

1. Well test interpretation model on power-law non-linear percolation pattern in low-permeability reservoirs

Liu, Shun (1); Han, Feng-Rui (2); Zhang, Kai (3); Tang, Ze-Wei (4)

Source: *Society of Petroleum Engineers - International Oil and Gas Conference and Exhibition in China 2010, IOGCEC*, v 4, p 3188-3196, 2010, *Society of Petroleum Engineers - International Oil and Gas Conference and Exhibition in China 2010, IOGCEC*; **ISBN-13:** 9781617388866; **Publisher:** Society of Petroleum Engineers

Author affiliation: (1) Xi'an Shiyou University, China (2) Geological Scientific Research Institute, Shengli Oilfield Company, China (3) China University of Petroleum (EastChina), China (4) Oil and Gas Technology Research Institute, Changqing Oilfield Company, China

Abstract: This paper presents a new percolation method that is power-law non-linear percolation pattern in low-permeability reservoirs. Well test interpretation model on power-law non-linear percolation pattern is given and the way how to solve those equations is provided. To analyze and compare well test interpretation models of four different percolation pattern. The balance factor of power-law percolation pattern responds little to pressure and the power-law index responds greatly to pressure yet. Models were used to oil field can those results to be achieved that, new established model presents type curves are more gently and less than that obtains from the method of start-up pressure gradient. Also, this non-linear effect measure makes derivative of pressure curve less and more early time than that gets from the closed boundary effect and there are be obviously distinction. This study addresses type curves capable of analyzing field cases and offers more logical and reliable results. Copyright 2010, Society of Petroleum Engineers. (10 refs)

Main heading: Low permeability reservoirs

Controlled terms: Oil wells - Mechanical permeability - Well testing - Petroleum reservoir evaluation - Solvents

Uncontrolled terms: Closed boundary - Nonlinear effect - Power law index - Pressure curve - Reliable results - Start-up pressure gradient - Type curves - Well test interpretation

Classification Code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 803 Chemical Agents and Basic Industrial Chemicals

Database: Compendex

Data Provider: Engineering Village

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2. Notice of Retraction: Applying the VE to diagnosis the elements for enterprise knowledge gap

Bai, Li (1); Zhang, Jing-Xiao (2); Xu, Fei (2)

Source: *Proceedings of the International Conference on E-Business and E-Government, ICEE 2010*, p 5105-5109, 2010, *Proceedings of the International Conference on E-Business and E-Government, ICEE 2010*; **ISBN-13:** 9780769539973; **DOI:** 10.1109/ICEE.2010.1281; **Article number:** 5592356; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Management, Xi'an Univ. of Arch. and Tech., Xi'an Shiyou Univ., Xi'an 710061, Shaanxi, China (2) School of Civil Engineering, Chang'an University, Xi'an, 710061, Shaanxi, China

Abstract: With the rapid development of knowledge-based economy, knowledge becomes the most key and competitive resource in an enterprise. From the perspective of knowledge gap, applying the value engineering, this paper diagnoses the elements of enterprise knowledge gap, and works out the programs to close the enterprise knowledge gap. Then the programs are evaluated synthetically from the perspective of technology and economy with Value Engineering principles, thus the most reasonable program that the enterprise should take is chosen. Finally, taking an enterprise for example, the paper puts forward specific measures to carry out the program so that the enterprise can determine the order of closing the knowledge gap according to the value coefficient of its own knowledge gap, which helps the enterprise gain and sustain its competitive advantage. © 2010 IEEE. (17 refs)

Main heading: Value engineering

Controlled terms: Knowledge based systems - Competition

Uncontrolled terms: Competitive advantage - Engineering principles - Knowledge based economy - Knowledge gaps

Classification Code: 723.4.1 Expert Systems - 911.2 Industrial Economics - 911.5 Value Engineering

Database: Compendex

Data Provider: Engineering Village

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3. Meso-cenozoic uplift and exhumation history in the North Tianshan mountains

Yao, Zhi-Gang (1, 2); Zhou, Li-Fa (1); Gao, Pu (2); Gao, Shan (2); She, Gang (2)

Source: *Zhongguo Kuangye Daxue Xuebao/Journal of China University of Mining and Technology*, v 39, n 1, p 121-126, January 2010; **Language:** Chinese; **ISSN:** 10001964; **Publisher:** China University of Mining and Technology

Author affiliation: (1) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an, Shaanxi 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China

Abstract: To determine the uplift and exhumation history of the north Tianshan mountains, six samples from granite, orthophyre and mylonization granite were collected in the piedmont belt of Yilinhebilgen mountain. The analysis results for the apatite fission tracks of the samples show that the fission track central ages presented range from (125±10) Ma to (51±4) Ma. The thermal-simulation results on the date of apatite fission show that the 2 episodic rapid cooling events were happened, including early Cretaceous and Miocene to the present which the uplift is different from the east and the west sectors of Yilinhebilgen mountain. The tectonic activity in the north Tianshan from Cretaceous is related to extensional tectonics resulted from the multiphase collapse of the southern margin in Asia. The different uplift of Mesozoic is possibly attributed to the diversity activity and thermal-rheological structures. (21 refs)

Main heading: Apatite

Controlled terms: Granite - Landforms - Tectonics - Fission reactions

Uncontrolled terms: Apatite fission tracks - Cenozoic - Extensional tectonics - Fission track - Rapid cooling event - Tectonic activity - Thermal simulations - Tianshan

Classification Code: 481.1 Geology - 482.2 Minerals - 932.2.1 Fission and Fusion Reactions

Database: Compendex

Data Provider: Engineering Village

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4. Method of improving resolution of seismic signals by using matching pursuit decomposition and wavelet packet

Liu, Long (1); Song, JunQi (2); Chang, XiaoJun (1); Song, Hong (3); Luo, Qiang (4); Zhang, Yun Hao (1)

Source: 2010 Chinese Conference on Pattern Recognition, CCPR 2010 - Proceedings, p 475-478, 2010,

2010 Chinese Conference on Pattern Recognition, CCPR 2010 - Proceedings; **Language:** Chinese; **ISBN-13:**

9781424472109; **DOI:** 10.1109/CCPR.2010.5659326; **Article number:** 5659326; **Publisher:** IEEE Computer Society

Author affiliation: (1) Xi'an University of Technolog, Xi'an, 710048, China (2) CESEC, Beijing, 100091, China (3) Xi'an Shiyou University, Xi'an, 710065, China (4) Xi'an Institute of Modern Control Technology, Xi'an 710065, China

Abstract: This paper proposes a algorithm of improving the resolution of seismic signals by using matching pursuit decomposition and wavelet packet method. The algorithm adopts to add to the function factor before Time-frequency element and the transformation of wavelet packet decomposition rate of the conjugate filter to achieve the purpose of improving resolution. Experimental results show that the signal of high frequency increased in the decomposition and synthesis process, and greatly improve the resolution of the seismic signal. ©2010 IEEE. (8 refs)

Main heading: Bandpass filters

Controlled terms: Seismic waves - Wavelet decomposition - Wavelet analysis - Seismology

Uncontrolled terms: Conjugate filter - High frequency HF - Matching pursuit - Matching pursuit decompositions - Synthesis process - Wavelet Packet - Wavelet Packet Decomposition - Wavelet packet method

Classification Code: 484 Seismology - 484.1 Earthquake Measurements and Analysis - 703.2 Electric Filters - 921 Mathematics - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

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5. In situ fabrication of Al₃Ti-Al functionally graded composites by centrifugal casting

Chen, T.J. (1); Li, J. (2); Li, Y.D. (1); Hao, Y. (1)

Source: International Journal of Materials and Product Technology, v 39, n 1-2, p 3-19, July 2010; **ISSN:** 02681900;

DOI: 10.1504/IJMPT.2010.034273; **Publisher:** Inderscience Publishers

Author affiliation: (1) Key Laboratory of Gansu Advanced Nonferrous Materials, Lanzhou University of Technology, Lanzhou 730050, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: In situ Al₃Ti-Al functionally graded composite rings were fabricated by centrifugal casting. The effects of processing parameters on the microstructures and hardness of the rings were mainly investigated. Simultaneously, the corrosion characteristics of the composites were discussed. The results indicated that not only the Al₃Ti platelet concentration distributed with a gradient along the radial direction of the rings, but also their size appeared in a gradient distribution. The presence of Al₃Ti platelets decreased the corrosion resistance of Al and the corrosion resistance of the rings also appeared in a graded manner. Copyright © 2010 Inderscience Enterprises Ltd. (24 refs)

Main heading: Hardness

Controlled terms: Ternary alloys - Centrifugal casting - Corrosion resistance - Microstructure - Titanium alloys - Binary alloys - Aluminum alloys - Aluminum corrosion - Metallic matrix composites - Platelets

Uncontrolled terms: Al composites - Corrosion characteristics - Functionally graded composites - Gradient distributions - In-situ fabrication - Processing parameters - Radial direction

Classification Code: 461.9 Biology - 531 Metallurgy and Metallography - 534.2 Foundry Practice - 539.1 Metals Corrosion - 541.1 Aluminum - 541.2 Aluminum Alloys - 542.3 Titanium and Alloys - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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6. Effect of annealing treatment on formation of intermetallic phase in cold-sprayed Ni/Ti mechanical alloying coating

Zhou, Yong (1, 2); Yang, Guanjun (1); Wang, Hongduo (2); Li, Geng (2); Li, Changjiu (1)

Source: *Hanjie Xuebao/Transactions of the China Welding Institution*, v 31, n 8, p 45-48, August 2010; **Language:** Chinese; **ISSN:** 0253360X; **Publisher:** Harbin Research Institute of Welding

Author affiliation: (1) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Three kinds of Ni/Ti mechanical alloying powder prepared by mechanical alloying at different milling time are employed to form Ni/Ti coatings by cold spraying. The microstructures of the coatings annealing under different conditions are characterized by scanning electron microscopy (SEM) and X-ray diffraction (XRD). It is found that the formation temperature of Ni-Ti intermetallics from the cold-sprayed alloy is decreased with increasing ball milling time for powder preparation. Moreover, the phase constitutions change from Ni₃Ti, B₂-NiTi and Ti₂Ni to Ni₃Ti and Ti₂Ni. The increase of annealing temperature only leads to the change of the relative content of different intermetallic phases in the coating. The results show that intermetallic B₂-NiTi phase formed during annealing exhibits good stability during cooling process. (11 refs)

Main heading: Intermetallics

Controlled terms: Scanning electron microscopy - Ball milling - Binary alloys - Milling (machining) - Titanium alloys - Nickel alloys - Powder coatings - Annealing - X ray diffraction - Mechanical alloying

Uncontrolled terms: Annealing temperatures - Annealing treatments - Cold spraying - Effect of annealing - Formation temperature - Intermetallic phase - Intermetallic phasis - Powder preparation

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 542.3 Titanium and Alloys - 548.2 Nickel Alloys - 604.2 Machining Operations - 802.3 Chemical Operations - 813.2 Coating Materials

Database: Compendex

Data Provider: Engineering Village

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7. Man-machine safety design for multimedia demonstration instrument

Chu, Jie (1); Chu, Lianghai (2); Qiu, Xiaoli (1)

Source: *Jixie Gongcheng Xuebao/Journal of Mechanical Engineering*, v 46, n 8, p 188-194, April 20, 2010; **Language:** Chinese; **ISSN:** 05776686; **DOI:** 10.3901/JME.2010.08.188; **Publisher:** Editorial Office of Chinese Journal of Mechanical Engineering

Author affiliation: (1) College of Mechanical and Electronic Engineering, Northwest Agriculture and Forestry University, Yangling 712100, China (2) College of Computer Science and Technology, Xi'an Shiyou University, Xi'an 710061, China

Abstract: The multimedia demonstration instrument has become an indispensable tool for college teaching. However, its unreasonable design causes more than 75% of teachers to suffer from cervical spondylosis, frozen shoulder and other diseases. Based on the ergonomics theory, through practical measurement and investigation, the multimedia demonstration instrument parameter optimization design is completed. Now that the instrument becomes simple and easy to use, safe and efficient, the teaching environment of college teachers is improved. 260 in-service college teachers are selected as sample population, through questionnaire survey, body percentile measurement and parameter calculation, the rule of teachers in class operation is summed up, then the total design of demonstration instrument is carried out, including human dimension analysis, user interface design, functional operation interface design, microphone design, top head design, device interface and system operating area design, overall size design and physical model design. The results of simulation test and model test show that the parameters of demonstration instrument are in line with teachers' class operation state. Total design resets the man-machine safety dimension, increases a dual-use lifting chair by opening and closing, innovates the demonstration screen, and improves the overall structure and function of demonstration instrument, thus promoting the innovative design and reform of educational facilities. © 2010 Journal of Mechanical Engineering. (14 refs)

Main heading: Demonstrations

Controlled terms: Ergonomics - User interfaces - Safety engineering - Plant shutdowns - Surveys - Parameter estimation - Teaching

Uncontrolled terms: Cervical spondylosis - Engineering parameters - Functional operation - Parameter calculation - Parameter optimization - Questionnaire surveys - Total designs - User interface designs

Classification Code: 722.2 Computer Peripheral Equipment - 914 Safety Engineering

Database: Compendex

Data Provider: Engineering Village

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8. Microstructures and corrosion properties of casting in situ Al₃Ti-Al composites

Chen, Tijun (1); Li, Jian (2); Hao, Yuan (1)

Source: *Rare Metals*, v 29, n 1, p 78-85, February 2010; **ISSN:** 10010521, **E-ISSN:** 18677185; **DOI:** 10.1007/s12598-010-0014-6; **Publisher:** University of Science and Technology Beijing

Author affiliation: (1) Gansu Key Laboratory of Advanced Nonferrous Materials, Lanzhou University of Technology, Lanzhou 730050, China (2) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The effects of Ti content and the alloying elements of Si and Cu on the microstructures of casting in situ Al₃Ti-Al composites were investigated. Simultaneously, their corrosion properties were also discussed. The results indicate that the aspect ratios of Al₃Ti platelets in different Al based composites are different although all of them are in flaky shape. The morphologies of Al₃Ti phase are not only determined by Ti content, but are also related to the alloying elements. The grain refining role of Al₃Ti phase in the pure Al and Al-Cu based composites is more effective than that in the Al-Si based composite. The addition of Ti decreases the corrosion resistance of pure Al and Al alloys. The corrosion resistances of the composites are dependent on both the corrosion characteristics of the corresponding matrixes and the distribution of Al₃Ti platelets. © 2010 Journal Publishing Center of University of Science and Technology Beijing and Springer Berlin Heidelberg. (31 refs)

Main heading: Corrosion resistance

Controlled terms: Aluminum corrosion - Corrosive effects - Aspect ratio - Binary alloys - Metallic matrix composites - Microstructure - Alloying elements - Aluminum alloys - Alloying - Corrosion resistant alloys - Titanium alloys

Uncontrolled terms: Al based composite - Al composites - Corrosion characteristics - Corrosion property - Cu-based composites - Grain refining - Si-based - Ti content

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 539.1 Metals Corrosion - 541.1 Aluminum - 541.2 Aluminum Alloys - 542.3 Titanium and Alloys - 951 Materials Science

Funding Details: Number: -, Acronym: LUT, Sponsor: Lanzhou University of Technology;

Funding text: The work was financially supported by the Development Program for Outstanding Young Teachers in Lanzhou University of Technology and the Opening Foundation of Gansu Key Laboratory of Advanced Nonferrous Materials.

Database: Compendex

Data Provider: Engineering Village

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9. High temperature oxidation behavior of the B₄C/BN composites

Jiang, Tao (1); Jin, Zhihao (2); Yang, Jianfeng (2); Qiao, Guanjun (2)

Source: *Advanced Materials Research*, v 105-106, n 1, p 133-136, 2010, *Chinese Ceramics Communications*; **ISSN:** 10226680; **ISBN-10:** 0878492755, **ISBN-13:** 9780878492756; **DOI:** 10.4028/www.scientific.net/AMR.105-106.133;

Conference: 6th China International Conference on High-Performance Ceramics, CICC-6, August 16, 2009 - August 19, 2009; **Sponsor:** The Chinese Ceramic Society; **Publisher:** Trans Tech Publications

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: The B₄C/BN composites were fabricated by hot-pressing process. The microstructure, mechanical properties and oxidation resistances of the B₄C/BN composites were investigated. It was shown that the h-BN particles were distributed in the B₄C ceramics matrix. The mechanical properties of the B₄C/BN microcomposites and the B₄C/BN nanocomposites decreased gradually with the increasing content of h-BN. The mechanical properties of the B₄C/BN nanocomposites were significantly improved in comparison with the B₄C/BN microcomposites. The oxidation processes were performed at 1000°C, 1100°C, 1200°C, 1300°C for 20h. The oxidation curves of the B₄C monolith, the B₄C/BN microcomposites and the B₄C/BN nanocomposites decreased gradually with the increase of oxidation temperature and oxidation time. The specimen's weight and the oxidation resistance decreased gradually with the increase of oxidation temperature and oxidation time. The specimens remained good oxidation resistance at 1000°C; the oxidation resistance decreased remarkably at 1300°C. The decreasing specimen's weight was attributed to the evaporation of B₂O₃ which produced by oxidation process of B₄C and h-BN. The phase composition and

microstructure of specimen's surface after oxidation process were investigated by XRD and SEM. © (2010) Trans Tech Publications. (9 refs)

Main heading: Nanocomposites

Controlled terms: Boron carbide - Ceramic materials - III-V semiconductors - Composite materials - Thermooxidation - Microstructure - Hot pressing - Oxidation resistance - Boron nitride

Uncontrolled terms: High temperature oxidation Behavior - Hot-pressing process - matrix - Micro-composites - Oxidation process - Oxidation temperature - Oxidation time - SEM - XRD

Classification Code: 539.1 Metals Corrosion - 712.1 Semiconducting Materials - 761 Nanotechnology - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.1 Ceramics - 933 Solid State Physics - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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10. Fuzzy rough sets based on hybrid monotonic inclusion measures and similarity measures

Zhang, Hongying (1); Dong, Minggao (2); Qi, Jianjun (3)

Source: *Annual Conference of the North American Fuzzy Information Processing Society - NAFIPS, 2010, 2010 Annual Meeting of the North American Fuzzy Information Processing Society, NAFIPS'2010*; ISBN-13:

9781424478576; DOI: 10.1109/NAFIPS.2010.5548288; Article number: 5548288; Conference: 2010 Annual North American Fuzzy Information Processing Society Conference, NAFIPS'2010, July 12, 2010 - July 14, 2010; Sponsor: Ryerson University; The Institute of Electrical and Electronic Engineers (IEEE); University of Waterloo; Publisher: Institute of Electrical and Electronics Engineers Inc.

Author affiliation: (1) Faculty of Science, Xi'an Jiaotong University, Xi'an, 710049, China (2) School of Economics and Management, Xi'an Shiyou University, Xi'an, 710065, China (3) Xidian University, Xi'an University, Xi'an, 71071, China

Abstract: Rough set theory and fuzzy set theory hold the topic of dealing with imperfect knowledge. Recent literature have shown both theories can be combined into a more expressive framework for modeling and processing incomplete information systems. According to the hierarchical characteristic of fuzzy sets, this paper presents the definitions of λ -weak fuzzy approximation space and IS#-fuzzy rough set based on a hybrid monotonic inclusion measure and a similarity measure. The properties of the IS#-fuzzy rough set are investigated. The approximate operators of a fuzzy decision concept and the relative decision rules will be derived from the fuzzy rough approximate operators. © 2010 IEEE. (40 refs)

Main heading: Fuzzy set theory

Controlled terms: Approximation algorithms - Fuzzy sets - Computation theory - Rough set theory

Uncontrolled terms: Decision rules - Fuzzy approximation spaces - Fuzzy decision - Fuzzy-rough sets - Inclusion measure - Incomplete information systems - Similarity measure

Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

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11. Effects of temperature and stress on the oxidation behavior of a 3D C/SiC composite in a combustion wind tunnel

Luan, Xin'gang (1); Cheng, Laifei (1); Zhang, Jun (2); Li, Jianzhang (1); Zhang, Litong (1)

Source: *Composites Science and Technology*, v 70, n 4, p 678-684, April 2010; ISSN: 02663538; DOI: 10.1016/j.compscitech.2009.12.025; Publisher: Elsevier Ltd

Author affiliation: (1) National Key Laboratory of Thermostructure Composite Materials, Northwestern Polytechnical University, Xi'an, Shaanxi 710072, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China

Abstract: High-temperature oxidation of a 3D C/SiC composite has been conducted under various tensile creep loads in a combustion wind tunnel at 1200-1500 °C. The effects of temperature and stress on the oxidation behavior were evaluated according to length change, lifetime and morphology of the specimens. The damage mechanisms of the composite are changed from superficial oxidation to non-uniform even uniform oxidation by a tensile stress. The stressed oxidation process is controlled by a normalized threshold stress (NTS), which is increased with rising temperature. When the normalized stress (NS) is below the threshold value, the oxidation of carbon fibers is controlled by the in-crack diffusion, starts from the windward and develops region by region along the combustion gas flow. The specimen displays a multiple creep behavior because the applied tensile load is borne by several load-bearing regions in turn and each region manifests a typical creep behavior after the tensile load transferred from an oxidized region to

it. When NS is above NTS, the oxidation of carbon fibers is limited by the boundary layer diffusion, and the specimen exhibits a typical creep behavior. © 2009 Elsevier Ltd. All rights reserved. (19 refs)

Main heading: Creep

Controlled terms: Flow of gases - Scanning electron microscopy - Wind tunnels - Carbon fibers - Temperature - Combustion - Tensile stress - Thermooxidation - Boundary layers - Ceramic matrix composites

Uncontrolled terms: 3D C/SiC composites - Boundary layer diffusions - Ceramic-matrix composites (CMCs) - Combustion gas flow - Damage mechanics - Effects of temperature - Oxidation behaviors - Superficial oxidation

Classification Code: 631.1.2 Gas Dynamics - 641.1 Thermodynamics - 651.2 Wind Tunnels - 802.2 Chemical Reactions - 804 Chemical Products Generally - 812.1 Ceramics - 951 Materials Science

Funding Details: Number: 50820145202,90405015, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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Database: Compendex

Data Provider: Engineering Village

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12. Fabrication and microstructure of Fe-Al intermetallic compound powders by mechanical alloying

Jiang, Tao (1); Jin, Haiyun (2)

Source: *Materials Science Forum*, v 658, p 356-359, 2010, *Eco-Materials Processing and Design XI, ISEPD-11*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-10:** 0878492445, **ISBN-13:** 9780878492442; **DOI:** 10.4028/www.scientific.net/MSF.658.356; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: The Fe-Al intermetallic compound powders were fabricated by mechanical alloying and heat treatment process. In this research, the phase composition and microstructure of the Fe-Al intermetallic compound powders produced by different milling time and heat treatment at 800°C and 1000°C were investigated. The XRD patterns results showed that the Fe-Al intermetallic compound powders were fabricated by mechanical alloying for 60h. After heat treatment at 800°C and 1000°C, the Fe-Al intermetallic compound powders transformed into the Fe₃Al powders. With the increase of milling time, the mechanical alloying extent of Fe-Al intermetallic compound powders would be increased remarkably, and the particles sizes decreased remarkably. The microstructure showed that the mean particles size of the Fe-Al intermetallic compound powders after milling for 60h was rather fine and about 4-5µm. The microstructures showed that mean particles size of the Fe₃Al intermetallic compound powders produced by heat treatment at 800°C and 1000°C was also about 4-5µm. © (2010) Trans Tech Publications. (8 refs)

Main heading: Microstructure

Controlled terms: Aluminum compounds - Mechanical alloying - Fabrication - Iron alloys - Milling (machining) - Powders - Aluminum alloys - Binary alloys - Iron compounds - Heat treatment - Intermetallics

Uncontrolled terms: Fe-Al intermetallic compounds - Heat treatment process - Intermetallics compounds - Milling time - Particles sizes - XRD patterns

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 541.2 Aluminum Alloys - 545.2 Iron Alloys - 604.2 Machining Operations - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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13. Experiment on invert emulsion viscosity reducing transportation for Dongxin heavy oil

Kou, Jie (1); Xiao, Rong-Ge (2)

Source: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*, v 34, n 4, p 162-166, August 2010; **Language:** Chinese; **ISSN:** 16735005; **DOI:** 10.3969/j.issn.1673-5005.2010.04.032; **Publisher:** University of Petroleum, China

Author affiliation: (1) College of Storage and Transportation and Architectural Engineering in China University of Petroleum, Qingdao 266555, China (2) College of Petroleum Engineering in Xi'an Shiyou University, Xi'an 710065, China

Abstract: Aimed at the problems of high cost of water blended crude transportation and large succeeding wastewater treatment for Dongxin heavy oil in Shengli Oilfield, a invert emulsion viscosity reducing transportation method was proposed. And a kind of invert emulsifier was selected for Dongxin heavy oil. The results show that the optimal prepared conditions of emulsion for invert emulsion transportation are temperature of 50°C, emulsifier mass fraction of

0.85%, the range of effective volume oil cut of 65%-70%, stirring intensity of 120 r/min and stirring time of 10 min. The experimental effect of invert emulsion transportation is better than that of water blended crude transportation. Invert emulsion viscosity reducing transportation has good economic benefits, and 2 million yuan can be reduced each year. (15 refs)

Main heading: Crude oil

Controlled terms: Emulsification - Heavy oil production - Petroleum transportation - Wastewater treatment - Viscosity

Uncontrolled terms: Economic benefits - Effective volume - Emulsify - Invert emulsions - Shengli Oilfield - Stirring intensity - Transportation method - Viscosity reduction

Classification Code: 452.4 Industrial Wastes Treatment and Disposal - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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14. The analysis and study on electromagnetic field of conductance water fraction sensor

Li, Li-Pin (1, 2); Dang, Rui-Rong (2); Zhao, Dong-Sheng (2); Yin, Guang (2); Fan, Yang-Yu (1)

Source: *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*, v 9, p 4271-4275, 2010, *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*;

ISBN-13: 9781424465149; **DOI:** 10.1109/CISP.2010.5647423; **Article number:** 5647423; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronics and Information, Northwestern Polytechnical University, Xian, China (2) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xian, China

Abstract: The basic principle of conductance sensor on the measurement of water fraction in oil-gas-water three phase flow is introduced and the mathematic model is described. The 2-D and 3-D electromagnetic field simulations have been implemented based on the method of finite element analysis. The optimal parameters of conductance sensor are obtained by analyzing the ANSYS simulations. According to the parameters, a conductance sensor which can be applied to measure water fraction for 2 7/8" oil pipe is designed and constructed. The indoor oil-gas-water experiments have been performed using the conductance sensor with optimal parameters and the experimental results coincide with theoretical simulations. It shows that the parameters obtained by analyzing and studying electromagnetic field of conductance sensor are feasible. ©2010 IEEE. (11 refs)

Main heading: Electromagnetic fields

Controlled terms: Finite element method

Uncontrolled terms: ANSYS - Conductance sensor - Electromagnetic field analysis - Mathematic model - Method of finite elements - Optimal parameter - Theoretical simulation - Water fraction

Classification Code: 701 Electricity and Magnetism - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

15. Study on temperature response of photonic crystal microcavity

Fu, Haiwei (1); Zhao, Hui (1); Qiao, Xueguang (2); Li, Yan (1); Zhao, Dazhuang (1); Yong, Zhen (1)

Source: *Guangxue Xuebao/Acta Optica Sinica*, v 30, n 1, p 237-240, January 2010; **Language:** Chinese; **ISSN:** 02532239; **DOI:** 10.3788/AOS20103001.0237; **Publisher:** Chinese Optical Society

Author affiliation: (1) Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Ministry of Education, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (2) Principal's Office, Northwest University, Xi'an, Shaanxi 710069, China

Abstract: The band structure of two-dimensional photonic crystals consisting of the silicon (Si) dielectric cylinder square lattices is calculated by using plane-wave expansion method for the TM mode. Photonic crystal microcavity structure is designed. The defect-state field of the microcavity is simulated by finite-difference time-domain (FDTD) method, so the mode field distribution of defects is obtained. The thermal expansion and thermal-optic effect of silicon is taken into account, the resonant wavelengths of the microcavity are also calculated by FDTD method under different temperature. The results indicate that the resonant wavelength increases linearly while the temperature rising. The wavelength shift is 6.7 pm/°C. This characteristic of photonic crystal microcavity can be used for temperature sensing, which has a certain degree of practical significance. (12 refs)

Main heading: Finite difference time domain method

Controlled terms: Temperature sensors - Photonic crystals - Crystal structure - Dielectric devices - Microcavities - Defects - Thermal expansion

Uncontrolled terms: Dielectric cylinder - Mode field distribution - Photonic crystal microcavities - Plane wave expansion method - Resonant wavelengths - Temperature response - Temperature sensing - Two-dimensional photonic crystals

Classification Code: 641.1 Thermodynamics - 714 Electronic Components and Tubes - 921 Mathematics - 933.1.1 Crystal Lattice - 944.5 Temperature Measuring Instruments - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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16. Synthesis, structures and properties of two novel charge-transfer complexes with the ratio of ferrocenyl:POM of 1:1, (Bu₄N)[CpFeCpCH₂N(C₂H₅)₃][M₆O₁₉] (M = Mo, W)

Xu, Haisheng (1, 2); Zhang, Lei (1); Li, Zuoxi (1); Liu, Xuemei (1, 2); Hu, Huaiming (1); Xue, Ganglin (1)

Source: *Solid State Sciences*, v 12, n 8, p 1332-1336, August 2010; **ISSN:** 12932558; **DOI:** 10.1016/j.solidstatesciences.2010.05.002; **Publisher:** Elsevier Masson s.r.l.

Author affiliation: (1) Department of Chemistry, Shaanxi Key Laboratory of Physico-Inorganic Chemistry, Northwest University, Xi'an 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China

Abstract: The first charge-transfer (CT) complexes containing the cationic ferrocenyl donor CpFeCpCH₂N+(C₂H₅)₃ and polyoxometalate (POM) acceptors of the Lindqvist structural type [M₆O₁₉]²⁻ (M=Mo, W) with the ratio of ferrocenyl:POM of 1:1, (Bu₄N)[CpFeCpCH₂N(C₂H₅)₃][Mo₆O₁₉] (1) and (Bu₄N)[CpFeCpCH₂N(C₂H₅)₃][W₆O₁₉] (2), were synthesized in high yields (67-71%) by traditional solution synthetic method, and characterized by elemental analysis, IR spectroscopy, UV-vis diffuse reflectance spectrum, luminescent spectrum and single crystal X-ray diffraction. The X-ray structure of the two novel CTCs were both solved in the monoclinic space group P2₁/n and show the close interaction of the hydrogen atoms of the CpFeCpCH₂N+(C₂H₅)₃ with the oxygen atoms on the surface of the POM. The UV-vis diffuse reflectance spectrum in the solid state indicates the presence of a new CT band at λ_{max} = 576 nm and 590 nm for 1 and 2, respectively, attributed to CT transitions between the ferrocenyl donors and the POM acceptors. The luminescent spectroscopy of 1 exhibits the weakened fluorescence signals compared to that of the corresponding POM and the cationic donor, however, 2 has an intense emission at about ca. 394 nm and may be excellent candidates for potential solid-state photofunctional materials. © 2010 Elsevier Masson SAS. (47 refs)

Main heading: X ray diffraction

Controlled terms: Crystal atomic structure - Oxides - Atoms - Fluorescence - Charge transfer - Reflection - Iron compounds - Synthesis (chemical) - Organometallics - Single crystals

Uncontrolled terms: Charge-transfer salts - Ferrocenes - Luminescent spectroscopy - Photofunctional materials - Single crystal x-ray diffraction - Spectrum properties - Structures and properties - UV-vis diffuse reflectance spectra

Classification Code: 741.1 Light/Optics - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.1 Organic Compounds - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice

Funding Details: Number: J083417/J0104, Acronym: -, Sponsor: -; Number: 09JK783, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 20973133, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: This work was supported by the National Natural Science Foundation of China (20973133), the Education Commission of Shaanxi Province (09JK783) and National Training Fund for the Basic Sciences (J083417/J0104)

Database: Compendex

Data Provider: Engineering Village

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17. A novel fast motion estimation algorithm for video coding

Liu, Long (1); Song, Qijun (2); Wang, Zhanhui (3); Hong, Song (4)

Source: *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*, v 1, p 33-37, 2010, *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*; **ISBN-13:** 9781424465149; **DOI:** 10.1109/CISP.2010.5648056; **Article number:** 5648056; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Xi'an University of Technology, Xi'an, China (2) China Electronic Systems Engineering Corporation, Beijing, China (3) School of Naval University of Engineering, Wuhan, China (4) School of Xi'an Shiyou University, Xi'an, China

Abstract: This paper presents an efficient search algorithm utilizes the relationship between local motion similarity and the variation degree of motion vector. The main feature of proposed algorithm are: the motion vectors are classified as

the unchanged, the slightly changed and the greatly changed motion vector according to corresponding local motion similarity; then different search schemes are adopted for different kind motion vectors. The experimental results show the proposed algorithm has a significant computational speedup compared with other popular fast algorithms, but offers a similar, even better performance. ©2010 IEEE. (6 refs)

Main heading: Motion estimation

Controlled terms: Image coding - Vectors - Video signal processing

Uncontrolled terms: Fast algorithms - Fast motion estimation algorithm - Local motions - Motion Vectors - Search Algorithms - Search scheme

Classification Code: 716.4 Television Systems and Equipment - 921.1 Algebra

Database: Compendex

Data Provider: Engineering Village

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18. Electronic transport properties of a (4, 4) carbon nanotube/silicon carbide nanotube heterojunction

Liu, Hong-Xia (1); Song, Jiu-Xu (1, 2); Zhang, He-Ming (1)

Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 37, n 3, p 520-523, June 2010; **Language:**

Chinese; **ISSN:** 10012400; **DOI:** 10.3969/j.issn.1001-2400.2010.03.024; **Publisher:** Science Press

Author affiliation: (1) Ministry of Education Key Lab. of Wide Band-Gap Semiconductor Materials and Devices, Xidian Univ., Xi'an 710071, China (2) School of Electronic Eng., Xi'an Shiyou Univ., Xi'an 710065, China

Abstract: The transport properties of the nanotube heterojunctions are the basis for the studies of their working mechanism, which is important for the theoretical study and the practical application. First, a two-probe model for a (4, 4) carbon nanotube (CNT)/silicon carbide nanotube (SiCNT) heterojunction is established. The transport properties of the heterojunction is realized with the nonequilibrium Green's function (NEGF). From the orbitals of the molecule projected self-consistent Hamiltonian, we can see that the highest occupied molecular orbital (HOMO) and the lowest unoccupied molecular orbital (LUMO) concentrate mainly on the CNT section and that the band gap of the heterojunction is about 0.48 eV. The turn-on voltages of the heterojunction under the positive and negative voltage are +2.0V and -1.6V, which can be achieved from its voltage-current characteristic. (11 refs)

Main heading: Transport properties

Controlled terms: Carbon nanotubes - Heterojunctions - Yarn - Energy gap - Molecular orbitals - Silicon carbide

Uncontrolled terms: Electronic transport properties - Highest occupied molecular orbital - Lowest unoccupied molecular orbital - Non-equilibrium Green's function - Silicon carbide nanotubes - Theoretical study - Voltage-current characteristics - Working mechanisms

Classification Code: 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 819.4 Fiber Products - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

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19. Synthesis and characterization of SiO₂ coating on cast pure titanium

Guo, Litong (1, 2); Guo, Lizhi (3); Zhu, Yabo (1); Xu, Cheng (1); Zhu, Hua (2); Guo, Tianwen (4)

Source: *Materials and Manufacturing Processes*, v 25, n 7, p 696-699, July 2010; **ISSN:** 10426914, **E-ISSN:**

15322475; **DOI:** 10.1080/10426914.2010.489594; **Publisher:** Taylor and Francis Inc.

Author affiliation: (1) School of Materials Science and Engineering, China University of Mining and Technology, Xuzhou 221116, China (2) School of Mechanical and Electrical Engineering, China University of Mining and Technology, Xuzhou, China (3) Xian Shiyou University, Xian, China (4) Fourth Military Medical University, Xi'an, China

Abstract: The silicon coating was deposited by sol-gel dipping process as intermediate layer to minimize titanium oxidation for Ti-porcelain restorations. The effect of silicon coating on bonding strength of titanium-porcelain was investigated. The adhesion between the titanium and porcelain was evaluated by three-point flexure bonding test. The result of TG-DSC analysis showed that the optimal treating temperature for SiO₂ coating was 300°C. Silicon coating was effective in preventing titanium oxide layer formation and improving bonding strength. The improvement in bonding strength of titanium-porcelain was about 10%. At the same time, the in vitro bioactivity of the titanium and SiO₂ coating was studied by cytotoxicity test. The methyl thiazolyl tetrazolium assay results demonstrated that the cytotoxicities of SiO₂ coating were ranked as 0. The SEM results revealed the existence of microcrack on the SiO₂ coating surface. Failure of the titanium-porcelain predominantly occurred at the titanium-oxide interface. The SiO₂ coating increased bonding strength of titanium-porcelain and could be used for dental implant materials. © Taylor & Francis Group, LLC. (18 refs)

Main heading: Silica

Controlled terms: Dental prostheses - Titanium oxides - Sol-gel process - Porcelain - Silicon oxides - Sol-gels - Diffusion bonding - Coatings - Cytotoxicity - Metal implants

Uncontrolled terms: Dental implant materials - In-vitro bioactivity - Methyl thiazolyl tetrazolium assays - SiO₂ - Sol-gel-dipping process - Synthesis and characterizations - Titanium oxide layer - Treating temperature

Classification Code: 461.9 Biology - 462.3 Dental Equipment and Supplies - 462.4 Prosthetics - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 812.1 Ceramics - 812.3 Glass - 813.2 Coating Materials

Funding Details: Number: 2009A057, Acronym: -, Sponsor: -; Number: 20090095120017, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China;

Funding text: The authors gratefully acknowledge the Fourth Military Medical University for providing support for porcelain fusion and in vitro bioactivity tests. This work was supported by Doctoral Fund for The New Youth Scholars of Ministry of Education of China 20090095120017 and Youth Foundation of China University of Mining and Technology No. 2009A057.

Database: Compendex

Data Provider: Engineering Village

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20. Robustness-tracking algorithm for the infrared target under complex background noise

Gao, Guo-Wang (1, 2); Liu, Shang-Qian (1); Qin, Han-Lin (1)

Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 37, n 6, p 1098-1102, December 2010;

Language: Chinese; **ISSN:** 10012400; **DOI:** 10.3969/j.issn.1001-2400.1010.06.021; **Publisher:** Science Press

Author affiliation: (1) School of Technical Physics, Xidian Univ., Xi'an 710071, China (2) Ministry of Edu. Key Lab. of Photoelectric Logging and Detecting of Oil and Gas, Xi'an Shiyou Univ., Xi'an 710065, China

Abstract: A tracking algorithm for the Infrared target is proposed that is the combination of edge detection and the improved Mean Shift method. After the edge of the original infrared image is detected roughly, the non-linear edge detection algorithm is presented that eliminates the most original image noise and could lead to a high-quality image. Based on this image, the improved Mean-Shift algorithm that focuses on renewing the target model, background-weightedness of the target template and Kernal Function-weightedness of the selected target region is applied to implement quick-tracking of a fast-moving target so that the algorithm is not sensitive to moving background noise, and thus it improves tracking procedure stability and robustness to background noise of the algorithm. Experimental results show that the combination of the non-linear edge detection algorithm and Mean Shift tracking algorithm not only reduces the operand of algorithms and improves the tracking speed, but also has a strong robustness to background noise. (11 refs)

Main heading: Edge detection

Controlled terms: Image enhancement - Signal detection - Target tracking - Infrared imaging - Chemical detection

Uncontrolled terms: Complex background - Edge detection algorithms - High quality images - Infrared target - Mean shift algorithm - Mean shift tracking - Stability and robustness - Tracking algorithm

Classification Code: 716.1 Information Theory and Signal Processing - 746 Imaging Techniques - 801 Chemistry

Database: Compendex

Data Provider: Engineering Village

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21. Covering model of granular computing

She, Yan-Hong (1); Wang, Guo-Jun (2, 3)

Source: *Ruan Jian Xue Bao/Journal of Software*, v 21, n 11, p 2782-2789, November 2010; **Language:** Chinese;

ISSN: 10009825; **DOI:** 10.3724/SP.J.1001.2010.03663; **Publisher:** Chinese Academy of Sciences

Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an 710065, China (2) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an 710062, China (3) Shanghai Key Laboratory of Trustworthy Computing, Shanghai 200062, China

Abstract: To investigate the basic problems of granular computing, such as granulation, computing with granulars and so on, in a more general setting, a covering model of granular computing is introduced in this paper by relaxing the three conditions of equivalence relations, which generalizes the existing models. Under this model, Zoom-in and Zoom-out operators are defined, respectively. Different combinations of Zoom-in and Zoom-out operators form different rough approximations of the universe of discourse and granulated universe of discourse. This paper studies their properties and establishes their relationship with topological space and Galois connection. © by Institute of Software, the Chinese Academy of Sciences. All rights reserved. (19 refs)

Main heading: Granular computing

Controlled terms: Topology

Uncontrolled terms: Covering - Covering model - Equivalence relations - Galois connection - Rough approximations - Topological spaces - Universe of discourse - Zoom-out

Classification Code: 723.2 Data Processing and Image Processing - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

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22. Study on the displacement characteristics of nitrogen foam flooding after polymer flooding

Zhao, Jin-Sheng (1); Li, Tian-Tai (1); Zhang, Ming (1); Li, Zhao-Min (2); Yang, Xiao-Lei (3)

Source: *Shenzhen Daxue Xuebao (Ligong Ban)/Journal of Shenzhen University Science and Engineering*, v 27, n 3, p 361-366, July 2010; **Language:** Chinese; **ISSN:** 10002618; **Publisher:** Editorial Office of Journal of Shenzhen University

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, China University of Petroleum, Dongying 257061, China (3) Drilling Engineering Academic, Daqing Petrel Administration, Daqing 163413, China

Abstract: To study the effect of permeability contrast and residual oil distribution on foam mobility and displacement in a heterogeneous reservoir, parallel cores were used to mimic the process in a lab. The lab tests show that, the foam can effectively adjust the mobility of permeability formations when the permeability contrast is below 12. At reasonable permeability contrast and residual oil distribution, foam can displace oil uniformly in the formations. For a heterogeneous reservoir with high permeability and different residual oil distribution, the effect of foam flooding is mainly determined by residual oil saturation. In a high permeability formation, the less the residual oil, the higher the plugging pressure is. This makes the residual oil displaced by foam and follow-up displacing fluid. (7 refs)

Main heading: Porous materials

Controlled terms: Floods - Natural gas fields - Petroleum reservoirs - Petroleum reservoir engineering - Oil well flooding - Reservoirs (water) - Gas industry - Oil field development

Uncontrolled terms: Displacement characteristic - Foam flooding - Heterogeneous reservoirs - High permeability formation - Oil-gas field development - Polymer flooding - Residual oil distribution - Residual oil saturation

Classification Code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2

Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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23. Time domain modeling of fiber Bragg gratings vibration acceleration sensor based on amplified spontaneous emission light source

Shao, Jun (1, 2); Liu, Junhua (1); Qiao, Xueguang (2); Jia, Zhen'an (2); Ge, Peng (2)

Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 44, n 4, p 43-47, April 2010; **Language:** Chinese; **ISSN:** 0253987X; **Publisher:** Xi'an Jiaotong University

Author affiliation: (1) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) The Ministry of Education Key Laboratory of Photoelectric Oil and Gas Logging and Detecting, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The demodulating technique of amplified spontaneous emission (ASE) is extended to fiber Bragg gratings vibration acceleration sensor and so this technique for the static demodulation of temperature or strain can be applied to dynamical demodulation of vibration acceleration. The measure system of fiber Bragg gratings vibration acceleration sensor based on ASE is constructed. The dynamical time domain signal of this system is obtained by negative step response of setting initial displacement. The dynamic parameters by nonlinear direct fitting coincide well with ones from finite element method. The results demonstrate that the dynamical demodulation project of ASE is simple, this modeling method of negative step response does not need special excitation equipment, and the method of nonlinear direct fitting for getting the dynamical parameters is more conveniently than the traditional methods. (14 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Finite element method - Light sources - Optical variables measurement - Acceleration - Spontaneous emission - Demodulation - Time domain analysis

Uncontrolled terms: Fiber gratings - Negative steps - Nonlinear direct fitting - Time domain modeling - Vibration acceleration sensor

Classification Code: 711 Electromagnetic Waves - 921 Mathematics - 921.6 Numerical Methods - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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24. AlGaIn/GaN MIS-HEMT using NbAlO dielectric layer grown by atomic layer deposition (Open Access)

Bi, Zhi-Wei (1); Feng, Qian (1); Hao, Yue (1); Wang, Dang-Hui (2); Ma, Xiao-Hua (1); Zhang, Jin-Cheng (1); Quan, Si (1); Xu, Sheng-Rui (1)

Source: *Chinese Physics B*, v 19, n 7, July 2010; **ISSN:** 16741056; **DOI:** 10.1088/1674-1056/19/7/077303; **Article number:** 077303; **Publisher:** Institute of Physics Publishing

Author affiliation: (1) Key Laboratory of Wide Band-Gap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, Xi'an 710071, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: We present an AlGaIn/GaN metal-insulator-semiconductor high electron mobility transistor (MIS-HEMT) with an NbAlO high-k dielectric deposited by atomic layer deposition (ALD). Surface morphology of samples are observed by atomic force microscopy (AFM), indicating that the ALD NbAlO has an excellent-property surface. Moreover, the sharp transition from depletion to accumulation in capacitance-voltage ($C\{V}$) curve of MIS-HEMT demonstrates the high quality bulk and interface properties of NbAlO on AlGaIn. The fabricated MIS-HEMT with a gate length of 0.5 μm exhibits a maximum drain current of 960 mA/mm, and the reverse gate leakage current is almost 3 orders of magnitude lower than that of reference HEMT. Based on the improved direct-current operation, the NbAlO can be considered to be a potential gate oxide comparable to other dielectric insulators. © 2010 Chinese Physical Society and IOP Publishing Ltd. (14 refs)

Main heading: III-V semiconductors

Controlled terms: Gallium nitride - Atomic force microscopy - Capacitance - Drain current - High electron mobility transistors - Leakage currents - Aluminum gallium nitride - Atomic layer deposition - High-k dielectric - Wide band gap semiconductors

Uncontrolled terms: AlGaIn/gaN - Dielectric insulators - Direct current operations - High- k - Maximum drain current - MIS-HEMT - NbAlO - Orders of magnitude

Classification Code: 701.1 Electricity: Basic Concepts and Phenomena - 708.1 Dielectric Materials - 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 741.3 Optical Devices and Systems - 804.2 Inorganic Compounds - 813.1 Coating Techniques - 933.1.2 Crystal Growth

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

Database: Compendex

Data Provider: Engineering Village

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25. Real-time nonuniformity-correction system for infrared focal plane arrays based on high-performance DSP

Gao, Guo-Wang (1, 2); Liu, Shang-Qian (1); Qin, Han-Lin (1); Zhang, Feng (2)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 5, p 664-667, May 2010; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) School of Technical Physics, Xidian University, Shanxi Xi'an 710071, China (2) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Shanxi Xi'an 710065, China

Abstract: Based on the theory of discrete wavelet transform, a scene-based nonuniformity-correction algorithm for infrared focal plane arrays (IRFPA) is presented. In this scheme, the infrared image sequence is decomposed to the discrete sequence wavelet transform with an appropriate wavelet function, and an operation flow based on Mallat algorithm is given, and an infrared imaging system is designed to carry out real-time nonuniformity-correction. The system uses high-performance DSP (TMS320C6713) as the core processor, and transmits the data by parallel transmission in different channels. By using the algorithm and operation flow of DSP processor, the real-time correction of the nonuniformity of IRFPA is realized. (11 refs)

Main heading: Focusing

Controlled terms: Discrete wavelet transforms - Thermography (imaging) - Digital signal processing - Infrared detectors - Signal reconstruction - Focal plane arrays

Uncontrolled terms: Core processors - Correction algorithms - DSP processor - Infrared focal plane arrays - Infrared focal plane arrays (IRFPA) - Infrared image sequence - Mallat algorithm - Nonuniformity - Operation flow - Parallel transmission - Real-time corrections - Scene-based - System use - Wavelet function

Classification Code: 657.2 Extraterrestrial Physics and Stellar Phenomena - 716.1 Information Theory and Signal Processing - 742.1 Photography - 921.3 Mathematical Transformations - 944.7 Radiation Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

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26. Prediction of bed variation during a flood by distorted model experiments with a movable bed

Wei, Bing-Qian (1); Xun, Hong-Yun (1); Xiao, Rong-Ge (1, 2); Xiao, Cheng-Ya (3)

Source: *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*, v 7, p

3438-3442, 2010, *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*;

ISBN-13: 9781424465149; **DOI:** 10.1109/CISP.2010.5646779; **Article number:** 5646779; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Hydraulic and Hydropower, Xi'an University of Technology, Xi'an, 710048, China

(2) College of Oil and Gas Resources, Xi'an Shiyou University, Xi'an, 710065, China (3) Sinohydro Bureau 3 Co.Ltd., Guizhou, 556605, China

Abstract: Theoretical backing of the similarity laws obtained from the dual dimensionless parameters of the bed-form classification diagram is given by solving the equations of similarity conditions that are obtained from the 1-dimensional equation of motion, the continuity equation, the bed deformation equation, and the formula of bed-load transport.

Furthermore, a distorted model experiment was conducted to predict the bed variation during a flood in the Chubetsu River (a tributary of the Ishikari river in Hokkaido, Japan). The usefulness of the similarity laws of a distorted model was ascertained, and it was found that the maximum scour depth occurs during a recession of the flood hydrograph. ©2010 IEEE. (11 refs)

Main heading: Floods

Controlled terms: Scour - Equations of motion

Uncontrolled terms: Alternate bars - Bed materials - Bed-load transport - Continuity equations - Dimensionless parameters - Equation of motion - River bend - Similarity law

Classification Code: 921.2 Calculus - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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27. Fabrication and thermal shock resistance of the machinable BN/B4C composite ceramics

Jiang, Tao (1); Jin, Zhihao (2); Qiao, Guanjun (2); Yang, Jianfeng (2)

Source: *Kuei Suan Jen Hsueh Pao/Journal of the Chinese Ceramic Society*, v 38, n 8, p 1527-1532, August 2010;

Language: Chinese; **ISSN:** 04545648; **Publisher:** Chinese Ceramic Society

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

(2) State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: BN/B4C micro-composite and BN/B4C nano-composite were fabricated by hot-pressing process. The thermal shock resistances of the BN/B4C micro-composite and the BN/B4C nano-composite were investigated by the water-quenching method compared with the B4C monolith ceramic. The residual fracture strength after thermal shock test was measured by the three-point bending method. The results show that the thermal shock resistances of the BN/B4C micro-composite and the BN/B4C nano-composite are much better than that of the B4C monolith ceramic. The thermal shock resistance of the BN/B4C nano-composite is much better than that of the BN/B4C micro-composite. The high thermal shock resistances of the BN/B4C micro-composite and the BN/B4C nano-composite can be attributed to their high fracture strength and low modulus of elasticity modulus. The microstructure analysis shows that the weak interface of BN/B4C and cleavage behavior of laminate-structured h-BN particles can remarkably improve the thermal shock resistance of the BN/B4C composites. (15 refs)

Main heading: Nanocomposites

Controlled terms: Boron carbide - Hot pressing - Laminated composites - Thermal shock - Boron nitride - Ceramic materials - Fracture - Fracture toughness - Elastic moduli - III-V semiconductors

Uncontrolled terms: Composite ceramic - Hot-pressing process - Microstructure analysis - Monolith ceramics - Shock temperature - Thermal shock resistance - Three point bending methods - Water quenching methods

Classification Code: 712.1 Semiconducting Materials - 761 Nanotechnology - 804.2 Inorganic Compounds - 812.1 Ceramics - 933 Solid State Physics - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village
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28. Formation characteristics of Ni/Ti intermetallics through annealing of layered Ni/Ti

Zhou, Yong (1, 2); Yang, Guanjun (1); Wu, Xian (2); Li, Changjiu (1)

Source: *Hanjie Xuebao/Transactions of the China Welding Institution*, v 31, n 9, p 41-44, September 2010; **Language:** Chinese; **ISSN:** 0253360X; **Publisher:** Harbin Research Institute of Welding

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

Abstract: Ni/Ti diffusion couples were prepared by cold spraying with Ni and Ti powders and mechanically alloyed Ni/Ti alloy powders. The formation and growth characteristics of Ni/Ti intermetallics within Ni/Ti during solid state diffusion treatment were investigated by scanning electron microscopy (SEM) and X-ray diffraction (XRD). It was found that the thicknesses of Ni₃Ti, NiTi and Ti₂Ni intermetallic compounds layers increased with annealing temperature. The growth of TiNi layer followed the parabolic law with annealing time while the thicknesses of Ti₂Ni or Ni₃Ti layers were kept constant at certain annealing temperature. The results suggest that the formation and then rapid growth of TiNi intermetallic take place after Ni₃Ti and Ti₂Ni intermetallic compounds grow to certain thicknesses. (16 refs)

Main heading: Titanium alloys

Controlled terms: Diffusion in solids - Scanning electron microscopy - Intermetallics - X ray diffraction - Powders - Binary alloys - Nickel alloys - Annealing

Uncontrolled terms: Annealing temperatures - Annealing treatments - Diffusion couple - Formation characteristics - Growth characteristic - Mechanically alloyed - Solid-state diffusion - TiNi intermetallic

Classification Code: 531.1 Metallurgy - 537.1 Heat Treatment Processes - 542.3 Titanium and Alloys - 548.2 Nickel Alloys

Database: Compendex

Data Provider: Engineering Village

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29. Two-phase flow instability in vertical and inclined parallel rifled tubes at low mass velocity

Deng, Zhi'an (1, 2); Luo, Yushan (1); Chen, Tingkuan (1); Wang, Haijun (1); Huang, Fan (3); Jia, Lin (2)

Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 44, n 1, p 17-21+50, January 2010;

Language: Chinese; **ISSN:** 0253987X; **Publisher:** Xi'an Jiaotong University

Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) China West Airport Group, Xi'an 710075, China

Abstract: An experiment was conducted to investigate the two-phase flow instability in the vertical parallel rifled tubes and inclined parallel rifled tubes using six-head rifled tubes with a diameter of 31.8 mm in the mass flow rate range of 200-450 kg/(m²·s) in a high pressure test loop. The experimental results show that the boundary heat flux of the pressure-drop type oscillation or the density-wave type oscillation increased with the increase of the inlet pressure and the mass flow rate, and the boundary heat flux for the vertical parallel rifled tubes was greater than that for inclined parallel rifled tubes, indicating that the flow in vertical parallel rifled tubes would be more stable. The effects of inlet subcooling degree on the boundary heat flux and the oscillation period exhibited two different trends in the test. In addition, non-dimensional correlations of thresholds of heat flux both in the vertical parallel rifled tube and the inclined parallel rifled tube were obtained by the regression calculation of the test data. (10 refs)

Main heading: Heat flux

Controlled terms: Mass transfer - Oscillating flow - Tubes (components) - Two phase flow

Uncontrolled terms: Boundary heat flux - Density wave type oscillation - Mass flow rate - Oscillation periods - Parallel rifled tubes - Pressure-drop type oscillations - Supercritical - Two-phase flow instabilities

Classification Code: 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 641.3 Mass Transfer

Database: Compendex

Data Provider: Engineering Village

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30. Effect of self-propagating high-temperature combustion synthesis on the deposition of NiTi coating by cold spraying using mechanical alloying Ni/Ti powder

Zhou, Yong (1, 2); Li, Chang-Jiu (1); Yang, Guan-Jun (1); Wang, Hong-Duo (2); Li, Geng (2)

Source: *Intermetallics*, v 18, n 11, p 2154-2158, November 2010; **ISSN:** 09669795; **DOI:** 10.1016/j.intermet.2010.07.006; **Publisher:** Elsevier Ltd

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

Abstract: Nickel titanium alloy powder was fabricated by mechanical alloying process. The powder was employed to form Ni50-Ti50 alloy deposit by cold spraying. The thermal stability of the as-milled powders was characterized by differential scanning calorimetry. The surface morphology and cross-sectional microstructure of the coatings were examined by scanning electron microscopy (SEM). The coating microstructure was also characterized by X-ray diffraction analysis. It was observed that the Self-propagating High-temperature combustion Synthesis (SHS) phenomenon occurs during cold spraying using Ni/Ti mechanical alloying powders. The deposition efficiency of Ni50-Ti50 coating was significantly influenced by the SHS reaction level of MA powder. The gas temperature igniting the SHS reaction during cold spraying decreased with the increase of ball milling time. The ignition of SHS reaction led to partial melting of Ni/Ti powder. It was found that the melted particle fraction which resulted from SHS reaction led to splashing of spray particles off substrate on impact, which significantly decreased the deposition efficiency. A model was proposed to explain the coating deposition behavior during cold spraying using the mechanically alloyed metastable Ni/Ti powder with the stoichiometry of a NiTi intermetallic compound. © 2010 Elsevier Ltd. All rights reserved. (26 refs)

Main heading: Mechanical alloying

Controlled terms: Powder metals - Combustion synthesis - Intermetallics - Titanium alloys - Binary alloys - Microstructure - Scanning electron microscopy - X ray diffraction analysis - Nickel alloys - Thermodynamic stability - Ball milling - Deposition - Efficiency - Milling (machining) - Differential scanning calorimetry

Uncontrolled terms: Coating microstructures - Cross-sectional microstructure - Deposition efficiencies - High-temperature combustion - Intermetallic and otherwise - Mechanical alloying and milling - Nickel titanium alloy - Reaction synthesis

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 542.3 Titanium and Alloys - 548.2 Nickel Alloys - 604.2 Machining Operations - 641.1 Thermodynamics - 642.1 Process Heating - 802.2 Chemical Reactions - 802.3 Chemical Operations - 913.1 Production Engineering - 944.6 Temperature Measurements - 951 Materials Science

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Funding text: The present work is supported by the Research Fund for the Doctoral Program of Higher Education of the Ministry of Education of China (No. 200806980008), National Science Fund for Distinguished Young Scholars (grant No. 50725101).

Database: Compendex

Data Provider: Engineering Village

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31. Effect of solution temperature on microstructure and properties of 22Cr duplex stainless steel

Luo, She-Ji (1); Wang, Rong (1); Yan, Chang-Liang (2); Chen, Yao (3)

Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 31, n 8, p 66-71, August 2010;

Language: Chinese; **ISSN:** 10096264; **Publisher:** Editorial Office of Transactions of Materials

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Institute of Tubular Goods Research Center, Xi'an 710065, China (3) School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, China

Abstract: Effects of solution temperature on microstructure and properties of 22Cr duplex stainless steel were studied by means of optical microscopy (OM), scanning electron microscopy (SEM) with EDS analysis, transmission electron microscopy (TEM), tensile and impact tests. The results show that the content of α phase and γ phase is linearly dependent on the solution temperature in the range of 950-1150°C. The micro-hardness and strength of 22Cr duplex stainless steel decrease to the lowest values at 1050°C and then increase with the increase of annealing temperature. The σ phase is found in the microstructure of the steel solution-treated at 950°C, leading to the decrease of plasticity and toughness. With increase of solution temperature, the partition coefficient of Cr and Mo decreases, but that of Ni increase, indicating that concentration difference of alloying elements in α and γ phase becomes smaller. (11 refs)

Main heading: Scanning electron microscopy

Controlled terms: Alloying elements - Microstructure - High resolution transmission electron microscopy - Stainless steel - Microhardness

Uncontrolled terms: Annealing temperatures - Duplex stainless steel - EDS analysis - Impact test - Microstructure and properties - Partition coefficient - SEM - Solution temperature - TEM

Classification Code: 531.1 Metallurgy - 545.3 Steel - 741.3 Optical Devices and Systems - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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32. Notice of Retraction: Study on using the water alternating gas injection technologic to improve the ultra low permeability reservoir recovery

Zhang, Yi (1); Zhang, Ning-Sheng (1); Li, Jun-Gang (2); Shi, Hai-Xia (2); Tong, Xiao-Hua (3)

Source: *Asia-Pacific Power and Energy Engineering Conference, APPEEC, 2010, 2010 Asia-Pacific Power and Energy Engineering Conference, APPEEC 2010 - Proceedings*; ISSN: 21574839, E-ISSN: 21574847; ISBN-13: 9781424448135; DOI: 10.1109/APPEEC.2010.5449158; **Article number:** 5449158; **Conference:** Asia-Pacific Power and Energy Engineering Conference, APPEEC 2010, March 28, 2010 - March 31, 2010; **Sponsor:** Chongqing University; et al.; IEEE Power and Energy Society (PES); Sichuan University; Siemens Ltd.; State Grid of China;

Publisher: IEEE Computer Society

Author affiliation: (1) Xi'an Petroleum University, Xi'an, Shaanxi, China (2) Qinghai Oilfield, Qing Hai, China (3) Changqing Oilfield, Qing Cheng, China

Abstract: To rationally develop low permeability reservoir, enhanced oil recovery, Changqing Oilfield launched a special low permeability oil field development studies. Based Changqing oilfield Yanhewan block this typical ultra-low permeability reservoir, use the numerical simulation method simulate the instability of water injection and gas injection alternating different effects of the development. The simulation results show that injection cycle in the early development of poor results, but the technique ultimately better results in the development of continuous injection; Gas-water cycle alternating six months of the development of better results in alternating cycles of three months, After the first injection of gas injection in better after the first injection of gas injection development effect, the study of the block for the rational development of a new approach. ©2010 IEEE. (6 refs)

Main heading: Gases

Controlled terms: Oil well flooding - Low permeability reservoirs - Numerical models - Oil field development - Gas permeability - Enhanced recovery - Petroleum reservoir engineering - Numerical methods

Uncontrolled terms: Changqing oilfield - Continuous injections - Development effect - Enhanced oil recovery - Numerical simulation method - Reservoir numerical simulation - Ultra-low permeability reservoirs - Water-alternating gas injections

Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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33. Analysis of the reason on tubing corrosion failure

Zhao, Guo-Xian (1); Lu, Xiang-Hong (2); Han, Yong (2)

Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 3, p 51-55, March 2010; **Language:** Chinese; ISSN: 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

Author affiliation: (1) Material Science and Engineering Institute, Xi'an Petroleum University, Xi'an 710065, China (2) Xi'an Maurer Petroleum Engineering Lab., Xi'an 710065, China

Abstract: Varying degree of corrosion occurred in internal and outer wall of tubing string. Serious corrosion is found in some well deep. The results of chemical composition analysis, metallurgical structure test, SEM, EDS and XRD show that chemical composition and metallurgical structure of the tubing meet the API Spec 5CT standard requirement. Large corrosion products stack at the bottom of the pitting. Cl⁻ enriches under the corrosion product layer. Corrosion product in internal wall are FeCO₃, MgFe(CO₃)₂, FeO(OH), Mg₃Ca(CO₃)₄ and Fe₃O₄, that in outer wall are FeCO₃, MgFe(CO₃)₂, CaCO₃ and FeO(OH). Internal wall are damaged by CO₂ corrosion. Corrosive gas and medium come into the space between casing string and tubing string corrode outer wall of tubing. Tubing around 3279 meter is most hardly affected because it is at the temperature which CO₂ corrosion is most seriously. Cl⁻ enrichment is the important reason inducing local corrosion. (6 refs)

Main heading: Calcite

Controlled terms: Chemical analysis - Magnesium compounds - Localized corrosion - Calcium carbonate - Magnetite - Carbon dioxide - Tubing

Uncontrolled terms: Chemical composition analysis - Chemical compositions - CO₂ corrosion - Corrosion product layers - Corrosion products - Degree of corrosion - Metallurgical structures - Standard requirements

Classification Code: 482.2 Minerals - 539.1 Metals Corrosion - 619.1 Pipe, Piping and Pipelines - 804 Chemical Products Generally - 804.2 Inorganic Compounds

Database: Compendex

Data Provider: Engineering Village

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34. Cenozoic fault structure and hydrocarbon accumulation in Western Sag, Liaohe Depression

Li, Minggang (1, 2); Qi, Jiafu (3); Tong, Hengmao (3); Yu, Fusheng (3); Wang, Naijun (4)

Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 37, n 3, p 581-288, June 2010;

Language: Chinese; **ISSN:** 10000747; **Publisher:** Science Press

Author affiliation: (1) Postdoctoral Center of China University of Petroleum, Beijing 102249, China (2) CNOOC Research Institute, Beijing 100027, China (3) Department of Geoscience, China University of Petroleum, Beijing 102249, China (4) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China

Abstract: To reveal the relationship between the Cenozoic fault structure and the hydrocarbon of the western sag in the Liaohe Depression, a systemic analysis is carried out on the development and evolution of the fault structure using the theory of oilfield structural analysis. Divided by mudstones of the middle and lower parts in the Sha-3 Member, two superimposed fault systems are formed in the Cenozoic strata in the western sag, including long-term active faults, present active faults and late-developed active faults, which, in origin, are extensional normal fault, strike-slip fault, strike-slip normal fault, strike-slip reverse fault. The fault activity controls the distribution and evolution of the source rock, hydrocarbon accumulation and trap formation: the period of faulting and depression is the main forming time of the source rock, continuing subsidence is favorable for the source rock evolution; the lower fault system formed in the extensional deformation period is good for hydrocarbon accumulation, while the upper fault system formed in the strike-slip deformation period is beneficial to the migration of oil and gas; the timing of trap formation accords with the intensive structure activity periods, and the majority of traps are formed in the early time of Sha-4 Member to Sha-3 Member and the late period of Dongying Formation. The Shuangxi subtle strike-slip fault and the south of Haiwaihe in the Tai'an-Dawa fault are favorable plays. (17 refs)

Main heading: Structural analysis

Controlled terms: Strike-slip faults - Deformation - Hydrocarbons - Fault slips - Structural geology - Oil well flooding

Uncontrolled terms: Dongying Formation - Extensional deformation - Fault structure - Hydrocarbon accumulation - Strike-slip deformation - Structure activity - Systemic analysis - Western sags

Classification Code: 408.1 Structural Design, General - 481.1 Geology - 484.1 Earthquake Measurements and Analysis - 511.1 Oil Field Production Operations - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

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35. Topological characterization of consistency of logic theories in n-valued lukasiewicz logic Luk(n)

She, Yanhong (1, 2); Wang, Guojun (1, 3); He, Xiaoli (2)

Source: *Chinese Journal of Electronics*, v 19, n 3, p 427-430, July 2010; **ISSN:** 10224653, **E-ISSN:** 20755597;

Publisher: Chinese Institute of Electronics

Author affiliation: (1) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an 710062, China (2) College of Science, Xi'an Shiyou University, Xi'an 710065, China (3) Shanghai Key Laboratory of Trustworthy Computing, East China Normal University, Shanghai 200062, China

Abstract: Let $(F(S), p)$ be the n-valued logic metric space, the present paper characterizes consistency of logic theories in the propositional logic system $Luk(n)$ by means of topological concepts in the n-valued logic metric space. It is proved that a closed theory Γ is consistent iff it contains no interior points, iff it possesses the truth-forgotten property, iff it contains no non-empty regular sphere. (6 refs)

Main heading: Topology

Controlled terms: Computer circuits - Fuzzy logic - Many valued logics - Set theory

Uncontrolled terms: Consistency - Interior point - Logic metric spaces - Logic theory - Lukasiewicz logic - N-valued propositional logic $luk(n)$ - Nvalued logic metric space - Propositional logic - Regular sphere - Theory

Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 721.3 Computer Circuits - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

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36. The water tunnel experimental study of natural gas swirling around the delta-wing

Wang, Jun-Qi (1); Ma, Wei-Guo (2); Xu, Yong-Gao (3)

Source: *Shiyan Liuti Lixue/Journal of Experiments in Fluid Mechanics*, v 24, n 4, p 13-16, August 2010; **Language:** Chinese; **ISSN:** 16729897; **Publisher:** Zhongguo Kongqi Dongli Yanjiu yu Fazhan Zhongxin

Author affiliation: (1) Petroleum Engineering School of Xi'an Shiyou University, Xi'an 710065, China (2) Jiangnan Machinery Research Institute of CNPC, Jingzhou, Hubei 434000, China (3) Oil and Gas Technology Research Institute of PetroChina Changqing Oil field Company, Xi'an 710021, China

Abstract: Natural gas around the delta-wing generates swirl flow, so that free water droplets in natural gas are thrown off, attached to the pipe inner wall, pulled by the air to go downstream along the pipeline inner wall, then achieved the separation of gas-water. Through water tunnel experiment, staining flow visualization techniques are used to explore the feasibility of fluid around the delta-wing to result in cyclone. At the same time, based on uniform design ideas, for leading edge sweep angle of delta wing, trailing edge sweep angle, attack angle and other geometric parameters, five levels of experimental research are done. It confirms the reliability of gas swirling around the delta-wing resulting in cyclone, and lays the foundation for the realization of the technology. (10 refs)

Main heading: Natural gas

Controlled terms: Hydraulic structures - Flow visualization - Gases - Water supply tunnels

Uncontrolled terms: Delta wings - Experimental research - Pipe inner walls - Trailing edges - Uniform design - Visualization technique - Water tunnel - Water tunnel experiments

Classification Code: 401.2 Tunnels and Tunneling - 446.1 Water Supply Systems - 522 Gas Fuels - 631.1 Fluid Flow, General

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

37. Influence of welding heat input on microstructure and properties of coarse grain heat-affected zone in X100 pipeline steel

Zhang, Xiaoyong (1, 2); Gao, Huilin (2); Zhuang, Chuanjing (3); Ji, Lingkan (3)

Source: *Hanjie Xuebao/Transactions of the China Welding Institution*, v 31, n 3, p 29-32, March 2010; **Language:** Chinese; **ISSN:** 0253360X; **Publisher:** Harbin Research Institute of Welding

Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Architecture and Technology, Xi'an 710055, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Tubular Goods Research Center of China National Petroleum Corporation, Xi'an 710065, China

Abstract: The influence of welding heat input on the microstructure characterization and properties of coarse grain heat-affected zone (CGHAZ) in a X100 pipeline steel were investigated by means of thermal simulation technique, microscopic analysis method and mechanical property testing. The results showed that the strength and toughness of X100 pipeline steel decreased with the welding heat input increasing. The microstructure of CGHAZ was mainly made up of bainitic ferrite and granular bainitic which could bring excellent strength and toughness when welding heat was about 10 kJ/cm. The quasi-polygonal ferrite and granular bainitic were formed with welding heat input about 20 kJ/cm, which could get fine strength-toughness. When the welding heat input was higher than 30 kJ/cm, the strength and toughness decreased because of the increasing of polygonal ferrite. Therefore, welding heat input at range of 10-20 kJ/cm was recommended in the welding process of X100 pipeline steels. (8 refs)

Main heading: Microstructure

Controlled terms: Steel testing - Heat affected zone - Welding - Pipelines - Bainite - Steel pipe - Ferrite - Corrosion

Uncontrolled terms: Coarse grain heat affected zone - Mechanical property testing - Microstructure and properties - Microstructure characterization - Properties - Strength and toughness - Welding heat input - X100 pipeline steels

Classification Code: 531.2 Metallography - 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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38. A new image fusion algorithm based on adaptive PCNN

Li, Mei-Li (1, 2); Li, Yan-Jun (1); Wang, Hong-Mei (1); Zhang, Ke (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 5, p 779-782, May 2010; **Language:** Chinese;

ISSN: 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) College of Astronautics, Northwestern Polytechnical University, Xi'an 710072, China (2) College of Science, Xi'an Petroleum University, Xi'an 710065, China

Abstract: Owing to the global coupling and pulse synchronization characteristic, pulse coupled neural networks(PCNN) has been proved to be suitable for image fusion. In this paper, a new image fusion algorithm based on adaptive PCNN is presented. Compared with the traditional algorithms where the linking strength of each neuron is assigned the same value, this algorithm uses the features of each pixel, e.g. energy of Laplacian and standard deviation, as its value, so that the linking strength of each pixel can be chosen adaptively. Experimental results demonstrate that the proposed algorithm outperforms Laplacian-based, wavelet-based and PCNN-based fusion algorithms. (11 refs)

Main heading: Image fusion

Controlled terms: Statistics - Laplace transforms - Neural networks - Pixels

Uncontrolled terms: Energy of Laplacian(EOL) - Laplacians - Linking strength - Pulse coupled neural network - Standard deviation

Classification Code: 723.2 Data Processing and Image Processing - 921.3 Mathematical Transformations - 922.2 Mathematical Statistics

Database: Compendex

Data Provider: Engineering Village

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39. Microstructure of X100 high strength pipeline steel during continuous cooling transformation

Zhang, Xiao-Yong (1, 2); Gao, Hui-Lin (2); Ji, Ling-Kang (3); Zhuang, Chuan-Jing (3)

Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 31, n 1, p 62-66, January 2010;

Language: Chinese; **ISSN:** 10096264; **Publisher:** Editorial Office of Transactions of Materials

Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Architecture and Technology, Xi'an 710055, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Tubular Goods Research Center of China National Petroleum Corporation, Xi'an 710065, China

Abstract: Microstructure in a continuously cooled X100 high strength pipeline steel was investigated by means of heat simulation technique on a Gleeble-1500 simulator, optical microscope(OM) and transmission electron microscopy(TEM). The results show that the microstructure of X100 high strength pipeline steel is mainly composed of polygonal ferrite(PF) when the cooling rate is lower than 0.2°C/s. Quasi-polygonal ferrite and granular ferrite(QF+GF) prevails in the steel with the cooling rate of 0.5-10 °C/s. When the cooling rate is higher than 20°C/s, the microstructure of X100 pipeline steel mainly consists of bainitic ferrite(BF). Martensite(M) forms in the steel with the cooling rate higher than 50 °C/s. (15 refs)

Main heading: Microstructure

Controlled terms: High resolution transmission electron microscopy - Bainite - High strength steel - Pipelines - Ferrite - Steel pipe - Bainitic transformations - Cooling

Uncontrolled terms: Bainitic ferrite - Continuous cooling transformation - Cooling rates - Gleeble - Heat simulation - High-strength pipeline steel - Polygonal ferrites - TEM - X100 pipelines

Classification Code: 531.2 Metallography - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.2 Heat Transfer - 741.3 Optical Devices and Systems - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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40. First-principles study of transition-metal atoms adsorption on GaN nanotube

Chen, Guo-Xiang (1, 2); Zhang, Yan (3); Wang, Dou-Dou (4); Zhang, Jian-Min (1)

Source: *Physica E: Low-Dimensional Systems and Nanostructures*, v 43, n 1, p 22-27, November 2010; **ISSN:**

13869477; **DOI:** 10.1016/j.physe.2010.06.039; **Publisher:** Elsevier B.V.

Author affiliation: (1) College of Physics and Information Technology, Shaanxi Normal University, Xian 710062, Shaanxi, China (2) School of Science, Xian Shiyou University, Xian 710065, Shaanxi, China (3) ICMMO/LEMHE UMR CNRS 8182, Universit Paris-Sud 11, 91405 Orsay, Cedex, France (4) Institute of Telecommunication Engineering of the Air Force Engineering University (AFEU1), Xian 710077, Shaanxi, China

Abstract: We have performed the first-principles calculations onto the adsorption behaviors of 12 transition-metal (TM) atoms (Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Pd and Pt) on the surface of the pristine zigzag (8,0) gallium nitride nanotube (GaNNNT). The results show that, for Sc, Ti, V, Cr, Mn, Fe, Co, Cu, Zn, Pd and Pt, the most stable adsorption sites are all on the top site of the nitrogen atom (N), whereas Ni prefers slightly to the hollow site above the Ga₃N₃ hexagon ring (H). The binding energies can vary significantly with different TM atoms. This may be related to their number of d electrons. The almost zero binding energy of Zn atom means it can only be physically adsorbed above the N site. The binding energy of Cr is negative (0.32 eV), indicating the adsorption process is endothermal. The adsorption of TM atoms generally induces some impurity states within the band gap of the pristine GaNNNT, except weaker metallic adatom Pd with fully filled 4d electrons of 10. For Cu-adsorbed (8,0) GaNNNT, only one type of bands (minority spin) crosses the Fermi level implying the Cu-adsorbed (8,0) GaNNNT is half-metal. The certain amount of charge is transferred from the TM atoms to the (8,0) GaNNNTs. The Sc-, V-, Cr-, Mn-, Fe-, Co- and Cu-adsorbed (8,0) GaNNNT systems have a net magnetic moment from 0.60 (for Cu) to 4.98 (for Mn). These net magnetic moments are located mainly on the TM atoms. © 2010 Elsevier B.V. (30 refs)

Main heading: Adsorption

Controlled terms: Energy gap - III-V semiconductors - Palladium - Nanotubes - Yarn - Gallium nitride - Magnetic moments - Density functional theory - Atoms - Binding energy - Calculations

Uncontrolled terms: Adsorption behavior - Adsorption process - First-principles calculation - First-principles study - Gallium nitride nanotubes - GaN nanotubes - Stable adsorption - Transition metal atoms

Classification Code: 547.1 Precious Metals - 701.2 Magnetism: Basic Concepts and Phenomena - 712.1

Semiconducting Materials - 761 Nanotechnology - 801.4 Physical Chemistry - 802.3 Chemical Operations - 819.4 Fiber Products - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

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41. Numerical analysis of eddy current effect for low frequency electromagnetic method in cross-well

Song, Xi-Jin (1, 2); Guo, Bao-Long (1); Dang, Rui-Rong (2); Wang, Xue-Long (3)

Source: *ICCSE 2010 - 5th International Conference on Computer Science and Education, Final Program and Book of Abstracts*, p 1350-1354, 2010, *ICCSE 2010 - 5th International Conference on Computer Science and Education, Final Program and Book of Abstracts*; **ISBN-13:** 9781424460052; **DOI:** 10.1109/ICCSE.2010.5593714; **Article number:** 5593714; **Publisher:** IEEE Computer Society

Author affiliation: (1) Institute of Intelligent Control and Image Engineering, Xidian University, Xi'an, China (2) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xi'an, China (3) College of Computer Science and Technology, Xi'an University of Technology, Xi'an, China

Abstract: In order to analyze the eddy current caused by the excitation signal and its influence on the secondary field response, the general analytical expressions of eddy current density for low frequency electromagnetic in cross-well is deduced. Based on the axially symmetric time harmonic electromagnetic theory, this expression is established by Helmholtz equation of electric field in radial non-uniform formation. Eddy current density distribution of infinite homogeneous conductive medium and layered media in cross-well show that the metal casing has a strong absorption to electromagnetic signal and the frequency of the emission signal has important influence on its capability of penetrating the casing. The character of EMF (electromotive force)-frequency curves for the non magnetic high resistance formation demonstrates that the low frequency electromagnetic signal can penetrate the casing perfectly, and it also shows that response signal has the highest resolution to the formation resistivity while excited by the frequency about 200Hz. ©2010 IEEE. (12 refs)

Main heading: Current density

Controlled terms: Electric excitation - Electric fields - Eddy currents - Numerical methods

Uncontrolled terms: Analytical expressions - Cross-well - Eddy-current effects - Electromagnetic methods - Electromagnetic signals - Formation resistivity - Highest resolutions - Metal casing

Classification Code: 701.1 Electricity: Basic Concepts and Phenomena - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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42. Influence of the secondary welding thermal cycle on the microstructure and property of coarse grain heat-affected zone in an X100 pipeline steel

Zhang, Xiaoyong (1); Gao, Huilin (2); Ji, Linggang (3); Zhuang, Chuanjing (3)

Source: *China Welding (English Edition)*, v 19, n 3, p 25-30, September 2010; **ISSN:** 10045341; **Publisher:** China Welding

Author affiliation: (1) School of Materials Science and Engineering, Xi'an University of Architecture and Technology, Xi'an, 710055, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, 710065, China (3) School of Material Science and Engineering, Xi'an Jiaotong University, Xi'an, 710049, China

Abstract: The influence of the secondary thermal cycle on the microstructure of coarse grain heat-affected zone in an X100 pipeline steel was investigated by means of a thermal simulation technique and microscopic analysis method. The property of coarse grain heat-affected zone was characterized by Charpy V-Notch impact properties testing. The results indicated that the experimental steel exhibited local brittleness of intercritically reheated coarse-grained heat-affected zone when the peak temperature of secondary thermal cycle was in the range of two phases region (α and γ). There were two main reasons for the local brittleness. The first was that the microstructures of intercritically reheated coarse-grained heat-affected zone were not fined although partial grain recrystallization occurred. The second was that M-A islands, which had the higher content, larger size and higher hardness, existed in intercritically reheated coarse-grained heat-affected zone. © 2010 Editorial Board of China Welding. (12 refs)

Main heading: Plasticity

Controlled terms: Corrosion - Microstructure - Steel pipe - Pipelines - Heat affected zone - Thermal cycling - Welding - Brittleness - Fracture mechanics - Steel

Uncontrolled terms: A-thermal - Charpy V-notch impact properties - Coarse grains - Coarse-grained heat-affected zones - Grain recrystallization - Microscopic analysis - Microstructure and properties - Peak temperatures - Thermal cycle - X100 pipelines

Classification Code: 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 931.1 Mechanics - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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43. Geometrical structures, electronic states, and stability of Ni_nAl Clusters

Wen, Jun-Qing (1, 2); Jiang, Zhen-YI (1); Li, Jun-Qian (3); Cao, Li-Ke (1); Chu, San-Yan (4)

Source: *International Journal of Quantum Chemistry*, v 110, n 7, p 1368-1375, 2010; **ISSN:** 00207608, **E-ISSN:** 1097461X; **DOI:** 10.1002/qua.22235; **Publisher:** John Wiley and Sons Inc.

Author affiliation: (1) Institute of Modern Physics, Northwest University, Xian 710069, China (2) School of Science, Xi'an Shiyou University, Xi'an 710065, China (3) College of Chemistry and Chemical Engineering, Fuzhou University, Fuzhou 350002, China (4) Department of Chemistry, National Tsing Hua University, Hsinchu 30013, Taiwan

Abstract: Density-functional with generalized gradient approximation (GGA) for the exchange-correlation potential has been used to calculate the energetically global minimum geometries and electronic states of Ni_nAl (n = 2-8) neutral clusters. Our calculations predict the existence of a number of previously unknown isomers. All structures may be derived from a substitution of a Ni atom at marginal positions by an Al atom in the Ni_{n+1} cluster. Aluminum atom remains on the surface of the geometrical configurations. Moreover, these species prefer to adopt three-dimensional (3D) spacial forms at the smaller number of nickel atoms compared with the pure Ni_{n+1} (n ≥ 3) configuration. Atomization energies per atom for Ni_nAl (n = 2-8) have the same trend as the binding energies per atom for Ni_n (n = 3-9). The stabilization energies reveal that Ni₅Al is the relatively most stable in this series. In comparison with the magnetic moment of pure metal nickel (0.6 μ_B), the average magnetic moment of Ni atom increases in Ni-Al clusters except the Ni₃Al. Moreover, except the case of Ni₅Al, Ni average magnetic moment decreases when alloyed with Al atoms than that in pure Ni clusters, which originate the effective charge transferring from Al to Ni atoms. © 2009 Wiley Periodicals, Inc. (33 refs)

Main heading: Atoms

Controlled terms: Aluminum - Binary alloys - Geometry - Nickel - Electronic states - Magnetic moments - Binding energy - Isomers - Aluminum alloys - Nickel compounds

Uncontrolled terms: Average magnetic moments - Cluster - Exchange-correlation potential - Generalized gradient approximations - Geometrical configurations - Geometrical structure - Nickel aluminum - Threedimensional (3-d)

Classification Code: 541.1 Aluminum - 541.2 Aluminum Alloys - 548.1 Nickel - 701.2 Magnetism: Basic Concepts and Phenomena - 801.4 Physical Chemistry - 804 Chemical Products Generally - 921 Mathematics - 931.3 Atomic and Molecular Physics - 933.3 Electronic Structure of Solids

Database: Compendex

Data Provider: Engineering Village

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44. Notice of Retraction: Study on generalized fractal algorithm of global optimization

Song, Julong (1); He, Xiangjian (2); Qian, Fucai (3)

Source: *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*, v 5, p 286-290, 2010, *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*; **ISBN-13:** 9781424458462; **DOI:** 10.1109/ICACC.2010.5487247; **Article number:** 5487247; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (2) Centre for Innovation in IT Services and Applications, University of Technology Sydney, NSW 2007, Australia (3) School of Automatization and Information Engineering, Xi'an University of Technology Xi'an, Shaanxi 710049, China

Abstract: To promote a fractal algorithm from being suitable for global optimization only on three dimensional spaces to an n dimensional space, this paper presents a simple and convenient method for dividing an n-dimensional hypercube. A key problem is then solved to develop the fractal algorithm in a high dimensional space so that the fractal algorithm becomes a generalized global optimization algorithm. The theoretical foundation of the algorithm is set up. Simulations show the generalized fractal algorithm is effective. © 2010 IEEE. (6 refs)

Main heading: Global optimization

Controlled terms: Fractals

Uncontrolled terms: Fractal algorithms - Global optimization algorithm - Golden section method - High dimensional spaces - N-dimensional hypercube - N-dimensional space - Theoretical foundations - Three dimensional space

Classification Code: 921 Mathematics - 921.5 Optimization Techniques

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

45. Electronic structures of an (8, 0) boron nitride/carbon nanotube heterojunction

Liu, Hongxia (1); Zhang, Heming (1); Song, Jiuxu (1, 2); Zhang, Zhiyong (3)

Source: *Journal of Semiconductors*, v 31, n 1, 2010; **ISSN:** 16744926; **DOI:** 10.1088/1674-4926/31/1/013001; **Article number:** 013001; **Publisher:** IOS Press

Author affiliation: (1) Key Laboratory of Ministry of Education for Wide Band-Gap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, Xi'an 710071, China (2) School of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Information Science and Technology Institution, Northwest University, Xi'an 710069, China

Abstract: The electronic structure of the heterojunction is the foundation of the study on its working mechanism. Models of the heterojunctions formed by an (8, 0) boron nitride nanotube and an (8, 0) carbon nanotube with C-B or C-N interface have been established. The structures of the above heterojunctions were optimized with first-principle calculations based on density functional theory. The rearrangements of the heterojunctions concentrate mainly on their interfaces. The highest occupied molecular orbital and the lowest unoccupied molecular orbital of the heterojunctions distribute in the carbon nanotube section. As the band offsets of the above heterojunctions are achieved with the average bond energy method, the band structure is plotted. © 2010 Chinese Institute of Electronics. (17 refs)

Main heading: Density functional theory

Controlled terms: Carbon nanotubes - Nitrides - Yarn - Electronic structure - Boron nitride - Chemical bonds - Molecular orbitals - Heterojunctions - III-V semiconductors

Uncontrolled terms: Band offsets - Bond energies - Boron nitride nanotubes - First principle calculations - Highest occupied molecular orbital - Lowest unoccupied molecular orbital - The average bond energy method - Working mechanisms

Classification Code: 712.1 Semiconducting Materials - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 819.4 Fiber Products - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

46. Corrosion failure analysis of stainless steel components for maleic anhydride plant

Wu, Wei (1); Cheng, Guangxu (1); Zhu, Wensheng (2); Xu, Congmin (3); Cai, Heping (4)

Source: *Engineering Failure Analysis*, v 17, n 4, p 906-912, June 2010; **ISSN:** 13506307; **DOI:** 10.1016/j.engfailanal.2009.11.001; **Publisher:** Elsevier Ltd

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Research Institute of Lanzhou Petrochemical Corporation, Lanzhou 730060, China (3) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (4) School of Material Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: Failures of a flowmeter floater and a spherical valve installed at a pipe transporting maleic acid aqueous solution in a maleic anhydride plant were investigated by means of macroscopic and microscopic examinations, chemical composition analysis, and weight loss tests. The investigation results indicated that the components were made of AISI type 316L stainless steel. The damages of both the floater and the inner surface of the valve were caused by an extensive erosion-corrosion in maleic acid aqueous solution contaminated with sulphuric acid and chlorides, which originated from the feed blending coking benzene and the recycled process water, while that of the back surface of the floater as well as the outer surface of the valve was induced by general and pitting corrosion as a result of formation of a stagnation zone where the acidic chloride-containing solution collected. It was recommended to use a dechlorination device by resin adsorption technique for reducing the content of chloride ions in the maleic acid aqueous solution. © 2009 Elsevier Ltd. (8 refs)

Main heading: Pitting

Controlled terms: Erosion - Steel corrosion - Dechlorination - Blending - Hydrochloric acid - Chlorine compounds - Solutions - Sulfuric acid - Chemical analysis

Uncontrolled terms: Chemical composition analysis - Chloride - Corrosion failure analysis - Erosion - Corrosions - Macroscopic and microscopic - Stagnation zones - Type 316L stainless steel - Weight loss tests

Classification Code: 539.1 Metals Corrosion - 545.3 Steel - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds

Database: Compendex

Data Provider: Engineering Village

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47. Study on ASE gain flattening filter based on all-fiber M-Z interferometer

Jia, Zhen-An (1); Li, Li (1); Qiao, Xue-Guang (1, 2); Liu, Ying-Gang (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 1, p 1-4, January 2010; **Language:** Chinese;

ISSN: 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Ministry of Education Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Xi'an Petroleum University, Xi'an 710065, China (2) Northwest University, Xi'an 710069, China

Abstract: By using iterative algorithm, Least Pth-norm algorithm and AMPPO algorithm in the Matlab environment, an optimal method is presented to design the gain flattening filter based on cascaded Mach-Zehnder Interferometer(MZI), and the method is applied to design the filter for flattening ASE source. An example is given to verify that the designed optical filter can effectively improve the flatness of ASE source, the flatness of the flattened spectrum (1525 nm-1540 nm) can reach ± 0.73 dB, the 3 dB bandwidth of C band ASE fiber source is 36.344 nm. (9 refs)

Main heading: Mach-Zehnder interferometers

Controlled terms: Iterative methods - Light sources - Bandpass filters

Uncontrolled terms: 3 dB bandwidth - All fiber - ASE source - Broadband light source - Broadband Light Sources - C-bands - Fiber sources - Fiberic filter - Gain flattening filters - Iterative algorithm - Light spectrum - M-Z interferometer - MATLAB environment - Optimal methods

Classification Code: 703.2 Electric Filters - 741.3 Optical Devices and Systems - 921.6 Numerical Methods - 941.3 Optical Instruments

Database: Compendex

Data Provider: Engineering Village

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48. Electronic transport properties of the armchair silicon carbide nanotube

Jiuxu, Song (1, 2); Yintang, Yang (1); Hongxia, Liu (1); Lixin, Guo (3); Zhiyong, Zhang (4)

Source: *Journal of Semiconductors*, v 31, n 11, p 1140031-1140033, November 2010; **ISSN:** 16744926; **DOI:**

10.1088/1674-4926/31/11/114003; **Publisher:** IOS Press

Author affiliation: (1) Key Laboratory of Ministry of Education for Wide Band Gap Semiconductor Materials and Devices, School of Microelectronics, Xidian University, Xi'an 710071, China (2) School of Electronic Engineering, Xi'an Shiyong University, Xi'an 710065, China (3) School of Science, Xidian University, Xi'an 710071, China (4) Information Science and Technology Institution, Northwest University, Xi'an 710069, China

Abstract: The electronic transport properties of the armchair silicon carbide nanotube (SiCNT) are investigated by using the combined nonequilibrium Green's function method with density functional theory. In the equilibrium transmission spectrum of the nanotube, a transmission valley of about 2.12 eV is discovered around Fermi energy, which means that the nanotube is a wide band gap semiconductor and consistent with results of first principle calculations. More important, negative differential resistance is found in its current voltage characteristic. This phenomenon originates from the variation of density of states caused by applied bias voltage. These investigations

are meaningful to modeling and simulation in silicon carbide nanotube electronic devices. © 2010 Chinese Institute of Electronics. (14 refs)

Main heading: Wide band gap semiconductors

Controlled terms: Negative resistance - Current voltage characteristics - Energy gap - Nanotubes - Transport properties - Yarn - Density functional theory - Silicon carbide

Uncontrolled terms: Applied bias voltage - Density of state - Electronic transport properties - Fermi energy - First principle calculations - Modeling and simulation - Negative differential resistances - Non equilibrium green's function method - Non-equilibrium Green's function - Silicon carbide nanotubes - Transmission spectrums - Wide-band-gap semiconductor

Classification Code: 712.1 Semiconducting Materials - 761 Nanotechnology - 804.2 Inorganic Compounds - 819.4 Fiber Products - 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 - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

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49. Confined gravity flow sedimentary process and its impact on the lower continental slope, Niger Delta

Li, Lei (1, 2); Wang, Ying Min (1); Zhang, Lian Mei (3); Huang, Zhi Chao (4)

Source: *Science China Earth Sciences*, v 53, n 8, p 1169-1175, 2010; **ISSN:** 16747313; **DOI:** 10.1007/s11430-010-4018-8; **Publisher:** Science in China Press

Author affiliation: (1) College of Geosciences, China University of Petroleum, Beijing 102249, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) School of Resources and Geoscience, China University of Mining and Technology, Xuzhou 221008, China (4) Institute of Shanghai Offshore Oil and Gas Company, China Petroleum and Chemical Corporation, Shanghai 200120, China

Abstract: There is active gravity flow sedimentation on the lower continental slope of Niger Delta. High-resolution 3-D seismic data enable a detailed study on the gravity flow deposition process and its impact. The lower continental slope of Niger Delta is characterized by a stepped complex topography, which resulted from gravity sliding and spreading during Miocene and Pliocene. Two types of accommodations are identified on the slope: ponded accommodation as isolated sub-basins and healed slope accommodation as connected tortuous corridors, where multi-scale submarine fans and submarine channels developed. Gravity flow deposition process is affected by the characteristics of gravity flows and the receiving basin. At the early stage, gravity flow deposition process was dominated by "fill and spill" pattern in the ponded accommodation, whereas it was confined to the healed slope accommodation during the late stage. On the lower continental slope of Niger Delta, complex slope topography controlled the distribution and evolution of the gravity flow, producing complicated gravity depositional patterns. © 2010 Science China Press and Springer-Verlag Berlin Heidelberg. (27 refs)

Main heading: Hazardous materials spills

Controlled terms: Sedimentology - Deposition - Seismology - Submarines

Uncontrolled terms: accommodation - Complex topographies - Continental slope - Gravity flow depositions - Gravity flows - Niger Delta - Sedimentary process - Submarine channel

Classification Code: 481.1 Geology - 484.1 Earthquake Measurements and Analysis - 672.1 Combat Naval Vessels - 802.3 Chemical Operations

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Database: Compendex

Data Provider: Engineering Village

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50. Erratum to: High efficiency of heavy metal removal in mine water by limestone (Chin.J.Geochem., (2009), 28, (293-298), DOI: 10.1007/s11631-009-0293-5) (Open Access)

Yao, Zhigang (1, 2); Zhou, Lifa (1); Bao, Zhengyu (3); Gao, Pu (2); Sun, Xingwang (4)

Source: *Chinese Journal of Geochemistry*, v 29, n 1, p 120, March 2010; **ISSN:** 10009426; **DOI:** 10.1007/s11631-010-0120-z; **Publisher:** Science Press

Author affiliation: (1) Key Laboratory of Continental Dynamics, Ministry of Education/Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065,

China (3) State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan 430074, China (4) Chuankou Oilfield, Yanchang Oilfield Administration Bureau, Shaanxi, Yan'an 768001, China

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

Database: Compendex

Data Provider: Engineering Village

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51. Optimal design and experimental investigation on FBG high pressure sensors

Li, Ming (1, 3); Liu, Zhi-Yuan (1); Qiao, Xue-Guang (1, 2); Fu, Hai-Wei (1); Jia, Zhen-An (1); Shao, Jun (1); Liu, Qin-Peng (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 4, p 489-491, April 2010; **Language:** Chinese;

ISSN: 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Key Laboratory of Oil and Gas Logging and Photoelectric Detection, EMC, Xi'an Petroleum University, Xi'an 710065, China (2) Northwestern University, Xi'an 710069, China (3) Weinan Vocational and Technical College, Weinan 714000, China

Abstract: Based on the optimal design for the thin wall cylinder for closing the FBG sensor at 0~50 MPa pressure range, the better sensor performance is obtained by changing the sizes of the cylinder materials and structures. The sensor is manufactured, and the high-pressure experiments are performed at the range from 0 to 50 MPa. The experimental results show that the pressure sensitivity of FBG is about 0.0374 nm/MPa, and there are very good linearity and repeatability between the center wavelength of FBG and pressure change with no hysteretic effect. The experiment results are consistent with the simulation ones. (7 refs)

Main heading: Pressure sensors

Controlled terms: Fiber Bragg gratings - Optimal systems - Cylinders (shapes) - Thin walled structures

Uncontrolled terms: ANSYS - Center wavelength - Cylinder materials - Experimental investigations - FBG sensor - Fiber Bragg grating (fbg) - High pressure sensors - High-pressure experiment - Hysteretic effects - Optimal design - Pressure change - Pressure ranges - Pressure sensitivities - Sensor performance - Thin walled tubes - Thin walls

Classification Code: 944.3 Pressure Measuring Instruments - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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52. Mesozoic intra-continental progressive deformation in Western Hunan-Hubei-Eastern Sichuan Provinces of China: Evidence from apatite fission track and balanced cross-section

Mei, Lian-Fu (1, 2); Liu, Zhao-Qian (1, 2); Tang, Ji-Guang (3); Shen, Chuan-Bo (1, 2); Fan, Yuan-Fang (4)

Source: *Diqiu Kexue - Zhongguo Dizhi Daxue Xuebao/Earth Science - Journal of China University of Geosciences*, v 35, n 2, p 161-174, March 2010; **Language:** Chinese; **ISSN:** 10002383; **DOI:** 10.3799/dqkx.2010.017; **Publisher:** China University of Geosciences

Author affiliation: (1) Key Laboratory of Tectonics and Petroleum Resources of Ministry of Education, China University of Geosciences, Wuhan 430074, China (2) Faculty of Earth Resources, China University of Geosciences, Wuhan 430074, China (3) Yangtze University, Jingzhou 434023, China (4) Xi'an Petroleum University, Xi'an 710065, China

Abstract: The Mesozoic intra-continental evolution of about 400 km wide middle-upper Yangtze thrust belt from western Hunan-Hubei-eastern Sichuan provinces has been established with a time interval of 70 Ma (from 165 Ma to 95 Ma). Based on apatite fission track (AFT), time-temperature thermal history and balanced cross-section, we conclude that the deformation evolution is progressive from southeast (Jiangnan-Xuefeng intra-continental orogeny) to northwest (Huayingshan thrust belt), and younger and younger. The shortening of thick-skinned fault-fold zone in western Hunan Province-Hubei Province is less than that of thin-skinned fault-fold zone in east Sichuan Province. The shortening rate of the fault-fold zone in western Hunan Province-Hubei Province during Jurassic is obviously more than that of the southeast region of the fault-fold zone of eastern Sichuan-Province during the early and middle periods of Early Crataceous. And the shortening rate of the southeast region of the fault-fold zone of eastern Sichuan Province during the early and middle periods of Early Crataceous is more than that of the northwest region of the fault-fold zone of eastern Sichuan Province during the late periods of Early Crataceous. The differences of the shortening rates in the different zones are controlled by the basement and the strength of the compressional deformation. These results indicate that Mesozoic intra-continental deformation in western Hunan Province-Hubei Province to eastern Sichuan Province is progressive with a large width and a long diachronous interval. Because of the different basement, basement involvement level and participation level of detachment layer, the differences of shortening and shortening rates reflect the obvious differences of intra-continental deformation and its dynamics. The "driving engine" of Mesozoic intra-continental progressive deformation is speculated to be in Taoyuan-Huaihua area, if the Jiangnan-Xuefeng

uplift is in place or parautochthon. The Taoyuan-Huaihua area is also where the Jiangnan-Xuefeng Mesozoic intra-continental orogenesis began and expanded southward and northward with a flower-structure geometry. (71 refs)

Main heading: Deformation

Controlled terms: Apatite - Fission reactions - Faulting - Buildings

Uncontrolled terms: Apatite fission tracks - Balanced cross sections - Compressional deformation - Continental deformation - Fission track - Mesozoic - Progressive deformation - Sichuan province

Classification Code: 402 Buildings and Towers - 482.2 Minerals - 484.1 Earthquake Measurements and Analysis - 932.2.1 Fission and Fusion Reactions

Database: Compendex

Data Provider: Engineering Village

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53. Temperature compensation of FBG sensor based on support vector machine

Shao, Jun (1, 2); Liu, Jun-Hua (1); Qiao, Xue-Guang (2, 3); Jia, Zhen-An (2)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 6, p 803-807, June 2010; **Language:** Chinese;

ISSN: 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Key Laboratory of Photo-electricity Gas-oil Logging and Detecting Optical Fiber Sensing, School of Science, Xi'an Petroleum University, Xi'an 710065, China (3) Northwest University, Xi'an 710069, China

Abstract: Temperature and strain are two parameters which are both sensitive to FBG sensor. Different from traditional model between temperature or strain and drift of Bragg wavelength, a method based on support vector machine(SVM) is presented in this paper. As an example, a SVM compensation model of pressure sensor is built. The parameters of SVM model are optimized based on the calibrated the kernel parameter of which is 100 and the penalty factor is 16. The compensation result shows the temperature coefficient of the pressure sensor data of the FBG pressure sensor, comes down from 34. 2%/°C to 7. 7×10⁻⁵%/°C. It fully reveals that SVM is an effective method to compensation temperature. It also can be used for simultaneous measurement of temperature and pressure or other measurands which can be converted to strain. (22 refs)

Main heading: Support vector machines

Controlled terms: Fiber Bragg gratings - Electric sensing devices - Pressure sensors - Temperature distribution

Uncontrolled terms: Bragg wavelength - Compensation temperature - FBG sensor - Fiber optics sensors - Kernel parameter - Penalty factor - Simultaneous measurement - SVM model - Temperature coefficient - Temperature compensation - Two parameter

Classification Code: 641.1 Thermodynamics - 723 Computer Software, Data Handling and Applications - 732 Control Devices - 944.3 Pressure Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

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54. Theoretical and experimental investigation of water-in-oil transverse dispersion in porous media

Duan, Shengkai (1, 2); Wojtanowicz, Andrew K. (3)

Source: *SPE Reservoir Evaluation and Engineering*, v 13, n 3, p 423-437, June 2010; **ISSN:** 10946470; **DOI:**

10.2118/115518-PA; **Publisher:** Society of Petroleum Engineers

Author affiliation: (1) Louisiana State University, Chevron, Houston, United States (2) Xi'An Petroleum Inst. China, China (3) Craft and Hawkins Petroleum Engineering Department, Louisiana State U., New Mexico Institute of Mining and Technology and the AGH U. of Science and Technology in Krakow, Poland

Abstract: Water production is controlled by the size and distribution of water saturation around wells. A recent discovery shows that not employing hydrodynamic mixing in numerical simulators may underestimate the water transition zone (Duan and Wojtanowicz 2006). This paper reports continuing research into mechanisms causing expansion of the water-saturation transition zone (transverse dispersion) in a segregated flow of oil and water approaching a vertical well's completion. The mechanisms-including nonlinear flow, turbulence, shear rate, and flow baffling at grains-all contribute to the instability of the oil/water interface, resulting in hydrodynamic mixing. Interface instability because of shearing rate has been demonstrated in our recent study on the Hele-Shaw model (Duan and Wojtanowicz 2007). In this paper, we mathematically model the effect of flow baffling and demonstrate transverse dispersion experimentally using a linear physical sandpack. A simple model of tortuous flow was developed to demonstrate the effect of two-phase-flow baffling in granular porous media. The model shows that the change in flow momentum of the two fluids at the point of collision with rock grains becomes the major factor causing water dispersion. A series of segregated-flow runs (top, oil; bottom, water) was carried out using a physical model packed

with different porous media at a constant pressure drop. The runs were videotaped and analyzed for saturation distribution using a color-intensity-recognition software. The results clearly demonstrate onset of transverse dispersion of water into the flowing oil. Further dispersion, however, was overshadowed by the dimensional and end-point effects of the model. With a numerical estimation procedure, the initial dispersion rate-computed from the 1D flow model-is the essential data needed to estimate total dispersion in radial inflow to wells. Copyright © 2010 Society of Petroleum Engineers. (38 refs)

Main heading: Porous materials

Controlled terms: Dispersions - Hydrodynamics - Mixing - Two phase flow - Video recording - Shear flow

Uncontrolled terms: Constant pressure drops - Distribution of water - Experimental investigations - Granular porous media - Interface instability - Oil/water interfaces - Saturation distribution - Transverse dispersion

Classification Code: 631.1 Fluid Flow, General - 716.4 Television Systems and Equipment - 802.3 Chemical Operations - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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55. Hydrocarbon generation potential restoration and expulsion: Taking Paleocene source rock in the western sag of Liaohe Depression as an example

Liu, Lifeng (1, 2); Jiang, Zhenxue (2, 3); Zhou, Xinmao (4); Ma, Zhongzhen (4); Wang, Naijun (5); Zhang, Fengqi (5); Lin, Shiguo (6)

Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 37, n 3, p 378-384, June 2010;

Language: Chinese; **ISSN:** 10000747; **Publisher:** Science Press

Author affiliation: (1) Lab for Integration of Geology and Geophysics, China University of Petroleum, Beijing 102249, China (2) State Key Laboratory of Petroleum Resource and Prospecting, China University of Petroleum, Beijing 102249, China (3) Basin and Reservoir Research Centre, China University of Petroleum, Beijing 102249, China (4) PetroChina Research Institute of Petroleum Exploration and Development, Beijing 100081, China (5) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (6) Langfang Branch, PetroChina Research Institute of Petroleum Exploration and Development, Langfang 065007, China

Abstract: Based on the hydrocarbon expulsion threshold theory, the method of hydrocarbon expulsion potential was improved to establish a model of hydrocarbon expulsion potential index, and the hydrocarbon-expelling characteristics of different kerogen types in the study area were analyzed. There are great differences among the different kerogens. The better the kerogen type, the shallower the threshold: type I and II A 2200 m; type II B 2700 m, and type III 2900 m. Under the same depth, the better the kerogen type, the bigger of the amount of hydrocarbon expulsion of unit organic carbon and the earlier the hydrocarbon expulsion peak and the higher the hydrocarbon-expelling efficiency. There are two main hydrocarbon expulsion periods in the western sag, one is in the sedimentary period of the Dongying Formation (before the erosion of the uplifting Dongying Formation) and the other is from the sedimentary period of the Minghuazhen Formation to now. The total hydrocarbon expulsion is 156.23×10⁸ t, and the 3rd and 4th Members of the Shahejie Formation contribute 61.5% and 21.2% to the total hydrocarbon expulsion separately, are the main source rock of the western sag. (14 refs)

Main heading: Hydrocarbons

Controlled terms: Organic carbon - Oil shale - Kerogen - Sedimentology

Uncontrolled terms: Hydrocarbon expulsion - Hydrocarbon expulsion quantities - Hydrocarbon expulsion thresholds - Liaohe Depression - Source rocks - Western sags

Classification Code: 481.1 Geology - 512.1 Petroleum Deposits - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

56. A new model for predicting inflow performance of fractured horizontal wells

Yuan, Hong (1); Zhou, Desheng (2)

Source: *Society of Petroleum Engineers Western North American Regional Meeting 2010 - In Collaboration with the Joint Meetings of the Pacific Section AAPG and Cordilleran Section GSA*, v 2, p 1030-1037, 2010, *Society of Petroleum Engineers Western North American Regional Meeting 2010 - In Collaboration with the Joint Meetings of the Pacific Section AAPG and Cordilleran Section GSA*; **ISBN-13:** 9781617387722; **DOI:** 10.2118/133610-ms; **Publisher:** Society of Petroleum Engineers

Author affiliation: (1) SPE, IHS Inc., United States (2) SPE, Xian Shiyou University, China

Abstract: Based on the analysis of horizontal well flow and flow characteristics in fractures, this paper presents a new method to predict the inflow performance of fractured horizontal wells with single phase flow at steady state

conditions. More and more horizontal wells are drilled today and we encounter more fractured horizontal wells. While predicting the inflow performance of fractured horizontal wells, we found that there is a need for a new model which couples the flow from rock matrix and flow from fractures, and is applicable for horizontal wells both with and without fractures. The model presented in this paper serves the purpose. The presented model can be easily used in horizontal wells with or without fractures. Results from the new model are compared with those from commonly used models in petroleum industry for fractured and unfractured horizontal well flow models such as Economides et al, Joshi, Babu and Odeh, and Guo and Schechter. Results from the new model are also compared with field data obtained from published literature. The new model may be used in well planning, production design, production system analysis and well efficiency improvement. Copyright 2010, Society of Petroleum Engineers. (9 refs)

Main heading: Horizontal wells

Controlled terms: Oil well drilling - Forecasting - Fracture - Petroleum engineering

Uncontrolled terms: Efficiency improvement - Flow characteristics - Fractured horizontal wells - Inflow performance - Production designs - Production system - Single-phase flow - Steady-state condition

Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

57. Research of cooperative geosteering drilling virtual system based on network

Gao, Xiaorong (1); Xu, Yingzhuo (2)

Source: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, v 6318 LNCS, n M4D, p 19-28, 2010, *Web Information Systems and Mining - International Conference, WISM 2010, Proceedings*; **ISSN:** 03029743, **E-ISSN:** 16113349; **ISBN-10:** 3642165141, **ISBN-13:** 9783642165146; **DOI:** 10.1007/978-3-642-16515-3_4; **Publisher:** Springer Verlag

Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China (2) Institute of Computer, Xi'an Shiyou University, Xi'an, China

Abstract: Aiming at the lacks in traditional information revelation and work style for geosteering drilling, a Cooperative Geosteering Drilling Virtual System Based on Network is developed by use of virtual reality and CSCW techniques. Sequentially a cooperative working virtual platform is provided for multi-domain experts and drilling technicians in different locations, which can make them achieve cooperative decision analysis and control while drilling towards drilling operating of the same well at the same time. The three-dimensional visualization of drilling process is implemented in this system using Java 3D. Consequently, it is convenient to control wellbore tracks in real time while drilling, and thus drilling success ratio can be improved. And real-time synchronization between different users' scenes is achieved based on the technique of SOCKET communication and multi-threading. Analyzing the particularity of cooperative operation in geosteering drilling, so a new concurrency control mechanism based on attribute operation in client is introduced to promote the consistency, responsiveness and concurrency of multi-user cooperation. Details are provided about the architecture' design and key techniques of the system in this paper, including the management of drilling virtual objects, constructing of virtual scene, synchronization between multi-users' scenes, concurrency control of multi-user, and so forth. © 2010 Springer-Verlag Berlin Heidelberg. (9 refs)

Main heading: Concurrency control

Controlled terms: Three dimensional computer graphics - Virtual reality

Uncontrolled terms: Analysis and controls - Cooperative operation - Geosteering - Information revelation - Multi-user - Network technologies - Three dimensional visualization - Virtual scenes

Classification Code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

58. The research of information and power transmission property for intelligent drillstring

Liu, Xuanchao (1); Cheng, Guojian (2)

Source: *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*, p 174-177, 2010, *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*; **ISBN-13:** 9780769540740; **DOI:** 10.1109/ITCS.2010.49; **Article number:** 5557301; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: This paper reviews the development of ground and underground communications in drillstring, and analysis the current information transmission method used in several problems and limitations. Pointed out the information and the power transmission is an important part of the intelligent drillstring and put forward sharing a pair of embedded wires to transmit information and power at the same time new solutions. Intelligent drillstring with embedded wires transmission method can transmit enough power from the ground to the underground, but also can establish the ground and underground two-way "information superhighway" with maximum transmission rate of 500Kbps at the same time, conducted a ground simulation test, obtained the expected results, which shows the feasibility and superiority of the intelligent drillstring. © 2010 IEEE. (13 refs)

Main heading: Power transmission

Controlled terms: Drill strings - Drills

Uncontrolled terms: Embedded wires - Information transmission - Intelligent drilling - Intelligent drillstring - New solutions - Simulation tests - Transmission methods - Transmission rates

Classification Code: 511.2 Oil Field Equipment - 602.2 Mechanical Transmissions - 603.2 Machine Tool Accessories

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

59. Notice of Retraction: Research on downhole wireless remote monitoring and information transmission technology

Liu, Xuanchao (1); Cheng, Guojian (2)

Source: *2nd International Workshop on Education Technology and Computer Science, ETCS 2010*, v 3, p 756-759, 2010, *2nd International Workshop on Education Technology and Computer Science, ETCS 2010*; **ISBN-13:**

9780769539874; **DOI:** 10.1109/ETCS.2010.612; **Article number:** 5458882; **Conference:** 2nd International

Workshop on Education Technology and Computer Science, ETCS 2010, March 6, 2010 - March 7, 2010; **Sponsor:** Columbia University; et al.; Huazhong Normal University; Huazhong University of Science and Technology; Research Association of Modern Education and Computer Science; Wuhan University; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: This paper analyzes the status of downhole wireless communication technology. Acoustic Telemetry System (ATS) technology is proposed as key technologies for the downhole remote wireless measurement and control system. We analyze the oil-tube acoustic transmission characteristics, pointing out an effective way and methods to resolve such problem. The key technology with effective solutions, principles of system integration and the application of technology are introduced, which show the feasibility and superiority of the downhole wireless remote monitoring and information transmission technology. © 2010 IEEE. (6 refs)

Main heading: Data acquisition

Controlled terms: Data communication systems - Data transfer - Remote control - Telemetry equipment

Uncontrolled terms: Acoustic telemetry systems - Acoustic transmission - Dynamic monitoring - Effective solution - Information transmission - System integration - Wireless communication technology - Wireless measurements

Classification Code: 723.2 Data Processing and Image Processing - 731.1 Control Systems

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

60. Research of visualization intelligent decision support system for drilling risk control

Xu, Yingzhuo (1); Wang, Liupeng (2)

Source: *2010 Chinese Control and Decision Conference, CCDC 2010*, p 3822-3827, 2010, *2010 Chinese Control and Decision Conference, CCDC 2010*; **ISBN-13:** 9781424451821; **DOI:** 10.1109/CCDC.2010.5498486; **Article number:**

5498486; **Conference:** 2010 Chinese Control and Decision Conference, CCDC 2010, May 26, 2010 - May 28, 2010;

Sponsor: Automatic Control Society of Chinese Association of Aeronautics; et al.; IEEE Control Systems Society (CSS); IEEE Industrial Electronics Society (IES); Intelligent Control Manage. Soc., Chin. Assoc. Artif. Intell.; Simul. Methods Model. Soc. Chin. Assoc. Syst. Simul.; **Publisher:** IEEE Computer Society

Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Shannxi Xi'an, 710065, China (2) Institute of Petroleum Engineering, Xi'an Shiyou University, Shannxi Xi'an, 710065, China

Abstract: There were many lacks in traditional risk control systems, for example, the systems were mostly based on static information from ground, thereby difficult to accurately distinguish the actual situation "down hole" in real time, they could only solve a sole factor risk control problem, and moreover, their information was not intuitively revealed and could not be shared. So this paper proposes a Visualization Intelligent Decision Support System for Drilling Risk Control. A risk visualization analysis GIS system and intelligent decision-making models of risk control are

built by use of WebGIS, case-based reasoning and network communication techniques. And an information-sharing and visualization decision-making support platform is provided for multi-domain experts and technicians in different locations to make cooperative decisions. The platform, which makes full use of all types of information as well as a variety of existing risk control methods, techniques, cases, multi-domain experts' experience and knowledge, can intuitively reveal the well location and distribution regularity of various types of potential risk in exploration area. In addition, it can achieve decision-making control of all risks in drilling engineering. This can improve risk decision-making and control in terms of science, accuracy and real-time. Details are provided about the architecture' design and key techniques of the system in this paper, including the building of intelligent decision-making models, asynchronous communication between the client and server, visualization of risk analysis, speedy loading and display of the map, and so forth. ©2010 IEEE. (18 refs)

Main heading: Case based reasoning

Controlled terms: Decision support systems - Real time systems - Visualization - Risk analysis - Risk assessment - Decision making

Uncontrolled terms: Asynchronous communication - Decision making support - Distribution regularities - Drilling risks - Intelligent decision making - Intelligent decision support systems - Intelligent decisions - Risk controls

Classification Code: 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 912.2 Management - 914.1 Accidents and Accident Prevention - 922 Statistical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

61. The application research of AC frequency conversion technique in transmission control system of oil rig

Yang, Ruifan (1); Peng, Yong (1)

Source: 2010 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010, v 3, p 803-805, 2010, 2010 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010; **ISBN-13:** 9780769539621; **DOI:** 10.1109/ICMTMA.2010.107; **Article number:** 5458878; **Conference:** International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010, March 13, 2010 - March 14, 2010; **Sponsor:** Changsha University of Science and Technology; City University of Hong Kong; Hunan University of Science and Technology; IEEE Instrumentation and Measurement Society; **Publisher:** IEEE Computer Society

Author affiliation: (1) Xi'an Shiyou University, Xian, Shaanxi, 710065, China

Abstract: This paper mainly introduced the basic structure and work principle of transmission agent on electric drilling rig, meanwhile the frequency control and parallel operation of motors used in the transmission agent were analyzed and designed. Using parallel operation could realize balance of power and load towards motor, using frequency control could realize fuzzy PID control. It can well accomplish two important missions - parallel operation and speed control with applying AC converter technique to control the winch motor. So it will ensure the drilling stability and safety as well as improve automation level. © 2010 IEEE. (3 refs)

Main heading: Three term control systems

Uncontrolled terms: Application research - Automation levels - Basic structure - Fuzzy - pid controls - Parallel operations - Transmission agents - Transmission control - Work principle

Classification Code: 731.1 Control Systems

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

62. Research on circuit and control system of an environment-friendly equipment applied to hot-phosphating of the drill collar coupling screw thread

Duan, Zhengyong (1); Peng, Yong (1); Yan, Wenhui (1)

Source: 2010 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010, v 3, p 38-41, 2010, 2010 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010; **ISBN-13:** 9780769539621; **DOI:** 10.1109/ICMTMA.2010.13; **Article number:** 5460100; **Conference:** International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2010, March 13, 2010 - March 14, 2010; **Sponsor:** Changsha University of Science and Technology; City University of Hong Kong; Hunan University of Science and Technology; IEEE Instrumentation and Measurement Society; **Publisher:** IEEE Computer Society

Author affiliation: (1) Xi'an Shiyou University, Xian, Shaanxi, 710065, China

Abstract: Research on circuit and control system of an environment-friendly equipment applied to hot-phosphating of the drill collar coupling screw thread has been carried out. In terms of the hot-phosphating processing, the functions and requirements of the control system of the equipment were established, which are the essential aim that we design the system. Accordingly, the designs and calculations to the key parts of the circuit and control system have been accomplished. Using PLC, achieved the controlling of the circuit and control system. The whole installation is total-closed and its structure is simple and compact. So this equipment has some important merits such as easy operation and maintenance, low cost of manufacturing and running, high utilization rate and easy maintenance of the phosphating solution. In addition, only to reprogram the LAD program of the PLC can be to meet the changes of the hot-phosphating processing which has good adaptability. © 2010 IEEE. (7 refs)

Main heading: Screw threads

Controlled terms: Control systems - Drills - Timing circuits

Uncontrolled terms: Circuit systems - Environment friendly - High utilizations - Key parts - Low costs - Operation and maintenance - Phosphating

Classification Code: 601.2 Machine Components - 603.2 Machine Tool Accessories - 713.4 Pulse Circuits - 731.1 Control Systems

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

63. Research of cooperative system for drilling design based on smart client

Xu, Yingzhuo (1); Xu, Hanqi (1)

Source: *Proceedings - 2010 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2010*, v 3, p 329-333, 2010, *Proceedings - 2010 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2010*; **ISBN-13:** 9781424465835; **DOI:** 10.1109/ICICISYS.2010.5658691; **Article number:** 5658691;

Publisher: IEEE Computer Society

Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, China

Abstract: The characteristics of current cooperative drilling design are analyzed, and a cooperative system for drilling design based on smart client was constructed. This system provides a cooperative design platform supported by computers for drilling engineering technicians to improve the efficiency of drilling design. There are several features in this system as following: firstly, users own two kinds of working statuses, such as, on-line and off-line; secondly, this system supports concurrency operation for multi-users. Based on the traditional model of Role Based Access Control, an improved new model, which is Role-Based Access Control of Smart Client (RBACSC), is put forward for the realization of multiusers access control in the cooperative system based on smart client. This paper mainly studies these key technologies to realize the smart client, such as data cache processing, data concurrency, data synchronization and so on. ©2010 IEEE. (11 refs)

Main heading: Access control

Controlled terms: Concurrency control

Uncontrolled terms: Co-operative systems - Cooperationm - Cooperative Design - Data synchronization - Drilling engineering - Off?line - Role-based Access Control - Smart client

Classification Code: 723 Computer Software, Data Handling and Applications

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

64. Research of intelligent teaching system based on knowledge grid

Xu, Yingzhuo (1)

Source: *Proceedings - 2010 2nd IEEE International Conference on Network Infrastructure and Digital Content, IC-NIDC 2010*, p 826-830, 2010, *Proceedings - 2010 2nd IEEE International Conference on Network Infrastructure and Digital Content, IC-NIDC 2010*; **ISBN-13:** 9781424468546; **DOI:** 10.1109/ICNIDC.2010.5657985; **Article number:** 5657985; **Publisher:** IEEE Computer Society

Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, China

Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, China

Abstract: In existing network teaching systems, deficiencies of the resource sharing and management are analyzed. An intelligent network teaching system based on knowledge grid is constructed to provide a uniform platform of intelligent information for teaching. The global sharing of knowledge resource will be realized by this platform. A course domain knowledge representation method based on the topic map in grid environment was put forward. Meanwhile, the domain knowledge model was built. Aiming at the problem about the knowledge resource deficiency in the present answering systems, an intelligent answering subsystem based on knowledge grid was studied and designed. By expanding the answering resource base to the Internet, this subsystem will fully mine the Internet knowledge resources

by use of knowledge mining technology to complete the answering task. Details are provided about the architecture's design and main techniques of the system in this paper, including the constructing of domain knowledge structure model, intelligent answering, personalized knowledge service and so on. ©2010 IEEE. (7 refs)

Main heading: Knowledge representation

Controlled terms: Data mining - Domain Knowledge - Teaching

Uncontrolled terms: Intelligence - Knowledge grids - Personalizations - Resource sharing - Teaching systems

Classification Code: 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

65. The characteristics of the photonic crystals resonant cavity with temperature and force simultaneously changing

Li, Yan (1); Shao, Min (1); Li, Xiao-Li (1)

Source: 2010 OSA-IEEE-COS Advances in Optoelectronics and Micro/Nano-Optics, AOM 2010, 2010, 2010 OSA-IEEE-COS Advances in Optoelectronics and Micro/Nano-Optics, AOM 2010; **ISBN-13:** 9781424483938; **DOI:** 10.1109/AOM.2010.5713559; **Article number:** 5713559; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, China

Abstract: A model of two-dimensional photonic band gap (PBG) structures resonant cavity made by GaAs pillars in air with graphite lattice is proposed. Its TE and TM mode resonant wavelength simultaneously changing with temperature and force is calculated by finite-difference time-domain (FDTD) method. The results show that the wavelength of the resonant cavity simultaneously changed with temperature and force according to an approximately segmental linear relation, and the highest response sensitivity for this kind resonant cavity is 5.8 nm/oC MPa; Moreover, there is a switch character for this kind of resonant cavity, and the primary explanation for this character was given by the calculation result. (11 refs)

Main heading: Finite difference time domain method

Controlled terms: Cavity resonators - Gallium arsenide - III-V semiconductors - Energy gap - Photonic band gap

Uncontrolled terms: Calculation results - Graphite lattices - Linear relation - Photonic band-gap structures - Resonant wavelengths - Response sensitivity - TE and TM modes - Temperature and force

Classification Code: 712.1 Semiconducting Materials - 804 Chemical Products Generally - 921 Mathematics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

66. Research of 3d visualization for wellbore trajectory

Xu, Yingzhuo (1); Zhang, Min (1)

Source: Proceedings - 2010 International Conference on Web Information Systems and Mining, WISM 2010, v 2, p 368-372, 2010, Proceedings - 2010 International Conference on Web Information Systems and Mining, WISM 2010; **ISBN-13:** 9780769542249; **DOI:** 10.1109/WISM.2010.94; **Article number:** 5663071; **Conference:** 2010 International Conference on Web Information Systems and Mining, WISM 2010, October 23, 2010 - October 24, 2010; **Sponsor:** Hainan Province Institute of Computer; Qiongzhou University; **Publisher:** IEEE Computer Society

Author affiliation: (1) Institute of Computer, Xi'an Shiyou University, Xi'an, China

Abstract: This paper deals with the analysis of the modeling deficiencies of the traditional 3D well bore trajectory and puts forward a new method of slice-based modeling for the tubular well bore trajectory. The method implements the 3D tubular well bore trajectory seamless connection efficiently and conveniently without interpolation smoothing treatment of the well bore trajectory's bender. In order to directly observe, analyze and effectively control the drilling trajectory for the drill staff, the paper implements the 3D tubular well bore trajectory based on virtual reality technology and provides a flexible human-computer interaction function. It also details in the well bore trajectory modeling and 3D visualization followed by an application example. © 2010 IEEE. (13 refs)

Main heading: Trajectories

Controlled terms: Human computer interaction - Boreholes - Virtual reality - Three dimensional computer graphics - Oil field equipment - Oil wells - Visualization

Uncontrolled terms: 3D Visualization - Application examples - slice - Trajectory modeling - Trajectory-based - Virtual reality technology - Well bore - Wellbore trajectory

Classification Code: 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

67. A new well log interpretation model based on emergent self-organizing maps

Gao, Rang-Fang (1); Wang, Xiao-Yan (1)

Source: *Proceedings 2010 IEEE 5th International Conference on Bio-Inspired Computing: Theories and Applications, BIC-TA 2010*, p 734-736, 2010, *Proceedings 2010 IEEE 5th International Conference on Bio-Inspired Computing: Theories and Applications, BIC-TA 2010*; **ISBN-13:** 9781424464388; **DOI:** 10.1109/BICTA.2010.5645216; **Article number:** 5645216; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: When the training samples of well log data for Kohonen Self-Organizing Maps(KSOM) are large and high dimensional, the adjacent clusters may be overlap in a common region. In the paper, a new model of clustering analysis and recognition for well log data is proposed with Ultsch Emergent Self-organizing Maps(ESOM) of neural network. This method can overcome the weakness of KSOM and optimize the result of clustering by using component map, U-Matrix and P-Matrix to visually compare and analysis the clusters on boundless toroid topology grids. This model is trained by the data clustering and visualization for key wells' data in oilfield block. The results show that this new model has good application prospects for well log interpretation using the trained pattern classifier. © 2010 IEEE. (5 refs)

Main heading: Data visualization

Controlled terms: Cluster analysis - Oil fields - Well logging - Self organizing maps - Conformal mapping - Matrix algebra - Clustering algorithms

Uncontrolled terms: Application prospect - Clustering analysis - Data clustering - Emergent self organizing maps - High-dimensional - Kohonen self-organizing maps - Pattern classifier - Training sample

Classification Code: 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 903.1 Information Sources and Analysis - 921.1 Algebra

Database: Compendex

Data Provider: Engineering Village

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68. A new method of online weighing based on non-contract measurement

Xiao, Zhihong (1); Song, Jiuxu (1); Wu, Yinchuan (1)

Source: *2010 International Conference on Computer, Mechatronics, Control and Electronic Engineering, CMCE 2010*, v 4, p 488-490, 2010, *2010 International Conference on Computer, Mechatronics, Control and Electronic Engineering, CMCE 2010*; **ISBN-13:** 9781424479566; **DOI:** 10.1109/CMCE.2010.5610110; **Article number:** 5610110; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: The mass measurement of material on belt conveyor system plays an important role in industrial production. A new online weighing system with non-contract measurement is designed in this paper. By measuring the material thickness based on ultrasonic detection technology, the density variation of material on conveyor belt using capacitance sensor and the velocity of the belt using ultrasonic Doppler velocimeter, the mass of the measured material can be achieved. The experimental results show that the principle of the online system is feasible. More important, comparing with the traditional methods, the proposed method has advantages on higher reliability and precision. © 2010 IEEE. (10 refs)

Main heading: Belt conveyors

Controlled terms: Capacitive sensors - Thickness measurement - Weighing - Ultrasonic testing

Uncontrolled terms: Capacitance sensors - Conveyor systems - Density variations - Industrial production - Mass measurements - Material thickness - Ultrasonic detection - Weighing systems

Classification Code: 692.1 Conveyors - 732 Control Devices - 753.3 Ultrasonic Applications - 943.2 Mechanical Variables Measurements - 943.3 Special Purpose Instruments

Database: Compendex

Data Provider: Engineering Village

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69. The color tag design and color model study in Miroso

Ma, Gang (1); Liu, Tian-Shi (1); Han, Jia-Xin (1); Wang, Xiao-Xiao (1)

Source: *Proceedings - International Conference on Artificial Intelligence and Computational Intelligence, AICI 2010*, v 1, p 72-76, 2010, *Proceedings - International Conference on Artificial Intelligence and Computational Intelligence, AICI*

2010; **ISBN-13:** 9780769542256; **DOI:** 10.1109/AICI.2010.22; **Article number:** 5656595; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: The paper gives a new color pattern based on contrasting the advantages and disadvantages of several kinds of color tag schemes. It adopts HSI color space and improves the transition from RGB color model to HSI color model by analyzing the particular characteristic of RGB color model, YUV color model and HSI color model. The test results and the site operations prove the new color pattern and the HSI color space can effectively solves the problem of color mixing and adhesion between cars. It also could simplify the recognition algorithm and separation algorithm, and improves real-time property, anti-interference capability and recognizing accuracy of vision system in Mirosoft. © 2010 IEEE. (10 refs)

Main heading: RGB color model

Controlled terms: Computer vision - Machine design - Color codes - Intelligent robots

Uncontrolled terms: Anti-interference - Color modeling - Real-time properties - Recognition algorithm - RGB Color Model - Robot soccer - Separation algorithms - Vision systems

Classification Code: 601 Mechanical Design - 723.5 Computer Applications - 731.6 Robot Applications - 741.1 Light/Optics - 741.2 Vision

Database: Compendex

Data Provider: Engineering Village

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70. Research on weak signal detection for downhole acoustic telemetry system

Liu, Xuanchao (1); Feng, Xiaoli (1)

Source: *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*, v 9, p 4432-4435, 2010, *Proceedings - 2010 3rd International Congress on Image and Signal Processing, CISP 2010*;

ISBN-13: 9781424465149; **DOI:** 10.1109/CISP.2010.5647911; **Article number:** 5647911; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: Weak signal detection is very important for the downhole acoustic telemetry system used in the process of petroleum exploration and development. This paper introduces a new method of weak signal detection which based on LabVIEW Programming for the downhole acoustic telemetry systems. First, analyzed the signal transmission characteristics and noise distribution law, as well as weak signal detection principle, and then on this basis, proposed an effective intelligent time-frequency Joint detection method which achieved by LabVIEW Programming, conducted a detailed analysis for how the different parameters impacted the system states and an actual signal detection experiment. The results show that the method in detecting characteristic parameters of the weak signal and improving the signal to noise ratio is a very effective way, the method could effectively detect the desired signal under strong noise background. It could meet the needs of acoustic telemetry system. ©2010 IEEE. (7 refs)

Main heading: Signal detection

Controlled terms: Signal to noise ratio - Telemetry equipment - Petroleum prospecting

Uncontrolled terms: Acoustic telemetry systems - Detection experiments - LabVIEW programming - Noise distribution - Petroleum exploration - Signal transmission - Virtual instrument - Weak signal detection

Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 716.1 Information Theory and Signal Processing

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

71. Design and research of amplitude transformer in ultrasonic vibration drilling system

Liu, Zhanfeng (1); Feng, Yazhou (1)

Source: *Advanced Materials Research*, v 139-141, p 852-856, 2010, *Manufacturing Engineering and Automation I*;

ISSN: 10226680; **ISBN-13:** 9780878492268; **DOI:** 10.4028/www.scientific.net/AMR.139-141.852; **Conference:** 2010 International Conference on Manufacturing Engineering and Automation, ICMEA2010, December 7, 2010 - December 9, 2010; **Sponsor:** Guangzhou University; The University of New South Wales; Huazhong University of Science and Technology; Xi'an Jiaotong University; **Publisher:** Trans Tech Publications

Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: The ultrasonic vibration drilling presents superior technology effect than common methods in small-diameter deep hole machining areas, and can improve the machining quality and efficiency remarkably. The amplitude transformer usually is designed by users according to the requirement of production. Thus the design and manufacturing of amplitude transformer and the realization of the resonance of device are key problems in ultrasonic

vibration drilling system. In this paper, we firstly analyzed the structure of amplitude transformer in the axial ultrasonic vibration drilling, and then designed and manufactured the composite amplitude transformer for small-diameter deep holes in the ultrasonic vibration drilling. After we carried out the test in the sound vibration system, the result indicated that the resonance of the sound system could be satisfied and the demand of small-diameter deep hole drilling could be met. © (2010) Trans Tech Publications. (4 refs)

Main heading: Resonance

Controlled terms: Drilling - Ultrasonic waves - Manufacture - Ultrasonic effects - Vibration analysis

Uncontrolled terms: Composite amplitude transformer - Deep hole drilling - Deep holes - Key problems - Machining quality - Small-diameter - Sound systems - Sound vibrations - Ultrasonic vibration - Ultrasonic vibration drilling

Classification Code: 537.1 Heat Treatment Processes - 753.1 Ultrasonic Waves - 913.4 Manufacturing - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

72. Weak signal detection study based on Duffing chaos circuit used for downhole communication

Liu, Xuanchao (1); Liu, Xiaolong (1)

Source: 2010 2nd International Symposium on Information Engineering and Electronic Commerce, IEEEC 2010, p 70-73, 2010, 2010 2nd International Symposium on Information Engineering and Electronic Commerce, IEEEC 2010; **ISBN-13:** 9781424469741; **DOI:** 10.1109/IEEC.2010.5533263; **Article number:** 5533263; **Conference:** 2nd International Symposium on Information Engineering and Electronic Commerce, IEEEC2010, July 23, 2010 - July 25, 2010; **Sponsor:** et al.; Huazhong Normal University; Huazhong University of Science and Technology; National Technical University of Ukraine; Ternopil National Economic University; Wuhan University; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: Weak signal detection is very important in the downhole acoustic telemetry system. This paper introduces the Duffing oscillator weak signal detection method for the downhole acoustic telemetry systems. First, by solving the Duffing equation, analyzed the dynamics characteristic of Duffing oscillator and weak signal detection principle; and then on this basis, built Duffing oscillator circuit based on the Duffing equation, by circuit simulation to study the Duffing circuit sensitive to different initial parameters, conducted a detailed analysis for how the different parameters impacted the system states situations. The results show that the method can effectively detect the weak changes of input signal and suppress strong noise; it is feasible, advanced and practical used for downhole acoustic telemetry system. © 2010 IEEE. (9 refs)

Main heading: Circuit simulation

Controlled terms: Oscillators (electronic) - Timing circuits - Signal detection - Telemetry equipment

Uncontrolled terms: Acoustic telemetry systems - Chaos circuits - Downholes - Duffing oscillator - Weak signal detection

Classification Code: 703.1.1 Electric Network Analysis - 713.2 Oscillators - 713.4 Pulse Circuits - 716.1 Information Theory and Signal Processing

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

73. Research on application of high impulse current in insensitive initiating system

Xue, Zhaome (1); Dang, Ruirong (1)

Source: 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010, 2010, 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010; **ISBN-13:** 9781424471614; **DOI:** 10.1109/ICEEE.2010.5661484; **Article number:** 5661484; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: While the insensitive of new slapper detonator ensuring the security, it proposes some special requirements on initiating conditions that metal foil may detonate in specific high voltage and high impulse current. But generation of high impulse current increases not only the technical difficulty of the power, but also the volume, power consumption and cost of the entire system. This article presents an approach to generate high impulse current with utilization of low-energy power. The theoretical calculation and experimental results show that higher measurement current can be generated in this method. By application of the technique in the intensive initiating system can detonation be real-time and reliable as well as improve the security of the system. Therefore, it owns certain theoretical and practical value. ©2010 IEEE. (7 refs)

Main heading: Detonation

Uncontrolled terms: Entire system - High voltage - High-impulse currents - Initiating system - Insensitive performance - Slapper detonator - Technical difficulties - Theoretical calculations

Classification Code: 942.2 Electric Variables Measurements

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

74. Study on a concurrent communication tree algorithm of P2P multi-link mode

Liu, Tian-Shi (1); Yang, Kun-Yi (1); Li, Jiao (1)

Source: *2010 International Conference on Multimedia Technology, ICMT 2010, 2010, 2010 International Conference on Multimedia Technology, ICMT 2010*; **ISBN-13:** 9781424478743; **DOI:** 10.1109/ICMULT.2010.5630937; **Article number:** 5630937; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: Based on the concurrent communication tree model, considering the network node communication capability and the communication weights between nodes, according to the importance of the number of node joints (NNJ) and communication weights, this paper proposes the weight first (WFI) communication tree algorithm and the NNJ first (JFI) communication tree algorithm respectively. The results, compared among the WFI, JFI and BFI algorithm, show that under the situation of larger differences among weights, the WFI algorithm is superior to BFI and JFI algorithm in the aspect of communication time and average communication time of branches, and under the situation of smaller differences among weights, the JFI algorithm is superior to the other two algorithms. ©2010 IEEE. (10 refs)

Main heading: Trees (mathematics)

Controlled terms: Forestry - Peer to peer networks

Uncontrolled terms: Communication capabilities - Communication time - Multi-link - Network node - Tree algorithms - Tree modeling

Classification Code: 722 Computer Systems and Equipment - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

75. Overview of P2P distributed database system

Liu, Tian-Shi (1); Li, Jiao (1); Gao, Rong-Fang (1); Ma, Gang (1)

Source: *Proceedings - 2010 International Conference on Web Information Systems and Mining, WISM 2010, v 2, p 192-197, 2010, Proceedings - 2010 International Conference on Web Information Systems and Mining, WISM 2010*; **ISBN-13:** 9780769542249; **DOI:** 10.1109/WISM.2010.23; **Article number:** 5662432; **Conference:** 2010 International Conference on Web Information Systems and Mining, WISM 2010, October 23, 2010 - October 24, 2010; **Sponsor:** Hainan Province Institute of Computer; Qiongzhou University; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China

Abstract: This paper overviews a distributed database system based on peer-to-peer model, which combines the advantages of P2P network to improve and expand the traditional distributed database system structure. It focuses on the study of such aspects as transaction commitment protocol, data communication method and additional trigger conflict resolution to complete the P2PDDb system structure. © 2010 IEEE. (41 refs)

Main heading: Ant colony optimization

Controlled terms: Distributed computer systems - Distributed database systems - Resource allocation - Peer to peer networks

Uncontrolled terms: Commitment protocols - Conflict Resolution - Data-communication - Distributed database - It focus - P2P network - Peer-to-peer models - System structures

Classification Code: 722 Computer Systems and Equipment - 722.4 Digital Computers and Systems - 723.3 Database Systems - 912.2 Management - 921.5 Optimization Techniques

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

76. Design of an ultrasonic vibration deep-hole honing device

Zhu, Lin (1); Chen, Li Xin (1); Li, Jiyun (1)

Source: *Advanced Materials Research, v 97-101, p 1971-1974, 2010, Manufacturing Science and Engineering I*; **ISSN:** 10226680; **ISBN-10:** 0878492801, **ISBN-13:** 9780878492800; **DOI:** 10.4028/www.scientific.net/

AMR.97-101.1971; **Conference:** 2009 International Conference on Manufacturing Science and Engineering, ICMSE 2009, December 26, 2009 - December 28, 2009; **Sponsor:** University of Wollongong (UOW); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications

Author affiliation: (1) Dept of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: A set of horizontal ultrasonic vibration deep-hole honing device is designed and developed, for honing the workpieces which diameter are between 80 to 100 mm. The honing experiments in the titanium alloy are carried out with the device, and the results indicate that the ultrasonic vibration honing can improve working surface quality. © (2010) Trans Tech Publications. (4 refs)

Main heading: Honing

Controlled terms: Titanium alloys - Ultrasonic waves - Ultrasonic effects

Uncontrolled terms: Deep-hole honing - Surface qualities - Ultrasonic vibration - Ultrasonic vibration honing - Work pieces

Classification Code: 542.3 Titanium and Alloys - 753.1 Ultrasonic Waves

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

77. A new type of wireless information transmission equipment design used for downhole acoustic telemetry system

Liu, Xuanchao (1); Feng, Xiaoli (1)

Source: 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010, 2010, 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010; **ISBN-13:** 9781424471614; **DOI:** 10.1109/ICEEE.2010.5661045; **Article number:** 5661045; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: The article proposes a new type of short-range wireless information transmission equipment. It is mainly composed of a transmitter and a receiver. The transmitter and the receiver all use the high integrated and high performance single chip solution. The transmitter is only composed of pure hardware. It features simple structure, stable performance and simple debugging. The receiver not only has simple hardware structure which is not need debugging, but also is easy to control with I2C bus by microcontroller to achieve powerful functions. The results of the research shows that this equipment can realize wireless information transmission well in the well site, its performance is outstanding, it is flexibility and convenient to control and is easy to realize, it has high ratio of performance to price and great use value. It completely meets the needs of the downhole acoustic telemetry system. ©2010 IEEE. (10 refs)

Main heading: Radio transmission

Controlled terms: Telemetry equipment - Radio transmitters

Uncontrolled terms: Acoustic telemetry systems - Hardware structures - Information transmission - Powerful functions - Short-range wireless - Simple structures - Single chip solution - Stable performance

Classification Code: 716.3 Radio Systems and Equipment

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

78. A color image segmentation algorithm based on region growing

Jun, Tang (1)

Source: ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings, v 6, p V6634-V6637, 2010, ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5486012; **Article number:** 5486012; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: Image segmentation is a classic subject in the field of image processing and also is a hotspot and focus of image processing techniques. With the improvement of computer processing capabilities and the increased application of color image, the color image segmentation are more and more concerned by the researchers. Color image segmentation methods can be seen as an extension of the gray image segmentation method in the color images, but many of the original gray image segmentation methods can not be directly applied to color images. This requires to improve the method of original gray image segmentation method according to the color image which have the feature of rich information or research a new image segmentation method it specially used in color image segmentation. This article proposes a color image segmentation method of automatic seed region growing on basis of the region with the combination of the watershed algorithm with seed region growing algorithm which based on the traditional seed region growing algorithm. © 2010 IEEE. (15 refs)

Main heading: Image segmentation

Controlled terms: Color image processing - Image enhancement - Watersheds - Color

Uncontrolled terms: Color image segmentation - Computer processing - Gray image segmentation - Image processing technique - Region growing - Region growing algorithm - Segmentation methods - Water-shed algorithm

Classification Code: 444.1 Surface Water - 741.1 Light/Optics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

79. The research on intelligent humidity measurement system

Liu, Xuanchao (1); Liu, Xiaolong (1)

Source: *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*, p 178-181, 2010, *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*; **ISBN-13:** 9780769540740; **DOI:** 10.1109/ITCS.2010.50; **Article number:** 5557302; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: In order to solve fast and accurate measurement of humidity problems, the measurement principle of the temperature and humidity sensor which based on the DHT95 is introduced in this paper. Explaining the DHT95's transmission interface characteristic, temperature and humidity data transmission principle, as well as hardware and software design method. Combining with high performance microcontroller C8051F920, intelligent humidity measurement system was been established. Result shows it has a simple structure, high precision, high measurement speed and low-power consumption. © 2010 IEEE. (10 refs)

Main heading: Software design

Controlled terms: Humidity sensors - Atmospheric humidity

Uncontrolled terms: C8051F920 - DHT95 - Hardware and software designs - High-performance microcontrollers - Humidity measurements - Temperature and humidities - Temperature and humidity sensor - Transmission interfaces

Classification Code: 443.1 Atmospheric Properties - 443.2 Meteorological Instrumentation - 723.1 Computer Programming - 723.5 Computer Applications

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

80. A new model for predicting gas-well liquid loading

Zhou, Desheng (1); Yuan, Hong (2)

Source: *SPE Production and Operations*, v 25, n 2, p 172-181, May 2010; **ISSN:** 19301855; **DOI:** 10.2118/120580-PA; **Publisher:** Society of Petroleum Engineers

Author affiliation: (1) Xian Petroleum University, China (2) IHS, United States

Abstract: Liquid loading is a common issue for gas producers. Better predictions of liquid loading will help operators in reducing costs (fewer shutdowns) and improving revenue (greater production). The Turner et al. (1969) entrained-droplet model-herein referred to as Turner's model-is the most popular one in predicting liquid loading in gas wells. However, there were still quite a few wells that could not be covered even after a 20% upward adjustment (Turner et al. 1969). Field practice also proves that the adjusted model still underestimates liquid loading sometimes. By studying the droplet model and liquid-film mechanisms, this paper presents a new empirical model. Previous models for liquid loading are independent of the liquid amount in a gas stream. When gas velocity is higher than calculated critical velocity, no liquid loading exists. This paper points out that, in addition to gas velocity, liquid amount (liquid holdup) in a gas stream is also a major factor for liquid loading. There is a threshold value for liquid amount in a gas/liquid mixture. Above this value, liquid loading may appear even when the gas velocity of a well is higher than the critical velocity from Turner's droplet model. The presented model is the first model to include the amount of liquids in the calculation of gas critical velocity. According to the new model, critical gas velocity is not a single value; it varies with the liquid holdup in the gas well once the holdup exceeds the threshold value. Well data from Turner's et al. (1969) were employed in the paper for evaluating the new model's parameters. Data from Coleman et al. (1991) were also used for the validation of the new model. The prediction results from the new model are better than those from Turner's model and are even better than Turner's adjusted model in matching the Turner et al. (1969). The new model is consistent with the Coleman et al. (1991) data and conclusion. The new model is simple and can be used easily to predict liquid loading in gas wells. Copyright © 2010 Society of Petroleum Engineers. (14 refs)

Main heading: Forecasting

Controlled terms: Gases - Natural gas well production - Natural gas wells - Velocity - Liquid films - Loading - Drops

Uncontrolled terms: Critical velocities - Empirical model - Entrained droplet models - Liquid hold ups - Liquid loading - Major factors - Reducing costs - Threshold-value

Classification Code: 512.2.1 Natural Gas Fields - 691.2 Materials Handling Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

81. Some classical constructive neural networks and their new developments

Li, Zhen (1); Cheng, Guojian (1); Qiang, Xinjian (1)

Source: *ICENT 2010 - 2010 International Conference on Educational and Network Technology*, p 174-178, 2010, *ICENT 2010 - 2010 International Conference on Educational and Network Technology*; **ISBN-13:** 9781424476619;

DOI: 10.1109/ICENT.2010.5532201; **Article number:** 5532201; **Conference:** 2010 International Conference on Educational and Network Technology, ICENT 2010, June 25, 2010 - June 27, 2010; **Sponsor:** Institute of Electrical and Electronics Engineers (IEEE); Int. Assoc. Comput. Sci. Inf. Technol. (IACSIT); **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi, China

Abstract: Reviewing old ones is to better understand new ones and also for innovating. The mapping capability of artificial neural networks is dependent on their structure, i.e., the number of layers and the number of hidden units. Presently, there is no formal way of computing network topology as a function of the complexity of a problem; it is usually selected by trial-and-error and can be rather time consuming. Basically, we make use of two mechanisms that may modify the topology of the network: growth and pruning. This paper firstly discusses some learning algorithms and topologies of classical constructive neural networks. Only incremental or growing algorithms employing supervised learning algorithms are outlined here which includes Tiling algorithm Tower algorithm, Upstart algorithm, Cascade-Correlation algorithm Restricted coulomb energy network and Resource-allocation network. For each neural network model, we review their topology structure and learning features. The new development of constructive neural networks is given at the end of the paper. © 2010 IEEE. (15 refs)

Main heading: Network topology

Controlled terms: Neural networks - Learning algorithms

Uncontrolled terms: Cascade correlation - Constructive neural network - Continuous neural networks - Discrete neural networks - Incremental learning - Mapping capabilities - Neural network model - Resource allocation networks

Classification Code: 703.1 Electric Networks - 723.4.2 Machine Learning

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

82. Corrosion behaviors of super 13Cr martensitic stainless steel under CO₂ and H₂S/CO₂ environment

Lü, Xiang-Hong (1); Zhao, Guo-Xian (1); Zhang, Jian-Bing (2); Xie, Kai-Yi (3)

Source: *Beijing Keji Daxue Xuebao/Journal of University of Science and Technology Beijing*, v 32, n 2, p 207-212, February 2010; **Language:** Chinese; **ISSN:** 1001053X; **Publisher:** University of Science and Technology Beijing

Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Hengyang Valin MPM Co. Ltd, Hengyang 421001, China

Abstract: The corrosion behaviors of super 13Cr martensitic stainless steel were studied with high temperature and high pressure CO₂ and H₂S/CO₂ test as well as electrochemical measurement at the simulated oilfield corrosion environment. The results show that with increasing temperature the uniform corrosion rate of super 13Cr martensitic stainless steel increases subsequently under CO₂ corrosion environment, and the pitting is very slight. Under H₂S/CO₂ corrosion environment, the uniform corrosion rate of super 13Cr martensitic stainless steel changes little, but the pitting becomes severe. When the Cl⁻ mass concentration is 160g·L⁻¹, the max pitting depth comes to 28µm. The pitting potential of super 13Cr martensitic stainless steel is bigger than that of common 13Cr, and it decreases with increasing temperature and Cl⁻ mass concentration as well as the presence of H₂S, while it changes slightly in CO₂ corrosion environment. The recovery potential of super 13Cr martensitic stainless steel is in the passivation zone under N₂ and CO₂ corrosion environment, and the higher recovery potential indicates that super 13Cr martensitic stainless steel possesses the superior re-passivation ability. At the same time, the presence of H₂S makes the recovery potential and pitting potential decrease remarkably. (10 refs)

Main heading: Carbon dioxide

Controlled terms: Pitting - Steel corrosion - Temperature - High temperature corrosion - Martensitic stainless steel - Recovery - Corrosive effects - Oil fields - Corrosion rate - Passivation

Uncontrolled terms: Corrosion environments - Electrochemical measurements - Gas corrosion - High temperature and high pressure - Increasing temperatures - Mass concentration - Oilfield corrosion - Uniform corrosion
Classification Code: 512.1.1 Oil Fields - 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 641.1 Thermodynamics - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

83. Study on the preparation of Fe₃O₄ nano-magnetic fluid for seal

Chen, Bing (1); Fan, Yuguang (1)

Source: *Advanced Materials Research*, v 139-141, p 34-38, 2010, *Manufacturing Engineering and Automation I*; **ISSN:** 10226680; **ISBN-13:** 9780878492268; **DOI:** 10.4028/www.scientific.net/AMR.139-141.34; **Conference:** 2010 International Conference on Manufacturing Engineering and Automation, ICMEA2010, December 7, 2010 - December 9, 2010; **Sponsor:** Guangzhou University; The University of New South Wales; Huazhong University of Science and Technology; Xi'an Jiaotong University; **Publisher:** Trans Tech Publications
Author affiliation: (1) Institute of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Water-based Fe₃O₄ nano-magnetic fluid for seal was prepared by coprecipitation. In order to obtain nano-magnetic fluid preparation technology which can produce industrially, the choice of second coating surfactant has been studied. Factors affecting nano-particle size and particle saturation magnetization were investigated using five factors and three level orthogonal experimental design. The size of nano-particles and particle saturation magnetization were characterized by transmission electron microscopy (TEM) and WSM vibration magnetometer. The results showed that the adding speed of NaOH solution and heat-maintaining time after adding, adding speed and reaction temperature of sodium oleate solution, as well as the heating temperature of sodium oleate solution influence the properties of nano-magnetic particles more. With the optimum process parameters, Fe₃O₄ nano-magnetic fluid which is below 15nm and can meet the nano-magnetic fluid sealing technology requirements has been prepared. © (2010) Trans Tech Publications. (8 refs)

Main heading: Particle size

Controlled terms: Magnetic fluids - High resolution transmission electron microscopy - Nanomagnetism - Sodium - Magnetite - Nanoparticles - Saturation magnetization - Sodium hydroxide

Uncontrolled terms: Fe₃O₄ - Heating temperatures - Magnetic fluid sealing - Nano-magnetic fluid - Nanomagnetic particles - NaOH solutions - Orthogonal design - Orthogonal experimental design - Preparation technology - Process parameters - Reaction temperature - Sodium oleate - TEM - Water based

Classification Code: 549.1 Alkali Metals - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 741.3 Optical Devices and Systems - 761 Nanotechnology - 804.2 Inorganic Compounds - 933 Solid State Physics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

84. Path planning for mobile robot based on immune clonal selection

Wang, Xiao-Xiao (1); Han, Jia-Xin (1); Ma, Gang (1)

Source: *Harbin Gongye Daxue Xuebao/Journal of Harbin Institute of Technology*, v 42, n SUPPL. 2, p 89-92, May 2010; **Language:** Chinese; **ISSN:** 03676234; **Publisher:** Harbin Institute of Technology

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Path planning algorithm based on immune clonal selection mechanism for mobile robot in dynamic environment is presented. During the motion of a robot, the algorithm dynamically predicts and updates the environment information according to the movement of obstacle, then invokes the immune clonal selection algorithm, which selects an optimized path through initialization of population, clone and mutate of chromosome. While preserving the variations of population, the algorithm employs the idea of vaccination. The only difference is that the vaccine acquired from last planning is used in the initialization of population current planning, The initial experiment shows that the efficiency of the algorithm is determined by the selection of period and the model for predicting the movement of obstacles. (14 refs)

Main heading: Mobile robots

Controlled terms: Vaccines - Motion planning - Robot programming

Uncontrolled terms: Dynamic environments - Dynamic path planning - Environment information - Immune clonal selection algorithm - Immune clonal selections - Path-planning algorithm

Classification Code: 461.6 Medicine and Pharmacology - 723.1 Computer Programming - 731.5 Robotics

Database: Compendex

Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

85. An overview of some classical Growing Neural Networks and new developments

Qiang, Xinjian (1); Cheng, Guojian (1); Wang, Zheng (1)

Source: *ICETC 2010 - 2010 2nd International Conference on Education Technology and Computer*, v 3, p V3351-V3355, 2010, *ICETC 2010 - 2010 2nd International Conference on Education Technology and Computer*, **ISBN-13:** 9781424463688; **DOI:** 10.1109/ICETC.2010.5529527; **Article number:** 5529527; **Conference:** 2010 2nd International Conference on Education Technology and Computer, ICETC 2010, June 22, 2010 - June 24, 2010; **Sponsor:** Int. Assoc. Comput. Sci. Inf. Technol. (IACSIT); **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi, China

Abstract: The mapping capability of artificial neural networks (ANN) is dependent on their structure, i.e., the number of layers and the number of hidden units. There is no formal way of computing network topology as a function of the complexity of a problem. It is usually selected by trial-and-error and can be rather time consuming. Basically, we make use of two mechanisms that may modify the topology of the network: growth and pruning. This paper gives an overview of some classical Growing Neural Networks (GNN) and their new developments. This kind of GNN is also called the ANN with incremental learning. Firstly, some classical GNN with supervised learning are outlined which includes tiling algorithm, tower algorithm, upstart algorithm, cascade-correlation algorithm, restricted coulomb energy network and resource-allocation network. Secondly, a class of classical GNN with unsupervised learning is reviewed, such as self-organizing surfaces, evolve self-organizing maps, incremental grid growing and growing hierarchical self-organizing map. Thirdly, the new developments of GNN, including both supervised learning and unsupervised learning, are surveyed. The conclusion is given at the end of the paper. © 2010 IEEE. (25 refs)

Main heading: Self organizing maps

Controlled terms: Conformal mapping - Topology - Unsupervised learning - Supervised learning

Uncontrolled terms: Cascade correlation - Constructive neural network - Growing hierarchical self-organizing maps - Incremental learning - Mapping capabilities - Network topology - Number of layers - Resource allocation networks

Classification Code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

86. A survey of some classic Self-Organizing Maps with incremental learning

Qiang, Xinjian (1); Cheng, Guojian (1); Li, Zhen (1)

Source: *ICSPS 2010 - Proceedings of the 2010 2nd International Conference on Signal Processing Systems*, v 1, p V1804-V1809, 2010, *ICSPS 2010 - Proceedings of the 2010 2nd International Conference on Signal Processing Systems*; **ISBN-13:** 9781424468911; **DOI:** 10.1109/ICSPS.2010.5555247; **Article number:** 5555247; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi, China

Abstract: Kohonen's Self-Organizing Maps (SOM) is a class of typical artificial neural networks (ANN) with unsupervised learning which has been widely used in clustering tasks, dimensionality reduction, data mining, information extraction, density approximation, data compression, etc. A basic principle of unsupervised learning is the competition mechanism, in which the output neurons compete for activation. In most competitive learning algorithms only one output neuron is activated at any given time. This is realized by means of the so-called winner-takes-all mode. Another mode is winner-takes-more. In this paper, the competitive learning is firstly introduced, the SOM topology and leaning mechanism are then illustrated. Thirdly, some self-organizing maps with incremental learning (SOMIL), such as self-organizing surfaces, evolve self-organizing maps, incremental grid growing and growing hierarchical self-organizing map, are outlined. Finally, the new development of SOMIL is reviewed. Some conclusions are given at the end of the paper. © 2010 IEEE. (15 refs)

Main heading: Self organizing maps

Controlled terms: Learning algorithms - Unsupervised learning - Data mining - Conformal mapping

Uncontrolled terms: Basic principles - Competition mechanism - Competitive learning - Density approximations - Growing hierarchical self-organizing maps - Incremental learning - Kohonen's self-organizing maps - Output neurons

Classification Code: 723.2 Data Processing and Image Processing - 723.4.2 Machine Learning

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

87. Stress characteristic of photonic crystals sensor made by GaAs pillars in air with graphite lattice

Li, Yan (1); Fu, Haiwei (1); Zhen, Yankun (1); Li, Xiaoli (1)

Source: *Zhongguo Jiguang/Chinese Journal of Lasers*, v 37, n 11, p 2829-2833, November 2010; **Language:** Chinese; **ISSN:** 02587025; **DOI:** 10.3788/CJL20103711.2829; **Publisher:** Science Press

Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China

Abstract: The photonic energy bands of the two-dimensional photonic crystal made by GaAs pillars in air with graphite lattice is calculated by finite difference time domain (FDTD) method. The result shows that there is a complete photonic band gap in the normalized frequency zone between 0.53 to 0.58 within this kind of photonic crystal. Based on it, a model of two-dimensional photonic crystals stress sensor made by GaAs pillars in air with graphite lattice is designed. The TE_y mode formant wavelength of the sensor resonant cavity changing along with x and y directions stress and the stress environment are calculated by FDTD method. The result shows that there is a good linear characteristic between the formant wavelength and the stress, the sensor sensitivity responding to stress is 0.0111 nm/MPa, meanwhile, it is found that the sensor sensitivities along x and y directions are the same. (21 refs)

Main heading: Finite difference time domain method

Controlled terms: Semiconducting gallium - Gallium arsenide - III-V semiconductors - Energy gap - Photonic band gap - Graphite - Optical lattices

Uncontrolled terms: Complete photonic band gap - Elasto-optical effects - GaAs - Linear characteristics - Normalized frequencies - Sensor sensitivity - Stress characteristics - Two-dimensional photonic crystals

Classification Code: 712.1 Semiconducting Materials - 712.1.1 Single Element Semiconducting Materials - 744.8 Laser Beam Interactions - 804 Chemical Products Generally - 921 Mathematics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

88. Research on optimization of safety management in oil depot based on FTA

Xue, Zhaomei (1)

Source: *2nd International Conference on Information Science and Engineering, ICISE2010 - Proceedings*, p 6051-6054, 2010, *2nd International Conference on Information Science and Engineering, ICISE2010 - Proceedings*;

Language: Chinese; **ISBN-13:** 9781424480968; **DOI:** 10.1109/ICISE.2010.5690535; **Article number:** 5690535;

Publisher: IEEE Computer Society

Author affiliation: (1) Safety Engineering Major, School of Electronic Engineering, Xi'an Shiyou University, China

Abstract: Based on FTA of safety-system engineering and analysis of risk or hazard factors of oil depot, the fault tree factor table of fire and explosion is determined and the fault tree is established. By means of Boolean algebra simplification, the minimum path sets of the system are achieved. And major hidden troubles of fire and explosion in oil depot are found out on the basis of the analysis about structure importance degree of each basic event. According to the minimum path sets of the fault tree, the control solutions are proposed to prevent the oil depot from fire and explosion. In the end, the most optimizing decision of safety management in oil depot is made on the basis of the costbenefit assessment of each solution. © 2010 IEEE. (6 refs)

Main heading: Fault tree analysis

Controlled terms: Explosions - Safety factor - Risk analysis - Boolean algebra - Risk assessment

Uncontrolled terms: Control solutions - Cost benefits - Fire and explosion - Hazard factors - Importance degrees - Minimum path sets - Oil depot - Safety management

Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 914.1 Accidents and Accident Prevention - 921.1 Algebra - 922 Statistical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

89. Experimental research on the vibration characteristics of flexural vibration disk

Zhu, Lin (1); Li, Jiyun (1)

Source: *Advanced Materials Research*, v 97-101, p 2558-2561, 2010, *Manufacturing Science and Engineering /*; **ISSN:** 10226680; **ISBN-10:** 0878492801, **ISBN-13:** 9780878492800; **DOI:** 10.4028/www.scientific.net/

AMR.97-101.2558; **Conference:** 2009 International Conference on Manufacturing Science and Engineering, ICMSE 2009, December 26, 2009 - December 28, 2009; **Sponsor:** University of Wollongong (UOW); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications

Author affiliation: (1) Dept. of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China

Abstract: The vibration characteristics of flexural vibration disk in ultrasonic vibration system are studied through experiments. The results show that the resonant frequency of flexural vibration disk reduces with the reducing of its thickness and the resonant frequency increases with the reducing of its diameter. When designing the ultrasonic vibration system, because the transformer horn and the flexural vibration disk are designedly integrated, the defects caused by the way of threaded connection can be avoided. It is found that flexural vibration is dominating in the disk with some reflected ultrasonic through experiments, at the same time, there exist amplifying characteristics in the vibration of the disk and the maximal amplitude can reach 18 μm . The corresponding results provide certain reference value for the structure design of ultrasonic vibration system and the application in ultrasonic vibration deep-hole honing. © (2010) Trans Tech Publications. (4 refs)

Main heading: Natural frequencies

Controlled terms: Ultrasonic effects - Ultrasonic waves - Vibration analysis - Honing

Uncontrolled terms: Experimental research - Flexural vibrations - Reference values - Resonant frequencies - Structure design - Threaded connection - Ultrasonic vibration - Ultrasonic vibration honing - Vibration characteristics

Classification Code: 753.1 Ultrasonic Waves

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

90. Notice of Retraction: Petroleum reservoir parameters prediction by combination of rough set and Support Vector Regression

Cheng, Guojian (1); Zeng, Lan (1); Lian, Shiyou (1)

Source: *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*, v 2, p V2701-V2704, 2010, *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5485712; **Article number:** 5485712; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shaanxi Province, 710065 Xi'an, China

Abstract: In this paper, we present a method based on the attribute reduction of rough set and support vector machine regression and the new method can be used to predict three important petroleum reservoir parameters which are porosity, permeability and saturation. First, we use rough set theory to reduce the attributes of sampling dataset in order to select the decision-making attributes constituting a new sampling dataset. Second, we use the theory of Support Vector Regression (SVR) for training data and establish the predicting model. After that, the test data will be predicted. The experimental results show that the method can get a better fitting result and reduce the computational complexity of SVR in training dataset and it can also improve the accuracy of reservoir physical parameters. The implementation of the method can provide the foundation of decision making for reservoir development. © 2010 IEEE. (8 refs)

Main heading: Porosity

Controlled terms: Rough set theory - Vectors - Forecasting - Mechanical permeability - Petroleum reservoir engineering - Regression analysis - Decision theory - Decision making - Petroleum reservoirs

Uncontrolled terms: Attribute reduction - Physical parameters - Predicting models - Reservoir development - Reservoir parameters - Support vector machine regressions - Support vector regression (SVR) - Training dataset

Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 912.2 Management - 921.1 Algebra - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

91. Study on properties of lead-free solder powder with different composition

Xu, Tianhan (1, 2); Jin, Zhihao (2); Wang, Danghui (1)

Source: *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering*, v 39, n 12, p 2217-2221, December 2010; **Language:** Chinese; **ISSN:** 1002185X; **Publisher:** Rare Metals Materials and Engineering Press

Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) Xi'an Jiaotong University, Xi'an 710049, China

Abstract: Lead-free solder powder of Sn-Ag-Cu system was prepared with a supersonic atomizer designed by ourselves. Then the effects of different compositions on the properties of the powder were studied, and the microstructure of its brazed joint was observed, which was compared with that of Sn37Pb solder powder. The results show that the Sn3Ag2.8Cu powder has the highest effective atomization efficiency, the lowest oxygen content, the best sphericity and surface smoothness in the three different compositions powders under the same superheat; the diffusion layer formed between Sn3Ag2.8Cu soldering paste and the copper substrate is thicker and their intermetallics

are more irregular than those of Sn37Pb and Sn3Ag2.8Cu-0.1Ce soldering paste; the Sn3Ag2.8Cu-0.1Ce powder has higher effective atomization efficiency and oxygen content than the Sn37Pb powder. © 2010, Northwest Institute for Nonferrous Metal Research. Published by Elsevier BV. All rights reserved. (19 refs)

Main heading: Lead-free solders

Controlled terms: Efficiency - Lead alloys - Ternary alloys - Tin alloys - Binary alloys - Copper alloys - Atomization - Brazing - Oxygen - Silver alloys

Uncontrolled terms: Atomization efficiency - Copper substrates - Gas atomization - Powder properties - Properties of the powders - Sn-Ag-Cu - Soldering pastes - Surface smoothness

Classification Code: 538.1.1 Soldering - 544.2 Copper Alloys - 546.1 Lead and Alloys - 546.2 Tin and Alloys - 547.1 Precious Metals - 802.3 Chemical Operations - 804 Chemical Products Generally - 913.1 Production Engineering

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

92. QSPR studies on soot-water partition coefficients of persistent organic pollutants by using artificial neural network

Jiao, Long (1)

Source: *Chemosphere*, v 80, n 6, p 671-675, July 2010; **ISSN:** 00456535; **DOI:** 10.1016/j.chemosphere.2010.04.013;

Publisher: Elsevier Ltd

Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, 710065, China

Abstract: Two quantitative structure property relationship (QSPR) models for predicting soot-water partition coefficients (K_{sc}) of 25 persistent organic pollutants (POPs) were developed. One model was established with linear artificial neural network (L-ANN), the other model was developed by using back propagation artificial neural network (BP-ANN). Leave one out cross validation was adopted to assess the predictive ability of the developed models.

For the L-ANN model, the square of correlation coefficient (R²) between the predicted and experimental logK_{sc} is 0.8358 and the RMS%RE is 6.32 for all the compounds. For the BP-ANN model, R² is 0.9628 and the RMS%RE is 4.12 for all the compounds. The result of leave one out cross validation demonstrates that both L-ANN and BP-ANN are practicable for developing the QSPR model for K_{sc} of the investigated POPs. However, the model established with BP-ANN is better than the model established with L-ANN in prediction accuracy. It is shown that BP-ANN is a promising method for developing QSPR models for K_{sc} of POPs. © 2010 Elsevier Ltd. (28 refs)

Main heading: Neural networks

Controlled terms: Backpropagation - Statistical methods - Water pollution - Soot - Organic pollutants

Uncontrolled terms: Back-propagation artificial neural network - Correlation coefficient - Leave-one-out cross validations - Persistent organic pollutant (POP) - Persistent organic pollutants - Quantitative structure - property relationships - Quantitative structure-property relationship models - Soot-water partition coefficients

Classification Code: 453 Water Pollution - 723.4 Artificial Intelligence - 804 Chemical Products Generally - 804.1 Organic Compounds - 922.2 Mathematical Statistics

Funding Details: Number: Z09027, Acronym: -, Sponsor: -;

Funding text: The work was supported by the Doctoral Research Fund of Xi'an Shiyou University (No. Z09027).

Database: Compendex

Data Provider: Engineering Village

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93. Influence of the metal centers of 2,6-bis(imino)pyridyl transitionmetal complexes on ethylene polymerization/ oligomerization catalytic activities

Su, Biyun (1); Feng, Guoxian (1)

Source: *Polymer International*, v 59, n 8, p 1058-1063, August 2010; **ISSN:** 09598103, **E-ISSN:** 10970126; **DOI:** 10.1002/pi.2824; **Publisher:** John Wiley and Sons Ltd

Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Much work on bis(imino)pyridyl complexes with Fe(II) and Co(II) as ethylene polymerization catalysts has been reported in terms of designing new analogous ligands, while little work has been dedicated to the study of the effect of the metal center on catalyst performance. A series of bis(imino)pyridyl-MCl₂ (M = Fe(II), Co(II), Ni(II), Cu(II), Zn(II)) transitionmetal complexes were synthesized, for which single crystals of the Co(II) and Cu(II) complexes were obtained. The crystal structures indicated that these complexes had similar coordination geometries. Being applied to ethylene polymerization at 25 °C and employing 500 equiv. of methylaluminoxane as co-catalyst, the complexes with Fe(II), Co(II) and Ni(II) centers showed, respectively, catalytic activities of 1.25 × 10⁶ g (mol Fe)⁻¹ h⁻¹ Pa for ethylene polymerization, and 3.98 × 10⁵ g (mol Co)⁻¹ h⁻¹ Pa and 5.13 × 10³ g (mol Ni)⁻¹ h⁻¹ Pa for ethylene oligomerization. In contrast, the complexes with Cu(II) and Zn(II) centers were inactive. Crystal structure data showed that the

coordination interactions provided a comparatively reliable quantification of the selectivity of the bis(imino)pyridyl ligand for the studied metal ions, which was in reasonable agreement with the Irving-Williams list. Moreover, for the Ni(II) and Cu(II) complexes, the strong coordination bonds and small N(imino)-M-N(imino) angles were unfavorable for several steps in the mechanism, such as ethylene coordination to the metal center, ethylene migratory insertion and olefin chain growth. All of these will reduce the speed of the overall reaction, indicating a decrease of catalytic efficiency in a given period. The poor activity of the Zn(II) complex for ethylene polymerization may be related to the reduction process by the alkylating agent. © 2010 Society of Chemical Industry. (27 refs)

Main heading: Crystal structure

Controlled terms: Ethylene - Indium compounds - Copper compounds - Nickel compounds - Single crystals - Metal ions - Polymerization - Synthesis (chemical) - Transition metals - Iron compounds - Ligands - Zinc compounds - Catalyst activity - Cobalt compounds

Uncontrolled terms: Bis(imino)pyridyl ligands - Catalytic efficiencies - Coordination interactions - Crystal structure data - Ethylene oligomerizations - Ethylene polymerization - Ethylene polymerization catalysts - Transition metal catalysts

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 815.2 Polymerization - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

94. Adaptive PID control of rotary drilling system with stick slip oscillation

Fubin, Shi (1); Linxiu, Sha (1); Lin, Li (1); Qizhi, Zhang (1)

Source: *ICSPS 2010 - Proceedings of the 2010 2nd International Conference on Signal Processing Systems*, v 2, p V2289-V2292, 2010, *ICSPS 2010 - Proceedings of the 2010 2nd International Conference on Signal Processing Systems*; **ISBN-13:** 9781424468911; **DOI:** 10.1109/ICSPS.2010.5555490; **Article number:** 5555490; **Publisher:** IEEE Computer Society

Author affiliation: (1) Key Laboratory of Drilling Rig Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: The stick-slip oscillation in the drilling process can stall the drill bit and cause the equipment failure. In order to eliminate the stick-slip oscillation of the bit, the paper presents the adaptive PID control strategy of the drilling rotary system. The identification of adaptive control can ensure the drilling rotary system's output tracking and maintain the optimal work condition during the wide change or uncertainty of rotating system parameters; and the PID control the dynamic response speed to accelerate and shorten the transition adjustment process. The application of the adaptive PID control strategy can improve the dynamic characters and enhance the stability and reliability of the drilling rotary system. © 2010 IEEE. (15 refs)

Main heading: Three term control systems

Controlled terms: Stick-slip - Drilling equipment - Adaptive control systems - Slip forming

Uncontrolled terms: Adaptive Control - Adaptive-pid controls - Dynamic character - Equipment failures - Rotary drilling system - Rotary systems - Stability and reliabilities - Stick-slip oscillation

Classification Code: 412 Concrete - 731.1 Control Systems - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

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95. Improvement of current protection method for ultra short incoming line and feeder on switching station

Dong, Zhang-Zhuo (1); Duan, Xin (2)

Source: *Dianli Xitong Baohu yu Kongzhi/Power System Protection and Control*, v 38, n 6, p 80-83, March 16, 2010;

Language: Chinese; **ISSN:** 16743415; **Publisher:** Power System Protection and Control Press

Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) PetroChina Changqing Oilfield Company, Xi'an 710021, China

Abstract: The modern urban power networks have large short-circuit capacity, and the cables are used for incoming line and feeder on load dense district's switching station, so electric distance is very short. In general, three-stage current protection can not ensure selectivity and sensitivity. The principle of instantaneous current protection delay time interlock is developed, when line is fault, the instantaneous current protection relay is interlocked by lower protection relay, which can ensure the protection's selectivity. The issue of protection in switching station incoming lines and feeders is solved. The device has been developed and applied in practice, the principle is correct and the issue that the ultra short lines instantaneous protection has not selectivity is solved. (5 refs)

Main heading: Switching

Controlled terms: Electric lines - Electric power system protection - Feeding - Relay protection

Uncontrolled terms: Instantaneous current - Instantaneous protection - Interlock - Line protection - Protection selectivity - Selectivity and sensitivity - Short circuit capacity - Switching stations

Classification Code: 691.2 Materials Handling Methods - 706.1 Electric Power Systems - 706.2 Electric Power Lines and Equipment

Database: Compendex

Data Provider: Engineering Village

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96. Development of downward communication receiving function in rotary steerable drilling system

Tang, Nan (1); Huo, Aiqing (1); Wang, Yuelong (1); Cheng, Weibin (1)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 31, n 1, p 157-160, January 2010; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) Shaanxi Key Laboratory of Drilling Rig Controlling Technique, Xi'an Shiyou University, Xi'an 710065, China

Abstract: In the rotary steerable drilling system, there is a downward communication channel to send the guidance control command from the ground monitor to the down-hole steering tool. The negative pulse of drilling fluid transmits a downward command mode encoded by the three-descending and three-ascending words. A command-sending device on the ground transmits the command mode into flow rate of drilling fluid, which is changing with a certain pulse width of drilling fluid. A control word composed of five instruction codes represents the grade of guiding force and angle of tool face. There is a downward receiving device in the down-hole steering tool. The data acquisition unit of the device can detect the output voltage or frequency of the down-hole fluid motor that reflects the pulse flow change of drilling fluid. The data processing and interpretation software based on signal threshold judgment and pulse width identification can process the received information. Then a right guiding control command calculated using the pulse width and the sequence of the 5 codes could be obtained. Several different measures were used in the receiving device for improving the reliability and anti-interference performance of downward signal transmission. Experimental results showed the feasibility of this downward transmission scheme. (12 refs)

Main heading: Data acquisition

Controlled terms: Data handling - Drilling fluids - Transmissions

Uncontrolled terms: Anti-interference - Data-acquisition units - Drilling fluid pulse - Interpretation software - Receiving device - Rotary-steerable drilling - Signal transmission - Transmission schemes

Classification Code: 602.2 Mechanical Transmissions - 723.2 Data Processing and Image Processing

Database: Compendex

Data Provider: Engineering Village

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97. Development and implementation of air & coal on-line monitoring system based on AC induction for power plant boiler

Xue, Zhaomei (1); Jin, Xiaoyang (2)

Source: *Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010*, p 807-810, 2010, *Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010*; **Language:** Chinese;

ISBN-13: 9780769540313; **DOI:** 10.1109/iCECE.2010.207; **Article number:** 5630763; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China (2) Xi'an KeRui Automation Co. Ltd., Xi'an, China

Abstract: Pulverized coal concentration and velocity of primary air pipe are two important parameters for direct-fired pulverized system, because they influence much on the economics and safety of boiler. This paper mainly introduces a kind of air & coal on-line monitoring system for power plant boiler. The new system makes the use of international advanced technique of AC charge-couple and digital processing. This system overcomes the technique difficulties of air & coal on-line monitoring systems at present. If the system applied in the power plant boiler, it can bring certain economic benefits and have broad industrial popularization and application prospect in the future. © 2010 IEEE. (6 refs)

Main heading: Coal

Controlled terms: Economics - Monitoring - Voltage measurement - Boilers - Pulverized fuel - Flow velocity - Air

Uncontrolled terms: AC induction - Application prospect - Direct-fired - Economic benefits - On-line monitoring system - Power plant boiler - Primary air - Pulverized coal concentration

Classification Code: 524 Solid Fuels - 614 Steam Power Plants - 631 Fluid Flow - 804 Chemical Products Generally - 942.2 Electric Variables Measurements - 943.2 Mechanical Variables Measurements - 971 Social Sciences

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

98. Research on improving operation efficiency of oil refining equipment using data mining technology

Wang, Jun-Qi (1); Zhu, Jing-Dong (2)

Source: *International Conference on Internet Technology and Applications, ITAP 2010 - Proceedings*, 2010, *International Conference on Internet Technology and Applications, ITAP 2010 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424451432; **DOI:** 10.1109/ITAPP.2010.5566125; **Article number:** 5566125; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China (2) Production Management, PetroChina Changqing Oilfield Company, Xi'an, China

Abstract: With the development of computer and Internet, it is easy to get related information. For the catalytic cracking unit of oil refining industry, although there is a flood of information recorded data, the changes in yield of the product caused by the changes of production of raw materials and run-time still need to rely on the experience and learn from a running instance, so Data Mining has a unique advantage in these areas. In this paper, based on increasing the yield of oil products, Data Mining technology is researched to improve operation efficiency in oil refining device applications. It abandoned the traditional way of thinking named "Assumption-Modeling- Solving- Forecasting-Verification" which based on Lumped Kinetics. It gains the most valuable experience directly from the operation of a large number of records in the past, and guides the new operating parameters to optimal operation using these experiences to increase oil refining plant run more efficiently. Each instance of a record will run automatically to be a new one in the next state of the data warehouse, so it does not require any theoretical assumptions and models to solve and will improve the prediction accuracy in the continuous learning cycle. In this paper, the example is used to prove the yield of a refinery with an annual processing capacity of 20 million tons increased from the original 71.28% to 78.13% with Data Mining methods. It not only enhances the operating efficiency of oil refining equipment, but also produces significant economic benefits. In addition, it leads the Data Mining from a commercial into the engineering field, and brings new development opportunities to traditional oil refining industry. ©2010 IEEE. (5 refs)

Main heading: Data mining

Controlled terms: Efficiency - Fluid catalytic cracking - Petroleum refining - Data warehouses

Uncontrolled terms: Continuous learning - Data mining technology - Oil-refining industry - Operating efficiency - Operating parameters - Operation - Operation efficiencies - Processing capacities

Classification Code: 513.1 Petroleum Refining, General - 723.2 Data Processing and Image Processing - 723.3 Database Systems - 802.2 Chemical Reactions - 913.1 Production Engineering

Database: Compendex

Data Provider: Engineering Village

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99. Study on technology of drilling superfine deep-hole in 2Cr13

Wang, Tianqi (1); Liu, Zhanfeng (1); Zhang, Chong (2)

Source: *Advanced Materials Research*, v 139-141, p 809-812, 2010, *Manufacturing Engineering and Automation I*; **ISSN:** 10226680; **ISBN-13:** 9780878492268; **DOI:** 10.4028/www.scientific.net/AMR.139-141.809; **Conference:** 2010 International Conference on Manufacturing Engineering and Automation, ICMEA2010, December 7, 2010 - December 9, 2010; **Sponsor:** Guangzhou University; The University of New South Wales; Huazhong University of Science and Technology; Xi'an Jiaotong University; **Publisher:** Trans Tech Publications

Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) MFE, UAES, Xi'an, 710075, China

Abstract: The paper studies machining technology, cutting parameter. It does experimentation research for drilling superfine deep-hole drilling of 2Cr13 stainless steel, of which slenderness ratio is greater than 300. The test result indicates that the drilling process is stable and reliable, the optimizing cutting technology and cutting parameters is rational, the production of the type of deep hole drilling technical problems have been solved. It has practical application in common production. The parameter can produce superfine deep holes of 2Cr13 stainless steel with the length to diameter ratio 322. In this paper, the key technologies of drilling 2Cr13 stainless steel deep hole are explained, which include selecting the system of drilling deep hole, designing of structure of deep hole bit, selecting the material of cutter blade of bit, and designing the geometry parameters of blade. © (2010) Trans Tech Publications. (3 refs)

Main heading: Turning

Controlled terms: Stainless steel - Manufacture

Uncontrolled terms: 2Cr13 stainless steel - Cutter blade - Cutting parameters - Cutting technology - Deep holes - Deep-hole drilling - Drilling process - Geometry parameter - Key technologies - Length to diameter ratio - Machining technology - Slenderness ratios - Technical problem - Test results

Classification Code: 537.1 Heat Treatment Processes - 545.3 Steel - 604.2 Machining Operations - 913.4 Manufacturing

Database: Compendex

Data Provider: Engineering Village

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100. A new smooth support vector machine

Liang, Jinjin (1); Wu, De (2)

Source: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, v 6319 LNAI, n PART 1, p 266-272, 2010, *Artificial Intelligence and Computational Intelligence - International Conference, AICI 2010, Proceedings*; **ISSN:** 03029743, **E-ISSN:** 16113349; **ISBN-10:** 364216529X, **ISBN-13:** 9783642165290; **DOI:** 10.1007/978-3-642-16530-6_32; **Publisher:** Springer Verlag

Author affiliation: (1) Department of Mathematical Sciences, Xi'an Shiyou University, Shaanxi Xi'an, China (2) Department of Computer Sciences, Xidian University, Shaanxi Xi'an, China

Abstract: A new Smooth Support Vector Machine (SSVM) is proposed and is called NSSVM for short. Different from traditional SSVM that treats perturbation formulation of SVM, NSSVM treats standard 2-norm error soft margin SVM. Different from traditional SSVM that uses the 2-norm of the Lagrangian multipliers vector to roughly substitute that of the weight of the separating hyperplane, which makes the obtained smooth model unequal to the primal program; NSSVM takes into account the connotative relation between the primal and dual program to transform the original program to a new smooth one. Numerical experiments on several UCI datasets demonstrate that NSSVM has higher precisions than existing methods. © 2010 Springer-Verlag. (12 refs)

Main heading: Vectors

Controlled terms: Lagrange multipliers - Support vector machines - Numerical methods

Uncontrolled terms: connotative relation - Lagrangian multipliers - Numerical experiments - primal and dual program - Separating hyperplane - Smooth models - Smooth support vector machine - Soft margins

Classification Code: 723 Computer Software, Data Handling and Applications - 921.1 Algebra - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

101. Life cycle influence mechanism of energy-saving chain management on energy-saving building construction

Zhang, Jing-Xiao (1); Li, Hui (1); Bai, Li (2)

Source: *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*, p 1904-1907, 2010, *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*; **ISBN-13:** 9781424477388; **DOI:** 10.1109/MACE.2010.5536595; **Article number:** 5536595; **Conference:** 2010 International

Conference on Mechanic Automation and Control Engineering, MACE2010, June 26, 2010 - June 28, 2010; **Sponsor:** Huazhong University of Science and Technology; IEEE Beijing Section CSS Chapter; Wuhan University of Science and Technology; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Civil Engineering, Chang'an University, Xi'an 710061, Shaanxi, China (2) School of Management, Xi'an Shiyou University, Xi'an 710061, Shaanxi, China

Abstract: Construction energy-saving chain management is a new kind method focusing on the energy-saving performance from the viewpoint of energy-saving building growth process. This paper introduces the source of as well as the cause-and-motivational from the mutual mechanism between construction energy-saving and program management, analyses the influence effect on the strength and the integration level of project management by construction energy-saving chain management. At last, the particular issues on construction energy-saving chain management and how to practice have been referred in the next step. ©2010 IEEE. (11 refs)

Main heading: Project management

Controlled terms: Chains - Intelligent buildings - Life cycle - Energy conservation

Uncontrolled terms: Construction energy savings - Coupling matrix - Energy-saving buildings - Energy-saving chains - Integration levels - Life-cycle management - Mutual mechanisms - Program management

Classification Code: 402 Buildings and Towers - 525.2 Energy Conservation - 602.1 Mechanical Drives - 723.5 Computer Applications - 731.1 Control Systems - 912.2 Management

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

102. Recognizing human activities by key frame in video sequences

Zhang, Hao (1); Liu, Zhijing (1); Zhao, Haiyong (1); Cheng, Guojian (2)

Source: *Journal of Software*, v 5, n 8, p 818-825, 2010; **ISSN:** 1796217X; **DOI:** 10.4304/jsw.5.8.818-825; **Publisher:** Academy Publisher

Author affiliation: (1) School of Computer Science and Technology, Xidian University, Xi'an, China (2) School of Computer, Xi'an Shiyou University, Xi'an, China

Abstract: This paper presents a new method of human activity recognition, which is based on R transform and dynamic time warping (DTW) after the key frame is extracted from a cycle. For a key binary human silhouette, R transform is employed to represent low-level features. The advantage of the R transform lies in its low computational complexity and geometric invariance. The DTW distance based on the extracted features are calculated and compared similarities to recognize activities. Compared with other methods, ours is superior because the descriptor is robust to frame loss in the video sequence, disjoint silhouettes and holes in the shape, and thus achieves better performance in similar activities recognition, simple representation, computational complexity and template generalization. Sufficient experiments have proved the efficiency. © 2010 ACADEMY PUBLISHER. (19 refs)

Main heading: Computational complexity

Controlled terms: Mathematical transformations - Pattern recognition - Video recording

Uncontrolled terms: Activities recognition - Activity recognition - Dynamic time warping - Geometric invariance - Human activity recognition - Key frames - Low computational complexity - R transforms

Classification Code: 716.4 Television Systems and Equipment - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

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103. Notice of Retraction: Empirical study on the performance of EPC contractor management module: A Chinese case

Zhang, Jing-Xiao (1); Bai, Li (2); Su, Chaun-Chuan (1)

Source: *Proceedings of the International Conference on E-Business and E-Government, ICEE 2010*, p 5157-5163, 2010, *Proceedings of the International Conference on E-Business and E-Government, ICEE 2010*; **ISBN-13:**

9780769539973; **DOI:** 10.1109/ICEE.2010.1294; **Article number:** 5592004; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Civil Engineering, Chang'an University, Xi'an 710061, Shaanxi, China (2) School of Management, Xi'an Shiyou University, Xi'an 710061, Shaanxi, China

Abstract: The home-and-abroad literature review shows that calculating the performance coefficients between EPC Program and its management module has not been found from the EPC contractor's viewpoint. It is emphasized that management is the main source of benefit, and the essence of EPC module is a kind of instrument producing the performance or benefit. This article, from the EPC contractor's point of view, builds EPC management function performance model, analyzes EPC management income distribution patterns of EPC management module, and constructs Markov state transition matrix by using expert scoring method and AHP method to calculate the performance contribution stability of EPC contractor's management module and to predict the stability of the EPC performance management module. The empirical study of the Branch Company of the 20th China Metallurgical Corporation shows that although the performance coefficients (0.13,0.06,0.3,0.2,0.31) in the module do not meet the pattern of "E-P-C" in EPC management, in which the additional values of the three elements appear decreasing, the coefficients satisfy the pattern of a "smiling" curve, by which it means that a shape of "high at two ends, low in the middle" reflects a relationship between the importance attached to the module and the performance income coefficients resulted from the module. Judging from common sense, it is the construction module (C) that should be at the bottom of the "smiling" curve, not the procurement module (P). The company, therefore, should adjust its focus in the management module to raise its base line in the procurement module so as to create a more reasonable performance income distribution curve. © 2010 IEEE. (29 refs)

Main heading: Construction industry

Controlled terms: Contractors

Uncontrolled terms: China - Empirical studies - Income distribution - Literature reviews - Management functions - Performance - Performance coefficients - Performance management

Classification Code: 405 Construction Equipment and Methods; Surveying - 912 Industrial Engineering and Management

Database: Compendex

Data Provider: Engineering Village

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104. The application of Hopfield neural network in enhancing x ray image of steel pipe welding

Li, Yaping (1); Zhang, Huade (1); Gao, Weixin (2)

Source: *Proceedings - 2010 6th International Conference on Natural Computation, ICNC 2010*, v 2, p 810-813, 2010, *Proceedings - 2010 6th International Conference on Natural Computation, ICNC 2010*; **ISBN-13:** 9781424459612;

DOI: 10.1109/ICNC.2010.5583229; **Article number:** 5583229; **Publisher:** IEEE Computer Society

Author affiliation: (1) SINOPEC Pipeline Transport and Storage Company, Xuzhou, China (2) School of Electrical Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: This paper analyses the characters of x-ray image of thick and thin steel pipe. In order to enhance the x-ray image automatically and avoid deciding the image's degraded type, a gray mapping matrix is constructed to replace traditional gray transformation curves and the maximum dimension of the gray mapping matrix is 256×256. So the calculation time has little relation with the size of the image. The criterion function of image quality is used to evaluate the quality of the transformed image. By this way, the problem of image enhancement is transformed to an optimization problem. The paper presents Hopfield neural network to calculate the gray mapping matrix. The energy function and the calculation method are also given. Some examples show that the presented method is effective. © 2010 IEEE. (10 refs)

Main heading: Hopfield neural networks

Controlled terms: Mapping - Image enhancement - Steel pipe - X ray analysis - Linear transformations

Uncontrolled terms: Calculation time - Criterion functions - Energy functions - Gray transformation - Image hencing - Optimization problems - Paper analysis - Steel pipe welding

Classification Code: 405.3 Surveying - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

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105. Preliminary study on deep-hole drilling gamma titanium aluminide

Zhu, Lin (1); Chen, Xin (1); Viehweger, Bernd (2)

Source: *Advanced Materials Research*, v 139-141, p 831-834, 2010, *Manufacturing Engineering and Automation I*;

ISSN: 10226680; **ISBN-13:** 9780878492268; **DOI:** 10.4028/www.scientific.net/AMR.139-141.831; **Conference:** 2010 International Conference on Manufacturing Engineering and Automation, ICMEA2010, December 7, 2010 - December 9, 2010; **Sponsor:** Guangzhou University; The University of New South Wales; Huazhong University of Science and Technology; Xi'an Jiaotong University; **Publisher:** Trans Tech Publications

Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China (2) Faculty 3, Brandenburg University of Technology, Cottbus, Germany

Abstract: γ -titanium aluminide are considered as a potential light weight material. γ -titanium aluminide alloy has the advantages of high temperature resistance, high performance of anti-oxidation effect, low-density, high specific strength and rigidity etc. This material is suitable to be applied in aeronautics, astronautics and automobile industry. But high hardness, brittleness and mechanical strength make it hard to process. This problem is more acute in deep hole drilling. In this paper, we have analyzed the cutting performance of γ -titanium aluminide and designed a deep-hole drill with three different tool materials. The experimental result shows: (1) YG8 cemented carbide is the appropriate tool material for drilling γ -titanium aluminide. (2) Small rake angle of external edge ($\phi=1^\circ$) and big clearance angle of external edge ($\alpha_{\#}=10\sim 12^\circ$) should be chosen. (3) Best wear results are obtained when oil is utilized as cutting fluid. © (2010) Trans Tech Publications. (4 refs)

Main heading: Fracture mechanics

Controlled terms: Automotive industry - Drills - High strength alloys - Cutting fluids - Titanium alloys

Uncontrolled terms: Anti-oxidation - Automobile industry - Cemented carbides - Clearance angle - Cutting performance - Deep hole drilling - Deep holes - Gamma-titanium aluminide - High hardness - High specific strength - High temperature resistance - Lightweight materials - Mechanical strength - Rake angle - Titanium aluminide alloy - Titanium aluminides - Tool materials

Classification Code: 531.1 Metallurgy - 542.3 Titanium and Alloys - 603.2 Machine Tool Accessories - 931.1 Mechanics

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

106. A new method of seismic wavefield separation and denoising

Shen, Hong-Yan (1); Li, Qing-Chun (2)

Source: *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*, v 5, p 107-110, 2010, *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*; **ISBN-13:** 9781424458462; **DOI:** 10.1109/ICACC.2010.5487234; **Article number:** 5487234; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an, China (2) College of Geology Engineering and Geometrics, Chang'an University, Xi'an, China

Abstract: Singular Value Decomposition (SVD) Filtering is one seismic data processing technique which uses the lateral coherence difference of the seismic wave to achieve wavefield separation and denoising. As the differences of propagation characteristics, apparent velocity and coherence in seismic signals, transformation of the valid signals may be transformed into those with better coherence by some mathematic transformations. In this paper, based on apparent velocities, throughing the processing method of two times Normal Moveout(NMO), we make the P-P wave and the P-S wave moveout respectively that enable them to achieve the best coherence on the deflection. The goal is that transforms the desired signal to one kind better processing territory in the horizontal upward coherence, then distinguishes two times SVD respectively and reconstruct signal with extracting the singular value of target signals. we might accomplish P-P wave and P-S wave separation as well as noise attenuation afterwards. © 2010 IEEE. (14 refs)

Main heading: Singular value decomposition

Controlled terms: Seismic waves - Processing - Shear waves - Data handling - Seismic response - Separation - Signal processing

Uncontrolled terms: De-noising - Normal moveout (NMO) - P waves - S-waves - Seismic data processing

Classification Code: 484 Seismology - 484.2 Secondary Earthquake Effects - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations - 913.4 Manufacturing - 921 Mathematics - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

107. The oil transmission station operational guidance calculation algorithm based on Hopfield neural network

Gao, Weixin (1); Tang, Nan (1); Li, Yaping (2); Zhang, Huade (2)

Source: *Proceedings - 2010 6th International Conference on Natural Computation, ICNC 2010*, v 2, p 716-719, 2010, *Proceedings - 2010 6th International Conference on Natural Computation, ICNC 2010*; **ISBN-13:** 9781424459612; **DOI:** 10.1109/ICNC.2010.5583285; **Article number:** 5583285; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xi'an, China (2) SINOPEC Pipeline Transport and Storage Company, Xuzhou, China

Abstract: This paper proposes a connected graph for describing the technology flow of the oil transmission station. By classifying the nodes of the connected graph, the problem of deciding the operation procedures for a specific scheduled task can be translated to the problem of calculating a radial sub-graph of the connected graph. We present a mathematical model for oil transmission station optimal operation based on the connected graph. And we put forward Hopfield neural network for calculating the model. The energy function is also given in the paper. Real calculation shows that the method presented is practical. © 2010 IEEE. (10 refs)

Main heading: Flow graphs

Controlled terms: Hopfield neural networks

Uncontrolled terms: Calculation algorithms - Component - Energy functions - Oil transmission substation - Operation procedure - Operational guidance - Optimal operation - Transmission station

Classification Code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

108. Neuron learning mechanism on china construction enterprises knowledge gap compensation

Zhang, Jing-Xiao (1); Li, Bai (2); Li, Hui (1); Zhou, Tian-Hua (1)

Source: *Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010*, p 1339-1344, 2010, *Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010*; **ISBN-13:** 9780769540313; **DOI:** 10.1109/iCECE.2010.333; **Article number:** 5630464; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Civil Eng., Chang'an Univ., Xi'an 710061, Shaanxi, China (2) School of Management, Xi'an Shiyou Xi'an Univ., Xi'an 710061, Shaanxi, China

Abstract: The compensation for construction enterprise knowledge gap is an important guarantee for the enterprise to make rapid and stable development. This paper defines the connotation of knowledge gap in construction enterprises from the knowledge supplies and demands point of view, and analyzes the causes of construction enterprise knowledge gaps and their remedy forces in China. Based on this, the paper, with the integration of learning theories and neurons thoughts, puts forward three learning mechanisms on self-evolutionary knowledge gap neuron, benchmarking knowledge gap neuron, and mixed knowledge neuron in construction enterprises to establish a predictive learning system for the enterprises' knowledge gaps based on discrete time dynamic process, thus fully describing a diachronic process of knowledge gaps in the construction enterprises from self-evolutionary learning, benchmarking learning, a combination of self-evolutionary and benchmarking learning to self-prediction learning to help the enterprises to set up a learning mechanism corresponding and effectively predict its transferring state on the basis of identifying the knowledge gaps in the construction enterprises. © 2010 IEEE. (26 refs)

Main heading: Benchmarking

Controlled terms: Neurons - Forecasting

Uncontrolled terms: Construction enterprise - Discrete time dynamics - Evolutionary knowledge - Evolutionary Learning - Knowledge gaps - Knowledge supply - Learning mechanism - Self-evolutionary

Classification Code: 461.9 Biology

Database: Compendex

Data Provider: Engineering Village

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109. Efficiency evaluation of construction enterprises value innovation culture force

Zhang, Jing-Xiao (1); Bai, Li (2); Lu, Ning (1); Xie, Yan-Ping (1)

Source: *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*, p 746-750, 2010, *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*; **ISBN-13:** 9781424477388; **DOI:** 10.1109/MACE.2010.5535501; **Article number:** 5535501; **Conference:** 2010 International Conference on Mechanic Automation and Control Engineering, MACE2010, June 26, 2010 - June 28, 2010; **Sponsor:** Huazhong University of Science and Technology; IEEE Beijing Section CSS Chapter; Wuhan University of Science and Technology; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Civil Engineering, Chang'an University, Xi'an 710061, Shaanxi, China (2) School of Management, Xi'an Shiyou Xi'an University, Xi'an 710061, Shaanxi, China

Abstract: Culture force is one of three-main important environment force for construction enterprises' value innovation. Based on literature review among the culture, culture force and enterprise culture force, the paper argues that culture governance is the highest state for construction enterprises to improve construction enterprises value innovation ability. Then, culture force system is divided into four parts, which is Enterprise spiritual culture, Enterprise system culture, Enterprise behavioral culture, Enterprise material culture, at the same time, the corresponding index systems have also been constructed. In order to realize the Efficiency Evaluation of Construction Enterprises Value Innovation Culture Force, the paper has built construction enterprise value innovation culture force evaluation model centered in DEA and assisted by AHP and construct efficiency wave analyzing picture based on project deviation ideology to pursue the efficiency gap among the index of culture forces. At last, fourteen shaanxi construction enterprises' investigate shows that this method could estimate the Construction Enterprises Value Innovation Culture Force's efficiency effectly. ©2010 IEEE. (25 refs)

Main heading: Efficiency

Controlled terms: Hierarchical systems - Value engineering

Uncontrolled terms: Construction enterprise - Efficiency evaluation - Enterprise culture - Enterprise system - Evaluation modeling - Literature reviews - Material cultures - Value innovations

Classification Code: 911.5 Value Engineering - 913.1 Production Engineering - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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110. Sliding mode control of rotary drilling system with stick slip oscillation

Zhang, Qi-Zhi (1, 2); He, Yu-Yao (1); Li, Lin (2); Nurzat (2)

Source: *Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010, 2010, Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010*; **ISBN-13:** 9781424458745; **DOI:** 10.1109/IWISA.2010.5473281; **Article number:** 5473281; **Conference:** 2nd International Workshop on Intelligent Systems and Applications, ISA2010, May 22, 2010 - May 23, 2010; **Sponsor:** Harbin Institute of Technology; Huazhong University of Science and Technology; Hubei University of Technology; IEEE Harbin Section; Research Association of Modern Education and Computer Science; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratory of Drilling Rig Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: In this paper, a conventional model describing the torsional behaviour of a generic vertical oilwell drillstring has been presented, and a dynamical sliding mode control has been used to eliminate bit sticking phenomena. In the control system, the bit angular velocities are driven to a desired reference value in spite of the presence of a dry friction modelling the bit-rock contact. The key idea of the controller is to introduce a sliding surface in the system which the desired dynamics is accomplished. Three reaching law in the sliding mode are applied in the drilling rotary system. The simulation results showed that the control law is capable of accurately controlling the bit speed, has faster dynamics responses and suppress stick-slip in oil well drill string. ©2010 IEEE. (20 refs)

Main heading: Stick-slip

Controlled terms: Control theory - Oil well drilling - Oil well drills - Oil wells - Slip forming - Drill strings - Sliding mode control

Uncontrolled terms: Conventional modeling - Dynamical sliding mode controls - Oscillation - Reference values - Rotary drilling system - Sliding modes - Sliding surface - Stick-slip oscillation

Classification Code: 412 Concrete - 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 731.1 Control Systems - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

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111. Notice of Retraction: Key technology research of downward communication receiving system in rotary steerable drilling

Huo, Ai-Qing (1, 2); He, Yu-Yao (1); Wang, Yue-Long (2); Nan, Tang (2); Cheng, Wei-Bin (2)

Source: *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings, v 1, p V1413-V1417, 2010, ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5486074; **Article number:** 5486074; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratories of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: The downward communication receiving system in rotary steerable is a hot research topic today. Several key technologies for its implementation, namely, transmission channel, the ground command code, underground detection devices, and underground instruction decoding were studied in this paper. After comprehensive drilling technology, command transmission time, underground communication recognition accuracy, etc., the drilling fluid pulse transmission is selected as a downlink information transmission protocol. The relationship between three-descending and three-ascending coded instructions and the points with tool face angle and the guidance force size is established. A code table has been established with four coding classes. In order to convert drilling fluid pulses into electric pulses, the use of downhole turbine engine is proposed as means to detect the changes in drilling fluid displacement. Ground simulation and hydraulic tests through the turbine engine showed the existence of a linear response relationship between the output voltage from the turbine motor and the drilling fluid displacement. The identification of descending edge and ascending edge is achieved by using interruption mode. Five-pulse widths were calculated by using pulse-counting method. The corresponding control commands were interpreted through the development of the software in the downhole drilling tool. Ground simulation results demonstrated the feasibility and achievability of this downward transmission and receiving scheme. © 2010 IEEE. (13 refs)

Main heading: Hydraulic motors

Controlled terms: Codes (symbols) - Engines - Hydraulic machinery - Turbines

Uncontrolled terms: Drilling fluid pulse - Drilling technology - Hot research topics - Information transmission - Recognition accuracy - Rotary steering - Rotary-steerable drilling - Transmission channels

Classification Code: 632.2 Hydraulic Equipment and Machinery - 723.2 Data Processing and Image Processing

Database: Compendex

Data Provider: Engineering Village

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112. The technique of reactive power compensation in the drill site power network

Zhang, Qi-Zhi (1); He, Yu-Yao (1); Li, Lin (2); Yan, Hong-Liang (2)

Source: *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*, v 3, p 213-215, 2010, *Proceedings - 2nd IEEE International Conference on Advanced Computer Control, ICACC 2010*; **ISBN-13:** 9781424458462; **DOI:** 10.1109/ICACC.2010.5486825; **Article number:** 5486825; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratory of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: This paper introduces the application of TCR dynamic reactive power compensation in the drill site power network. The basic principle and composition of TCR dynamic reactive power compensation device and its control system are also presented. The experimental results show that the application of device can improve power quality, raise the power factor, and reduce the voltage fluctuation. It is good to be applied widely. © 2010 IEEE. (6 refs)

Main heading: Electric power utilization

Controlled terms: Reactive power - Electric network analysis - Electric power transmission networks - Bandpass filters - Drills

Uncontrolled terms: Basic principles - Dynamic reactive power compensation devices - Dynamic reactive power compensations - Filter - Power factors - Power networks - Reactive power compensation - Voltage fluctuations

Classification Code: 603.2 Machine Tool Accessories - 703.1.1 Electric Network Analysis - 703.2 Electric Filters - 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission

Database: Compendex

Data Provider: Engineering Village

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113. Research of disc valve friction torque modeling and integral sliding mode adaptive control for rotary steering drilling tool

Huo, Ai-Qing (1); He, Yu-Yao (1); Wang, Yue-Long (2); Nan, Tang (2); Cheng, Wei-Bin (2)

Source: *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*, v 1, p V1715-V1719, 2010, *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5485370; **Article number:** 5485370; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratories of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: There is a clear non-linear characteristic of friction torque to the control axis on stable platform control system. Based on the structure of this system, the article establishes the basic model of the control system and the disk valve model of friction torque. For the non-linear friction torque, integral sliding mode controller was designed, and an adaptive control was presented to realize the adaptive estimation of uncertain disturbances. Simulation results show that this method is an effective solution to the nonlinear friction torque on the stable platform attitude control. The system takes on strong robustness to load disturbance and parameter perturbation. The outcome of such research would provide the theoretical basis for the steady platform controlling and the decisionmaking. © 2010 IEEE. (11 refs)

Main heading: Adaptive control systems

Controlled terms: Torque - Attitude control - Friction - Sliding mode control - Tribology

Uncontrolled terms: Adaptive Control - Integral sliding mode control - Nonlinear friction torque - Rotary steering - Stabilized platform

Classification Code: 731.1 Control Systems - 731.3 Specific Variables Control - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

114. Image fusion algorithm based on energy of Laplacian and PCNN

Li, Meili (1, 2); Wang, Hongmei (1); Li, Yanjun (1); Zhang, Ke (1)

Source: *Proceedings of SPIE - The International Society for Optical Engineering*, v 7651, 2010, *International Conference on Space Information Technology 2009*; **ISSN:** 0277786X; **ISBN-13:** 9780819480798; **DOI:**

10.1117/12.855556; **Article number:** 76510M; **Conference:** International Conference on Space Information Technology 2009, November 26, 2009 - November 27, 2009; **Sponsor:** China Academy of Space Technology;

Huazhong University of Science and Technology; The Second Acad. China Aerosp. Sci. Ind. Corp.; **Publisher:** SPIE

Author affiliation: (1) College of Astronautics, Northwestern Polytechnical University, Xi'an 710072, China (2) College of Science, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Owing to the global coupling and pulse synchronization characteristic of pulse coupled neural networks (PCNN), it has been proved to be suitable for image processing and successfully employed in image fusion. However, in almost all the literatures of image processing about PCNN, linking strength of each neuron is assigned the same value which is chosen by experiments. This is not consistent with the human vision system in which the responses to the region with notable features are stronger than that to the region with nonnotable features. It is more reasonable that notable features, rather than the same value, are employed to linking strength of each neuron. As notable feature, energy of Laplacian (EOL) is used to obtain the value of linking strength in PCNN in this paper. Experimental results demonstrate that the proposed algorithm outperforms Laplacian-based, wavelet-based, PCNN-based fusion algorithms. © 2010 Copyright SPIE - The International Society for Optical Engineering. (10 refs)

Main heading: Image fusion

Controlled terms: Image processing - Neural networks - Laplace transforms

Uncontrolled terms: Energy of laplacian (EOL) - Fusion algorithms - Global coupling - Human vision systems - Image fusion algorithms - Linking strength - Pulse coupled neural network - Pulse synchronization

Classification Code: 723.2 Data Processing and Image Processing - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

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115. Diagenesis and favorable diagenetic facies of Chang 8 reservoir in Heshui area, Ordos basin

Gao, Hui (1); Sun, Wei (2)

Source: *Jilin Daxue Xuebao (Diqiu Kexue Ban)/Journal of Jilin University (Earth Science Edition)*, v 40, n 3, p 542-548, May 2010; **Language:** Chinese; **ISSN:** 16715888; **Publisher:** Jilin University Press

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Geology, Northwest University, Xi'an 710069, China

Abstract: Diagenesis and favorable diagenetic facies of Chang 8 reservoir in Heshui area, Ordos basin are researched using physical property analysis, mercury penetration, cast section and SEM technique. The results show that physical property is poor, pore throat is minute, fine-mesograin feldspathic litharenite dominated, clastic constituents are complicate, compositional maturity is low and texture maturity is low to middle. Original pore spaces are decreased because of compaction, cementation damage not only partial primary pore but also secondary dissolved pore, dissolution improves the physical property. Five kinds of diagenetic facies are classified on the base of the influence of diagenesis on physical property. There is an intimate relationship between qualifying reservoir and diagenetic facies, physical property and oil bearing of chlorite cementation-feldspar corrosion facies are the best, chlorite cementation facies follows, which construct the favorable diagenetic facies of reservoir develop. (12 refs)

Main heading: Physical properties

Controlled terms: Cementing (shafts) - Sedimentology - Oil bearing formations - Petroleum reservoirs - Sandstone - Feldspar - Petroleum reservoir engineering - Metamorphic rocks

Uncontrolled terms: Diagenesis - Diagenetic facies - Heshui area - Ordos Basin - Petroleum gas

Classification Code: 481.1 Geology - 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

116. The design of PROFIBUS-DP and CAN bus communications unit in drilling rig control system

Zhang, Qi-Zhi (1); He, Yu-Yao (1); Li, Lin (2); Shen, Xiao-Hui (2)

Source: *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*, v 3, p V3492-V3494, 2010, *ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings*; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5485841; **Article number:** 5485841; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratory of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: The paper presents that PROFIBUS-DP and CAN bus communication unit is developed. For drilling rig electric control system the communication unit achieves communication function between PLC and diesel generator controller and the remote control function of diesel generator by PLC. The data transmission is reliable and the transmission speed is high in communication unit, And it has further consummated the digital control level of the drilling rig electric control system. © 2010 IEEE. (5 refs)

Main heading: Remote control

Controlled terms: Digital control systems

Uncontrolled terms: Can bus communications - Communication functions - Control functions - Diesel generators - Digital control - Electric control system - Electric rig - Transmission speed

Classification Code: 731.1 Control Systems

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

117. Notice of Retraction: The design of cased hole formation resistivity logging of preamplifier circuits

Zhang, Jiatian (1); Huo, Feifei (1); Yan, Zhengguo (1)

Source: *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*, p 455-458, 2010, *Proceedings - 2nd International Conference on Information Technology and Computer Science, ITCS 2010*; **ISBN-13:** 9780769540740; **DOI:** 10.1109/ITCS.2010.117; **Article number:** 5557165; **Publisher:** IEEE Computer Society

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

Abstract: In view of the signals of the cased hole formation resistivity logging which is extremely low, the voltage is nanometer. The amplifier technology is the key of logging technology of formation resistivity through casing. In this paper, which contains the design of signal conditioning circuits, the preamplifier utilizes the method of reducing power supply noise and select the low-noise amplifier. In order to achieve the performance and requirements of the circuit, the pre-amplifier make use of virtual GND and some of the denoising ways such as multi-level filtering respectively. © 2010 IEEE. (5 refs)

Main heading: Low noise amplifiers

Controlled terms: Signal processing - Timing circuits - Bandpass filters - Signal conditioning circuits

Uncontrolled terms: Amplifier technologies - Cased-hole formation resistivities - De-noising - Formation resistivity - Multilevels - Preamplifier circuit - Reducing power - Weak signals

Classification Code: 703.2 Electric Filters - 713.1 Amplifiers - 713.4 Pulse Circuits - 716.1 Information Theory and Signal Processing - 722.4 Digital Computers and Systems

Database: Compendex

Data Provider: Engineering Village

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118. Harmonic suppression in the power system of electric drilling rig

Zhang, Qi-Zhi (1, 2); He, Yu-Yao (1); Li, Lin (2); Yan, Hong-Liang (2)

Source: *Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010*, 2010, *Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010*; **ISBN-13:** 9781424458745; **DOI:** 10.1109/IWISA.2010.5473601; **Article number:** 5473601; **Conference:** 2nd International Workshop on Intelligent Systems and Applications, ISA2010, May 22, 2010 - May 23, 2010; **Sponsor:** Harbin Institute of Technology; Huazhong University of Science and Technology; Hubei University of Technology; IEEE Harbin Section; Research Association of Modern Education and Computer Science; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Key Laboratory of Drilling Rig Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: The paper presents a hybrid power filter for suppressing harmonics caused by the nonlinear load in drilling rig electric power system, and analyzes the impact and the harm of the harmonic. The principle and the control method of system are discussed. A composite control model is adopted. The experimental results show that the hybrid power filter has the good characters of harmonics elimination and reactive power compensation, can raised the power factor effectively, decreased the harmonic current and improved the current waveshape. It has proved the system safety and steady, and has good cost performance with deserving extensive use. ©2010 IEEE. (7 refs)

Main heading: Electric power utilization

Controlled terms: Bandpass filters - Reactive power - Harmonic analysis - Active filters

Uncontrolled terms: Active power Filter - Composite control - Harmonic currents - Harmonic suppression - Harmonics elimination - Harmonics suppression - Hybrid power filter - Reactive power compensation

Classification Code: 703.2 Electric Filters - 706.1 Electric Power Systems - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

119. Petroleum lithology discrimination based on PSO-LSSVM classification model

Cheng, Guojian (1); Guo, Ruihua (1); Wu, Wenhai (2)

Source: ICCMS 2010 - 2010 International Conference on Computer Modeling and Simulation, v 4, p 365-368, 2010, ICCMS 2010 - 2010 International Conference on Computer Modeling and Simulation; **ISBN-13:** 9780769539416;

DOI: 10.1109/ICCMS.2010.284; **Article number:** 5421448; **Conference:** 2010 International Conference on Computer Modeling and Simulation, ICCMS 2010, January 22, 2010 - January 24, 2010; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Shaanxi Province, China (2) Xi'an Electric Power College, Shaanxi Province, 710032, China

Abstract: This paper propose an algorithm which combines Particle Swarm Optimization (PSO) with Least Squares Support Vector Machines (LSSVM) to identify lithology by using well logging data. First of all, PSO is used for optimizing the main parameters of LSSVM, and then by using the optimized parameters to obtain a better PSO-LSSVM classification model which can be used to identify lithology with logging data. Compared with the traditional SVM model based on cross-validation and a single hidden layer of BP neural network model, the new PSO-LSSVM method can accurately describe the nonlinear mapping relationship between the well logging data and the lithology categories. The experimental results show that a higher precise identification can be got and the automation of the algorithm can also be improved. © 2010 IEEE. (5 refs)

Main heading: Lithology

Controlled terms: Well logging - Support vector machines - Particle swarm optimization (PSO) - Neural networks

Uncontrolled terms: BP neural network model - Classification models - Least squares support vector machines - Lithology discrimination - Lithology identification - Logging data - Nonlinear mapping relationship - Optimized parameter

Classification Code: 481.1 Geology - 723 Computer Software, Data Handling and Applications - 921.5 Optimization Techniques

Database: Compendex

Data Provider: Engineering Village

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120. A double surfaces sliding mode control technique in rotary drilling system

Zhang, Qi-Zhi (1, 2); He, Yu-Yao (1); Li, Lin (2); Rasol, Nurzat (2)

Source: ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings, v 3, p V3645-V3649, 2010, ICCET 2010 - 2010 International Conference on Computer Engineering and Technology, Proceedings; **ISBN-13:** 9781424463503; **DOI:** 10.1109/ICCET.2010.5485769; **Article number:** 5485769; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, 710065, China (2) Key Laboratory of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, 710065, China

Abstract: In this paper, a conventional model describing the torsional behavior of a generic vertical oilwell drillstring has been presented, and a PI control based on sliding mode is proposed for robust stabilization of nonlinear rotary drilling system. The controller is combined of a PI controller to compensate the nonlinearity in the drilling machine and sliding mode controller to ensure the robustness of the method proposed. A double sliding mode surfaces control is applied in the control system. The control target is to give rise to bit stick-slip oscillations and bit sticking phenomena, to accomplish the bit velocity to the rotary velocity and the rotary velocity approach to the reference. The simulation results show faster dynamics performance, and a strong potential for the practical applicability of this approach. © 2010 IEEE. (20 refs)

Main heading: Stick-slip

Controlled terms: Drill strings - Controllers - Drills - Sliding mode control - Slip forming

Uncontrolled terms: Conventional modeling - Oscillation - Robust stabilization - Rotary drilling system - Sliding mode controller - Sliding mode surface - Sliding modes - Stick-slip oscillation

Classification Code: 412 Concrete - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 731.1 Control Systems - 732.1 Control Equipment - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

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121. Skin color segmentation based on improved 2D Otsu and YCgCr

Zhao, Minghua (1); Zhao, Yonggang (2)

Source: Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010, p 1954-1957, 2010, Proceedings - International Conference on Electrical and Control Engineering, ICECE 2010; **ISBN-13:** 9780769540313; **DOI:** 10.1109/ICECE.2010.480; **Article number:** 5629683; **Publisher:** IEEE Computer Society

Author affiliation: (1) Faculty of Computer Science and Engineering, Xi'an University of Technology, Xi'an, China (2) Faculty of Petroleum Resource, Xi'an Shiyou University, Xi'an, China

Abstract: A new algorithm for skin color segmentation is proposed in this paper. Firstly, the skin color sample images are light-compensated and transferred from RGB to YCgCr color space. Secondly, the Gaussian skin color model is established from 179221 skin pixels. Thirdly, the skin like similarity degree is computed and the skin color similarity image is obtained. Finally, an improved 2D Otsu method is used into skin color segmentation. Experimental results show that the new skin color segmentation method is superior to the traditional methods. © 2010 IEEE. (10 refs)

Main heading: RGB color model

Controlled terms: Color codes

Uncontrolled terms: Color space - Gaussians - Otsu method - Similarity degree - Skin color - Skin color modeling - Skin-color segmentation - Ycgcr color spaces

Classification Code: 741.1 Light/Optics

Database: Compendex

Data Provider: Engineering Village

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122. Forming of micro-sheet-metal components

Qin, Yi (1); Brockett, Andrew (2); Zhao, Jie (3); Razali, Akhtar (4); Ma, Yanling (5); Harrison, Colin (5)

Source: *Micro-Manufacturing Engineering and Technology*, p 130-145, 2010; **ISBN-13:** 9780815515456; **DOI:** 10.1016/B978-0-8155-1545-6.00008-9; **Publisher:** Elsevier Inc.

Author affiliation: (1) Research Group in Precision Engineering and Micro-Manufacturing, University of Strathclyde, United Kingdom (2) University of Strathclyde, United Kingdom (3) Xian Shiyou University, China (4) Micro-Manufacturing Technology, University of Strathclyde, United Kingdom (5) University of Aberdeen, United Kingdom

Main heading: Sheet metal

Uncontrolled terms: Sheet metal components

Classification Code: 608 Mechanical Engineering, General - 912.1 Industrial Engineering

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

123. Adaptive regularized variation model based on diffusion tensor

Liu, Xiao-Yan (1, 2); Feng, Xiang-Chu (1)

Source: *Xi Tong Gong Cheng Yu Dian Zi Ji Shu/Systems Engineering and Electronics*, v 32, n 1, p 188-191+194, January 2010; **Language:** Chinese; **ISSN:** 1001506X; **Publisher:** Chinese Institute of Electronics

Author affiliation: (1) Dept. of Mathematics, School of Science, Xidian Univ., Xi'an 710071, China (2) School of Science, Xi'an Shiyou Univ., Xi'an 710065, China

Abstract: Structure tensor is good for describing images, this paper puts forward an adaptive regularized variation model based on diffusion tensor. In this model, the direction of diffusion and the characters of different kinds of pixel in noisy images are characterized by the eigenvector and eigenvalues of structure tensor. In order to enhance edges, the shock filter is coupled to it. And the principle of selecting the parameters is presented. Simulation experiments indicate that the proposed model can not only denoise efficiently but also preserve detail information well, thus obtaining the better results. (12 refs)

Main heading: Image reconstruction

Controlled terms: Adaptive filtering - Bandpass filters - Tensors - Eigenvalues and eigenfunctions - Diffusion

Uncontrolled terms: Adaptive regularization - De-Noise - Diffusion tensor - Eigenvalues - Noisy image - Shock filters - Structure tensors - Variation models

Classification Code: 703.2 Electric Filters - 921.1 Algebra

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

124. Spectral color calibration method for the multi-ink printer using the look-up table

Wang, Ying (1); Zeng, Ping (1, 2); He, Xiu-Fang (1); Luo, Xue-Mei (1)

Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 37, n 1, p 41-48, February 2010; **Language:** Chinese; **ISSN:** 10012400; **DOI:** 10.3969/j.issn.1001-2400.2010.01.008; **Publisher:** Science Press

Author affiliation: (1) Research Inst. of Computer Peripherals, Xidian Univ., Xi'an 710071, China (2) School of Computer Science, Xi'an Shiyou Univ., Xi'an 710065, China

Abstract: To achieve the color calibration in the multi-spectral image print output, a new calibration method for the multi-ink printer is proposed. By sampling in the multi-ink print color space, measuring the spectral reflectance of the samples and then transforming the reflectance data to a low-dimensional spectral space, a forward look-up table is established firstly. Then by sampling in the low-dimensional spectral space and using the nonlinear optimization to determine the mapping points of the samples in the printer color space, a backward look-up table is created. Meanwhile, optimization parameters are determined according to the samples, which improves the optimization accuracy and shortens the computing time. Finally a multi-linear interpolation method is carried out on the forward and backward look-up table to achieve the spectral color calibration of the multi-ink printer. Experiments show that compared with the spectral color calibration model methods, the new method increases the colorimetric and spectral precision by 40% and 44%, respectively, in forward calibration, and 51% and 41% in backward calibration. The time efficiency is improved by 96% in backward calibration. (16 refs)

Main heading: Color

Controlled terms: Metadata - Printing presses - Photomapping - Reflection - Table lookup - Interpolation - Colorimetry - Spectroscopy

Uncontrolled terms: Linear Interpolation - Look up table - Multispectral images - Non-linear optimization - Spectral color

Classification Code: 405.3 Surveying - 723.1 Computer Programming - 741.1 Light/Optics - 742.1 Photography - 745.1.1 Printing Equipment - 921.6 Numerical Methods - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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125. The design of DF-windspout separator cleaner

Dong, Pengmin (1); Wang, Tianqi (1); Li, Guanzhu (2); Zhang, Jianli (2); Yao, Zhigang (2)

Source: *Advanced Materials Research*, v 139-141, p 819-822, 2010, *Manufacturing Engineering and Automation I*; **ISSN:** 10226680; **ISBN-13:** 9780878492268; **DOI:** 10.4028/www.scientific.net/AMR.139-141.819; **Conference:** 2010 International Conference on Manufacturing Engineering and Automation, ICMEA2010, December 7, 2010 - December 9, 2010; **Sponsor:** Guangzhou University; The University of New South Wales; Huazhong University of Science and Technology; Xi'an Jiaotong University; **Publisher:** Trans Tech Publications

Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) WDEC TuHa Mud Logging and Engineering Company, Tuha, 838202, China

Abstract: The detritus of drilling well carry the important information of stratum, which is the important basis for discovering and evaluating oil and gas layer. So it is important to get detritus from the viscous drilling mud. In this paper, it studies the technology of cleaning detritus. According to the requirements of cleaning process and water - saving on the drilling well spot, DF - Windspout separator cleaner is designed, which is used to clean detritus. The mixture of viscous drilling mud and the detritus are accelerated through the double fluid (DF) system. Then they go into the windspout separation, they are separated to fluid and solid at here. Next the fluid is purified by ultrasonic microfiltration plant. The water can be recycled again. It can ensure the clean debris, the accuracy of collecting debris, accurate, remove the fake block and solves the lack of the dis - continuity of sampling. © (2010) Trans Tech Publications. (4 refs)

Main heading: Debris

Controlled terms: Oil well drilling - Microfiltration - Separators - Water conservation - Cleaning - Water filtration

Uncontrolled terms: Cleaning process - Detritus - DF - windspout separator - Drilling mud - Oil and gas - Recycled water - Water-saving

Classification Code: 444 Water Resources - 445.1 Water Treatment Techniques - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations

Database: Compendex

Data Provider: Engineering Village

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126. Nonnegative constrained principal component analysis for the construction of low-dimensional spectral space

Wang, Ying (1); Zeng, Ping (1, 2); Luo, Xue-Mei (1); Xie, Kun (1)

Source: *Sichuan Daxue Xuebao (Gongcheng Kexue Ban)/Journal of Sichuan University (Engineering Science Edition)*, v 42, n 2, p 165-170, March 2010; **Language:** Chinese; **ISSN:** 10093087; **Publisher:** Editorial Department of Journal of Sichuan University

Author affiliation: (1) Research Inst. of Computer Peripherals, Xidian Univ., Xi'an 710071, China (2) School of Computer Sci., Xi'an Shiyou Univ., Xi'an 710065, China

Abstract: Nonnegative constrained principal component analysis method was proposed to construct a low-dimensional space by which the conversion between it and the multi-spectral space could be achieved. This method overcame the shortcoming that the reconstructed spectral reflectance may be negative when using the classic principal component analysis (PCA) to reduce the dimension of the multi-spectral image data. The reason behind the negative data produced by the PCA was analyzed firstly. According to this, a nonnegative constraint was imposed on the classic principal component analysis model and an iteration equation was constructed. Then through solving that equation, a set of nonnegative linear independence weight vectors of principal components was obtained, by which a low-dimensional spectral space was spanned. Finally a nonlinear optimization technique was used to determine the projection vectors of the multi-spectral image data in the constructed space. Experiments showed that comparing with the classic PCA, the new method can make the reconstructed spectral reflectance data in the interval of [0, 1], which maintains the physical significance of the spectral reflectance. The precision of the space founded by the new method is almost equivalent to that by classic PCA. (13 refs)

Main heading: Principal component analysis

Controlled terms: Iterative methods - Nonlinear programming - Reflection - Spectroscopy - Image reconstruction - Constrained optimization - Image analysis - Vector spaces

Uncontrolled terms: Constrained principal component analysis - Multispectral images - Non-linear optimization - Spectral color - Spectral spaces

Classification Code: 921 Mathematics - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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127. Study of downward communication receiver in rotary steerable drilling tool based on turbine generator

Huo, Aiqing (1, 2); He, Yuyao (1); Wang, Yuelong (2); Tang, Nan (2); Cheng, Weibin (2)

Source: *Proceedings of the 29th Chinese Control Conference, CCC'10*, p 4210-4213, 2010, *Proceedings of the 29th Chinese Control Conference, CCC'10*; **ISBN-13:** 9787894631046; **Article number:** 5572876; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xian, 710062, China (2) Key Laboratories of Drilling Rigs Controlling Technique, Xi'an Shiyou University, 710065, China

Abstract: For the existence issues of underground information receiving at drilling, such as the installation space in the drill collar, installation location, and connections to the measurement circuit, etc., turbine generator as detection devices was proposed to achieve downward information received. The instruction encoding was built, and the effective downhole control instruction was generated by the use of drilling fluid pump displacement to format three descending and three ascending pulse transmission modes. The internal structure and working principle of turbine generator were outlined. The receiving of downhole signal was achieved by detecting changes of the turbine generator output voltage. Pulse counting method was used for pulse width measurement. In order to improve the accuracy and to resistant interference in the identification of downhole information, some measures were taken on software and hardware. A linear relationship between the drilling fluid displacement and the turbine generator output voltage was determined through the hydraulic experimental study. The laboratory experiment prove that the three descending and three ascending pulse transmission method is reliable and the receiving device is feasible. (13 refs)

Main heading: Turbogenerators

Controlled terms: Hydraulic motors - Turbines - Hydraulic machinery - Optical pumping

Uncontrolled terms: Communication receivers - Drilling fluid pulse - Hydraulic tests - Installation locations - Laboratory experiments - Pulse transmission method - Pulse width measurement - Rotary-steerable drilling

Classification Code: 632.2 Hydraulic Equipment and Machinery - 705.2 Electric Generators

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

128. Influence of strain aging on the microstructure-property of an X100 pipeline steel

Zhang, Xiaoyong (1); Gao, Huilin (1); Ji, Linggang (2); Zhuang, Chuangjing (2)

Source: *Materials Science Forum*, v 658, p 157-160, 2010, *Eco-Materials Processing and Design XI, ISEPD-11*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-10:** 0878492445, **ISBN-13:** 9780878492442; **DOI:** 10.4028/www.scientific.net/MSF.658.157; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Tubular Goods Research Center of China National Petroleum Corporation, Xi'an 710065, China

Abstract: The influence of strain aging on the microstructure-property characterization of an X100 pipeline steel was investigated by means of a thermal simulation technique, microscopic analysis method and mechanical properties testing. The experimental steel was prestrained in the tension at 6 pct and then was baked at 150°C, 200°C, 250°C and 300°C for 60 minutes, respectively. The results indicated that the strength and hardness of test steel X100 increase and the plasticity and toughness decrease with the increasing of strain aging temperature, and it can get a higher ratio of yield to tensile and a lower strain-hardening coefficient which result in lower hardening capacity of X100 pipeline steel. There are two reasons for this strain aging phenomenon. One is the solute atoms of C, N in the α -Fe which Aggregated at the dislocation zones; the other is the compounds precipitation of C, N induced by the dislocations. © (2010) Trans Tech Publications. (8 refs)

Main heading: Microstructure

Controlled terms: Strain hardening - Strain - Steel pipe - Pipelines - Steel testing

Uncontrolled terms: Hardening capacities - Mechanical properties testing - Microscopic analysis - Microstructure properties - Property - Strain aging - Strain hardening coefficient - X100 pipeline steels

Classification Code: 537.1 Heat Treatment Processes - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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129. Electrocatalytic oxidation of methanol and other short chain aliphatic alcohols at Ni(II)-quercetin complex modified multi-wall carbon nanotube paste electrode

Zheng, Li (1, 2); Song, Jun-Feng (1)

Source: *Journal of Solid State Electrochemistry*, v 14, n 1, p 43-50, January 2010; ISSN: 14328488; DOI: 10.1007/s10008-008-0780-3; **Publisher:** Springer New York LLC

Author affiliation: (1) Institute of Analytical Science, Northwest University, Xi'an 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: A modified electrode Ni(II)-Qu-MWCNT-PE has been fabricated by electrodepositing nickel(II)-quercetin [Ni(II)-Qu] complex on the surface of multi-wall carbon nanotube paste electrode (MWCNT-PE) in alkaline solution. Ni(II)-Qu-MWCNT-PE exhibits the characteristic of improved reversibility and enhanced current responses of the Ni(III)/Ni(II) couple compared with Ni(II)-MWCNT-PE and Ni(II)-Qu-carbon paste electrode. It also shows electrocatalytic activity toward the oxidation of methanol and other short chain aliphatic alcohols, such as ethanol, 1-propanol, and 1-butanol. The catalytic peak current and peak potential decrease in exponential form with the increase of carbon number of the chains. Kinetic parameters such as the electron transfer coefficient, α , rate constant, k_s , of the electrode reaction, and the catalytic rate constant, k_{cat} , for oxidation of methanol are determined. The stability and reproducibility of the Ni(II)-Qu-MWCNT-PE are good for practical applications. © 2009 Springer-Verlag. (35 refs)

Main heading: Methanol

Controlled terms: Catalyst activity - Flavonoids - Multiwalled carbon nanotubes (MWCN) - Chains - Electrodes - Phenols - Catalytic oxidation - Rate constants - Yarn - Nickel compounds - Electrocatalysis

Uncontrolled terms: Carbon nanotube paste electrodes - Carbon paste electrode - Electro-catalytic oxidation - Electrocatalytic activity - Electron transfer coefficient - Modified electrodes - Oxidation of methanol - Quercetin

Classification Code: 451.2 Air Pollution Control - 602.1 Mechanical Drives - 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 - 819.4 Fiber Products - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

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130. A quantitative analysis of rough logic

She, Yan-Hong (1); Wang, Guo-Jun (2)

Source: *Advances in Intelligent and Soft Computing*, v 82, p 145-156, 2010, *Quantitative Logic and Soft Computing 2010: Volume 2*; ISSN: 18675662; ISBN-13: 9783642156595; DOI: 10.1007/978-3-642-15660-1_12; **Publisher:** Springer Verlag

Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China (2) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an 710062, China

Abstract: The present paper mainly concerns the quantitative analysis of rough logic PRL [1], which is a propositional logic system for rough sets with pre-rough algebra semantics. The concepts of rough(upper, lower) truth degrees on the set of logic formulas in PRL are initially introduced. Then, by grading the rough equality relations, the concepts of rough(upper, lower) similarity degrees are proposed. Finally, three different pseudo-metrics on the set of logic

formulas in PRL are obtained, and the corresponding approximate reasoning mechanisms reflecting the idea of rough approximations are established. © 2010 Springer-Verlag Berlin Heidelberg. (19 refs)

Main heading: Grading

Controlled terms: Formal logic - Approximation algorithms - Computer circuits - Semantics - Approximation theory - Rough set theory

Uncontrolled terms: Approximate reasoning - Equality relations - Propositional logic - Pseudo-metrics - Rough algebras - Rough approximations - Similarity degree - Truth degree

Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 721.3 Computer Circuits - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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131. Method of gas generated from asphalt and its application to asphalt sandstones of silurian, Tazhong Area

Wang, Min (1); Lu, Shuang-Fang (1); Gao, Song (1); Li, Ji-Jun (1); Wang, Nai-Jun (2)

Source: *Jilin Daxue Xuebao (Diqiu Kexue Ban)/Journal of Jilin University (Earth Science Edition)*, v 40, n 1, p 15-20, January 2010; **Language:** Chinese; **ISSN:** 16715888; **Publisher:** Jilin University Press

Author affiliation: (1) College of Earth Sciences, Daqing Petroleum Institute, Daqing, Heilongjiang 163318, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The asphalt is ubiquity in the superimposed basins, NW of China, but now there are no quantitative evaluation methods of gas generated from asphalt. In response to this scientific issue, according to the mechanism of gas generated from asphalt, the method of chemical kinetics, which is successfully used for quantitative appraisalment the oil-gas generated from kerogen and gas from oil cracking, is firstly applied to quantitatively evaluate the gas generation quantity from asphalt. Chemical kinetic model of gas generated from asphalt and from group compositions of chloroform bitumen "A" are established, and then kinetic models are extrapolated to the Silurian asphalt sand of Tazhong area, Tarim basin, combined with the thermal history of research area. The results indicate that, the process of gas generated from non-hydrocarbon is relatively earlier in the research area, and its transformation ratio increases significantly around a 3500 m depth; the secondary process is the gas generated from asphaltene; and the latest is the gas generated from saturated hydrocarbon, which transformation ratio increased significantly around 4200 m depth. Gas generation amount from Silurian asphaltic sands of Tazhong area is calculated using this established method. The result indicates that, the total amount of gas generated from saturated hydrocarbon, aromatic hydrocarbon, non-hydrocarbon and asphaltene is 8160.68×10^8 m³, 6573.21×10^8 m³, 9719.3×10^8 m³ and 5926.82×10^8 m³, respectively. The cumulative gas generation total amount reaches 30377.97×10^8 m³. (18 refs)

Main heading: Chlorine compounds

Controlled terms: Aromatic hydrocarbons - Kinetic parameters - Kinetic theory - Gas generators - Asphalt - Gases

Uncontrolled terms: Chemical kinetic model - Gas generation - Quantitative evaluation methods - Saturated hydrocarbons - Silurian - Superimposed basin - Tarim Basin - Transformation ratio

Classification Code: 411.1 Asphalt - 522 Gas Fuels - 631.1 Fluid Flow, General - 804.1 Organic Compounds - 931 Classical Physics; Quantum Theory; Relativity

Database: Compendex

Data Provider: Engineering Village

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132. Data envelopment analysis evaluation of informal innovation network

Li, Bai (1); Zhang, Jing-Xiao (2); Zhou, Tian-Hua (2); Li, Hui (2)

Source: *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*, p 876-880, 2010, *2010 International Conference on Mechanic Automation and Control Engineering, MACE2010*; **ISBN-13:**

9781424477388; **DOI:** 10.1109/MACE.2010.5535518; **Article number:** 5535518; **Conference:** 2010 International Conference on Mechanic Automation and Control Engineering, MACE2010, June 26, 2010 - June 28, 2010; **Sponsor:** Huazhong University of Science and Technology; IEEE Beijing Section CSS Chapter; Wuhan University of Science and Technology; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Management, Xi'an University of Arch. and Tech., Xi'an Shiyou University, Xi'an 710061, Shaanxi, China (2) School of Civil Engineering, Chang'an University, Xi'an 710061, Shaanxi, China

Abstract: On the basis of establishing evaluation index system of efficiency of Informal Innovation Network (IIN), this paper presents the comprehensive evaluation means that regards Data Envelopment Analysis (DEA) as the central model and the entropy method as the assisted model, and empirically analyzes IIN efficiency of ten IT enterprises. The

evaluation measures are beneficial to managing the knowledge of IIN and showing the actual directions for enterprises to further promote network efficiency and increase the input degree. ©2010 IEEE. (21 refs)

Main heading: Data envelopment analysis

Controlled terms: Efficiency

Uncontrolled terms: Comprehensive evaluation - Entropy methods - Evaluation index system - Evaluation measures - Innovation network - Network efficiency

Classification Code: 913.1 Production Engineering - 922 Statistical Methods

Database: Compendex

Data Provider: Engineering Village

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133. FBG sensors combining target with cantilever beam for simultaneous measurement of Flow-rate/temperature

Yu, Da-Kuan (1); Jia, Zhen-An (1); Qiao, Xue-Guang (1); Zhang, Qian (1); Liu, Qin-Peng (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 21, n 5, p 710-713, May 2010; **Language:** Chinese;

ISSN: 10050086; **Publisher:** Board of Optronics Lasers

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

Abstract: A novel FBG sensor for simultaneous discriminating measurement of flow-rate and temperature is developed based on target and cantilever beams. While fluid passes through the sensor, the change of flow velocity in the pipeline results in the strain change of target structure, and then the strain transmits on cantilever beam, the wavelength of FBG1 on it is changed but the wavelength of FBG2 on the other cantilever beam isn't changed. While the change of temperature of fluid results in the wavelength changes of FBG1 and FBG2 at the same time. The flow-rate and temperature of fluid can be measured by testing the reflective wavelength change of FBG1 and FBG2. The experimental results in water and in castor oil pipeline verify the feasibility of the proposed sensor with a flow-rate measurement range of 400-2200 cm³/s, 700-1800 cm³/s and temperature range of 0-100°C, respectively. (8 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Electric sensing devices - Fiber optic sensors - Nanocantilevers - Cantilever beams - Pipelines - Flow rate - Temperature measurement - Flow velocity

Uncontrolled terms: Castor oil - FBG sensor - Fiber Bragg grating (fbg) - Reflective wavelength - Simultaneous measurement - Strain change - Target structure - Target temperature - Temperature range - Wavelength change

Classification Code: 408.2 Structural Members and Shapes - 619.1 Pipe, Piping and Pipelines - 631 Fluid Flow - 732 Control Devices - 741.1.2 Fiber Optics - 761 Nanotechnology - 933 Solid State Physics - 943.2 Mechanical Variables Measurements - 944.6 Temperature Measurements

Database: Compendex

Data Provider: Engineering Village

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134. Color management using a hue-constancy color space

Luo, Xue-Mei (1); Zeng, Ping (1, 2); Wang, Ying (1); Wang, Yi-Feng (1)

Source: *Tien Tzu Hsueh Pao/Acta Electronica Sinica*, v 38, n 11, p 2660-2663+2668, November 2010; **Language:**

Chinese; **ISSN:** 03722112; **Publisher:** Chinese Institute of Electronics

Author affiliation: (1) Research Institute of Computer Peripherals, Xidian University, Xi'an, Shannxi 710071, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an, Shannxi 710065, China

Abstract: Hue nonconstancy of CIELAB color space affects the result of gamut mapping and the accuracy of color difference evaluation seriously. To solve this problem, a hue-constancy corrected method was proposed and a new color space tLAB was constructed, which was used to replace CIELAB during color management. Based on Munsell color space, the hue nonconstancy of CIELAB was analyzed firstly. Then the hue in CIELAB was corrected according to Munsell renotation Data, and the tLAB color space was created which was hue constant. Meanwhile, 3D look up table(3D-LUT) was utilized to characterize the non-linear relationship between CIELAB and tLAB;an implementation scheme for color management with a low spatio-temporal cost was presented. Finally, the results of gamut mapping in tLAB color space and a new color difference evaluation were presented. Experiments show that the results of gamut mapping in the new tLAB space gain an advantage over the traditional ones. In addition, the color management using tLAB color space has real time performance and universality. (15 refs)

Main heading: Color

Controlled terms: Colorimetry - Mapping - Table lookup

Uncontrolled terms: 3D_LUT - Color management - Gamut mapping - Hue constancy - Munsell

Classification Code: 405.3 Surveying - 723.1 Computer Programming - 741.1 Light/Optics - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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135. Empirical research on the classification for enterprise knowledge-gap model with the index weight method

Bai, Li (1); Zhang, Jing-Xiao (2); Li, Hui (2); Su, Chuan-Chuan (2)

Source: 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010, 2010, 2010 International Conference on E-Product E-Service and E-Entertainment, ICEEE2010; **ISBN-13:** 9781424471614; **DOI:** 10.1109/ICEEE.2010.5661034; **Article number:** 5661034; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Management, Xi'an Univ. of Arch. and Tech., Xi'an Shiyou Univ., Xi'an, 710061, Shaanxi, China (2) School of Civil Engineering, Chang'an University, Xi'an, 710061, Shaanxi, China

Abstract: Based on the knowledge gap literature review, the elements of knowledge gap affecting enterprises are divided into the following five types according to enterprise operation laws and factors in market competition, i.e. Knowledge Gap of Management, Knowledge Gap of Sharing, Knowledge Gap of Innovation, Knowledge Gap of Resources, Knowledge Gap of Propertyrights; then with principle of PCA to build positive analysis and definition of main index system, calculate correlation matrixes and the characteristic values. At the same time, Expert Grade has been used to get the index weight of construction enterprise. The empirical case finds that for enterprises, innovation is the vital element which guarantees the advance of enterprises., and property right and management are also very significant to enterprises. At last, the corresponding suggestion is given in four aspects. ©2010 IEEE. (16 refs)

Main heading: Principal component analysis

Controlled terms: Competition

Uncontrolled terms: Component analysis - Construction enterprise - Correlation matrix - Index weight - Knowledge gaps - Literature reviews - Market competition - Property right

Classification Code: 911.2 Industrial Economics - 922.2 Mathematical Statistics

Database: Compendex

Data Provider: Engineering Village

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136. Effects of welding heat input on microstructure and properties of welding seam in X80 grade welded pipe

Zhang, Xiao-Yong (1); Gao, Hui-Lin (1); Bi, Zong-Yue (2); Xu, Xue-Li (1); Zhang, Li-Li (1)

Source: *Cailliao Gongcheng/Journal of Materials Engineering*, n 9, p 66-70, September 2010; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Baoji Petroleum Steel Pipe Co., Ltd., Baoji 721008, Shaanxi, China

Abstract: The effect of welding heat input on the toughness distribution and microstructure characterization of weld heat-affected zone (WHAZ) in the inside welding seam of X80 grade welded pipe was investigated by means of thermal simulation technique, microscopic analysis method and mechanical property testing. The results show that medium welding heat input (17-35 kJ/cm) can produce good toughness in the weld coarse grained heat-affected zone (WCGHAZ) of welding seam of X80 pipeline steel. The toughness of WCGHAZ is the best when welding heat input is 20 kJ/cm. But the toughness of WCGHAZ would become worse when welding energy input is less than 17 kJ/cm and more than 35 kJ/cm. Therefore, welding heat input at range of 17-35 kJ/cm can be used as the recommended welding parameter in the outer welding process of X80 welded pipe. (7 refs)

Main heading: Seam welding

Controlled terms: Submerged arc welding - Microstructure - Corrosion - Heat affected zone

Uncontrolled terms: Coarse grained heat affected zone - Mechanical property testing - Microscopic analysis - Microstructure and properties - Microstructure characterization - Submerged arc welded - Weld heat-affected zone - Welding heat input

Classification Code: 538.2 Welding - 538.2.1 Welding Processes - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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137. Application research of the synthetic image segmentation algorithm on the multi-lens video logging

Jia, Huiqin (1); Li, Zhouli (1); Zhang, Weiguang (2)

Source: *Proceedings of SPIE - The International Society for Optical Engineering*, v 7659, 2010, *5th International Symposium on Advanced Optical Manufacturing and Testing Technologies: Smart Structures and Materials in Manufacturing and Testing*; **ISSN:** 0277786X; **ISBN-13:** 9780819480897; **DOI:** 10.1117/12.867964; **Article number:** 765906; **Publisher:** SPIE

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, Shannxi, 710065, China (2) School of Optoelectronic Engineering, Xi'an Technological University, Xi'an, Shannxi, 710021, China

Abstract: Current video logging system adopts a method by placing camera on the bottom of well to acquire the clear bottom hole image, but which can not obtain the clear image because the lens is placed along the hole axis direction. The Multi-lens video logging system which presented by the paper authors obtains image by means of placing multi grin lens along the radius, and only one along the axial. This paper presents an integrated image segmentation algorithm, which can extract useful image information of curtain angle and well depth, and make preparation for forming the video well logging information fusion map, and supply evidence for logging data interpretation. First, to obtain the approximate boundaries of the image for processing, analysis begins with the image using edge detection algorithms and Canny operator; then aiming at the specification of the image on the bottom hole is primarily a circular region, meanwhile the margin of it is so long, then search the circle edge; dilation operation is applied to convert it to continuous data, and connect the data together, fill up the edge slot. The edge search function is used to obtain characteristic parameters of extracting image. Finally, using least squares fitting algorithm obtain the circle center and radius, and take the maximum one as the image radius. The standard net mesh is used to calibrate the image, which is acquired through the lens of axial direction on the analog well logging device, the integrated image processing method described above is used to process the acquired image of oil well. © 2010 SPIE. (8 refs)

Main heading: Edge detection

Controlled terms: Image segmentation - Image acquisition - Oil wells - Processing - Well logging

Uncontrolled terms: Application research - Dilation operation - Edge detection algorithms - Image information - Image segmentation algorithm - Integrated images - Least squares fitting - Synthetic images

Classification Code: 512.1.1 Oil Fields - 723 Computer Software, Data Handling and Applications - 913.4 Manufacturing

Database: Compendex

Data Provider: Engineering Village

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138. High precision optical fiber Bragg grating demodulation system based on the source filtering for seismic detection

Qiao, Xueguang (1, 2); Ding, Feng (1); Jia, Zhen'an (1); Song, Juan (1)

Source: *Guangxue Xuebao/Acta Optica Sinica*, v 30, n 8, p 2219-2223, August 2010; **Language:** Chinese; **ISSN:** 02532239; **DOI:** 10.3788/AOS20103008.2219; **Publisher:** Chinese Optical Society

Author affiliation: (1) Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (2) Northwest University, Xi'an, Shaanxi 710069, China

Abstract: The filtering demodulation is realized by using the good linear sideband near 1530 nm of the super-fluorescent fiber source. The light source of system adopts double-pass backward configuration, because the detecting sensitivity of light source decides the whole system's sensitivity. When the linear sideband is 2.5 nm, the sensitivity of power is $-14.7 \mu\text{W}/\text{nm}$, and the degree of fitting is 0.9995. The system uses all-optical structure to improve the demodulation speed. By the way of computer simulation, its detection sensitivity for the wavelength and strain separately are $-1.27 \text{ pm}/\text{mV}$ and $1.06 \mu\text{E}$. The results show that this demodulation system has high sensitivity, good stability, quick demodulation speed, and it can realize real-time detection of seismic wave. (13 refs)

Main heading: Demodulation

Controlled terms: Light - Light sources - Fiber Bragg gratings - Seismology - Optical variables measurement

Uncontrolled terms: Demodulation system - Detecting sensitivity - Detection sensitivity - Edge filtering - Fiber light source - Fluorescent fibers - Real-time detection - Seismic detection

Classification Code: 484.1 Earthquake Measurements and Analysis - 741.1 Light/Optics - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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139. Influence of the size distribution of particles on the MCF through fog-filled medium

Wang, Rong-Rong (1, 2); Wu, Zhen-Sen (1); Jiang, Zan-Qin (1)

Source: 2010 9th International Symposium on Antennas Propagation and EM Theory, ISAPE 2010, p 588-591, 2010, 2010 9th International Symposium on Antennas Propagation and EM Theory, ISAPE 2010; **ISBN-13:** 9781424469062;

DOI: 10.1109/ISAPE.2010.5696534; **Article number:** 5696534; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Science, Xidian University, No.2 South Taibai Road, Xi'an 710071, China (2) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China

Abstract: Based on the theory of Mie and pulse wave propagation in discrete random medium, using the size distribution spectrum of fog particles, the characteristics of laser pulse propagating in fog is studied under various visibility conditions. The fog particles distribution changing with the visibility is obtained, and for larger visibility, fog particles are moving towards smaller size. These results show that the distribution of the size of fog particles is influenced by the visibility. With the visibility increasing, the radiation fog droplet number density is increased slowly. The relationship of the two-frequency mutual coherence function (MCF) with the difference frequency is obtained. The amplitude and phase of MCF are compared with that considering about the average fog number density. When the visibility is about 2Km, the obtained MCF is similar to that when the average fog concentration is 107/m³. With the visibility increasing, the phase of the MCF changes tremendously. When the transmission distance is 5Km, considering the gamma distribution of droplet size spectrum, the normalized value of the MCF changes in relationships with the difference frequency. The coherence bandwidth is close to that of the droplet number density of 107/m³ while the visibility is 2Km. When the visibility is 3Km, the coherence bandwidth is several times for that while the visibility is 1Km. ©2010 IEEE. (9 refs)

Main heading: Visibility

Controlled terms: Drops - Wave propagation - Fog - Bandwidth - Laser theory - Size distribution

Uncontrolled terms: Difference frequency - Droplet size spectrum - Mutual coherence function - Particles distribution - Pulse wave propagation - Size distribution spectra - Transmission distances - Visibility conditions

Classification Code: 443.1 Atmospheric Properties - 716.1 Information Theory and Signal Processing - 741.2 Vision - 744.1 Lasers, General - 922.2 Mathematical Statistics

Database: Compendex

Data Provider: Engineering Village

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140. Effect of the protrusion height of the delivery tube on performance of Sn-Ag-Cu lead-free solder powder

Xu, Tian-Han (1, 2); Wang, Dang-Hui (2)

Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 31, n 2, p 21-25, February 2010;

Language: Chinese; **ISSN:** 10096264; **Publisher:** Editorial Office of Transactions of Materials

Author affiliation: (1) College of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) College of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: The effects of the delivery tube protrusion height on efficient atomization efficiency, size distribution, sphericity and oxygen content of Sn₃Ag_{2.8}Cu lead-free solder powder were investigated with a self-designed supersonic atomizer. The results show that the powder with uniform size distribution, smooth surface and high sphericity is obtained, and the higher efficient atomization efficiency and lower oxygen content for the powder is observed when protrusion height of delivery tube is 4.0 mm. the thicker and more irregular the intermetallic compound (IMC) layers is observed in the joint prepared with Sn₃Ag_{2.8}Cu powder and copper plate compared with that with Sn₃₇Pb and copper plate. With protrusion height of delivery tube increasing from 4 mm to 5 mm, the prepared powder is finer and the efficient atomization efficiency increases, but the size distribution of the powder deteriorates, the powder surface becomes coarser and more irregular. With protrusion height of delivery tube decreasing from 4 to 2 mm, the efficient atomization efficiency is significantly decreased, and the size distribution of the powder deteriorates, its surface is coarser and more irregular. The optimal protrusion height of delivery tube is 4 mm under the experiment condition. (14 refs)

Main heading: Size distribution

Controlled terms: Atomization - Lead-free solders - Oxygen - Copper alloys - Silver alloys - Lead alloys - Efficiency - Tin alloys - Binary alloys - Ternary alloys

Uncontrolled terms: Atomization efficiency - Copper plate - Experiment condition - Intermetallic compounds - Lead free solders - Oxygen content - Powder properties - Powder surface - Protrusion height of delivery tube - Smooth surface - Sn-37Pb - Sn-Ag-Cu lead-free solders - Uniform size

Classification Code: 538.1.1 Soldering - 544.2 Copper Alloys - 546.1 Lead and Alloys - 546.2 Tin and Alloys - 547.1 Precious Metals - 802.3 Chemical Operations - 804 Chemical Products Generally - 913.1 Production Engineering - 922.2 Mathematical Statistics

Database: Compendex

Data Provider: Engineering Village

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141. Comparison of the corrosion inhibitive effect of anaerobic and aerobic cigarette butts water extracts on N80 steel at 90 °c in hydrochloric acid solution

Zhao, Jun (1); Zhang, Ningsheng (1, 2); Qu, Chengtun (2); Zhang, Juantao (3); Zhang, Xiang (1)

Source: *Industrial and Engineering Chemistry Research*, v 49, n 24, p 12452-12460, December 15, 2010; **ISSN:** 08885885, **E-ISSN:** 15205045; **DOI:** 10.1021/ie1011454; **Publisher:** American Chemical Society

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, 710049, Xi'an, China (2) Xi'an Shiyou University, 710065, Xi'an, China (3) Tubular Goods Research Center of CNPC, 710065, Xi'an, China

Abstract: The chemical compositions of cigarette butts water extracts mainly are aromatic amines including nicotine and its compounds. If oxygen exists, the aromatic amine compounds can be oxidized easily. Whether this oxidation would be beneficial in enhancing the corrosion inhibitive effect of the inhibitor is not known. In this study, the corrosion inhibitive effect of aerobic and anaerobic cigarette butts water extracts are compared on N80 steel at 90 °C in 15% (weight %) hydrochloric acid. The chemical compositions of the aerobic and anaerobic cigarette butts water extracts are also contrasted. Weight loss, X-ray diffraction, and electrochemical techniques (such as electrochemical noise, impedance, and potentiodynamic polarization) are used to evaluate the corrosion inhibitive effect of aerobic and anaerobic cigarette butts water extracts. Results show that the inhibition efficiency of the aerobic cigarette butts water extracts (92.9%) is higher than anaerobic cigarette butts water extracts (84.6%). © 2010 American Chemical Society. (63 refs)

Main heading: X ray diffraction

Controlled terms: Tobacco - Aromatic compounds - Hydrochloric acid - Extraction - Corrosion inhibitors - Steel corrosion - Amines

Uncontrolled terms: Aromatic amines - Chemical compositions - Cigarette butts - Electrochemical noise - Electrochemical techniques - Hydrochloric acid solution - Inhibition efficiency - Inhibitive effects

Classification Code: 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 821.4 Agricultural Products

Database: Compendex

Data Provider: Engineering Village

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142. Yttrium silicate coatings for SiC coated C/C composites prepared by atmospheric plasma spraying

Huang, Min (1, 2); Li, Ke-Zhi (1); Li, He-Jun (1); Huang, Jian-Feng (1); Fu, Qian-Gang (1)

Source: *Xinxing Tan Cailiao/New Carbon Materials*, v 25, n 3, p 187-191, June 2010; **Language:** Chinese; **ISSN:** 10078827; **Publisher:** Editorial Board of New Carbon Materials

Author affiliation: (1) C/C Composites Technology Research Center, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Different yttrium silicate coatings for SiC-coated C/C composites were designed and prepared by an atmospheric plasma spray method to prevent the C/C composites from oxidation. XRD profiles showed that the coating was composed of Y₂SiO₅, Y₂Si₂O₇, and Y₄Si₃O₁₂. SEM showed that the gradient SiC/Y₄Si₃O₁₂/Y₂Si₂O₇/Y₂SiO₅ coating had a more compact surface than the other coatings did. Isothermal oxidation tests at 1500°C in air showed that the weight loss curves of the as-prepared C/C composites showed a linear tendency with time and the weight loss rate of all coated samples increased significantly after 73 h. The coating could protect the C/C composites from oxidation at 1500°C for 73 h in air with a weight loss rate of 1.01 × 10⁻⁴ g · cm⁻² · h⁻¹. The SiC/Y₄Si₃O₁₂/Y₂Si₂O₇/Y₂SiO₅ was the better coating at high temperature than other coatings. (13 refs)

Main heading: Carbon carbon composites

Controlled terms: Silicon carbide - Coatings - Carbon - Plasma jets - Silicates - Oxidation - Plasma spraying

Uncontrolled terms: Atmospheric plasma spray - Atmospheric plasma spraying - C/C composites - Coated sample - High temperature - Isothermal oxidations - Weight loss rates - Yttrium silicates

Classification Code: 415.4 Structural Materials Other Than Metal, Plastics or Wood - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 813.1 Coating Techniques - 813.2 Coating Materials - 932.3 Plasma Physics

Database: Compendex

Data Provider: Engineering Village

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143. Research on preparation and property of borosilicate glass coating for C/C composites

Huang, Min (1, 2); Li, Ke-Zhi (2); Li, He-Jun (2); Fu, Qian-Gang (2); Wang, Yu (1); Lu, Xiang-Hong (1)

Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 7, p 78-81+86, July 2010; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) C/C Composites Technology Research Center, Northwestern Polytechnical University, Xi'an 710072, China

Abstract: The effects of the ratio of SiO₂ and B₂O₃, the type of addition with high melting point including MoSi₂, Y₂O₃, SiC on the high temperature stability and fluidity of the borosilicate glass coating were studied. Borosilicate glass coating with good high temperature stability and fluidity was prepared on the surface of SiC coated carbon-carbon (C/C) composites. The isothermal oxidation resistance of SiC/borosilicate glass coated C/C composites was also tested under 1500°C in air. The study results showed that the borosilicate glass exhibits good high temperature stability and fluidity as the ratio of SiO₂ and B₂O₃ was 4: 1. The addition of MoSi₂ can improve the oxidation resistance of borosilicate coating, and the better oxidation resistance borosilicate glass coating can be obtained as the mass ratio of borosilicate glass and MoSi₂ was 4: 1. The mass loss of the SiC/borosilicate glass coated C/C composites was only 4.31% after oxidation for 17 h. (13 refs)

Main heading: Oxidation resistance

Controlled terms: Carbon - Thermodynamic stability - Silicon carbide - Silica - Fluidity - Molybdenum compounds - Carbon carbon composites - Borosilicate glass - Composite coatings

Uncontrolled terms: Borosilicate coatings - C/C composites - Carbon carbons - High melting point - High temperature stability - Isothermal oxidation resistance - Mass loss - Mass ratio

Classification Code: 415.4 Structural Materials Other Than Metal, Plastics or Wood - 539.1 Metals Corrosion - 641.1 Thermodynamics - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 812.3 Glass - 813.2 Coating Materials - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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144. High flattening C+L-band erbium-doped superfluorescent light source with three-stage two-pumping structure

Jia, Zhen-An (1); Li, Li (1); Qiao, Xue-Guang (1, 2); Liu, Ying-Gang (1)

Source: *Guangxue Jingmi Gongcheng/Optics and Precision Engineering*, v 18, n 3, p 558-562, March 2010;

Language: Chinese; **ISSN:** 1004924X; **Publisher:** Chinese Academy of Sciences

Author affiliation: (1) Key Laboratory of Photoelectricity Gas-oil Logging and Detecting of the Ministry of Education, Xi'an Shiyou University, Xi'an 710065, China (2) Northwest University, Xi'an 710069, China

Abstract: In order to realize a high flattening C+L-band fiber source by C band matching L band closely, a superfluorescent light source structure with three-stage two-pumping is presented. Firstly, the experimental equipment is composed of three erbium-doped fibers, two 980 nm LDs, a Wavelength Division Multiplexer (WDM), an isolator (ISO) and a 3 dB coupler. Then, a high flattening C+L-band fiber source is achieved by optimizing the lengths of three erbium-doped fibers and adjusting the powers of two pumps, and the mechanism of production is also analyzed. Experimental results indicate that when the lengths of three fibers are 11.5 m, 53 m, 6.5 m and the powers of the two pumps are 65 mW, 115 mW respectively, the light source can offer a linewidth in 75.68 nm with a power ripple of 3 dB, and the flatness of the spectra from 1543 nm to 1603 nm is less than ± 1.3 dB without any external spectral filters. The high flattening C+L-band superfluorescent light source can satisfy the requirements of the optical fiber sensing and optical fiber communication systems. (10 refs)

Main heading: Light sources

Controlled terms: Erbium - Pumps - Optical fibers

Uncontrolled terms: C+L bands - Erbium doped fibers - Erbium-doped superfluorescent - Experimental equipments - External spectral filters - Fluorescent fibers - High flattening - Wavelength division multiplexers

Classification Code: 547.2 Rare Earth Metals - 618.2 Pumps - 741.1.2 Fiber Optics

Database: Compendex

Data Provider: Engineering Village

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145. Automated sample data selecting from DAS based on maximum entropy theory

Wang, Yue-Long (1, 2); Huo, Ai-Qing (2); Xu, De-Min (1)

Source: *Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010, 2010, Proceedings - 2010 2nd International Workshop on Intelligent Systems and Applications, ISA 2010*; **ISBN-13:**

97814244458745; **DOI:** 10.1109/IWISA.2010.5473673; **Article number:** 5473673; **Conference:** 2nd International

Workshop on Intelligent Systems and Applications, ISA2010, May 22, 2010 - May 23, 2010; **Sponsor:** Harbin Institute of Technology; Huazhong University of Science and Technology; Hubei University of Technology; IEEE Harbin Section; Research Association of Modern Education and Computer Science; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Marine Engineering, Northwestern Polytechnical University, Xi'an 710072, China (2) Shaanxi Key Laboratory of Oil-Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an 710065, China
Abstract: How to selecting sample data set from a DAS automatically is a critical problem for machine learning. In this paper, it is illustrated that measurement data included enough information for modeling through comparing the information extropy of a continuous system with its sampling system. Based on maximum entropy principle, an equipartitional method has been discussed which can be used to collect a small data set as a training sample set from a DAS. Then, an application of this method which be used in an ethylene oxide reactor's modeling has been given. The sample set obtained by this way has a uniform distribution as good as distributing of boundary data points. This application illustrates that this way was effectively for selecting a sample set. And combined with a RBF-BP cascaded artificial neural network, it got a satisfactory prediction result. ©2010 IEEE. (8 refs)

Main heading: Neural networks

Controlled terms: Ethylene - Maximum entropy methods - Learning systems

Uncontrolled terms: Automated - Continuous system - Equipartition - Maximum entropy principle - Maximum entropy theory - Sample data - Satisfactory predictions - Uniform distribution

Classification Code: 716.1 Information Theory and Signal Processing - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

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146. Research on fault diagnosis for centrifugal compressor using entropy-based fuzzy gray relational analysis

Li, Lanyun (1); Yang, Zhuanzhao (2); He, Zhi (1)

Source: *Advanced Materials Research*, v 129-131, p 1-6, 2010, *Material and Manufacturing Technology*; **ISSN:**

10226680; **ISBN-13:** 9780878492435; **DOI:** 10.4028/www.scientific.net/AMR.129-131.1; **Conference:** 2010

International Conference on Material and Manufacturing Technology, ICMMT 2010, September 17, 2010 - September

19, 2010; **Sponsor:** Int. Assoc. Comput. Sci. Inf. Technol. (IACSIT); **Publisher:** Trans Tech Publications

Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (2) Tubular Goods Research Center of CNPC, Xi'an, Shaanxi 710065, China

Abstract: A novel fault diagnosis method for centrifugal compressor was proposed by using entropy-based fuzzy gray relational analysis (EF-GRA). Firstly, the minimize entropy principle (MEP) was used to subdivide all real-valued fault features and construct membership functions of fuzzy variables. Secondly, based on the gray theory, the fuzzy-gray relational coefficients (F-GRC) were calculated and the weighted fuzzy-gray relation degrees (WF-GRD) were obtained, so that the diagnostic result can be determined. Finally, a centrifugal compressor fault dataset was used to illustrate the proposed method, and the results show that it has strong engineering practicability and validity. © (2010) Trans Tech Publications. (8 refs)

Main heading: Membership functions

Controlled terms: Fault detection - Centrifugal compressors - Failure analysis - Centrifugation - Entropy

Uncontrolled terms: Data sets - Entropy principle - Fault diagnosis - Fault diagnosis method - Fault feature - Fuzzy variable - Gray relation degree - Gray relational analysis - Gray theories - Minimize entropy principle

Classification Code: 618.1 Compressors - 641.1 Thermodynamics - 802.3 Chemical Operations - 921 Mathematics

Database: Compendex

Data Provider: Engineering Village

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147. Research on fault recognition for centrifugal compressor using entropy weight-based gray relational analysis

Li, Lanyun (1); Yang, Zhuanzhao (2); Li, Xiao (1); He, Zhi (1)

Source: *Applied Mechanics and Materials*, v 29-32, p 685-690, 2010, *Applied Mechanics and Mechanical Engineering*;

ISSN: 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9780878492459; **DOI:** 10.4028/www.scientific.net/AMM.29-32.685;

Conference: 2010 International Conference on Applied Mechanics and Mechanical Engineering, ICAMME 2010, September 8, 2010 - September 9, 2010; **Sponsor:** Asia Pacific Environmental Science Research Center; Huazhong Normal University; Chinese Academy of Sciences; **Publisher:** Trans Tech Publications

Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (2) Tubular Goods Research Center of CNPC, Xi'an, Shaanxi, 710065, China

Abstract: A new fault recognition method for centrifugal compressor was proposed by using entropy weight-based gray relational analysis (EW-GRA). Firstly, the weight values of all fault features were calculated objectively by the entropy method to avoid the influence of subjective factors. Secondly, an improved local gray relational coefficient (LGRC) formula with weight measures was designed to reflect the contributions of different fault features. Thirdly, according to the relationship between similarity degree and Euclidean distance, the local gray relational distances (LGRD), the global gray relational distances (GGRD) and the global gray relational grades (GGRG) were calculated, and consequently, the fault recognition result was obtained by using the max membership degree principle. Finally, the engineering practicability and validity of the EW-GRA method was demonstrated by a centrifugal compressor fault diagnosis example, and the results show that the EW-GRA method is more effective and accurate than the traditional gray relational analysis (T-GRA) method and the weighted gray relational analysis (W-GRA) method. © (2010) Trans Tech Publications, Switzerland. (7 refs)

Main heading: Centrifugation

Controlled terms: Fault detection - Centrifugal compressors

Uncontrolled terms: Entropy methods - Entropy weight - Entropy weights - Euclidean distance - Fault diagnosis - Fault feature - Fault recognition - Gray relational analysis - Gray relational grades - Membership degrees - Similarity degree - Subjective factors - Weight values

Classification Code: 618.1 Compressors - 802.3 Chemical Operations

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

148. Microstructure characterization of 3D C/SiC composites in combustion gas environments

Zhang, Jun (1, 2); Luan, Xingang (1); Zhang, Litong (1)

Source: *Journal Wuhan University of Technology, Materials Science Edition*, v 25, n 6, p 957-961, December 2010;

ISSN: 10002413; **DOI:** 10.1007/s11595-010-0128-6; **Publisher:** Wuhan Ligong Daxue

Author affiliation: (1) National Key Laboratory of Thermostructure Composite Materials, Northwestern Polytechnical University, Xian 710072, China (2) Department of Materials Science and Engineering, Xi'an Shiyou University, Xian 710065, China

Abstract: C/SiC composites prepared by chemical vapor infiltration (CVI) were subjected to a stationary loading of 160 MPa in a combustion gas environment with flame temperature of 1300 °C. Lifetime of C/SiC composites in such environment was measured. Microstructures of the composites after the testing were also characterized by SEM. The experimental results indicate the lifetime of C/SiC composites is average 2.3 hours in combustion gas environments. The combustion gas flow accelerates the damage of carbon fibers and the failure of the composites by speeding up the diffusion of gas reactants and products, destroying the layer of SiO₂ on the surface of SiC coating and bringing fused SiO₂ inside the composites. The fracture face of C/SiC is uneven, i.e., a flat area close to the windward side and a pulling-out of long fibers near the leeward side, which results from the directionality effect of the combustion gas flow. © 2010 Wuhan University of Technology and Springer-Verlag Berlin Heidelberg. (9 refs)

Main heading: Microstructure

Controlled terms: Silicon carbide - Diffusion in gases - Gases - Fracture - Diffusion coatings - Chemical vapor infiltration - Combustion - Flow of gases - Silica

Uncontrolled terms: 3D C/SiC composites - C/SiC composites - Combustion gas - Combustion gas flow - Flame temperatures - Fracture face - Microstructure characterization - Stationary loading

Classification Code: 631.1.2 Gas Dynamics - 804.2 Inorganic Compounds - 813.1 Coating Techniques - 813.2 Coating Materials - 951 Materials Science

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Database: Compendex

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149. A novel multi-effect methanol distillation process

Zhang, Juntao (1, 2); Liang, Shengrong (2); Feng, Xiao (1)

Source: *Chemical Engineering and Processing: Process Intensification*, v 49, n 10, p 1031-1037, October 2010; **ISSN:** 02552701; **DOI:** 10.1016/j.cep.2010.07.003; **Publisher:** Elsevier B.V.

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Research Center of Petroleum Processing and Petrochemicals, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Crude methanol distillation is an energy-intensive separation process and contributes significantly to the cost of methanol production. Although a number of energy-efficient distillation systems have been proposed, there is potential for energy savings in methanol distillation. To further reduce the energy consumption of methanol distillation, a novel five-column multi-effect distillation process is proposed in this work, which is essentially an improved version of an existing four-column scheme. The four-column scheme is made up of a pre-run column, a higher-pressure column, an atmospheric column and a recovery column. The new five-column scheme adds a medium-pressure column after the original higher-pressure column. In this way, the load of the original higher-pressure and atmospheric columns can be decreased by about 30%. The five-column arrangement creates a multi-effect distillation configuration involving efficient heat integration between higher-pressure and medium-pressure columns, atmospheric and recovery columns, and recovery and pre-run columns. Steady-state process simulation results indicate that temperature differences at two sides of each heat exchanger are appropriate, allowing effective heat transfer. Economic analysis shows that the energy consumption of the five-column scheme can be reduced by 33.6% compared to the four-column scheme. Significant savings in operating costs can therefore be achieved, resulting in an economically viable process for methanol distillation. © 2010 Elsevier B.V. (19 refs)

Main heading: Methanol

Controlled terms: Heat transfer - Energy efficiency - Heat exchangers - Distillation - Economic analysis - Energy utilization - Recovery - Operating costs - Distillation columns

Uncontrolled terms: Energy-efficient distillation - Heat integration - Higher pressure column - Methanol distillations - Multieffect distillation - Process simulations - Steady state process - Temperature differences

Classification Code: 525.2 Energy Conservation - 525.3 Energy Utilization - 616.1 Heat Exchange Equipment and Components - 641.2 Heat Transfer - 802.1 Chemical Plants and Equipment - 802.3 Chemical Operations - 804.1 Organic Compounds - 911.1 Cost Accounting - 911.2 Industrial Economics

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150. Research on intelligent fault diagnosis method based on rough set theory and Fuzzy Petri nets

Li, Lanyun (1); Yang, Zhuanzhao (2); He, Zhi (1)

Source: *Applied Mechanics and Materials*, v 26-28, p 77-82, 2010, *Advanced Mechanical Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9780878492497; **DOI:** 10.4028/www.scientific.net/AMM.26-28.77;

Conference: 2010 International Conference on Advanced Mechanical Engineering, AME 2010, September 4, 2010 - September 5, 2010; **Sponsor:** Information Technology and Industrial Engineering Research Center; **Publisher:** Trans Tech Publications

Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (2) Tubular Goods Research Center of CNPC, Xi'an, Shaanxi, 710065, China

Abstract: Rough sets theory (RST) and Fuzzy Petri nets (FPN) have been widely used in fault diagnosis. However, RST has the weakness of over-rigidity decision, and FPN has the dimensional disaster problem. In order to solve these shortcomings, according to complementary strategy, a new fault diagnosis method based on integration of RST and FPN was presented. Firstly, RST was applied to remove redundant fault features and simply fault information, so that the minimal diagnostic rules can be obtained and the fault was roughly diagnosed. Secondly, the optimal FPN structure was built and the fault diagnosis was finally realized through matrix operation of FPN. Finally, a diesel engine fault diagnosis example was analyzed, and the results show that the proposed method not only holds the ability of RST for analyzing and reducing data, but also has the advantage of FPN for parallel reasoning, so it has strong engineering practicability and validity. © (2010) Trans Tech Publications. (11 refs)

Main heading: Failure analysis

Controlled terms: Structural optimization - Rough set theory - Fault detection - Fuzzy set theory - Petri nets

Uncontrolled terms: Fault diagnosis - Fuzzy Petri nets - Matrix operation - Parallel reasoning - Rough set

Classification Code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques

Database: Compendex

Data Provider: Engineering Village

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151. Evaluation of two-phase-flow correlations and mechanistic models for small-diameter pipelines at slightly inclined downward flow

Yuan, Hong (1); Zhou, Desheng (2)

Source: *SPE Projects, Facilities and Construction*, v 5, n 1, p 5-12, March 2010; **ISSN:** 19422431; **DOI:**

10.2118/117395-PA; **Publisher:** Society of Petroleum Engineers (SPE)

Author affiliation: (1) Petroleum Engineering from the University of Tulsa, United States (2) Engineering at Xian Petroleum University, Mechanical Engineering from Southwest Petroleum University, China

Abstract: In this study, two-phase-flow pressure-prediction correlations and mechanistic models for pipelines commonly used in the petroleum industry are evaluated against experimental data. Downward two-phase flow occurs in hilly-terrain pipelines, in steam-injection wells, and in offshore oil- and gas-production systems. During pipeline design and simulation, experimental data are usually unavailable to calibrate against correlations and models. Sometimes, it is difficult to determine which correlation or model to use in predicting pressure gradient in inclined downward flow because very few correlations and models were developed specifically for downward pipe flow. Experimental data used in this study are from published papers (Kokal and Stanislav 1989a, 1989b). Experimental data were gathered from 1-, 2-, and 3-in. pipes with seven inclination angles. Oil and air were used as testing fluids. During the experiment, superficial-liquid velocities (SLVs) range from 1.2 to 10 ft/sec and superficial-gas velocities (SGVs) range from 0.76 to 85 ft/sec. The experimental results were plotted as pressure gradient vs. SGV for each SLV. Beggs-Brill (BB), Dukler-Eaton-Flanigan (DEF), Dukler-Flanigan (DF), Dukler, Eaton, and Eaton-Flanigan (EF) correlations and the Xiao mechanistic model are evaluated in this study. The results of this study can be used as guidelines in choosing two-phase-flow pressure-prediction correlations and models in designing and analyzing downward two-phase-flow pipelines. © 2010 Society of Petroleum Engineers. (6 refs)

Main heading: Two phase flow

Controlled terms: Petroleum industry - Injection (oil wells) - Forecasting - Offshore oil wells - Pipelines - Pressure gradient - Air - Crude oil - Offshore oil well production

Uncontrolled terms: Hilly terrain pipelines - Inclination angles - Mechanistic modeling - Mechanistic models - Small diameter pipelines - Steam injection wells - Superficial gas velocities - Superficial liquid velocity

Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 804 Chemical Products Generally - 944.4 Pressure Measurements

Database: Compendex

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152. Effects of atmosphere and stress on the thermal shock damage behaviors of 3D C/SiC composite with thin interlayer

Luan, Xingan (1); Cheng, Laifei (1); Zhang, Jun (2); Mei, Hui (1)

Source: *Fuhe Cailiao Xuebao/Acta Materiae Compositae Sinica*, v 27, n 1, p 98-103, February 2010; **Language:**

Chinese; **ISSN:** 10003851; **Publisher:** Beijing University of Aeronautics and Astronautics (BUAA)

Author affiliation: (1) National Key Laboratory of Thermostructure Composite Materials, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: To investigate the thermal shock resistance of 3D C/SiC composites with a thin interlayer under stresses and oxidizing atmospheres whose thickness of the interlayer is thinner than the standard one (200 nm), the thermal shock tests were carried out in the temperature range between 700 and 1200°C in oxidizing atmospheres under fatigue or creep stresses. Effects of stress and atmosphere on the degradation behaviors of the 3D C/SiC composite were investigated by the residual tensile strength, the stress-displacement curves, the length change curves and the morphologies. It is found that the oxidation of carbon and the degradation saturation of the composite under thermal shock are accelerated by the stress because of the cracks widen. The effect of creep stress on the degradation of the composite is greater than that of the fatigue stress. The residual tensile strength of the composite is enhanced by a limited oxidation and debonding of the interlayer resulted from the oxidizing atmosphere and the stress. It is shown that the thermal shock resistance of the composite with a thin interlayer is good even under the stress. (15 refs)

Main heading: Thermal shock

Controlled terms: Tensile strength - Creep - Fatigue damage - Oxidation

Uncontrolled terms: 3D C/SiC composites - C/SiC composites - Degradation behavior - Oxidizing atmosphere - Stress-displacement - Temperature range - Thermal shock damages - Thermal shock resistance

Classification Code: 802.2 Chemical Reactions - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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153. Research on fault recognition for centrifugal compressor based on fuzzy gray relational grade

Li, Lanyun (1); Yang, Zhuanzhao (2); He, Zhi (1)

Source: *Applied Mechanics and Materials*, v 26-28, p 71-76, 2010, *Advanced Mechanical Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9780878492497; **DOI:** 10.4028/www.scientific.net/AMM.26-28.71;

Conference: 2010 International Conference on Advanced Mechanical Engineering, AME 2010, September 4, 2010 - September 5, 2010; **Sponsor:** Information Technology and Industrial Engineering Research Center; **Publisher:** Trans Tech Publications

Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (2) Tubular Goods Research Center of CNPC, Xi'an, Shaanxi, 710065, China

Abstract: In practical centrifugal compressor fault diagnosis, it is very difficult to improve the fault recognition rate, especially when the sample sizes are small. To solve this problem, a new fault recognition method based on fuzzy gray relational grade was proposed. Firstly, according to fuzzy set theory, the fuzzy relation coefficient (FRC), fuzzy relation degree (FRD) and fuzzy relative weights (FRW) of all fault features were calculated. Secondly, the gray system theory was used to obtain the gray relational coefficients (GRC). Thirdly, by combining FRW and GRC, two fuzzy gray relation grades (FGRG) were presented, which is the Hamming distance-based fuzzy gray relation grade (HD-FGRG) and the Euclidean distance-based fuzzy gray relation grade (ED-FGRG), respectively. Finally, the fault recognition results were obtained by using the max membership degree principle. The centrifugal compressor fault diagnosis results show that the ED-FGRG method is more effective and accurate than traditional gray relational analysis (T-GRA) method, the weighted gray relational analysis (W-GRA) method, and the entropy weight-based gray relational analysis (EW-GRA) method and the HD-FGRG method. © (2010) Trans Tech Publications. (7 refs)

Main heading: Fuzzy sets

Controlled terms: Hamming distance - Failure analysis - Centrifugal compressors - Centrifugation - Fuzzy set theory

Uncontrolled terms: Entropy weights - Euclidean distance - Fault diagnosis - Fault feature - Fault recognition - Fuzzy gray relational grade - Fuzzy relations - Gray relational analysis - Gray relational grades - Gray system theory - Gray-relation - Membership degrees - Relative weights - Sample sizes

Classification Code: 618.1 Compressors - 802.3 Chemical Operations - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

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154. Research on intelligent fault diagnosis method for ESP protector based on Fuzzy Petri nets

Li, Lanyun (1); Yang, Zhuanzhao (2); Li, Xiao (1); He, Zhi (1)

Source: *Applied Mechanics and Materials*, v 29-32, p 691-696, 2010, *Applied Mechanics and Mechanical Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9780878492459; **DOI:** 10.4028/www.scientific.net/AMM.29-32.691;

Conference: 2010 International Conference on Applied Mechanics and Mechanical Engineering, ICAMME 2010, September 8, 2010 - September 9, 2010; **Sponsor:** Asia Pacific Environmental Science Research Center; Huazhong Normal University; Chinese Academy of Sciences; **Publisher:** Trans Tech Publications

Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (2) Tubular Goods Research Center of CNPC, Xi'an, Shaanxi, 710065, China

Abstract: The protector is a key part of electric submersible pump (ESP), seals the motor and prevents the water entering into it. In order to solve the problem of complexity and uncertainty of fault propagation and analysis in protector, a new method for ESP protector fault diagnosis based on Fuzzy Petri nets (FPN) is proposed. Firstly, according to expert experiences and maintain rules, the FPN structure which has 28 places and 11 transitions is built to describe the protector fault propagation relations. Secondly, the five matrixes representing the FPN structure are obtained, and a rapid fault inference algorithm is designed via matrix operations. Finally, two fault diagnosis cases are

analyzed, and the results show that the proposed method is valid and has strong engineering practicality. © (2010) Trans Tech Publications, Switzerland. (9 refs)

Main heading: Failure analysis

Controlled terms: Fault detection - Petri nets - Uncertainty analysis

Uncontrolled terms: Electric submersible pumps - Expert experience - Fault diagnosis - Fault propagation - Fuzzy Petri nets - Inference algorithm - Intelligent fault diagnosis - Key parts - matrix - Matrix operations - Protector

Classification Code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.1 Probability Theory

Database: Compendex

Data Provider: Engineering Village

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155. Damage evolution in 3D Cf/SiC composites in stressed oxidation environments

Zhang, Jun (1, 2); Luan, Xingang (1); Cheng, Laifei (1); Zhang, Litong (1)

Source: *Kuei Suan Jen Hsueh Pao/Journal of the Chinese Ceramic Society*, v 38, n 5, p 799-804, May 2010;

Language: Chinese; **ISSN:** 04545648; **Publisher:** Chinese Ceramic Society

Author affiliation: (1) National Key Laboratory of Thermostructure Composite Materials, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The damage evolution in three dimensional carbon fiber reinforced silicon carbide (3D Cf/SiC) composites in a stressed oxidation environment was investigated by scanning electron microscopy in terms of generation and propagation of cracks. The results indicate that the main damages in 3D Cf/SiC composites in the stressed oxidation environments include cracking of SiC matrix, debonding and oxidation of pyrolytic carbon interphase, and fracture and oxidation of carbon fibers. The interphase and fibers are oxidized by oxygen through microcracks in the matrix. The fibers are elongated due to debonding and oxidation of interphase, which contribute to the propagation of cracks. The mutual promotion between the fracture of fibers and propagation of cracks provides the essential driving force for the crack extension. (12 refs)

Main heading: Oxidation

Controlled terms: Scanning electron microscopy - Fracture - Silicon carbide - Fibers - Debonding - Reinforcement - Cracks

Uncontrolled terms: Carbon fiber reinforced silicon carbide - Carbon fiber reinforced silicon carbide composites - Crack extension - Damage - Damage evolution - Oxidation environment - Propagation of cracks - Pyrolytic carbon

Classification Code: 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 951 Materials Science

Database: Compendex

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