed method. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 12
Main heading: Iterative methods
Controlled terms: Differentiation (calculus) - Numerical methods - Time varying control systems - Two term control systems - Learning algorithms - Adaptive control systems - Nonlinear systems - Learning systems
Uncontrolled terms: Adaptive iterative learning control - Adaptive learning - Caputo fractional derivatives - Closed-loop signals - Fractional integrals - Fractional-order nonlinear systems - Learning controllers - Time varying parameter
Classification code: 723.4.2 Machine Learning - 731.1 Control Systems - 921.2 Calculus - 921.6 Numerical Methods - 961 Systems Science
DOI: 10.1088/1742-6596/1324/1/012079
Compendex references: YES
Open Access type(s): All Open Access, Bronze

Database: Compendex
Data Provider: Engineering Village

466. Research on Early Intelligent Warning Method of Lost Circulation Risk Based on SVM and PSO

Accession number: 20191506743472
Authors: Xu, Yingzhuo (1); Huan, Bian (1)
Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
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Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
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Publication year: 2019
Pages: 593-596
Article number: 8669597
Language: English
ISBN-13: 9781538653944
Document type: Conference article (CA)
Conference name: 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Conference date: January 12, 2019 - January 13, 2019
Conference location: Changsha, China
Conference code: 146381
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: For the traditional lost circulation early warning methods (such as expert system method and neural network method), there are problems such as difficulty in obtaining knowledge, poor real-time, large amount sample or easy to appear local optimal solution. An early intelligent warning method based on SVM and PSO is proposed, the method first establishes the lost circulation risk warning model based on SVM, and then uses PSO's powerful global search capability to optimize the parameters of SVM model to effectively solve the blindness of SVM model parameter optimization selection, and make the lost circulation early warning model based on SVM-PSO optimal. Tested by an oilfield measured data, the results show that the early warning method can predict the risk data in time, and has high prediction accuracy, which can meet the needs of drilling field applications. © 2019 IEEE.
Number of references: 9
Main heading: Support vector machines
Controlled terms: Expert systems - Particle swarm optimization (PSO) - Risk assessment
Uncontrolled terms: Early warning - Early-warning method - Early-warning models - Global search capability - Local optimal solution - Lost circulation - Neural network method - Parameter optimization
Classification code: 723 Computer Software, Data Handling and Applications - 723.4.1 Expert Systems - 914.1 Accidents and Accident Prevention - 921.5 Optimization Techniques
DOI: 10.1109/ICITBS.2019.00148
Funding Details: Number: 51574194, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

467. Faulty Diagnosis of Network Video Surveillance System of X Vocational Education Centre, XI'AN (*Open Access*)

Accession number: 20194107521296
Authors: Liu, Junfeng (1)
Author affiliation: (1) Department of Economics and Management, Xi'an ShiYou University, Xi'an, China
Corresponding author: Liu, Junfeng(liujunfeng98@126.com)
Source title: Journal of Physics: Conference Series

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Publication year: 2019
Article number: 022021
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th Annual International Conference on Information System and Artificial Intelligence, ISAI 2019
Conference date: May 17, 2019 - May 18, 2019
Conference location: Changsha, Hunan, China
Conference code: 152110
Publisher: IOP Publishing Ltd
Abstract: Aiming at the problems of the projects of government procurement of computer network video surveillance systems in terms of design, construction, management have been existing, this paper would found them through a survey with help of instruments, such as Network Connectivity Tester, etc. diagnosing the faults of the network Video Surveillance System of X vocational education centre in Xi'an. These problems include the faulty of network topology design, not standardized network engineering construction, material use issues and problems of not clear video surveillance images, and the author makes recommendations related to repair of the video surveillance system for accumulating experiences for improving management of government procurement project and raising the quality of network integration construction. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 13
Main heading: Monitoring
Controlled terms: Project management - Apprentices - Image enhancement - Security systems
Uncontrolled terms: Government procurement - Network connectivity - Network engineering - Network integration - Network topology designs - Video surveillance - Video surveillance systems - Vocational education
Classification code: 912.2 Management - 912.4 Personnel - 914.1 Accidents and Accident Prevention
DOI: 10.1088/1742-6596/1302/2/022021
Funding Details: Number: -, Acronym: MPS, Sponsor: Ministry of Public Security of the People's Republic of China;
Funding text: [1] Jiaxing Yang, Design and Implementation of Wireless Video Surveillance System in Coal Mine, Coal Technology, pp. 133-134, May 2013. [2] LiangTao Song, Embedded Network Video Surveillance System Based on Web Technology,Information & Communications, pp. 92-93, July 2015. [3] Xiaoqing Luo, Shangping He and Zhongzhuang Wang, Research on Network VideoSurveillance System Based on Da Vinci Platform, Natural Sciences Journal of HARBIN NORMAL UNIVERSITY, pp. 66-69, Mar 2015. [4] HouYun Zhang, Discussion on design and implementation with the specification of videosurveillance system in Smart City, Electronics and Software Engineering, pp. 63, Nov 2015. [5] AngQian Wang and Hang Chen, Video Surveillance System Fault Detection, Police Technology, pp. 66-69, April 2011. [6] Yangang Lü, Hongrui ZHANG, Jun ZHANG and Hongliang Wang, Intelligent Surveillance System Used for Protecting the Security of Laboratory, Research and Exploration in Labora-tory, pp. 204-207, June 2011. [7] Baidu Library, Integrated network cabling full manual, Information on http://wenku.baidu.com/view/1d9d58f5ba0d4a7302763a71.html. [8] Zheng Zhao, Ying Liu, BuPing Geng, Application of Network IT in centralized control system transformation in Xiaonan Coal Preparation Plant, Technology Innovation and Application, pp. 66-67, Dec 2015. [9] Jiaquan Zhang, Cabling System Design in Tianjin Xianshuigu Hospital, Tianjin: TianJin University, 2012. [10] Minhua Cai. Design and application of a primary security system and cabling system, HangZhou: ZheJiang University Technology, 2013. [11] CISCO, Textbook of Network Technology, Peking: Press of RenMin Post, 2002. [12] Xiaoqun Qiu, Solutions of Campus Video Surveillance System, Technology Trend, pp. 81, Sep 2011. [13] XinTAI Technology Co. Ltd, Science and Technology Achievement Project of Ministry of Public Security: XinTai video surveillance system fault detection server. Police Technology, pp. 75, June 2011.
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

468. Research on Well Trajectory Optimization Design Based on Ant Colony Algorithm (*Open Access*)

Accession number: 20193207296106
Authors: Xu, Yingzhuo (1); Li, Chengyuan (1); Wang, Liupeng (1)
Author affiliation: (1) Institute of Computer, Xi'An Shiyou University, Shaanxi, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
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Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022056
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The intelligent optimization algorithm designed for the current drilling well trajectory has shortcomings such as slow convergence rate and easy to fall into local optimal solution. This paper proposes an optimization method based on ant colony algorithm for well trajectory optimized design. Firstly, the three-stage well trajectory optimization design is taken as an example. The shortest space curve length is the optimization target, and the vertical depth, well angle and azimuth angle are used as constraints to establish the optimal mathematical model of the well trajectory. Then the ant colony algorithm is used to find the optimal parameters of the well trajectory under the constraint conditions, so as to realize the optimization of the well trajectory design.
Number of references: 6
Main heading: Trajectories
Controlled terms: Ant colony optimization - Curve fitting - Artificial intelligence - Aerodynamics
Uncontrolled terms: Ant colony algorithms - Constraint conditions - Intelligent optimization algorithm - Local optimal solution - Optimal parameter - Optimization method - Optimized designs - Slow convergences
Classification code: 651.1 Aerodynamics, General - 723.4 Artificial Intelligence - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1088/1742-6596/1237/2/022056
Funding Details: Number: 51574194, Acronym: AIC, Sponsor: Innovative Research Group Project of the National Natural Science Foundation of China; Number: 17JK0609, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Provincial Department of Education;
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Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

469. Design and Experiment of High-speed Deep Hole Drilling for Difficult-to-Cut Materials (*Open Access*)

Accession number: 20191606809256
Authors: Zhu, Lin (1); Dong, Zhiwei (1); Pan, Deshu (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Shaanxi; 710065, China
Corresponding author: Zhu, Lin(337226591@qq.com)
Source title: IOP Conference Series: Earth and Environmental Science
Abbreviated source title: IOP Conf. Ser. Earth Environ. Sci.

Volume: 242
Part number: 3 of 6
Issue: 3
Issue title: 4th International Conference on Energy Equipment Science and Engineering - Energy Equipment and Mechanical Dynamics
Issue date: April 1, 2019
Publication year: 2019
Article number: 032025
Language: English
ISSN: 17551307
E-ISSN: 17551315
Document type: Conference article (CA)
Conference name: 2018 4th International Conference on Energy Equipment Science and Engineering, ICEESE 2018
Conference date: December 28, 2018 - December 30, 2018
Conference location: Xi'an, China
Conference code: 147102
Publisher: IOP Publishing Ltd
Abstract: Objective: Difficult-to-cut materials are the mainstream of the current machining research. The purpose of the study is to apply high speed deep hole drilling technology to difficult-to-cut materials, but ordinary high-speed drilling technology can not deal with problems of difficult-to-cut materials in the field of processing. Materials and Method: The study starts with multi-edge BTA deep hole drilling for its greatest advantage in cutting TC4 - the most typical difficult-to-cut materials. This paper proposes a viewpoint for reducing the friction force of the guide block so as to improve the cutting speed. Results: By means of testing, the author obtains the function relation between the tooth width of drilling bits and the force in cutting titanium alloy and redesigns the width and position of the high-speed deep-hole drilling bit, completing the cutting tooth material and the geometric angle of the cutting tooth. Conclusion: He verifies the viewpoint and optimizes the parameters of the drilling bit. These provide the theoretical basis for the design of high-speed deep-hole drilling bits. © 2019 Published under licence by IOP Publishing Ltd.
Number of references: 14
Main heading: Friction
Controlled terms: Speed - Titanium alloys - Bits - Infill drilling
Uncontrolled terms: Cutting speed - Cutting teeth - Deep hole drilling - Difficult-to-cut materials - Drilling bit - Friction force - High Speed - High speed drilling
Classification code: 511.1 Oil Field Production Operations - 542.3 Titanium and Alloys - 603.2 Machine Tool Accessories
DOI: 10.1088/1755-1315/242/3/032025
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

470. Application of Grey Relation Analysis Theory to Choose High Reliability of the Network Node (*Open Access*)

Accession number: 20193307300026
Authors: Wang, Xuelong (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Shaanxi; 710065, China
Corresponding author: Wang, Xuelong(wxl3029@126.com)
Source title: Journal of Physics: Conference Series
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Article number: 032056
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Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The research on resource sharing network safety problem mainly refers to the concept of trust management in distributed systems, and uses trust management method to realize secure access to shared services and data, etc. This paper describes the method of the grey correlation analysis theory that is used to calculate a reliable resource node trust value, and applies it in the access nodes feedback recommendation algorithm to adjust the recommended resource node trust value. The simulation results show that the method can obviously improve the success rate of resource searching. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 5
Main heading: Information management
Controlled terms: Reliability analysis - Computation theory - Reliability theory
Uncontrolled terms: Distributed systems - Grey correlation analysis - Grey relation analysis - High reliability - Recommendation algorithms - Resource searching - Trust management - Trust management methods
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 922.2 Mathematical Statistics
DOI: 10.1088/1742-6596/1237/3/032056
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

471. Adsorption behavior of graphene-like ZnO monolayer with oxygen vacancy defects for NO2: A DFT study

Accession number: 20193307323906
Authors: Chen, Haixia (1); Qu, Yongfeng (1); Ding, Jijun (1); Fu, Haiwei (1)
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an; Shaanxi; 710065, China
Corresponding author: Chen, Haixia(chxia8154@163.com)
Source title: Superlattices and Microstructures
Abbreviated source title: Superlattices Microstruct
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Article number: 106223
Language: English
ISSN: 07496036
E-ISSN: 10963677
CODEN: SUMIEK
Document type: Journal article (JA)
Publisher: Academic Press
Abstract: As a new two-dimensional (2D) material, the adsorption properties of the graphene-like ZnO monolayer have not been fully known. In this work, the band structures and electronic properties of NO2 molecule adsorbed onto defective ZnO monolayer are investigated by using Density Functional Theory (DFT). Firstly, the geometry structure of ZnO are optimized to obtain the most stable adsorption configuration. Then, the adsorption energy, band structure spectrum, electronic structure, charge transfer and magnetism are calculated. Finally, in order to further understand the interaction between NO2 molecule and ZnO monolayer, the total density of states (TDOS) and the partial density of states (PDOS) of ZnO monolayer before and after NO2 adsorption are investigated. The results imply that the electronic properties of the ZnO monolayer can be effectively tuned by absorbing NO2. Based on calculation results, adsorption mechanism is proposed. © 2019 Elsevier Ltd
Number of references: 33
Main heading: Density functional theory
Controlled terms: Electronic properties - Structural properties - Zinc oxide - Adsorption - Charge transfer - Band structure - II-VI semiconductors - Molecules - Oxygen - Defects - Graphene - Monolayers - Nitrogen oxides - Electronic structure

Uncontrolled terms: Adsorption behavior - Adsorption mechanism - Adsorption properties - Calculation results - Oxygen vacancy defects - Partial density of state - Total density of state - Two Dimensional (2 D)
Classification code: 408 Structural Design - 712.1 Semiconducting Materials - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics - 951 Materials Science
DOI: 10.1016/j.spmi.2019.106223
Funding Details: Number: YCS18211019, Acronym: -, Sponsor: -; Number: 2016JQ5037,2019GY-170,2019GY-176, Acronym: -, Sponsor: -; Number: 16JK1601, Acronym: -, Sponsor: -; Number: 11447116,11804273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Authors thanks Professor Jianhong Peng of Qinghai Nationalities University for his help in software simulation calculation. This work is supported by the National Natural Science Foundation of China (Grant No. 11804273; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170; 2019GY-176; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS18211019).This work is supported by the National Natural Science Foundation of China (Grant No. 11804273 ; 11447116), Science and Technology Plan Program in Shaanxi Province of China (Grant No. 2019GY-170 ; 2019GY-176 ; 2016JQ5037), Special Program for Scientific Research of Shaanxi Educational Committee (Grant No. 16JK1601), Graduate Student Innovative and Practical Ability Training Program of Xi'an Shiyou University (Grant No. YCS18211019).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

472. Detection of weak signal-to-noise ratio signal while drilling based on duffing chaotic oscillator

Accession number: 20202608861584
Authors: Yang, Yi (1, 2); Chen, Jia (1, 2); Gao, Yi (1, 2); Fan, Heng (1, 2)
Author affiliation: (1) Xi'An Shiyou University, Department of Electronic Engineering, Xi'an, China; (2) Xi'An Shiyou University, Key Laboratory of Measurement and Control Technology for Oil and Gas Wells in Shaanxi Province, Xi'an, China
Source title: Proceedings - 2019 6th International Conference on Information Science and Control Engineering, ICISCE 2019
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Part number: 1 of 1
Issue title: Proceedings - 2019 6th International Conference on Information Science and Control Engineering, ICISCE 2019
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Pages: 1027-1031
Article number: 9107736
Language: English
ISBN-13: 9781728157122
Document type: Conference article (CA)
Conference name: 6th International Conference on Information Science and Control Engineering, ICISCE 2019
Conference date: December 20, 2019 - December 22, 2019
Conference location: Shanghai, China
Conference code: 160767
Sponsor: et al.; IEEE; Shanghai Lixin University of Accounting and Finance; Shanghai Pudong New Area Association For Computer; Swinburne University of Technology; Wayne State University
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In the process of drilling, the strong vibration and rapid rotation of bottom drilling tools lead to multi-frequency and high-amplitude interference signals in attitude measurement signals. The problems of weak original signal amplitude and very low signal-to-noise ratio are always the technical difficulties in the field of while-drilling measurement. To solve this problem, a Duffing chaotic system detection method suitable for weak signal recognition while drilling is proposed in this paper. Firstly, the frequency reconstruction of downhole measurement signal is realized by scale transformation, and a weak signal detection model based on variable-scale Duffing oscillator is established, so that the measured signal meets the restriction of frequency parameters of this method. Then, in order

to solve the influence of initial phase of measured signal on the accuracy of detection model, different periodic driving forces are introduced. The Duffing equation is solved to get the detection model of all-phase coverage measurement signals. Finally, the simulation results of the laboratory vibration platform system show that the signal-to- noise ratio of weak signals detected by this method can be as low as -20dB, which provides a new solution for the detection of strong vibration weak signals while drilling. © 2019 IEEE.
Number of references: 10
Main heading: Signal to noise ratio
Controlled terms: Simulation platform - Chaotic systems - Infill drilling - Signal detection - Oscillators (mechanical)
Uncontrolled terms: Attitude measurement - Downhole measurements - Frequency parameters - Low signal-to-noise ratio - Periodic driving forces - Scale transformation - Technical difficulties - Weak signal detection
Classification code: 511.1 Oil Field Production Operations - 601.1 Mechanical Devices - 716.1 Information Theory and Signal Processing - 723.5 Computer Applications - 961 Systems Science
Numerical data indexing: Decibel -2.00e+01dB
DOI: 10.1109/ICISCE48695.2019.00207
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

473. Analysis of perforation liquid pressure pulsation law considering complex boundary conditions at the bottom of a well

Accession number: 20200708184304
Title of translation:
Authors: Li, Mingfei (1); Dou, Yihua (1); Cao, Yinping (1); Yu, Yang (1); Cao, Ting (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Dou, Yihua
Source title: Zhendong yu Chongji/Journal of Vibration and Shock
Abbreviated source title: J Vib Shock
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Issue: 24
Issue date: December 28, 2019
Publication year: 2019
Pages: 189-196
Language: Chinese
ISSN: 10003835
Document type: Journal article (JA)
Publisher: Chinese Vibration Engineering Society
Abstract: Perforation detonation shock and pressure pulsation often lead to accidents, such as bend and break of the column of the emission hole because of vibration. The high pressure of the perforating liquid and the narrow casing boundary that affect the shock wave propagation, and the influence of interference caused by the dense arrangement of perforating bullets were considered.Furthermore, continuity of shock wave propagation at phase change interface was also considered. An initial pressure analysis method of the shock wave was established according to the Tait equation. The law of shock wave propagation was clarified and an analytical method of direct shock wave was established, which both consider the narrow boundary conditions of casings. According to the principle of shock wave reflection, the approximate graphic method was used for solving the parameters of the perforation liquid and the casing interface. The pressure pulsation analysis method was established by applying the superposition principle of direct and reflected waves. After actual perforation verification, the results show that the reflected wave pressure is significantly larger than the incident wave pressure, and the reflected wave pressure decreases with the explosion distance. When perforating bullets are arranged in 16 holes/m, the four nearby bombs affect the shock wave generated by a certain bomb, and the rest can be neglected. The pressure decay is increased by the initial pressure time of the perforating liquid by 30 μs.
Number of references: 17
Main heading: Graphic methods
Controlled terms: Wave propagation - Explosives - Blasting - Bombs (ordnance) - Liquids - Underwater explosions - Shock waves
Uncontrolled terms: Analytical method - High-pressure fluids - Initial pressure - Narrow boundary - Phase-change interface - Pressure pulsation - Shock wave reflection - Superposition principle

Classification code: 404 Civil Defense and Military Engineering - 472 Ocean Engineering - 931 Classical Physics; Quantum Theory; Relativity
Numerical data indexing: Time 3.00e-05s
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Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

474. Research on the incremental learning SVM algorithm based on the improved generalized KKT condition (*Open Access*)

Accession number: 20193207295900
Authors: Xie, Wenhao (1, 2); Liang, Gongqian (1); Yuan, Pengcheng (3)
Author affiliation: (1) School of Management, Northwestern Polytechnical University, Xi'an, Shaanxi; 710129, China; (2) School of Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China; (3) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Xie, Wenhao(xwhaoxwhao@163.com)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
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Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
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Language: English
ISSN: 17426588
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to adapt to the classification of the large-scale data and the dynamic data, this paper proposes an incremental learning strategy of SVM called GGKKT-ISVM algorithm based on the generalized KKT condition. The algorithm sets the generalized extension factors by the samples distribution density in order to make the useful samples become new support vectors, and it trains a new classifier. Then this algorithm modifies the classifier secondly, and it can not only keep the historical classification information, also can make full use of the new samples' information, and structure the classifier that has stronger generalization ability. The experimental results show that the algorithm has a good classification effect. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 16
Main heading: Classification (of information)
Controlled terms: Support vector machines - Learning algorithms
Uncontrolled terms: Classification informations - Distribution density - Extension factors - Generalization ability - Incremental learning - Large scale data - Support vector - SVM algorithm
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.4.2 Machine Learning - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1237/2/022150
Funding Details: Number: 15JK1587, Acronym: -, Sponsor: -;
Funding text: This research was financially supported by the Shaanxi Province Education Department Foundation (Grant NO.15JK1587).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

475. Research and Analysis of Blockchain Data (*Open Access*)

Accession number: 20193207296134
Authors: Yang, Xiaojing (1); Liu, Jinshan (1); Li, Xiaohe (1)
Author affiliation: (1) College of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022084
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Blockchain technology is characterized by anti-counterfeiting, non-tampering and easy to implement smart contracts, and is known as a new technology that will lead to social change. Therefore, the study of data in blockchain has important theoretical and practical significance. The author proposes a three-layer model from the perspective of data analysis; on the basis of this model, the data structure and data type of blockchain, as well as the data structure and operation principle of smart contract are studied. Finally, the seven problems and correlations of blockchain data analysis are summarized.
Number of references: 12
Main heading: Blockchain
Controlled terms: Smart contract - Data handling - Data structures - Information use - Information analysis
Uncontrolled terms: Anti-counterfeiting - Data type - Research and analysis - Social changes - Three-layer models
Classification code: 723.2 Data Processing and Image Processing - 723.3 Database Systems - 902.3 Legal Aspects - 903.1 Information Sources and Analysis - 903.3 Information Retrieval and Use
DOI: 10.1088/1742-6596/1237/2/022084
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

476. A new type of duffing oscillator for weak signal detection

Accession number: 20202408809790
Authors: Liu, Xuanchao (1); Wang, Mengmeng (1)
Author affiliation: (1) Electronic Engineering College, Xi'An Shiyou University, Shaanxi Province, Xi'an, China
Corresponding author: Liu, Xuanchao(13186172127@163.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 the 2nd International Conference on Information Technologies and Electrical Engineering, ICITEE 2019
Issue date: December 6, 2019
Publication year: 2019
Language: English
ISBN-13: 9781450372930
Document type: Conference article (CA)

Conference name: 2nd International Conference on Information Technologies and Electrical Engineering, ICITEE 2019
Conference date: December 6, 2019 - December 7, 2019
Conference location: Zhuzhou, China
Conference code: 160411
Publisher: Association for Computing Machinery
Abstract: For the sake of weak signal detecting more effectively, this paper introduces a new type of Duffing oscillator system for weak signal detection based on researching the Duffing oscillator. Firstly, the classical Duffing equation is introduced. By comparing, a new type of Duffing equation is introduced too. Because the behavior of the new nonlinear system is very complex, two different ways are used to study, including numerical simulation by solving the differential equation for static research, and mechanical-electrical analog circuit for dynamic research. The effects of initial parameters such as signal amplitude and frequency on the condition evolution of the nonlinear system are analyzed. The results show that the new nonlinear system can more effectively detect the weak amplitude changes of special frequency input signal and suppress strong other frequency signals. Especially, the new method greatly improved detection sensitivity reduced the difficulty of the weak signal detection. © 2019 ACM.
Number of references: 12
Main heading: Nonlinear systems
Controlled terms: Differential equations - Oscillators (mechanical) - Nonlinear equations - Signal detection
Uncontrolled terms: Detection sensitivity - Duffing equations - Duffing oscillator - Dynamic researches - Electrical analog circuits - Initial parameter - Weak signal detecting - Weak signal detection
Classification code: 601.1 Mechanical Devices - 716.1 Information Theory and Signal Processing - 921.2 Calculus - 961 Systems Science
DOI: 10.1145/3386415.3387075
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

477. Application Research of Evolutionary Algorithm in Synthesis of Reversible Logic Circuits (*Open Access*)

Accession number: 20193207296133
Authors: Han, Jiaxin (1); Zhang, Xin (1); Wang, Xiaoxiao (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Issue date: July 12, 2019
Publication year: 2019
Article number: 022083
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to avoid the algorithm falling into premature convergence, a big mutation adaptive evolutionary algorithm for reversible logic circuit synthesis with tabu list is proposed. Big Mutation Variable Length Evolutionary Algorithm Reversible Logic Circuit (BM-VLEA-RLC) is based on Variable-Length Evolutionary Algorithm Reversible Logic Circuit (VLEA-RLC) algorithm that designs the corresponding fitness function, adaptive evolution probability, etc., and tests using benchmark functions. The experimental results show that the proposed algorithm can obtain several feasible solutions, and some solutions are better than the existing algorithms, which verifies the feasibility of the algorithm. © 2019 IOP Publishing Ltd. All rights reserved.

Number of references: 11
Main heading: Evolutionary algorithms
Controlled terms: Computer circuits - Logic Synthesis - Timing circuits - Artificial intelligence - Logic circuits - Logic gates - Tabu search
Uncontrolled terms: Adaptive evolution - Application research - Benchmark functions - Feasible solution - Fitness functions - Pre-mature convergences - Reversible logic circuits - Variable length
Classification code: 713.4 Pulse Circuits - 721.2 Logic Elements - 721.3 Computer Circuits - 723.4 Artificial Intelligence - 723.5 Computer Applications - 921.5 Optimization Techniques
DOI: 10.1088/1742-6596/1237/2/022083
Funding Details: Number: 17JK0595, Acronym: -, Sponsor: -; Number: 2016kw-047, Acronym: -, Sponsor: -; Number: 2018JM6093, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was financially supported by the Natural Science Basic Research Plan in Shaanxi Province of China (2018JM6093), Scientific Research Plan of Shaanxi Committee of Education (17JK0595), and Shaanxi Provincial International Co-operation and Exchanges in Science and Technology Plan Project (2016kw-047).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

478. Color Quantization Application Based on K-Means in Remote Sensing Image Processing (*Open Access*)

Accession number: 20193207269375
Authors: Cheng, Guojian (1); Wei, Junjie (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an City, China
Source title: Journal of Physics: Conference Series
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Issue title: International Conference on Advanced Algorithms and Control Engineering, ICAACE 2019 - Mathematical and Computer Modeling
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Publication year: 2019
Article number: 042012
Language: English
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Document type: Conference article (CA)
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Conference location: Guilin, China
Conference code: 148935
Publisher: IOP Publishing Ltd
Abstract: In this paper, four kinds of RGB remote sensing images are processed using color quantization algorithm based on K-Means to reduce the number of colors in the image. The color quantization algorithm is to select the most representative color and reduce the useless color in the image as much as possible. This paper assumes that the RGB remote sensing image is composed of multiple pixels. Using the K-Means algorithm to perform unsupervised clustering on these pixels with specific colors, color quantization can be realized. The use of K-Means for color quantization of remote sensing images can reduce the number of colors in those images, so that remote sensing images can be reproduced well in lower performance computer equipment. At the same time, color quantization reduces the size of remote sensing images and improves the efficiency of remote sensing image processing. © Published under licence by IOP Publishing Ltd.
Number of references: 7
Main heading: Color
Controlled terms: Remote sensing - K-means clustering - Image enhancement - Pixels - Image compression
Uncontrolled terms: Color quantization - Computer equipments - K-means - Remote sensing image processing - Remote sensing images - Unsupervised clustering

Classification code: 741.1 Light/Optics - 903.1 Information Sources and Analysis
DOI: 10.1088/1742-6596/1213/4/042012
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

479. An effective underwater image enhancement method based on CLAHE-HF (*Open Access*)

Accession number: 20193307300233
Authors: Luo, Mingshi (1); Fang, Yang (1); Ge, Yimeng (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
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Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In order to solve the problem that the unbalanced illumination and noise induce poor contrast, uneven brightness and poor clarity to underwater image, an effective underwater image enhancement method based on spatial and frequency domain is proposed in this paper. Firstly, Contrast Limited Adaptive Histogram Equalization technology is used in spatial domain to enhance the local contrast of different regions of the image according to the distribution of pixel values of each region, which can not only ensure the image texture clarity and detail characteristics, but also suppress the noise. Secondly, Homomorphic Filtering technology is used to enhance the image details and reduce the noise in the image in frequency domain. Two sets of image data that verify the effectiveness of the proposed method were provided. The experimental results show that, compared with the traditional underwater image enhancement methods, the peak signal-to-noise ratio (PSNR), mean square error (MSE) and information entropy of the proposed method are combined optimal.
Number of references: 11
Main heading: Mean square error
Controlled terms: Textures - Underwater imaging - Frequency domain analysis - Image enhancement - Image texture - Signal to noise ratio
Uncontrolled terms: Adaptive histogram equalization - Frequency domains - Homomorphic filtering - Information entropy - Local contrast - Peak signal to noise ratio - Spatial and frequency domain - Spatial domains
Classification code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 746 Imaging Techniques - 921.3 Mathematical Transformations - 922.2 Mathematical Statistics
DOI: 10.1088/1742-6596/1237/3/032009
Funding Details: Number: 2018SF, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by the Key R&D Program Projects in Shaanxi Province2018SF-
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

480. Enhancement of XNAV Utilizing Incremental Phase and Star Elevation

Accession number: 20193807445124
Title of translation: XNAV
Authors: Jiao, Rong (1); Gan, Wei (1); Xiao, Zhi-Hong (1); Cui, Zhan-Qin (1)
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Yuhang Xuebao/Journal of Astronautics
Abbreviated source title: Yuhang Xuebao
Volume: 40
Issue: 6
Issue date: June 30, 2019
Publication year: 2019
Pages: 666-672
Language: Chinese
ISSN: 10001328
CODEN: YUXUD6
Document type: Journal article (JA)
Publisher: China Spaceflight Society
Abstract: The X-ray pulsar navigation system (XNAV) is a nonlinear system. It is difficult to obtain the statistical characteristics of the process noise accurately. The improper assumption of XNAV leads to poor performance of the filter estimation. A multi-information fusion navigation method based on the adaptive divided difference filter (ADDF) is proposed. In order to reduce the navigation error, based on the traditional pulsar timing observation, the star elevation angle and the incremental phase between the two moments are appended to enhance the XNAV together. First of all, the time observation, incremental phase and star elevation model are established respectively. Then, this measurement model is integrated into the spacecraft orbit dynamics to build the ADDF filter model. Finally, the proposed method is verified by simulation. Under the condition of the same initial state and initial noise error, the experimental results show that the multi-information fusion algorithm can reduce the estimated value of navigation position error to about 200 m. Compared with the conventional X-ray pulsar navigation algorithm, the accuracy of position estimation and velocity estimation are increased by more than 70% and 40% respectively. Moreover, The performance of ADDF is better than that of the unscented Kalman filter. © 2019, Editorial Dept. of JA. All right reserved.
Number of references: 18
Main heading: Information fusion
Controlled terms: Adaptive filters - Orbits - Errors - Time of arrival - Navigation systems - Adaptive filtering - Extended Kalman filters - Pulsars
Uncontrolled terms: Divided difference filter - Multi-information fusion - Navigation methods - Position estimation - Statistical characteristics - Unscented Kalman Filter - Velocity estimation - 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 4.00e+01%, Percentage 7.00e+01%, Size 2.00e+02m
DOI: 10.3873/j.issn.1000-1328.2019.06.007
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

481. Sequence Stratigraphy towards its standardization-an important scientific scheme (*Open Access*)

Accession number: 20194907788324
Authors: Wu, Heyuan (1, 2); Khan, Muneeb (1); Song, Ping (1)
Author affiliation: (1) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China; (2) Shannxi Key Laboratory of Petroleum Accumulation Geology, Xi'an Shiyou University, Xi'an Shaanxi; 710065, China
Corresponding author: Wu, Heyuan(why@xsyu.edu.cn)
Source title: E3S Web of Conferences
Abbreviated source title: E3S Web Conf.
Volume: 131
Part number: 1 of 1
Issue title: 2nd International Conference on Biofilms, ChinaBiofilms 2019
Issue date: November 19, 2019

Publication year: 2019
Article number: 01034
Language: English
ISSN: 25550403
E-ISSN: 22671242
Document type: Conference article (CA)
Conference name: 2nd International Conference on Biofilms, ChinaBiofilms 2019
Conference date: October 10, 2019 - October 13, 2019
Conference location: Guangzhou, China
Conference code: 154545
Publisher: EDP Sciences
Abstract: In the Post-Exxon Era of sequence stratigraphy, various sequence models for the complex stratigraphic records with their response mechanisms are developed. All the models with strong pertinence are endowed, which lead to misapprehension in the conceptual system. Therefore, the standardization of sequence stratigraphy with the aim to provide consistency in the terminology has become an important motive of modern sequence. During the development of sequence stratigraphy, the identification and distinction between normal and forced regression have laid important foundation for the system description of sequence development. This becomes the first step towards the standardization because of model-independent nature. The introduction of model-independent unconventional system tracts in fluvial sequence models, which are low-and high-accommodation system tracts, which turn out to be another successful attempt of towards the standardization of sequence stratigraphy. The four parts of stratigraphic records, which include the complexity and cyclicity in the stratigraphic accumulation process; the non-gradual change and the non-integrity of the stratigraphic records; the variability represented by the diversity of the sequence models and the nature of standardization including variability, will provide more clues and approaches for further sequence stratigraphy development. © 2019 The Authors, published by EDP Sciences.
Number of references: 55
Main heading: Standardization
Controlled terms: Stratigraphy
Uncontrolled terms: Conceptual systems - Forced regression - Gradual changes - Model independent - Response mechanisms - Sequence stratigraphy - Stratigraphic records - System description
Classification code: 481.1 Geology - 902.2 Codes and Standards
DOI: 10.1051/e3sconf/201913101034
Compendex references: YES
Open Access type(s): All Open Access, Gold, Green
Database: Compendex
Data Provider: Engineering Village

482. An Improved Multidimensional Query Language for Oil and Gas Development Data Warehouse (*Open Access*)

Accession number: 20193207296116
Authors: Zhao, Jidong (1); Yao, Tingzhen (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China

Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Multidimensional data analysis is the most central technique for processing data in data warehouse and On-Line Analysis Processing (OLAP). In order to solve the problem of multi-dimensional analysis expression and query processing in oil and gas development data warehouse, this paper proposes an improved multi-dimensional query language application method to realize effective interaction between query terminal and OLAP server. This formal language has the following advantages, such as simplicity, flexibility and easy to use. It also meets the needs of multi-dimensional query for oil and gas data analysis, and has various display modes. The results can be displayed in two-dimensional space. And it provides an extended function beyond the standard MDX, simple grammar format, concise and clear semantic expression, and is conducive to query processing conversion.
Number of references: 5
Main heading: Data warehouses
Controlled terms: Query processing - Data handling - Semantics - Formal languages - Query languages
Uncontrolled terms: Application method - Display modes - Effective interactions - Multi-dimensional analysis - Multi-dimensional data analysis - Multi-dimensional queries - Online analysis processing - Two dimensional spaces
Classification code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.1.1 Computer Programming Languages - 723.2 Data Processing and Image Processing - 723.3 Database Systems
DOI: 10.1088/1742-6596/1237/2/022066
Funding Details: Number: 41301480, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: This work was financially supported by the National Natural Science Foundation of China (41301480).
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

483. Research on Students' Performance Portrait Method Based on Multidimensional Data (*Open Access*)

Accession number: 20193307300267
Authors: Ren, Changlin (1); Wang, Xuelong (1)
Author affiliation: (1) Department of Information Center, Xi'An Shiyou University, Xi'an; 710065, China
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Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
Publication year: 2019
Article number: 032043
Language: English
ISSN: 17426588
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Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: With the construction and operation of the university's intelligent application system, it also accumulates a large amount of data for colleges and universities. Many of these data are student performance data. It is of certain significance to analyze its performance characteristics through data mining technology, to realize teaching in accordance with the aptitude, intelligent management, improve the quality of education and teaching, and work efficiency. We collect data such as wireless user trajectory data, card data, and book borrowing data to analyze student performance. Construct a classification model of student performance based on cluster analysis, and analyze the

performance indicators to find the rules between performance and achievement, and improve the learning efficiency of students.
Number of references: 5
Main heading: Cluster analysis
Controlled terms: Data mining - Education computing - Efficiency - Students
Uncontrolled terms: Classification models - Colleges and universities - Data mining technology - Intelligent applications - Intelligent management - Multidimensional data - Performance characteristics - Performance indicators
Classification code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 913.1 Production Engineering
DOI: 10.1088/1742-6596/1237/3/032043
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

484. Research on network load balancing method based on simulated annealing algorithm and genetic algorithm (*Open Access*)

Accession number: 20193207295887
Authors: Yingzhuo, Xu (1); Qing Yang, Geng (1)
Author affiliation: (1) Institute of Computer, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Journal of Physics: Conference Series
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Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022137
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Due to the high burstiness and high real-time performance of modern network load, it is difficult to meet the requirements of purely simulated annealing algorithm or genetic algorithm for network resource utilization and flow control problems, resulting in low network resource utilization. Congestion is serious. In order to make network load balancing more reasonable, a method of combining simulated annealing algorithm with genetic algorithm is proposed. Firstly, the genetic algorithm is used to globally search the network load balancing problem, so that the solution of the problem is quickly in the vicinity of the global optimal region. Then the simulated annealing algorithm is used to further local optimization near the global optimal region, and the optimal solution for the network load balancing problem is found. The simulation results show that the method improves the global search speed, improves the network resource utilization, and significantly improves the network load imbalance.
Number of references: 7
Main heading: Simulated annealing
Controlled terms: Artificial intelligence - Genetic algorithms
Uncontrolled terms: Flow control problems - Local optimizations - Network load balancing - Network resource utilization - Optimal regions - Optimal solutions - Real time performance - Simulated annealing algorithms
Classification code: 537.1 Heat Treatment Processes - 723.4 Artificial Intelligence
DOI: 10.1088/1742-6596/1237/2/022137
Funding Details: Number: 51574194, Acronym: AIC, Sponsor: Innovative Research Group Project of the National Natural Science Foundation of China;

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

485. Application Research of Moving Target Detection Based on Optical Flow Algorithms (*Open Access*)

Accession number: 20193207296123
Authors: Lou, Li (1); Liang, Shuo (1); Zhang, Yanyan (1)
Author affiliation: (1) Department of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: After many years of research, optical flow algorithm has achieved good results in detecting moving objects in simple scenes, but the detection effect in some complex scenes is not ideal, for example, in scenes with changing illumination and large displacement, the accuracy of moving objects detection is low. In order to solve this problem, this paper proposes texture decomposition of images, and applies texture image and pyramid technology to Lucas-Kanade optical flow algorithm. Relevant experiments show that this method can achieve better detection results for moving objects in static scenes. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6
Main heading: Textures
Controlled terms: Optical flows - Image texture - Object detection
Uncontrolled terms: Application research - Complex scenes - Detecting moving objects - Detection effect - Large displacements - Moving objects detection - Moving target detection - Optical flow algorithm
Classification code: 723.2 Data Processing and Image Processing - 741.1 Light/Optics
DOI: 10.1088/1742-6596/1237/2/022073
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

486. Effect of Skin Layer on Electric Impedance Scanning Imaging (*Open Access*)

Accession number: 20193307300247
Authors: Zhang, Feng (1); Li, Xiangjuan (1); Duan, Bohan (1); Zhang, Chen (1); Hu, Longtao (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
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Article number: 032023
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: In study of Electric Impedance Scanning Imaging (EISI), some scholars believe that low electrical impedance of skin layer will reduce detection sensitivity of imaging system. However, in the previous numerical model analysis, there is little work to analyze the influence of skin layer. Based on actual size, electrical parameters of Chinese female breasts and detection probe structure, static electric field equation was solved by finite element method. Results show that skin layer not only reduces current detected by probe, but also significantly reduces sensitivity of probe. The smaller the conductivity of skin layer, the more obvious decrease in sensitivity. In practice, if conductivity of skin layer can be improved by some means, sensitivity of probe can be increased. Furthermore, if thickness and conductivity parameters of skin layer can be accurately obtained, and then influence of skin layer in overall EISI image can be eliminated, imaging quality and detection sensitivity of system should be significantly improved. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 7
Main heading: Electric impedance
Controlled terms: Electric impedance measurement - Probes - Electric fields - Image enhancement
Uncontrolled terms: Detection probes - Detection sensitivity - Electrical impedance - Electrical parameter - Imaging quality - Numerical modeling analysis - Scanning imaging - Static electric fields
Classification code: 701.1 Electricity: Basic Concepts and Phenomena - 942.2 Electric Variables Measurements
DOI: 10.1088/1742-6596/1237/3/032023
Funding Details: Number: 201710705047, Acronym: -, Sponsor: -; Number: 2018JM6090, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
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Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

487. Fruit tree disease recognition based on convolutional neural networks

Accession number: 20200908240102
Authors: Zheng, Zechen (1); Pan, Shaowei (1); Zhang, Yichi (1)
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an; 710065, China
Source title: Proceedings - 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Abbreviated source title: Proc. - IEEE Int. Conf. Ubiquitous Comput. Commun. Data Sci. Comput. Intell. Smart Comput., Netw. Serv., IUCC/DSCI/SmartCNS
Part number: 1 of 1
Issue title: Proceedings - 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Issue date: October 2019
Publication year: 2019
Pages: 118-122
Article number: 8982677
Language: English

ISBN-13: 9781728152097
Document type: Conference article (CA)
Conference name: 2019 IEEE International Conferences on Ubiquitous Computing and Communications and Data Science and Computational Intelligence and Smart Computing, Networking and Services, IUCC/DSCI/SmartCNS 2019
Conference date: October 21, 2019 - October 23, 2019
Conference location: Shenyang, China
Conference code: 157534
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: In order to realize the rapid and accurate recognition of fruit tree diseases in orchard environment, this paper puts forward a deep learning model based on Convolution Neural Network to identify fruit tree diseases. In this paper, the data set is processed by the Sobel operator and image enhancement respectively. Then, the network depth, convolution kernel, feature maps, and fully connected layer in the Convolution Neural Network structure use different parameters and softmax classifier. Differently composition networks are used to train processed dataset. Convolution Neural Network models are used to predict test sets, and the results show that deeper Convolution Neural Networks and mean pooling for tiny features in the dataset are more accurate. It can achieve the disease recognition, which includes cab disease, black rot, rust of apple leaves and bacterial spot disease of peach tree leaves. The model has a good recognition function for disease identification of fruit trees and can help real-time monitoring of orchard diseases.

Number of references: 16
Main heading: Image enhancement
Controlled terms: Forestry - Fruits - Convolution - Deep learning - Orchards - Multilayer neural networks - Statistical tests - Convolutional neural networks
Uncontrolled terms: Convolution kernel - Convolution neural network - Learning models - Network depths - Real time monitoring - Sobel - Sobel operator - Spot disease
Classification code: 461.4 Ergonomics and Human Factors Engineering - 716.1 Information Theory and Signal Processing - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 821.3 Agricultural Methods - 821.4 Agricultural Products - 922.2 Mathematical Statistics
DOI: 10.1109/IUCC/DSCI/SmartCNS.2019.00048
Funding Details: Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University; Number: -, Acronym: XSYU, Sponsor: Xi'an Shiyou University;
Funding text: Fig. 6. Model accuracy on three validation sets. B. The impact of different pooling methods on accuracy There are two types of pooling methods usually used: max-pooling and avg-pooling. The Convolutional Neural Networks of cnn6 and cnn7 have a total of 5 convolutional weight layers and 2 fully-connected layers. By using softmax as classifier, avg-pooling max-pooling could run respectively. The results show that it is better to use avg-pooling on train and validation than max-pooling. The max-pooling works more on texture features and deeper information of the picture, reduces accuracy of the recognition of the disease characteristics, while the avg-pooling takes mean value of the non-zero pixels in the filter region corresponding to the image, making full use of the most basic features of the picture, which is conducive to extracting the key features. Fig. 7. Comparison of Avg-pooling and max-pooling in train. Fig. 8. Comparison of Avg-pooling and max-pooling in validation. C. Different network structures and accuracy 1) Different convolution kernel sizes: Different convolution kernel sizes affect the recognition accuracy of the Convolutional Neural Network model. In Fig.9, the model accuracy of cnn5 and cnn6 is shown respectively. It can be clearly seen that the recognition accuracy of cnn6 on validation is mostly higher than that of the cnn5 model. The convolution kernel size of 7*7, 5*5 and 3*3 used in cnn6, and the convolution kernel size of cnn5 used in 3*3, which indicates that the mixed convolution kernel and the convolution kernel of 7*7 and 5*5 size have a certain improvement on accuracy of the model. Fig. 9. Effect of different convolution kernel on accuracy. 2) Different quantities of convolution feature maps: Different quantities of convolution feature maps affect the recognition accuracy of the Convolution Neural Network models. In Fig.10, the accuracy of cnn4 and cnn3 models is compared respectively, and it can be seen that the recognition accuracy of cnn4 on validation is much higher than that of cnn3 model, and comparing with the cnn4 network model, cnn3 mod-el outputs more feature maps in each convolution layer and the full-connected layer. There is some optimization for the model. Fig. 10. Effect of different number of feature maps on accuracy. 3) Different depth convolutional layers: Multilayer Convolution Neural Network has a certain improvement on accuracy of model recognition. In Fig.11, cnn6 has 5 convolution layers and 2 full-connection layers, cnn1 has 3 convolution layers and 2 full-connection layers. It is obviously that cnn6 has higher recognition accuracy than cnn1, up to 89.1%. However, the deep network will be accompanied by a large number of weight parameters, which will have certain requirements on computer hardware, so it is necessary to select a suitable depth convolutional neural network to build a model. Fig. 11. Effect of neural networks at different depths on accuracy. CONCLUSION In this paper, the disease of apple and peach trees in orchard is identified and distinguished. The characteristic of the image is visually enhanced by using the sobel operator and image enhancement. The Convolutional Neural Network with different depths is used to identify the disease of the fruit tree, and the data of cnn8 is found. The data set recognition accuracy is high, which can reach 92.1%. Since the experiment and the real environment are different, the next research direction will add

the sliding window search to identification of the Convolutional Neural Network. So a more complex situation could be judged. At the same time, the Convolutional Neural Network model is optimized, the depth of the convolutional neural network is reduced, the parameters of neural network are reduced, and hardware is added to monitor the real-time situation. ACKNOWLEDGMENT The author is a graduate student at Xi'an Shiyou Univ
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

488. Development and research based on WebRTC mobile phone video communication

Accession number: 20192607109691
Authors: Li, Gaohe (1); Ding, Yongqi (2); Xu, Bo (3); Li, Xinhao (1)
Author affiliation: (1) School of Economic Management, Xi'An Shiyou University, Xi'an; 710065, China; (2) China Mobile Group Design Institute Co., Ltd., Xi'an; 710069, China; (3) School of Petroleum Engineering, Xi'An Shiyou University, Xi'an; 710065, China
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Abbreviated source title: Proc. IEEE Inf. Technol., Netw., Electron. Autom. Control Conf., ITNEC
Part number: 1 of 1
Issue title: Proceedings of 2019 IEEE 3rd Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2019
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Language: English
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Conference date: March 15, 2019 - March 17, 2019
Conference location: Chengdu, China
Conference code: 148626
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: On the basis of summarizing and analyzing the core technical architecture of WebRTC, the function and construction process of Room Server, Signaling Server and STUN/TURN/ICE Server are emphasized. Finally, using the Java programming language, the mobile video/audio system is developed based on WebRTC on the Android Studio platform. It realizes the point-to-point real-time audio/video communication between two mobile phones, and has good effect, and it is used for reference to the rapid development of the similar audio/video services. © 2019 IEEE.
Number of references: 13
Main heading: Android (operating system)
Controlled terms: Mobile telecommunication systems - Cellular telephones - Java programming language
Uncontrolled terms: Android - Audio technologies - Java - Mobile communications - Video technologies - WebRTC
Classification code: 718.1 Telephone Systems and Equipment - 723 Computer Software, Data Handling and Applications - 723.1.1 Computer Programming Languages
DOI: 10.1109/ITNEC.2019.8729024
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

489. Experiment and Analysis of Electrode Characteristics and Electrical Parameters of Short Electric Arc Trepanning Machining of Nickel-based Superalloy (*Open Access*)

Accession number: 20194907794785
Authors: Wang, Tianlong (1); Zhang, Zhaoyuan (1)

Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, Shannxi; 710065, China
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Conference name: 2019 3rd International Conference on Electrical, Mechanical and Computer Engineering, ICEMCE 2019
Conference date: August 9, 2019 - August 11, 2019
Conference location: Guizhou, China
Conference code: 155153
Publisher: IOP Publishing Ltd
Abstract: Nickel-based Superalloy Inconel 625 is a super-strong, super-hard typical difficult-to-machine material that can be processed with high efficiency by short electric arc machining technology. In this paper, the primary and secondary factors affecting material removal rate, electrode loss and surface quality in short electric arc trepanning machining, such as power supply voltage, electrode feed amount, electrode structure and electrode material, were studied for Nickel-based Superalloy. The test results showed that: when the power supply voltage increases, the feed rate increases, the efficiency of machining work-pieces with four material electrode tip increases accordingly, and the order of influence is graphite > ductile iron > copper > 45 steel. Among the three types of graphite electrode tips, the toothed electrode tip has the highest processing efficiency, and the through hole pin electrode has the lowest loss rate. The effect of the surface properties of the Nickel-base Superalloy after short electric arc machining is only in the heat-affected layer, less increase in hardness, which has less influence on the mechanical properties of the work-piece. © Published under licence by IOP Publishing Ltd.
Number of references: 8
Main heading: Surface properties
Controlled terms: Nickel alloys - Nickel - Superalloys - Electric arcs - Electric losses - Electric power systems - Graphite electrodes - Manufacture
Uncontrolled terms: Difficult to machine materials - Electrical parameter - Experiment and analysis - Machining technology - Material removal rate - Nickel base superalloy - Nickel- based superalloys - Power supply voltage
Classification code: 531 Metallurgy and Metallography - 537.1 Heat Treatment Processes - 548.1 Nickel - 548.2 Nickel Alloys - 701.1 Electricity: Basic Concepts and Phenomena - 706.1 Electric Power Systems - 913.4 Manufacturing - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.1088/1742-6596/1314/1/012076
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

490. Finite element contact and wear analysis of stator and rotor in a screw pump

Accession number: 20191706831440
Authors: Sun, Yanping (1); Gu, Randy (2); Qu, Wentao (1); Zhao, Ning (3); Chen, Longhan (2)
Author affiliation: (1) Xi'An Shiyou University, China; (2) Oakland University, United States; (3) Northwestern Polytechnical University, United States
Source title: SAE Technical Papers
Abbreviated source title: SAE Techni. Paper.
Volume: 2019-April
Part number: 1 of 1
Issue: April
Issue title: SAE World Congress Experience, WCX 2019
Issue date: April 2, 2019
Publication year: 2019

Report number: 2019-01-0813
Language: English
E-ISSN: 01487191
Document type: Conference article (CA)
Conference name: SAE World Congress Experience, WCX 2019
Conference date: April 9, 2019 - April 11, 2019
Conference location: Detroit, MI, United states
Conference code: 146987
Publisher: SAE International
Abstract: The aim of this study is to develop a methodology to estimate the wear between rotor and stator of the screw pump, under static and transient conditions, respectively, by using a two- dimensional finite element model. Because the velocity and the contact pressure were varied at the point of contact, it made the problem nonlinear and complicated, as the plane motion of the rotor in the stator. A geometry analysis, which incorporated a finite element method is developed to solve the problem. The variation of wear with frequency, friction coefficient and also with interference is presented and discussed. © 2019 SAE International. All Rights Reserved.
Number of references: 25
Main heading: Stators
Controlled terms: Friction - Finite element method - Screws - Wear of materials - Screw pumps
Uncontrolled terms: Contact pressures - Friction coefficients - Geometry analysis - Plane motions - Point of contact - Rotor and stators - Transient conditions - Wear analysis
Classification code: 605 Small Tools and Hardware - 618.2 Pumps - 705.1 Electric Machinery, General - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
DOI: 10.4271/2019-01-0813
Funding Details: Number: 2015XT-26, Acronym: -, Sponsor: -;
Funding text: This work was supported by Collaborative Innovation Program of Shaanxi Province China (2015XT-26).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

491. Case Reasoning Based Design System for Product Packaging (*Open Access*)

Accession number: 20193307300228
Authors: Wang, Zheng (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University xi'An, Shaanxi; 710065, China
Corresponding author: Wang, Zheng(wangzheng@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
Publication year: 2019
Article number: 032004
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: The overall design procedure of product packaging is divided into 2 phases: generation of packaging design scheme and detailed design scheme, based on which, overall structure of design system for product packaging PACKAGING is designed. By using CBR technology, generation of product design scheme in PACKAGING is achieved, Meanwhile, each key technological step in generating procedure of design scheme for product packaging is discussed in detail. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 6

Main heading: Product design
Controlled terms: Manufacture - Packaging - Case based reasoning
Uncontrolled terms: Case reasoning - Design scheme - Design systems - Detailed design - Overall design - Packaging designs - Product packaging
Classification code: 537.1 Heat Treatment Processes - 694.1 Packaging, General - 913.1 Production Engineering - 913.4 Manufacturing
DOI: 10.1088/1742-6596/1237/3/032004
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

492. Calculation of Natural Frequencies on Transverse Vibration for drill strings in Non-Uniform Temperature Field (*Open Access*)

Accession number: 20193707413864
Authors: Jianqing, Ma (1); Junqiang, Li (1); Guangwei, Zhang (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, Shanxi; 710065, China
Corresponding author: Jianqing, Ma(majianqing2000@163.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 563
Part number: 5 of 5
Issue: 5
Issue title: 2019 International Conference on Advanced Electronic Materials, Computers and Materials Engineering, AEMCME 2019 - Software Engineering and Algorithm
Issue date: August 9, 2019
Publication year: 2019
Article number: 052049
Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 2019 2nd International Conference on Advanced Electronic Materials, Computers and Materials Engineering, AEMCME 2019
Conference date: April 19, 2019 - April 21, 2019
Conference location: Changsha, China
Conference code: 151050
Publisher: IOP Publishing Ltd
Abstract: It is necessary to consider the effect of temperature which changes the mechanical properties of materials when drill strings work in a non-uniform temperature field. In this paper, the natural frequencies of transverse vibration are studied under axial compression in the nonuniform temperature field. Using an asymptotic solution method, first-order approximation formula of the nonlinear vibration equation is obtained. The effects of temperature changes and axial pressure on the natural frequencies are discussed by an example. The results show that the influence of temperature on the critical load is small; change rate of natural frequency increases with the increase of axial pressure; while the axial pressures become larger, the influence of temperature on the first-order frequency is greater than on the second-order's. © Published under licence by IOP Publishing Ltd.
Number of references: 12
Main heading: Natural frequencies
Controlled terms: Infill drilling - Nonlinear equations - Temperature - Drill strings - Drills
Uncontrolled terms: Effect of temperature - Effects of temperature - First-order approximations - First-order frequency - Mechanical properties of materials - Nonlinear vibration equation - Nonuniform temperature - Nonuniform temperature field
Classification code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 641.1 Thermodynamics
DOI: 10.1088/1757-899X/563/5/052049
Funding Details: Number: 2018JM5015, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

Funding text: The support of the Shanxi Natural Science Foundation "Dynamic Characteristics Research of Closed Loop Controllable Bending Joint System Based on Rotary Steering Drilling Technology" (No. 2018JM5015) is gratefully acknowledged.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

493. Research on Information Management Model of Petroleum Enterprises under the Big Data Background (*Open Access*)

Accession number: 20193207296122
Authors: Yang, Jinquan (1)
Author affiliation: (1) Department of Computer Science, University of xi'An Shiyou, Xi'an; 710065, China
Corresponding author: Yang, Jinquan(jqyang@xsyu.edu.cn)
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022072
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Application of big data is analysed via the present information management of petroleum enterprises in this paper. The logical structure and application architecture are proposed based on hodiernal production, administration and management of oil firms in China and mainstream big data technology. Meanwhile, future applications of the information management are looked ahead under big data environment. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 5
Main heading: Big data
Controlled terms: Information management - Gasoline
Uncontrolled terms: Application architecture - Data backgrounds - Data environment - Data technologies - Future applications - Logical structure - Petroleum enterprise
Classification code: 523 Liquid Fuels - 723.2 Data Processing and Image Processing
DOI: 10.1088/1742-6596/1237/2/022072
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

494. Research on Deformation Detection Method of Oil and Gas Well Casing Based on Curve Fitting (*Open Access*)

Accession number: 20194907783669
Authors: Cuan, Ying (1); Wang, Sijie (1); Han, Jiaxin (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shaanxi; 710065, China
Corresponding author: Wang, Sijie(602164057@qq.com)
Source title: Journal of Physics: Conference Series

Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1325
Part number: 1 of 1
Issue: 1
Issue title: 2019 International Conference on Artificial Intelligence Technologies and Applications
Issue date: November 7, 2019
Publication year: 2019
Article number: 012218
Language: English
ISSN: 17426588
E-ISSN: 17426596
Document type: Conference article (CA)
Conference name: 2019 International Conference on Artificial Intelligence Technologies and Applications, ICAITA 2019
Conference date: July 5, 2019 - July 7, 2019
Conference location: Qingdao, China
Conference code: 155154
Publisher: IOP Publishing Ltd
Abstract: Wells visual inspection technique is an effective way to detect oil and gas well casing damage, due to the complicated underground environment, poor visualization, and the positional deviation of the downhole video module. The degree of deformation of the sleeve is difficult to precisely detect and quantify by visual inspection method. As a way of providing solution to the highlighted problems, this paper proposes a method based on curve fitting for oil and gas well casing deformation detection. Firstly, the casing to be detected is obtained by the proposed method of pre-sleeve image size pre-positioning. Then the canny algorithm is used to obtain the feature points of the inner diameter of the casing. Finally, the 4-direction curve fitting method proposed in this paper is used to calculate the casing deformation coefficient. Simulation experiments showed that the proposed method has a good processing effect on the detection of casing damage in oil and gas wells. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: Curve fitting
Controlled terms: Damage detection - Deformation - Natural gas wells
Uncontrolled terms: Casing deformation - Curve fitting methods - Deformation detection - Degree of deformations - Processing effects - Underground environment - Visual inspection - Visual inspection method
Classification code: 512.2.1 Natural Gas Fields - 921.6 Numerical Methods
DOI: 10.1088/1742-6596/1325/1/012218
Funding Details: Number: 2019KW-045, Acronym: -, Sponsor: Key Research and Development Program of Jiangxi Province;
Funding text: This work was supported by the Key Research Development Program of Shaanxi Province (2019KW-045).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

495. Simulation research on measurement method of geometric parameters of non-contact pipe thread (*Open Access*)

Accession number: 20202008673350
Authors: Liu, Yanshu (1); Li, Wenjie (1); Song, Ziyang (1); Li, Zhong (1)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710000, China
Corresponding author: Li, Wenjie(501615341@qq.com)
Source title: IOP Conference Series: Materials Science and Engineering
Abbreviated source title: IOP Conf. Ser. Mater. Sci. Eng.
Volume: 688
Part number: 3 of 5
Issue: 3
Issue title: 3rd International Conference on Traffic Engineering and Transportation System - 2. Vehicle Engineering
Issue date: December 6, 2019
Publication year: 2019
Article number: 033037

Language: English
ISSN: 17578981
E-ISSN: 1757899X
Document type: Conference article (CA)
Conference name: 3rd International Conference on Traffic Engineering and Transportation System, ICTETS 2019
Conference date: September 20, 2019 - September 22, 2019
Conference location: Jiaozuo, China
Conference code: 156507
Publisher: IOP Publishing Ltd
Abstract: In order to ensure that the pipe thread exerts its good sealing and transmission performance in the oil and gas pipeline, it is essential to judge the geometric parameters of the pipe thread. The experiment uses the 60 standard sealed pipe thread of model NPT1/2 as the research target, the machine vision technology is used to make non-contact measurement of the pipe thread geometry, LABVIEW is used as the software development platform to analyse the processed thread image. Finally, the parameters such as pitch, thread angle, taper, and thread height are simulated and measured to obtain the qualification conclusion. © Published under licence by IOP Publishing Ltd.
Number of references: 7
Main heading: Geometry
Controlled terms: Software design - Computer programming languages
Uncontrolled terms: Machine vision technologies - Measurement methods - Noncontact measurements - Oil-and-Gas pipelines - Pipe threads - Simulation research - Thread images - Transmission performance
Classification code: 723.1 Computer Programming - 723.1.1 Computer Programming Languages - 723.5 Computer Applications - 921 Mathematics
DOI: 10.1088/1757-899X/688/3/033037
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

496. Designing Trajectories in Natural Parameter Curve with Improved Ant Colony Optimization

Accession number: 20191506743458
Authors: Wang, Liupeng (1); Li, Qi (1); Li, Xiaobo (1); Liu, Yi (1)
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, Shaanxi; 710065, China
Source title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Abbreviated source title: Proc. - Int. Conf. Intell. Transp., Big Data Smart City, ICITBS
Part number: 1 of 1
Issue title: Proceedings - 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Issue date: March 18, 2019
Publication year: 2019
Pages: 637-641
Article number: 8669583
Language: English
ISBN-13: 9781538653944
Document type: Conference article (CA)
Conference name: 2019 International Conference on Intelligent Transportation, Big Data and Smart City, ICITBS 2019
Conference date: January 12, 2019 - January 13, 2019
Conference location: Changsha, China
Conference code: 146381
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: When a natural parameter curve (NPC) is used for the well trajectory, the curve formulation is a nonlinear transcendental equation set. However, the existing iterative solution method presents such disadvantages as difficult initial value selection, local optima trapping, and low convergence speed. An improved ant colony optimization named IACO is proposed in this study to overcome these advantages effectively. Firstly, a nonlinear constraint equation with an objective function for designing an NPC trajectory is established to minimize the sum of the squared deviations of borehole trajectory coordinates. The ranges of well measured depth increment, inclination angle, and azimuth angle are used as constraints. Secondly, by using the unequal length discretization method to mesh the continuous space

of constraints and objective function difference as the heuristic function to improve the ACO to solve the nonlinear constraint equation. Finally, through a case verification shows that the proposed IACO exhibits good convergence speed and accuracy and can provide engineering designers with a scientific and effective computation method. © 2019 IEEE.
Number of references: 10
Main heading: Trajectories
Controlled terms: Curve fitting - Discrete event simulation - Iterative methods - Nonlinear equations - Ant colony optimization - Lagrange multipliers - Heuristic methods - Artificial intelligence - Heuristic algorithms
Uncontrolled terms: Continuous spaces - Designing trajectories - Discretization method - Improved ant colony optimization - Iterative solution methods - Natural parameter curve - Non-linear constraints - Transcendental equations
Classification code: 723.1 Computer Programming - 723.4 Artificial Intelligence - 921.5 Optimization Techniques - 921.6 Numerical Methods
DOI: 10.1109/ICITBS.2019.00158
Funding Details: Number: 17JK0609,51574194, Acronym: -, Sponsor: -; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: Acknowdgements We are grateful to the National Natural Science Foundation China and the Project of the Education Department of Shaanxi Provincial Government for their financial supported under Grant No.51574194 and No. 17JK0609 for this paper.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

497. Research on the Application of Microservice Architecture in Administrative Law Enforcement Supervision System (*Open Access*)

Accession number: 20193207296105
Authors: Wei, Fan (1); Zhang, Qian (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shannxi; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022055
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Traditional WEB system costs a lot of resources but takes less effect. Thus, this problem should be solved. In this paper, we take administrative law enforcement supervision system as an example to show why microservice architecture is a good solution to the above problem. And evaluation proved that microservice architecture is more effective. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 10
Main heading: Law enforcement
Controlled terms: Computer architecture - Architecture
Uncontrolled terms: Administrative law - Supervision systems - Web system
Classification code: 402 Buildings and Towers - 971 Social Sciences
DOI: 10.1088/1742-6596/1237/2/022055
Funding Details: Number: 51707158, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: This research is supported by the National Natural Science Foundation of China under grant No. 51707158.
Compendex references: YES
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

498. Large Scale Dynamics Visualization on GPU (*Open Access*)

Accession number: 20193307300246
Authors: Kang, Lei (1); Liang, Jianzhe (2)
Author affiliation: (1) Xi'An Shiyou University, Xi'an, Shaanxi Province, China; (2) Tsinghua University, Beijing, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 3 of 5
Issue: 3
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Signal and Image Processing
Issue date: July 12, 2019
Publication year: 2019
Article number: 032022
Language: English
ISSN: 17426588
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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Simulating and visualizing dynamics of systems consisting of large amount of particles on GPU can be generally difficult due to limitation on data size and programmability. We propose a scheme for developing such algorithms when there exists certain kind of independence and similarity between subsystems. We have instantiated the scheme into algorithms and have integrated them into a real-world game engine. Empirical results show that these algorithms incur little overhead with tens of thousands of particles. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 8
Main heading: Graphics processing unit
Uncontrolled terms: Data size - Dynamics of system - Large amounts - Large-scale dynamics - Programmability - Real-world games
Classification code: 714.2 Semiconductor Devices and Integrated Circuits - 721.3 Computer Circuits
DOI: 10.1088/1742-6596/1237/3/032022
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

499. Multi-color space rock shin-section image classification with SVM

Accession number: 20193507359891
Authors: Tian, Yajuan (1); Guo, Chao (2); Lv, Lintao (3); Li, Fan (3); Gao, Chendong (2); Liu, Ye (3)
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an; 710065, China; (2) Research Institute of Yanchang Petroleum (Group) CO.LTD, Xi'an; 710075, China; (3) School of Computer Science, Xi'An Shiyou University, Xi'an, China
Source title: Proceedings of 2019 IEEE 8th Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2019
Abbreviated source title: Proc. IEEE Jt. Int. Inf. Technol. Artif. Intell. Conf., ITAIC
Part number: 1 of 1

Issue title: Proceedings of 2019 IEEE 8th Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2019
Issue date: May 2019
Publication year: 2019
Pages: 571-574
Article number: 8785477
Language: English
ISBN-13: 9781538681787
Document type: Conference article (CA)
Conference name: 8th IEEE Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2019
Conference date: May 24, 2019 - May 26, 2019
Conference location: Chongqing, China
Conference code: 150447
Sponsor: Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Chongqing University of Technology; IEEE Beijing Section
Publisher: Institute of Electrical and Electronics Engineers Inc., United States
Abstract: For an efficient and flexible access to the rock classification with features extracted from rocks casting thin section images, a SVM based approach is proposed for automatic classification of sand rocks. A PCA procedure is used to enhance correlation between features and reduce dimensionality of feature space. The relationship between feature spaces and sand rock types can be accessed with SVM. 400 images from Ordos basin are separated into two sets consisted by 300 and 100 samples respectively for training and testing of SVM to prove its availability and reliability. Classification of testing set result shows that this SVM classifier provides over 97.0% classification accuracy, which presents a good prospect in practical usage and helps geologists to authenticate casting thin section. © 2019 IEEE.
Number of references: 9
Main heading: Classification (of information)
Controlled terms: Support vector machines - Rocks - Color - Image classification
Uncontrolled terms: Automatic classification - Casting thin sections - Classification accuracy - Correlation between features - Multi-colors - Rock classification - SVM classifiers - Training and testing
Classification code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 741.1 Light/Optics - 903.1 Information Sources and Analysis
Numerical data indexing: Percentage 9.70e+01%
DOI: 10.1109/ITAIC.2019.8785477
Funding Details: Number: 2018JM4004,2018JM4005, Acronym: -, Sponsor: -;
Funding text: This work was supported by Shaanxi Provincial Natural Science Basis Research 2018 with the Project No.2018JM4004 and 2018JM4005.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

500. Improved Slope One Algorithm Using Multi-weight and Auxiliary Items (*Open Access*)

Accession number: 20193207295648
Authors: Han, Jiaxin (1); Yu, Yang (1)
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Shaanxi Xi'an; 710065, China
Source title: Journal of Physics: Conference Series
Abbreviated source title: J. Phys. Conf. Ser.
Volume: 1237
Part number: 2 of 5
Issue: 2
Issue title: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019 - Algorithm and Data Mining
Issue date: July 12, 2019
Publication year: 2019
Article number: 022048
Language: English
ISSN: 17426588

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Document type: Conference article (CA)
Conference name: 2019 4th International Conference on Intelligent Computing and Signal Processing, ICSP 2019
Conference date: March 29, 2019 - March 31, 2019
Conference location: Xi'an, China
Conference code: 149890
Publisher: IOP Publishing Ltd
Abstract: Slope one algorithm is widely used in recommendation systems. Although slope one algorithm is simple and efficient, the correlation between items and data sparsity issue are still the main issues. This paper proposes a multi-weight slope one algorithm, which obtains the correlation between items from multiple aspects, and introduces auxiliary items in relatively sparse scoring data to improve the recommendation effect. Experimental results on the MovieLens show that the recommended effect of multiple weight is better than the single weight. In the case of the sparseness of the data, the MAE value is reducing by 3% when using auxiliary items. © 2019 IOP Publishing Ltd. All rights reserved.
Number of references: 11
Main heading: Artificial intelligence
Uncontrolled terms: Data sparsity - Movielens - Slope ones
Classification code: 723.4 Artificial Intelligence
Numerical data indexing: Percentage 3.00e+00%
DOI: 10.1088/1742-6596/1237/2/022048
Funding Details: Number: 2016kw-047, Acronym: -, Sponsor: -;
Funding text: This work was financially supported by the Shaanxi Provincial International Co-operation and Exchanges in Science and Technology Plan Project (2016kw-047).
Compendex references: YES
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

1. Passivity of martensitic stainless steel in borate buffer solution: Influence of sulfide ion

Accession number: 20190506455021
Authors: Lei, Xiaowei (1, 2); Wang, Hongyan (1); Wang, Nan (2); Ren, Dazhong (3); Fu, Anqing (4); Yin, Chengxian (4); Zhang, Junping (2); Feng, Yaorong (4); Macdonald, Digby D. (5)
Author affiliation: (1) Key Laboratory of Macromolecular Science of Shaanxi Province, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an; 710062, China; (2) MOE Key Laboratory of Materials Physics and Chemistry under Extraordinary Conditions, School of Science, Northwestern Polytechnical University, Xi'an; 710072, China; (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (4) State Key Laboratory of Performance and Structural Safety for Petroleum Tubular Goods and Equipment Materials, Tubular Goods Research Institute, CNPC, Xi'an; 710077, China; (5) Department of Materials Science and Engineering, University of California at Berkeley, Berkeley; CA; 94720, United States
Corresponding author: Wang, Hongyan(hongyan-wang@snnu.edu.cn)
Source title: Applied Surface Science
Abbreviated source title: Appl Surf Sci
Volume: 478
Issue date: 1 June 2019
Publication year: 2019
Pages: 255-265
Language: English
ISSN: 01694332
CODEN: ASUSEE
Document type: Journal article (JA)
Publisher: Elsevier B.V., Netherlands
Abstract: Upon performing electrochemical measurements, XPS and TEM characterizations, the influence of sulfide on the passive behavior of Super 13Cr martensitic stainless steel was deciphered. Mechanism interpretation is performed by optimizing the Point Defect Model based upon the impedance data. It is revealed that the passive film display n-type semiconductivity, and the donor density dropped with increasing concentration of sulfide ion. Sulfide ion can induce a current peak at -250 mVSCE (Epeak). The addition of Na2S generates a continuous outer layer which is comprised of Cr(OH)3, FeS2 and FeS at potential lower than Epeak, and Cr(OH)3 at potential higher than Epeak. This result leads to the thinner barrier layer and lower charge transfer resistance, implying a weaker protection of the substrate by the passive film. © 2019
Number of references: 44
Main heading: Sulfur compounds
Controlled terms: Defects - Chromium compounds - Ions - Charge transfer - Martensitic stainless steel
Uncontrolled terms: Borate buffer solutions - Charge transfer resistance - Electrochemical measurements - Passive behavior - Passivity - Point defect model (PDM) - Sulfide - TEM characterization
Classification code: 545.3 Steel - 802.2 Chemical Reactions - 951 Materials Science
DOI: 10.1016/j.apsusc.2019.01.250
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Funding text: This work is financially supported by the National Natural Science Foundation of China (51801160 , 51671160 , 41702146 , 51874242), the Fundamental Research Funds for the Central Universities (GK201802033), Innovation Project of Science and Technology of Shaanxi Province of China (2015KTCL01-09), and Natural Science Basic Research Plan in Shaanxi Province of China (2018JQ5091).
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

2. Convection heat transfer and friction characteristics of liquid CO2-N2 foam fracturing fluid using C4F9OCH3 as frother

Accession number: 20193707422042
Authors: Luo, Xiangrong (1); Qi, Yin (2); Li, Jianshan (2); Huang, Penggang (2); Wang, Shuzhong (3); Ren, Xiaojuan (1); Zhang, Pengfei (4)
Author affiliation: (1) Engineering Research Center of Development and Management for Low to Extra-Low Permeability Oil & Gas Reservoirs in West China, Ministry of Education, Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil & Gas Reservoirs, School of Petroleum Engineering, Xi'an Shiyou University, Xi'an;

Shaanxi; 710065, China; (2) Oil & Gas Technology Research Institute of Changqing Oilfield Company, CNPC, Xi'an; Shaanxi; 710018, China; (3) 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; (4) Xi'an Fengdong Heating Co., Ltd, Xi'an; Shaanxi; 710086, China
Corresponding author: Luo, Xiangrong(xiangrong_luo@163.com)
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Article number: 106461
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Publisher: Elsevier B.V., Netherlands
Abstract: The liquid CO2–N2 foam fracturing fluid containing C4F9OCH3 causes no damage to formation, similar to dry CO2 fracturing, can be used to stimulate water sensitivity and low-permeability gas reservoirs. The main objective of this experimental study was to ascertain the convective heat transfer and frictional characteristics of this modified dry fracturing fluid system. A foam fracturing fluid test system was adopted in this study. The results showed that the viscosity of the liquid CO2–N2 foam fracturing fluid with C4F9OCH3 added was significantly higher compared with the liquid CO2–N2. The optimum frother concentration was 0.65%. The shear rate had the most significant effect on the convective heat transfer. The pressure had a significant effect on the frictional characteristics of the complex foam fluid due to the compressibility of the internal and external phases. When the flow velocity was greater than 1.4 m/s, the frictional resistance coefficients for foams of different qualities were similar. The velocities in the expression of the generalized Reynolds number, Re', and the generalized Prandtl number, Pr', were not sufficient to describe the influence of the shear rate on the heat transfer. When fitting the convection heat transfer coefficient, the effect of shear rate on coefficient of thermal conductivity was also considered. These results can be used to calculate the temperature field and predict the friction pressure drop in the use of this foam fracturing fluid. © 2019 Elsevier B.V.
Number of references: 39
Main heading: Carbon dioxide
Controlled terms: Liquids - Shear flow - Thermal conductivity - Friction - Heat transfer coefficients - Flow velocity - Petroleum reservoir engineering - Fracturing fluids - Reynolds number - Shear deformation - Heat convection - Low permeability reservoirs - Gas permeability
Uncontrolled terms: Coefficient of thermal conductivities - Convective heat transfer - Fiction - Friction characteristics - Friction pressure drop - Frictional characteristics - Frothers - Low permeability gas reservoirs
Classification code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 631 Fluid Flow - 631.1 Fluid Flow, General - 641.1 Thermodynamics - 641.2 Heat Transfer - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 943.2 Mechanical Variables Measurements
Numerical data indexing: Percentage 6.50e-01%, Velocity 1.40e+00m/s
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Compendex references: YES
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Data Provider: Engineering Village

3. Origin of silica, paleoenvironment, and organic matter enrichment in the Lower Paleozoic Niutitang and Longmaxi formations of the northwestern Upper Yangtze Plate: Significance for hydrocarbon exploration

Accession number: 20191106636563
Authors: Li, Delu (1, 2, 3); Li, Rongxi (4); Tan, Chengqian (5); Zhao, Di (4); Xue, Tao (6); Zhao, Bangsheng (4); Khaled, Ahmed (4); Liu, Futian (4); Xu, Feng (7)
Author affiliation: (1) Shaanxi Provincial Key Laboratory of Geological Support for Coal Green Exploitation, Xi'an University of Science and Technology, Xi'an; 710054, China; (2) Geological Research Institute for Coal Green Mining,

Xi'an University of Science and Technology, Xi'an; 710054, China; (3) College of Geology and Environment, Xi'an University of Science and Technology, Xi'an; 710054, China; (4) School of Earth Sciences and Resources, Chang'an University, Xi'an; 710054, China; (5) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (6) No.2 Geo-exploration Institute, Henan Provincial Bureau of Geo-exploration and Mineral Development, Zhengzhou; 450000, China; (7) Shaanxi Center of Geological Survey, Xi'an; 710068, China
Corresponding author: Li, Delu(lidelu322@126.com)
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Pages: 404-421
Language: English
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: Lower Paleozoic shale is an important source rock and reservoir for gas in the northwestern Upper Yangtze Plate. The paleoenvironment, and its impact on organic matter enrichment of the shale, plays a vital role in the exploration and development of the resource. Based on the analysis of the results of total organic carbon (TOC), maceral examination, bitumen reflectance (Rb), major elements, trace elements, rare earth elements (REEs), and X-ray diffraction (XRD) of shale samples from the Niutitang and Longmaxi formations, the origin of silica, the paleoenvironment, and the mode of organic matter enrichment of the shale were examined. The shales of the Niutitang and Longmaxi formations have high TOC abundance, with Type I organic matter and high maturity. Quartz and clay minerals dominate the mineral constituents, leading to characterization as siliceous shale. The average SiO2 content of the shale in the Niutitang and Longmaxi formations is above 70 wt%. Al2O3 and TFe2O3 (total iron) are the next-most abundant major elements, with average values of 12.80 wt% and 1.95 wt% in the Niutitang Formation, and average values of 11.44 wt% and 4.09 wt% in the Longmaxi Formation. Compared with the Upper Continental Crust (UCC), V, Mo and U are the most enriched elements. The average #LREE/#HREE of the shale samples is very low, and the Chondrite-normalized REE distribution pattern shows sloping LREE trends and flat HREE trends towards the right. The total rare earth elements of the shale vary within the range of 147.85–219.60 ppm and 159.90–222.02 ppm in both the Niutitang and Longmaxi formations, suggesting that the shale has not been subject to obvious hydrothermal fluid activities. The correlation diagrams of SiO2–Al2O3, SiO2-TOC and Siexcess-TOC, the diagrams of hydrothermal origins, and the elemental parameters indicate that the silica of the shales from the Niutitang and Longmaxi formations are mainly of biogenic origins, with a lesser contribution from terrigenous detrital sources. The ratios of MnO2/TiO2 and Al2O3/(Al2O3+TFe2O3) of the shale samples all show limited variability, illustrating that the shales are mainly deposited on the continental margin. The average chemical alteration index (CIA) values of the Niutitang and Longmaxi formations are 71.25 and 72.77 with little variation, and the average Sr/Cu ratios are 4.38 and 2.22, reflecting a warm and humid paleoclimate for both formations. The average Ni/Co, Th/U, and #U readings of the shale samples of the formations are 10.91, 0.97 and 1.51, and 12.69, 0.43 and 1.75, indicating that the redox conditions during the sedimentation of the formations were anoxic. The positive correlations between TOC and paleoenvironmental proxies reveal a warm and humid climate, and that anoxia had a positive effect on organic matter enrichment. These conditions have laid a geological foundation for the enrichment of shale gas, and that the Upper Yangtze Plate is favorable for future shale gas exploration. © 2019 Elsevier Ltd
Number of references: 91
Main heading: Silica
Controlled terms: Trace elements - Organic carbon - Clay minerals - Rare earths - Shale - Aluminum oxide - Biogeochemistry - Exploratory geochemistry - Heterojunctions - Petroleum prospecting - Alumina
Uncontrolled terms: Exploration and development - Hydrocarbon exploration - Longmaxi formation - Niutitang formation - Paleo-environment - Rare earth elements (REEs) - Upper Yangtze - Warm and humid climates
Classification code: 481.2 Geochemistry - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 714.2 Semiconductor Devices and Integrated Circuits - 801.2 Biochemistry - 804.1 Organic Compounds - 804.2 Inorganic Compounds
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Database: Compendex

4. Influence of Typical Core Minerals on Tight Oil Recovery during CO2 Flooding Using the Nuclear Magnetic Resonance Technique

Accession number: 20193407334894
Authors: Huang, Xing (1, 2, 3, 7); Li, Ang (4); Li, Xiang (5); Liu, Yueliang (6)
Author affiliation: (1) School of Petroleum Engineering, Xi'An Shiyou University, Xi'an; Shaanxi; 710065, China; (2) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Chengdu University of Technology, Chengdu; Sichuan; 610051, China; (3) Shaanxi Key Laboratory of Advanced Stimulation Technology for Oil and Gas Reservoirs, Xi'an; Shaanxi; 710065, China; (4) School of Mining and Petroleum Engineering, Faculty of Engineering, University of Alberta, Edmonton; AB; T6G 1H9, Canada; (5) School of Petroleum Engineering, University of Tulsa, Tulsa; OK; 74104, United States; (6) Key Laboratory of Unconventional Oil and Gas Development, Ministry of Education, China University of Petroleum (East China), Qingdao; Shandong; 266580, China; (7) School of Petroleum Engineering, China University of Petroleum (East China), Qingdao; Shandong; 266580, China
Corresponding author: Huang, Xing(hx@xsyu.edu.cn)
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Publisher: American Chemical Society
Abstract: CO2 flooding is widely recognized as an efficient way of developing tight reservoirs. Multiple types of minerals in tight rocks may interact with introduced CO2, resulting in more complex mechanisms of tight reserve recovery from tight reservoirs. It is necessary to reveal the impact of core minerals on tight oil recovery, which is critical in understanding the fundamental mechanisms of CO2 flooding for enhanced tight reserve recovery. In this work, 18 tight core samples, retrieved from the Changqing oilfield, are characterized to obtain their mineral compositions. Three typical core samples are then selected to conduct CO2 flooding and investigate how the minerals contained in these tight cores affect the tight oil recovery during CO2 flooding using the nuclear magnetic resonance technique. On the basis of the characterization results, Changqing tight cores mainly contain three typical minerals, i.e., illite, montmorillonite, and quartz. With regard to illite-dominated cores, CO2 is not efficient in extracting oil from the smaller pores when the injection pressure is lower than the minimum miscible pressure (MMP); on the contrary, crude oil can be efficiently recovered from both the smaller and larger pores when the injection pressure is beyond the MMP. With regard to the montmorillonite-dominated core, oil saturation in the medium pores increases when CO2 is injected. However, with regard to the quartz-dominated core, oil residing in both the smaller and larger pores is significantly recovered after CO2 injection. This work may help understand the question of how the minerals residing in core samples affect oil recovery from a pore-scale perspective. Copyright © 2019 American Chemical Society.
Number of references: 30
Main heading: Carbon dioxide
Controlled terms: Enhanced recovery - Petroleum reservoirs - Recovery - Clay minerals - Floods - Reservoirs (water) - Oil well flooding - Quartz - Secondary recovery - Nuclear magnetic resonance
Uncontrolled terms: Changqing oilfield - Complex mechanisms - Fundamental mechanisms - Injection pressures - Mineral composition - Nuclear magnetic resonance techniques - Oil saturation - Tigh treservoirs
Classification code: 441.2 Reservoirs - 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 804.2 Inorganic Compounds
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and Exploitation (under planning) to Xing Huang.The authors acknowledge the financial support by the Open Fund (PLC20190803) of the State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation (Chengdu University of Technology) and the Open Foundation (YJSYZX19SKF0003) of the Shaanxi Key Laboratory of Lacustrine Shale Gas Accumulation and Exploitation (under planning) to Xing Huang.
Compendex references: YES
Database: Compendex
Data Provider: Engineering Village

5. A novel experimental method to investigate the plugging characteristics of diversion agents within hydro-fracture

Accession number: 20193507370286
Authors: Wang, Bo (1, 2, 3); Zhou, Fujian (1, 2); Yang, Chen (1); Xu, Chao (1, 2); Liu, Jianfu (1, 2); Han, Shaobo (1, 2); Wang, Daobing (4); Ren, Zongxiao (5); Liang, Tianbo (1, 2)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum (Beijing), Beijing; 102249, China; (2) The Unconventional Oil and Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Beijing Branch, Research Institute of Petroleum Exploration and Development, China National Petroleum Cooperation, Beijing; 100083, China; (4) School of Mechanical Engineering, Beijing Institute of Petrochemical Technology, Beijing; 102617, China; (5) College of Petroleum Engineering, Xi'an Petroleum University, Xi'an; 102249, China
Corresponding author: Zhou, Fujian(zhoufj@cup.edu.cn)
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Article number: 106354
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Abstract: Temporary plugging and diverting fracturing (TPDF) technique has been widely used in exploiting hydrocarbon resources in conventional/unconventional formations. The key to ensuring the success of this technique lies in the efficient plugging of the previously created fractures. However, the plugging characteristics of diversion agents influenced by the fracture geometry have not been efficiently investigated through experiments. In this study, the conventional true tri-axial hydraulic fracturing system was modified, then a series of investigative experiments were carried out and a novel experimental method was proposed to systematically investigate the plugging characteristics of diversion agents within the fracture. This method can not only investigate the effects of fracture geometry on the diversion agent distribution, plugging capacity, and plugging speed within fracture, but also optimize the diversion agent recipe for plugging various geometries fracture with different apertures, thus saving the dosage of diversion agents and fracturing fluids. Moreover, under certain conditions, as for the common four types of fractures i.e., distorted (type-) fracture, inclined and flat (type-) fracture, longitudinal and flat (type-) fracture, and transverse and flat (type-) fracture, the required ratio of diversion agent dosage for plugging is approximately 1:7:15:3. © 2019 Elsevier B.V.
Number of references: 33
Main heading: Hydraulic fracturing
Controlled terms: Fracturing fluids - Geometry
Uncontrolled terms: Agent distribution - Experimental methods - Fracture geometries - Hydro-fracture - Hydrocarbon resources - Plugging capacity - Tri-axial
Classification code: 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics
DOI: 10.1016/j.petrol.2019.106354
Funding Details: Number: -2-1704, Acronym: -, Sponsor: -; Number: 51804033,51804258, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2018M641254, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 2018-ZZ-045, Acronym: -, Sponsor: Beijing Postdoctoral Research Foundation; Number: 2016ZX05051,2017ZX05030, Acronym: -, Sponsor: National Major Science and Technology Projects of China;
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Database: Compendex
Data Provider: Engineering Village

6. Mechanism analysis of organic matter enrichment in different sedimentary backgrounds: A case study of the Lower Cambrian and the Upper Ordovician-Lower Silurian, in Yangtze region

Accession number: 20184406027121
Authors: Zhang, Kun (1, 2, 3, 4, 5); Song, Yan (1, 2, 4); Jiang, Shu (5, 6, 12); Jiang, Zhenxue (1, 2); Jia, Chengzao (4); Huang, Yizhou (1, 2); Wen, Ming (1, 2); Liu, Weiwei (7); Xie, Xuelian (8); Liu, Tianlin (1, 2); Wang, Pengfei (9); Shan, Chang'an (10); Wu, Yinghui (11)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) Unconventional Natural Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Unconventional Oil & Gas Cooperative Innovation Center, China University of Petroleum, Beijing; 102249, China; (4) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (5) Energy and Geoscience Institute & Department of Chemical Engineering, University of Utah, Salt Lake City; UT; 84108, United States; (6) Research Institute of Unconventional Oil & Gas and Renewable Energy, China University of Petroleum (East China), China; (7) Jiangxi Provincial Natural Gas Company, Ltd., Nanchang; 330000, China; (8) Guangzhou Marine Geological Survey, Guangzhou; 510760, China; (9) Geoscience Documentation Center, CGS, Beijing; 100083, China; (10) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (11) School of Earth Sciences and Resources, China University of Geosciences, Beijing; 100083, China; (12) Energy and Geoscience Institute, University of Utah, UT; 84108, United States
Corresponding author: Song, Yan(sya@petrochina.com.cn)
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Document type: Journal article (JA)
Publisher: Elsevier Ltd
Abstract: In order to meet the demand of shale oil and gas exploration, it is more and more important to study the controlling effect of sedimentary environment on the enrichment of organic matter. In this paper, the Lower Cambrian and Upper Ordovician-Lower Silurian shales in the Yangtze region are studied. Firstly, according to the content of Mo and TOC, the water closure property of the shale depositional period is judged. Then this study selected typical wells, and calculated quantitatively whether there was excess siliceous minerals in shale and the content of it. The origin of excess siliceous minerals is determined by Al, Fe and Mn element. The results show that the Lower Cambrian shale is deposited in a weak to moderate restricted water environment, and the Upper Ordovician and Lower Silurian shales are deposited in a strong restricted water environment in the Yangtze region. Excess siliceous minerals in the Lower Cambrian shale is of hydrothermal origin. On the one hand, hydrothermal activity can enhance the reductivity of the water bottom. On the other hand, it can improve the biological productivity, so that the sedimentary organic matter can be enriched. Excess siliceous minerals in Upper Ordovician and Lower Silurian shale is biogenic. The strong restriction of the water leads to stratification. The oxygen content in the upper layer makes the biological productivity higher and the lower layer more reductive, which is beneficial to the preservation of sedimentary organic matter. © 2018
Number of references: 63
Main heading: Biogeochemistry
Controlled terms: Organic compounds - Sedimentology - Petroleum prospecting - Productivity - Minerals
Uncontrolled terms: Biogenesis - Biological productivity - Hydrothermal activity - Hydrothermal origin - Oil and gas exploration - Sedimentary environment - Sedimentary organic matter - Siliceous source
Classification code: 481.1 Geology - 481.2 Geochemistry - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 801.2 Biochemistry - 804.1 Organic Compounds
DOI: 10.1016/j.marpetgeo.2018.10.044

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

7. Division of shale sequences and prediction of the favorable shale gas intervals: An example of the Lower Cambrian of Yangtze Region in Xiuwu Basin (*Open Access*)

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Authors: Li, Zhuo (1, 2); Zhang, Kun (1, 2, 3, 4, 5); Song, Yan (1, 2, 4); Jiang, Zhenxue (1, 2); Liu, Xiaoxue (1, 2); Jiang, Shu (5, 6, 7); Jia, Chengzao (4); Huang, Yizhou (1, 2); Liu, Weiwei (8); Wen, Ming (1, 2); Wang, Pengfei (9); Liu, Tianlin (1, 2); Xie, Xuelian (10); Shan, Chang'an (11); Wang, Xin (1, 2)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) Unconventional Natural Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Unconventional Petroleum Collaborative Innovation Center, China University of Petroleum, Beijing; 102249, China; (4) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (5) Energy and Geoscience Institute, University of Utah, Salt Lake City; UT; 84108, United States; (6) Key Laboratory of Tectonics and Petroleum Resources, Ministry of Education, Faculty of Earth Resources, China University of Geosciences, Wuhan; 430074, China; (7) Research Institute of Unconventional Oil and Gas and Renewable Energy, China University of Petroleum (East China), Qingdao; 266580, China; (8) Jiangxi Provincial Natural Gas Company Ltd, Nanchang; 330000, China; (9) Geoscience Documentation Center. China Geological Survey, Beijing; 100083, China; (10) Guangzhou Marine Geological Survey, Guangzhou; 510760, China; (11) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Corresponding author: Song, Yan(sya@petrochina.com.cn)
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Publication year: 2019
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Language: English
E-ISSN: 23915447
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Publisher: De Gruyter Open Ltd
Abstract: It is a common method to use sequence stratigraphic theory to identify favourable intervals in hydrocarbon exploration. The Lower Cambrian shale of Well Jiangye-1 in Yangtze Region in Xiuwu Basin was chosen as the research object. The content of excess silicon of siliceous minerals in shale was calculated quantitatively, and the concentration distribution of Al, Fe, Mn showed that the excess silicon is of hydrothermally origin and the shale deposited in an environment with hydrothermal activity. Using U/Th values in the study, combined with lithology and logging data, in order to divide sequences of the Lower Cambrian shale in Yangtze Region in Xiuwu Basin. The result shows that the shale of the Lower Cambrian shale is recognized as 1 2nd sequence (TST-RST, TST = Transgressive systems tract; RST = Regressive systems tract) and then further subdivided into 5 3rd sequences (SQ1-SQ5). During the deposition of SQ2 and SQ3, hydrothermal activity was active, and their excess silicon content was generally above 20%-30%. Rising sea level and active hydrothermal activity were beneficial for the enrichment of siliceous minerals and organic matter. Based on the comparison of the reservoir parameters, it tells that SQ2 and SQ3 have relatively higher content of TOC, higher content of brittle minerals (such as siliceous minerals, carbonate minerals and so on), larger effective porosity and higher content of gas, which make it as the most favourable intervals of the Lower Cambrian in Xiuwu Basin. © 2019 Zhuo Li et al.
Number of references: 66
Main heading: Silicon
Controlled terms: Minerals - Petroleum prospecting - Stratigraphy - Lithology - Sea level

Uncontrolled terms: Concentration distributions - Favourable intervals - Hydrocarbon exploration - Hydrothermal activity - Hydrothermally - Regressive systems tracts - Sequence stratigraphy - Transgressive systems tracts
Classification code: 471.1 Oceanography, General - 481.1 Geology - 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals
Numerical data indexing: Percentage 2.00e+01% to 3.00e+01%
DOI: 10.1515/geo-2019-0015
Compendex references: YES
Open Access type(s): All Open Access, Gold
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8. Shale gas accumulation mechanism in a syncline setting based on multiple geological factors: An example of southern Sichuan and the Xiuwu Basin in the Yangtze Region

Accession number: 20185106276356
Authors: Zhang, Kun (1, 2, 3, 4, 7); Song, Yan (1, 2, 4); Jiang, Shu (5, 6, 7); Jiang, Zhenxue (1, 2); Jia, Chengzao (4); Huang, Yizhou (1, 2); Liu, Xiaoxue (1, 2); Wen, Ming (1, 2); Wang, Xin (1, 2); Li, Xin (1, 2, 3); Wang, Pengfei (8); Shan, Chang'an (9); Liu, Tianlin (1, 2); Liu, Weiwei (10); Xie, Xuelian (11)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) Unconventional Natural Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Unconventional Petroleum Collaborative Innovation Center, China University of Petroleum, Beijing; 102249, China; (4) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (5) Key Laboratory of Tectonics and Petroleum Resources of Ministry of Education, Faculty of Earth Resources, China University of Geosciences, Wuhan; 430074, China; (6) Research Institute of Unconventional Oil & Gas and Renewable Energy, China University of Petroleum (East China), Qingdao; 266580, China; (7) Energy and Geoscience Institute, University of Utah, Salt Lake City; UT; 84108, United States; (8) Geoscience Documentation Center, China Geological Survey, Beijing; 100083, China; (9) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (10) Jiangxi Provincial Natural Gas Company, Ltd., Nanchang; 330000, China; (11) Guangzhou Marine Geological Survey, Guangzhou; 510760, China
Corresponding author: Song, Yan(sya@petrochina.com.cn)
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Abstract: The determination of favorable areas for shale gas enrichment under a syncline background is an important problem that needs to be addressed. The research objects in this study are typical shale gas blocks of the southern Sichuan Basin and the Xiuwu Basin in the Yangtze region with Lower Cambrian and Upper Ordovician–Lower Silurian shales. We carried out permeability tests parallel and perpendicular to the bedding surface, permeability tests with different overburden pressures, and permeability tests and isothermal adsorption experiments under different osmotic pressures before and after the adsorption of methane parallel to the bedding surface. In addition, along with the analysis of drilling data statistics, the enrichment of marine shale gas under a syncline background was studied with respect to dip angle and burial depth. The results show that the preservation conditions of shale gas are better when the dip angle is below 10° while they are relatively poorer at angle more than 20°. This is due to the migration of natural gas, mainly in parallel direction to the bedding surface, leading to favorable shale gas preservation with decreasing angle. Based on double effects of the overburden pressure and gas adsorption (both increase) parallel to the bedding surface on the permeability of shale, the permeability decreases. When the overburden pressure increases to 10–15 MPa, the permeability parallel to the shale layer changes suddenly and decreases to a low value, which means that under the syncline background, the drilling depth with good shale gas production capacity should be at least 1019–1529 m. © 2018
Number of references: 47
Main heading: Shale gas
Controlled terms: Gas adsorption - Gases - Infill drilling - Osmosis

Uncontrolled terms: Depth of burial - Dip angle - Geological factors - Isothermal adsorption - Overburden pressures - Permeability test - Preservation condition - Syncline
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9. Vertical sealing mechanism of shale and its roof and floor and effect on shale gas accumulation, a case study of marine shale in Sichuan basin, the Upper Yangtze area

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Authors: Zhang, Kun (1, 2, 3, 4, 7); Song, Yan (1, 2, 4); Jia, Chengzao (4); Jiang, Zhenxue (1, 2); Jiang, Shu (5, 6, 7); Huang, Yizhou (1, 2); Wen, Ming (1, 2); Liu, Xiaoxue (1, 2); Liu, Weiwei (8); Chen, Zhiyuan (1, 2); Xie, Xuelian (9); Liu, Tianlin (1, 2); Wang, Xin (1, 2); Wang, Pengfei (10); Li, Xin (1, 2); Shan, Chang'an (11, 12)
Author affiliation: (1) State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing; 102249, China; (2) Unconventional Natural Gas Institute, China University of Petroleum, Beijing; 102249, China; (3) Unconventional Petroleum Collaborative Innovation Center, China University of Petroleum, Beijing; 102249, China; (4) Research Institute of Petroleum Exploration and Development, Beijing; 100083, China; (5) Key Laboratory of Tectonics and Petroleum Resources of Ministry of Education, Faculty of Earth Resources, China University of Geosciences, Wuhan; 430074, China; (6) Research Institute of Unconventional Oil & Gas and Renewable Energy, China University of Petroleum (East China), Qingdao; 266580, China; (7) Energy and Geoscience Institute, University of Utah, Salt Lake City, Utah; 84108, United States; (8) Jiangxi Provincial Natural Gas Company, Ltd., Nanchang; 330000, China; (9) Guangzhou Marine Geological Survey, Guangzhou; 510760, China; (10) Geoscience Documentation Center, China Geological Survey, Beijing; 100083, China; (11) School of Earth Sciences and Engineering, Xi'an Shiyou University, Xi'an; 710065, China; (12) State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Chengdu University of Technology, Chengdu; 610059, China
Corresponding author: Song, Yan(sya@petrochina.com.cn)
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Abstract: Shale and its roof and floor are very important for shale gas preservation. How to clarify the mechanism of its vertical sealing and its effect on shale gas enrichment is a significant problem to be solved. In this paper, the objective layers are the Upper Ordovician Wufeng Formation, the first member of the Lower Silurian Longmaxi Formation and the Lower Cambrian Qiongzhusi Formation, which are all in the representative shale gas blocks in the Sichuan basin of the Yangtze region. Studied by statistical drilling data, the focus is on the detailed analyses of the JiaoYe-1, Ning-201 and Wei-201 well, and experiments were carried out such as the porosity test, the TOC content analysis and the experiment of overburden permeability, permeability experiments before and after adsorption of methane under different osmotic pressure, and isothermal adsorption experiments. The experiments results are applied on studying the effect of shale and its roof and floor on shale gas enrichment, combined with formula deduction. The results show that the roof and floor have a vertical sealing effect on the organic-rich shale by the

difference of physical properties. In eastern Sichuan, the roof of the organic-rich shale of the Wufeng Formation and the first member of Longmaxi Formation is assemblage of argillaceous siltstone and siliceous shale, while in southern Sichuan it is assemblage of gray shale and siliceous shale. The floor is nodular limestone and limestone in both areas. The combination of roof and floor, with low porosity, can form a quality roof and floor sealing ability in the absence of fracture development. Its sealing ability is stronger than that in the upper part of the Qiongzhusi Formation, considering its roof and floor composed of argillaceous siltstone and siliceous shale. The floor of the organic-rich shale at the bottom of the Qiongzhusi Formation is a dolomite reservoir with good storage capacity, between which there is an unconformable contact causing the worst sealing ability among the three intervals. With the increase of burial depth, the overlying pressure of shale increases. With the increase of TOC content and thickness, the amount of adsorption gas of shale increases. These two aspects of factors can lead to the permeability decline and self-sealing enhancement of the organic-rich shale. In this study, focusing on the Upper Ordovician-Lower Silurian and the Lower Cambrian in the Sichuan basin, four patterns of organic-rich shale and its roof and floor were summed up, and the rapid evaluation method of sealing of shale and its roof and floor under the limited geological data was established. © 2019 Elsevier B.V.
Number of references: 41
Main heading: Adsorption
Controlled terms: Gases - Lime - Roofs - Limestone - Osmosis - Digital storage - Mechanical permeability - Floors - Porosity - Shale gas
Uncontrolled terms: Burial depths - Content analysis - Dolomite reservoirs - Evaluation method - Isothermal adsorption - Organic-rich shales - Storage capacity - Vertical sealing
Classification code: 402 Buildings and Towers - 512.2 Natural Gas Deposits - 522 Gas Fuels - 722.1 Data Storage, Equipment and Techniques - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
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10. Wintertime Optical Properties of Primary and Secondary Brown Carbon at a Regional Site in the North China Plain

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Authors: Wang, Qiyuan (1, 2); Ye, Jianhuai (3); Wang, Yichen (4); Zhang, Ting (1, 2); Ran, Weikang (1); Wu, Yunfei (5); Tian, Jie (1, 2); Li, Li (1); Zhou, Yaqing (1); Hang Ho, Steven Sai (6); Dang, Bo (7); Zhang, Qian (8); Zhang, Renjian (5); Chen, Yang (9); Zhu, Chongshu (1, 2); Cao, Junji (1, 2)
Author affiliation: (1) Key Laboratory of Aerosol Chemistry and Physics, State Key Laboratory of Loess and Quaternary Geology, Institute of Earth Environment, Chinese Academy of Sciences, Xi'an; 710061, China; (2) CAS, Center for Excellence in Quaternary Science and Global Change, Xi'an; 710061, China; (3) School of Engineering and Applied Sciences, Harvard University, Cambridge; MA; 02138, United States; (4) School of Humanities, Economics and Law, Northwestern Polytechnical University, Xi'an; 710129, China; (5) Key Laboratory of Regional Climate-Environment Research for Temperate East Asia, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing; 100029, China; (6) Division of Atmospheric Sciences, Desert Research Institute, Reno; NV; 89512, United States; (7) Shannxi Key Laboratory of Measurement and Control Technology for Oil and Gas Wells, Xi'An Shiyou University, Xi'an; 710065, China; (8) Key Laboratory of Northwest Resource, Environment and Ecology, MOE, Xi'An University of Architecture and Technology, Xi'an; 710055, China; (9) Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences, Chongqing; 400714, China
Corresponding author: Wang, Qiyuan(wangqy@ieecas.cn)
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Abstract: The light-absorbing properties of atmospheric brown carbon (BrC) are poorly understood due to its complex chemical composition. Here, a black-carbon-tracer method was coupled with source apportionments of organic aerosol (OA) to explore the light-absorbing properties of primary and secondary BrC from the North China Plain (NCP). Primary emissions of BrC contributed more to OA light absorption than secondary processes, and biomass burning OA accounted for 60% of primary BrC absorption at λ = 370 nm, followed by coal combustion OA (35%) and hydrocarbon-like OA (5%). Secondary BrC absorption was high in the early morning and later decreased due to the bleaching of chromophores. Nighttime aqueous-phase chemistry promoted the formation of secondary light-absorbing compounds and the production of strongly absorbing particles. Source analysis showed that the NCP region was the most important source for primary and secondary BrC subtypes at the study site. The mean direct radiative forcing for BrC was 0.15 W m-2 (0.11 W m-2 and 0.04 W m-2 for the primary and secondary fractions, respectively). This study provides new information on the optical properties of primary and secondary BrC and highlights the importance of atmospheric oxidation on BrC absorption. Copyright © 2019 American Chemical Society.
Number of references: 52
Main heading: Optical properties
Controlled terms: Chromophores - Bromine compounds - Atmospheric aerosols - Atmospheric radiation - Coal combustion - Light absorption - Atmospheric chemistry - Carbon
Uncontrolled terms: Absorbing particles - Absorbing properties - Atmospheric oxidation - Complex chemicals - Direct radiative forcing - Primary emissions - Secondary process - Source apportionment
Classification code: 443.1 Atmospheric Properties - 521 Fuel Combustion and Flame Research - 524 Solid Fuels - 741.1 Light/Optics - 801.1 Chemistry, General - 804 Chemical Products Generally - 804.1 Organic Compounds
Numerical data indexing: Percentage 3.50e+01%, Percentage 5.00e+00%, Percentage 6.00e+01%, Size 3.70e-07m, Surface_Power_Density 1.10e-01W/m2, Surface_Power_Density 4.00e-02W/m2
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