1. SINUMERIK 802D applied in the transformation of profiling machine

Dong, Peng Min (1); Liu, Wan Bing (2); Wang, Tian Qi (1); Dang, Xiao Li (1)
Source: *Advanced Materials Research*, v 201-203, p 2326-2329, 2011, *Advanced Manufacturing Systems*; **ISSN:** 10226680; **ISBN-13:** 9783037850398; **DOI:** 10.4028/www.scientific.net/AMR.201-203.2326; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi Er Road, 710065, Xi'an, Shanxi, China (2) Shaanxi Automobile Group Company, Limited., Jing Cheng Road 8th, Xi'an, 710201, China
Abstract: FASH160KE profiling machine manufactured in Germany is imported by our company in the late 1970s. The electrical element of this equipment is seriously ageing. What is worse, there have no substitution for AC drive, which will cause speed could not be regulated. Besides, the function of hydraulic pressure copying is beyond repair. We make CNC system reforming for this machine by using SINUMERIK 802D CNC and MICROMASTER-440 transducer. The wireless communication system © (2011) Trans Tech Publications. (2 refs)
Main heading: AC motors
Controlled terms: Hydraulic machinery
Uncontrolled terms: 802Dnumerical control system - AC drives - CNC system - CNC system reforming - Electrical elements - Germany - Hydraulic pressure - Profiling machines - Wireless communication system
Classification Code: 632.2 Hydraulic Equipment and Machinery - 705.3.1 AC Motors
Database: Compendex
Data Provider: Engineering Village

2. Low-frequency FBG accelerometer based on double cantilever beam

Liu, Qin-Peng (1); Qiao, Xue-Guang (1, 3); Zhao, Jian-Lin (1); Jia, Zhen-An (2); Gao, Hong (2, 3); Shao, Min (1, 2); Jiang, Bi-Qiang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 22, n 8, p 1119-1123, August 2011; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Institute of Optical Information Science and Technolodge, School of Science, Northwester Polytechnic University, Xi'an 710072, China (2) Xi'an Shiyou University of Petroleum, Xi'an 710065, China (3) Northwest University, Xi'an 710069, China
Abstract: In order to realize the precise measurement of acceleration by fiber Bragg grating, a novel double-cantilever beam fiber Bragg grating accelerometer is proposed. Firstly, the configuration and coating of the accelerometer were designed. Secondly, the principle of the fiber Bragg grating accelerometer was analyzed theoretically. The temperature response of FBGs and the acceleration response versus wavelength were analyzed. And the analytical formula of acceleration sensitivity was also deduced. Thirdly, the linear response, temperature response, resonance frequency and anti-jamming of the FBG accelerometer were researched experimentally. Experimental results indicate that the sensitivity is 7.81 pm/m/s2, the relative error is 2.62%. The linearity between acceleration and wavelength is 99.8%. The temperature compensation from 67.5°C to 27.5°C is realized triumphantly. The sensor has good flat response range and faculty of anti-jamming. (14 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Cantilever beams - Security systems - Accelerometers - Temperature distribution - Nanocantilevers - Jamming
Uncontrolled terms: Acceleration response - Acceleration sensitivity - Analytical formulas - Anti-jamming - Double cantilever beam - Fiber bragg grating accelerometer - Fiber Bragg grating(FBG) - Linear response - Low frequency - Precise measurements - Relative errors - Resonance frequencies - Response range - Temperature compensation - Temperature response
Classification Code: 408.2 Structural Members and Shapes - 641.1 Thermodynamics - 711 Electromagnetic Waves - 761 Nanotechnology - 914.1 Accidents and Accident Prevention - 933 Solid State Physics - 943.1 Mechanical Instruments
Database: Compendex
Data Provider: Engineering Village

3. Research the electromagnetic detecting electrical parameters through the casing

Xie, Yan (1); Wang, Yihui (1); Ren, Zhiping (1); Cui, Xiaoduo (2); Wang, Yuanyuan (1)
Source: *Proceedings - IEEE 2011 10th International Conference on Electronic Measurement and Instruments, ICEMI 2011*, v 4, p 155-158, 2011, *Proceedings - IEEE 2011 10th International Conference on Electronic Measurement and*

Instruments, ICEMI 2011; **ISBN-13:** 9781424481590; **DOI:** 10.1109/ICEMI.2011.6037968; **Article number:** 6037968; **Conference:** IEEE 2011 10th International Conference on Electronic Measurement and Instruments, ICEMI 2011, August 16, 2011 - August 18, 2011; **Sponsor:** Chinese Institute of Electronics (CIE); Computer Measurement Group; IEEE Beijing Section; National Natural Science Foundation of China; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xi'an 710065, China (2) Geological Science Institute of Shengli Oilfield, Dongying 257000, China
Abstract: This paper based on the theory of transient electromagnetic method to establish the model of multi-layer columnar medium, deduce and solve the model, calculate the formation of the induced electromotive force. Through the software simulation, the different electrical parameters on the influence of the induced EMF were visually observed, which can determine the feasibility of the method, and provide a new method for the detection of residual oil. © 2011 IEEE. (7 refs)
Main heading: Computer software
Controlled terms: Electromotive force - Transient analysis - Electric network parameters
Uncontrolled terms: Electrical parameter - Induced electromotive force - Induced EMF - Residual oil - Software simulation - Transient electromagnetic methods
Classification Code: 703.1 Electric Networks - 723 Computer Software, Data Handling and Applications - 801.4.1 Electrochemistry
Database: Compendex
Data Provider: Engineering Village

4. Evaluation of mechanical properties and microstructures of casing-drilling steels

Xu, Tianhan (1, 2); Feng, Yaorong (3); Song, ShengYin (3); Jin, Zhihao (2)
Source: *Advanced Materials Research*, v 146-147, p 674-677, 2011, *Advances in Superalloys*; **ISSN:** 10226680; **ISBN-13:** 9780878492008; **DOI:** 10.4028/www.scientific.net/AMR.146-147.674; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) Shool of Materials Science and Engineering, X'an JIaotong University, Xi'an 710049, China (2) Shool of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Tubular Goods Research Center of CNPC, Xi'an 710065, China
Abstract: An investigation into the mechanical properties of K55, N80 and P110 steels was carried out for casing-drilling technology. The obvious presence of bright facets on broken K55 Charpy V-Notch (CVN) sample surfaces was indicative of the effect of microstructure on the cleavage fracture. The appearing of bright facet surfaces of K55 was attributed to the microstructure of ferrite and pearlite. The fracture surfaces of N80 and P110 CVN samples included quasi-cleavage fracture mechanism and dimple fracture mechanism, respectively. The tensile fracture surface of all three types of casing-drilling steels included dimple fracture mechanism, both the N80 and P110 specimen show higher UTS and impact energy values compared to the K55 specimen. (9 refs)
Main heading: Microstructure
Controlled terms: Brittle fracture - Fracture toughness
Uncontrolled terms: Casing-drilling steel - Charpy v notches - Cleavage fracture - Dimple fracture - Drilling technology - Fracture surfaces - Impact energy - Impact toughness - Properties and microstructures - Quasi cleavage fracture - Sample surface - Tensile fracture surfaces
Classification Code: 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

5. The experimental research on using honey to inhibit corrosion

Wei, Ai-Jun (1); Jiang, Hua-Yi (1); Zhang, Xin (2); Zhao, Guang-Qiang (3)
Source: *Advanced Materials Research*, v 233-235, p 689-692, 2011, *Fundamental of Chemical Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037851197; **DOI:** 10.4028/www.scientific.net/AMR.233-235.689; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications

Author affiliation: (1) Provincial Key Laboratory of Unusual Well Stimulation, Xi'an Shiyou University, Xi'an, China (2) Guangxi Petrochemical Company of Petro China Company Limited, Guangxi, China (3) Petrochina Coalbed Methane Company Limited, Hancheng Branch, China
Abstract: Add different concentrations of honey into the simulated brine, then study the corrosion of Q235 steel and the corrosion inhibition effect of honey in different concentrations and temperatures with the method of losing weight. Results show that honey is a good inhibitor. © (2011) Trans Tech Publications, Switzerland. (4 refs)
Main heading: Corrosion rate
Controlled terms: Corrosion inhibitors - Food products - Steel corrosion
Uncontrolled terms: Corrosion inhibition - Corrosion inhibition efficiency - Experimental research - Green corrosion inhibitors - Q235 steel
Classification Code: 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 803 Chemical Agents and Basic Industrial Chemicals - 822.3 Food Products
Database: Compendex
Data Provider: Engineering Village

6. Microstructure and oxidation resistance of SiC/W-Al-Si double-layer coatings for carbon-carbon composites

Huang, Min (1); Li, Ke-Zhi (2); Li, He-Jun (2)
Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 32, n 7, p 17-20, July 2011;
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) Research Center of C/C Composites, Key Laboratory of Superhigh Temperature Composites, Northwestern Polytechnical University, Xi'an 710072, China
Abstract: SiC and W-Al-Si oxidation resistant coatings on carbon-carbon(C/C) composites surface were prepared by pack cementation and slurry method. The phases, microstructure of the SiC and W-Al-Si coatings were studied by XRD and SEM. The oxidation resistance of mono-layer SiC and double-layer SiC/W-Al-Si coatings were also tested by isothermal oxidation test at 1773 K in air, respectively. The results show that the mono-layer SiC coatings composed of Si and SiC only can protect C/C composites for several hours from oxidation at 1773 K because of its porous structure. WSi2 and W(Si, Al)2 are two main phases of the outer W-Al-Si layer. The anti-oxidation property of the double-layer SiC/W-Al-Si coatings with a approximately 100 μm thickness is superior to that of the mono-layer SiC coatings, and the mass loss of SiC/W-Al-Si coated C/C composites is less than 5% after oxidation at 1773 K in air for 19 h. By optimization of the slurry ratio of W-Al-Si, the oxidation resistance of double-layer SiC/W-Al-Si coatings can be improved to over 19 h at 1773 K due to the elimination of penetrating crack created by dismatch between inner SiC and outer layer W-Al-Si for SiC/W-Al-Si coatings. (10 refs)
Main heading: Carbon carbon composites
Controlled terms: Aluminum coatings - Aluminum compounds - Oxidation - Ablation - Oxidation resistance - Silicon carbide - Microstructure
Uncontrolled terms: Anti-oxidation properties - C/C composites - Double layers - Isothermal oxidations - Mass loss - Outer layer - Oxidation resistant coating - Pack cementation - Porous structures - SiC coatings - SiC/W-Al-Si - Slurry method - XRD
Classification Code: 415.4 Structural Materials Other Than Metal, Plastics or Wood - 539.1 Metals Corrosion - 641.2 Heat Transfer - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 813.2 Coating Materials - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

7. Corrosion resistance and semiconductor properties of passive films formed on super 13Cr stainless steel

Cai, Wen-Ting (1); Zhao, Guo-Xian (1); Zhao, Da-Wei (2); Wei, Ai-Ling (1)
Source: *Beijing Keji Daxue Xuebao/Journal of University of Science and Technology Beijing*, v 33, n 10, p 1226-1230, October 2011; **Language:** Chinese; **ISSN:** 1001053X; **Publisher:** University of Science and Technology Beijing
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Corrosion Protection Center, CNOOC Energy Technology and Services-Oilfield Technology Services Co. Shanghai Branch Co, Shenzhen 518067, China
Abstract: The electrochemical behavior and semiconductor properties of passive films formed on super 13Cr martensitic stainless steel in a corrosion solution which contains CO2 and Cl- soaked for 7 d at 100, 130, 150 and

170°C were examined using polarization curves and Mott-Schottky curves. The valence states of elements in the passive films were analyzed by X-ray photoelectron spectroscopy. It is shown that Mo and Ni in the forms of sulfides concentrate respectively in the surface layer of the passive films, but Cr in form of oxides enriches on the surface layer. The passive films formed at 100°C and 130°C are in possession of superior corrosion resistance, but the corrosion resistance of the passive films formed at 150°C and 170°C decreases. The reason for this phenomenon is concerned with the semiconductor properties of the passive films. A typical n-p-type semiconductor behavior is observed for the passive films formed at 100°C and 130°C, the doping quantity increases with increasing temperature; but a p-type semiconductor behavior is observed for the passive films formed at 150°C and 170°C. For this reason, the corrosion resistance of the martensitic stainless steel decreases with increasing temperature. (10 refs)
Main heading: Corrosion resistance
Controlled terms: Steel corrosion - X ray photoelectron spectroscopy - Chlorine compounds - Semiconductor doping - Polarization - Chromium compounds - Martensitic stainless steel - Temperature - Nickel compounds - Sulfur compounds
Uncontrolled terms: Electrochemical behaviors - Increasing temperatures - Mott-Schottky - P type semiconductor - Passive films - Polarization curves - Semiconductor properties - Surface layers
Classification Code: 539.1 Metals Corrosion - 545.3 Steel - 641.1 Thermodynamics - 712.1 Semiconducting Materials
Database: Compendex
Data Provider: Engineering Village

8. Continuous cooling transformation of X100 pipeline steel

Ji, Ling-Kang (1, 2); Zhang, Wei-Wei (2); Gao, Hui-Lin (3); Li, He-Lin (2)
Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 2, p 10-16, February 2011; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Tubular Goods Research Center of CNPC, Xi'an 710065, China (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: CCT curve of the X100 pipeline steels was established by thermodilatometric analysis method, and then it was analysed through hardness test, OEM, SEM and TEM observing. The CCT curve and the rule of phase transformation at different cooling conditions were investigated profoundly, and the structure style and its typical characters of the X100 pineline steels was discussed which tremendously helped understanding the relationship of the structure and performance and provided an important reference for the industry applications. (8 refs)
Main heading: Pipelines
Controlled terms: Steel pipe
Uncontrolled terms: CCT curve - Continuous cooling transformation - Cooling conditions - Industry applications - Performance - Structure and performance - Thermodilatometric analysis - X100 pipeline steels
Classification Code: 545.3 Steel - 619.1 Pipe, Piping and Pipelines
Database: Compendex
Data Provider: Engineering Village

9. Compact FBG diaphragm accelerometer based on L-shaped rigid cantilever beam (*Open Access*)

Weng, Yinyan (1); Qiao, Xueguang (1, 2); Feng, Zhongyao (1); Hu, Manli (1); Zhang, Jinghua (1); Yang, Yang (1)
Source: *Chinese Optics Letters*, v 9, n 10, October 2011; **ISSN:** 16717694; **DOI:** 10.3788/COL201109.100604; **Article number:** 100604; **Publisher:** Science Press
Author affiliation: (1) Department of Physics, Northwest University of China, Xi'an 710069, China (2) Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Xi'an Shiyou University of China, Ministry of Education, Xi'an 710065, China
Abstract: A compact fiber Bragg grating (FBG) diaphragm accelerometer based on L-shaped rigid cantilever beam is proposed and experimentally demonstrated. The sensing system is based on the integration of a flat diaphragm and an L-shaped rigid cantilever beam. The FBG is pre-tensioned and the two side points are fixed, efficiently avoiding the unwanted chirp effect of grating. Dynamic vibration measurement shows that the proposed FBG diaphragm accelerometer provides a wide frequency response range (0-110 Hz) and an extremely high sensitivity (106.5 pm/g), identifying it as a good candidate for embedding structural health monitoring and seismic wave measurement. ©2011 Chinese Optics Letters. (10 refs)
Main heading: Diaphragms

Controlled terms: Fiber Bragg gratings - Accelerometers - Nanocantilevers - Structural health monitoring - Cantilever beams - Frequency response
Uncontrolled terms: Chirp effects - Compact fibers - High sensitivity - L-shaped - Sensing systems - Wave measurement
Classification Code: 408.2 Structural Members and Shapes - 422 Strength of Building Materials; Test Equipment and Methods - 601.2 Machine Components - 761 Nanotechnology - 933 Solid State Physics - 943.1 Mechanical Instruments
Open Access type(s): All Open Access, Hybrid Gold
Database: Compendex
Data Provider: Engineering Village

10. Study on fatigue crack growth behavior of casing-drilling steel N80

Xu, Tianhan (1, 2); Feng, Yaorong (3); Song, Sheng Yin (3); Jin, Zhihao (1)
Source: *Applied Mechanics and Materials*, v 44-47, p 2852-2856, 2011, *Frontiers of Manufacturing and Design Science*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037850046; **DOI:** 10.4028/www.scientific.net/AMM.44-47.2852; **Conference:** 2010 International Conference on Frontiers of Manufacturing and Design Science, ICFMD2010, December 11, 2010 - December 12, 2010; **Sponsor:** Control Engineering and Information Science Research Association; Int. Front. Sci. Technol. Res. Assoc.; Trans Tech Publications; Chongqing Xueya Conferences Catering Co.,Ltd; Chongqing University of Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xi'an JIaotong University, Shool of Materials Science and Engineering, Xi'an 710049, China (2) Xi'an Shiyou University, Shool of Materials Science and Engineering, Xi'an 710065, China (3) Tubular Goods Research, Center of CNPC, Xi'an 710065, China
Abstract: An investigation into the fatigue crack growth behavior of N80 steel was carried out for casing-drilling technology. The results show that the effect of stress ratio on the K corresponding to access of the tensile overload region is remarkable, and increasing the stress ratio is found to increase the FCGR at the same K and reduce K of access of the tensile overload region; the transgranular failure machanism is dominant for the N80 steel in the all crack growth stage; the fracture surface roughness decreases as the cracks propagate through threshold region and into Paris region, whereas it increases as the cracks propagate through Paris region and into the tensile overload region; the typical ductile-dimpled fracture mechanism observed on the tensile overload region is similar to the tensile fracture mode, although the orientation of the dimples significantly inclines to fatigue crack growth direction. © (2011) Trans Tech Publications. (8 refs)
Main heading: Surface roughness
Controlled terms: Fatigue crack propagation - Ductile fracture - Tensile strength
Uncontrolled terms: Crack growth - Drilling technology - Effect of stress - Fatigue crack growth - Fatigue crack growth behavior - Fatigue crack growth rates - Fracture mechanisms - N80 - N80 Steel - Stress ratio - Tensile fractures - Tensile overload - Threshold regions - Transgranular
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

11. Characteristics and causes of Mesozoic reservoirs with extra-low permeability and high water cut in northern Shaanxi (*Open Access*)

Wang, Jianmin (1, 2); Liu, Shengfu (3); Li, Jun (3); Zhang, Yongfu (3); Gao, Ling (3)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 38, n 5, p 583-588, October 2011; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) Hengshan Oil Production Factory, Shaanxi Yanchang Petroleum (Group) Corp. Ltd., Yulin 719100, China
Abstract: Considering actual oil field development and based on comprehensive analysis on the oil production and oil test data, this paper summarizes the characteristics of the Chang 6 reservoir of extra-low permeability and high water cut in the Weijialou oilfield in northern Shaanxi and the distribution rule of high water cut zones. The results show that the Chang 6 reservoir in the Weijialou oilfield is a typical reservoir of extra-low permeability and high water cut, its water cut contour shows irregular annular distribution around local structure highs in plane. The water cut distribution within the reservoir shows high heterogeneity; along the NE-SW direction, water cut change is relatively stable, water cut contour extending in band shape; along the NW-SE direction, water cut fluctuates greatly, contours showing an alternating distribution of high and low water cut zones; there exists high water cut zone out-thrusting locally. Lack of

effective hydrocarbon source rocks and poor resource conditions are the underlying causes of high water cut in the Chang 6 extra-low permeability reservoir. High crude oil viscosity, great difference of fluid properties, high fluidity ratio, and well developed natural fractures are the main internal cause of the high water cut. (12 refs)
Main heading: Low permeability reservoirs
Controlled terms: Crude oil - Petroleum reservoir engineering - Oil field development - Mechanical permeability - Oil well flooding
Uncontrolled terms: Causes - Comprehensive analysis - Crude oil viscosity - Extra low-permeability - High heterogeneity - High water-cut - Hydrocarbon source rocks - Resource conditions
Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations
Funding Details: Number: 2010JM5003, Acronym: -, Sponsor: -;
Funding text: Received date: 08 Dec. 2010; Revised date: 25 May 2011. * Corresponding author. E-mail: wangjm@xsyu.edu.cn Foundation item: Supported by the Natural the National Science Fundamental Research Project of Shaanxi Province (2010JM5003).
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

12. Application of evolutionary neural networks for well-logging recognition in petroleum reservoir

Zhu, Kai (1); Song, Huaguang (1); Gao, Jinzhu (1); Cheng, Guojian (2)
Source: *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*, p 362-366, 2011, *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*; **ISBN-13:** 9780769545844; **DOI:** 10.1109/CIS.2011.87; **Article number:** 6128140; **Conference:** 2011 7th International Conference on Computational Intelligence and Security, CIS 2011, December 3, 2011 - December 4, 2011; **Sponsor:** Beijing Normal University; Guangdong University of Technology; HIC; Xidian University; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Engineering and Computer Science, University of the Pacific, Stockton, CA 95211, United States (2) School of Computer Science, Xi'an Shiyou University, Dian Zi 2nd Road 18, Xi'an, Shaanxi 710065, China
Abstract: A critical task of well-logging interpretation is to differentiate oil-gas-water layers. Other approaches based on data exploration and low recognition rate are difficult to generalize oil-gas-water layers identification because of the high moisture content in the later period of development. In this research we utilize evolutionary neural networks to build the interpreting model of oil-gas-water layers and extracting well-logging parameters. By using an evolutionary neural network method to recognize reservoir stratum, it can efficiently distinguish oil-gas-water layers. © 2011 IEEE. (14 refs)
Main heading: Neural networks
Controlled terms: Gases - Petroleum reservoirs - Petroleum reservoir engineering - Oil well logging - Genetic algorithms
Uncontrolled terms: Critical tasks - Data exploration - Evolutionary neural network - High moisture contents - Logging interpretation - Oil gas water
Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

13. Efficient preparation of biodiesel from rapeseed oil over modified CaO

Tang, Ying (1); Meng, Mei (1); Zhang, Jie (1); Lu, Yong (2)
Source: *Applied Energy*, v 88, n 8, p 2735-2739, August 2011; **ISSN:** 03062619; **DOI:** 10.1016/j.apenergy.2011.02.033; **Publisher:** Elsevier Ltd
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an shiyou University, Xi'an Shannxi, China (2) Shanghai Key Laboratory of Green Chemistry and Chemical Processes, Department of Chemistry, East China Normal University, Shanghai 200062, China
Abstract: In this study, the catalytic performance of commercial CaO modified by trimethylchlorosilane (TMCS) for transesterification of rapeseed oil and methanol to biodiesel production was investigated. It was found that the fatty acid methyl esters (FAME) yield of the modified CaO was greatly enhanced from 85.4% to 94.6%. The

possible reason lies on promoting the absorption of grease to CaO surface. Good results of repeated experiments showed that the modified catalyst has the capacity of water resistance and can be reused for several runs without significant deactivation, which can be confirmed by the humidity test in the vapor-saturated atmosphere. Both the characterizations of the catalyst and the effects of various factors such as mass ratio of catalyst to oil, reaction temperature and molar ratio of methanol to oil were investigated. © 2011 Elsevier Ltd. (20 refs)
Main heading: Biodiesel
Controlled terms: Catalysts - Methanol - Vegetable oils - Oilseeds - Fatty acids
Uncontrolled terms: Base catalyst - Biodiesel production - Catalytic performance - Fatty acid methyl ester - Modification - Modified catalysts - Reaction temperature - Trimethylchlorosilanes
Classification Code: 523 Liquid Fuels - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 821.4 Agricultural Products
Funding Details: Number: 50874092, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Scientific Research Plan Projects of Shaanxi Education Department;
Funding text: This work was financially supported by grants from National Science Foundation of China (No. 50874092), Scientific Research Plan Projects of Shaanxi and the Open Founds of the Shanghai Key Laboratory of Green Chemistry and Chemical Process.
Database: Compendex
Data Provider: Engineering Village

14. Alkaline dissolution of sandstone in the triassic Yanchang Formation in the Ordos Basin

Tian, Jian-Feng (1, 2, 3); Liu, Chi-Yang (1, 2); Wang, Gui-Cheng (3); Qiu, Xin-Wei (1, 2)
Source: *Diqiu Kexue - Zhongguo Dizhi Daxue Xuebao/Earth Science - Journal of China University of Geosciences*, v 36, n 1, p 103-110, January 2011; **Language:** Chinese; **ISSN:** 10002383; **DOI:** 10.3799/dqkx.2011.011; **Publisher:** China University of Geosciences
Author affiliation: (1) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an 710069, China (2) Institute of Oil and Gas of Northwest University, Xi'an 710069, China (3) College of Oil and Gas Resources, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In order to figure out the relationship between reservoir porosity and iron-rich chlorite cementation, the pore characteristic, rock constituents and relationship between pore and rock constituents of sandstone were studied by using cast thin sections, scanning electron microscope and electron microprobe techniques. The study reveals that the pore-line chlorite offers limited protection to the porosity, and the greatest contribution to the porosity is alkaline dissolution of volcanic materials. The volcanic materials (matrix and grain) belong to medium-basic volcanics through quantitative calculation of iron content in the chlorite cementation. During the early diagenetic stage, A 7%-11% medium-basic volcanics were dissolved, and this alkaine dissolution process yielded 8% secondary porosity and 3% pore-lining chlorite. The widespread chlorite cementation just indicates that abundant medium-basic volcanics were dissolved and considerable alkaline dissolution pore was generated. (31 refs)
Main heading: Sandstone
Controlled terms: Dissolution - Cementing (shafts) - Scanning electron microscopy - Porosity - Volcanoes
Uncontrolled terms: Alkaline dissolution - Chlorite cementation - Dissolution process - Electron microprobe techniques - Pore characteristics - Quantitative calculation - Volcanic materials - Yanchang Formation
Classification Code: 482.2 Minerals - 484 Seismology - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

15. Hybrid genetic algorithm for cloud computing applications

Zhu, Kai (1); Song, Huaguang (1); Liu, Lijing (2); Gao, Jinzhu (1); Cheng, Guojian (2)
Source: *Proceedings - 2011 IEEE Asia-Pacific Services Computing Conference, APSCC 2011*, p 182-187, 2011, *Proceedings - 2011 IEEE Asia-Pacific Services Computing Conference, APSCC 2011*; **ISBN-13:** 9780769546247; **DOI:** 10.1109/APSCC.2011.66; **Article number:** 6127960; **Conference:** 2011 IEEE Asia-Pacific Services Computing Conference, APSCC 2011, December 12, 2011 - December 15, 2011; **Sponsor:** IEEE; IEEE Comput. Soc. Tech. Comm. Serv. Comput. (TCSC); IEEE Computer Society; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Engineering and Computer Science, University of the Pacific, Stockton, CA 95211, United States (2) School of Computer Science, Xi'an Shiyou University, Dian Zi 2nd Road 18, Xi'an, Shaanxi 710065, China

Abstract: In the cloud computing system, the schedule of computing resources is a critical portion of cloud computing study. An effective load balancing strategy is able to markedly improve the task throughput of cloud computing. Virtual machines are selected as a fundamental processing unit of cloud computing. The resources in cloud computing will increase sharply and vary dynamically due to the utilization of virtualization technology. Therefore, implementation of load balancing in cloud computing has become complicated and it is difficult to achieve. Multi-agent genetic algorithm (MAGA) is a hybrid algorithm of GA, whose performance is far superior to that of the traditional GA. This paper demonstrates the advantage of MAGA over traditional GA, and then exploits multi-agent genetic algorithms to solve the load balancing problem in cloud computing, by designing a load balancing model on the basis of virtualization resource management. Finally, by comparing MAGA with Minmin strategy, the experiment results prove that MAGA is able to achieve better performance of load balancing. © 2011 IEEE. (13 refs)
Main heading: Cloud computing
Controlled terms: Software agents - Virtualization - Multi agent systems - Virtual reality - Genetic algorithms
Uncontrolled terms: Hybrid genetic algorithms - Load balance - Load balancing models - Load balancing problem - Load balancing strategy - Multi agent genetic algorithms - Resource management - Virtualization technologies
Classification Code: 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications
Database: Compendex
Data Provider: Engineering Village

16. Vibrational properties between silver (4,4) nanotube and nanowire

Yang, Aping (1, 2, 3); Fa, Wei (2, 3); Li, Xiaowei (2, 3); Dong, Jinming (2, 3)
Source: *Journal of Applied Physics*, v 110, n 2, July 15, 2011; **ISSN:** 00218979; **DOI:** 10.1063/1.3608113; **Article number:** 023514; **Publisher:** American Institute of Physics Inc.
Author affiliation: (1) School of Science, Xi'An Shiyou University, Xi'an 710065, China (2) Group of Computational Condensed Matter Physics, National Laboratory of Solid State Microstructures, Nanjing University, Nanjing 210093, China (3) Department of Physics, Nanjing University, Nanjing 210093, China
Abstract: The geometrical structures and vibrational spectra of both the (4,4) single-walled silver nanotube and the stretched one-lattice-parameter-wide fcc Ag nanowire, found in a recent experiment [Nature Nanotechnology 4, 149 (2009)], have been investigated by the density-functional theory calculations within the generalized gradient approximation. It is found that there exist main differences between their vibrational spectra and corresponding Raman- and IR-active spectra. For example, 1) the Raman modes of the Ag tube span a wider frequency range than the Ag wire, and there is its characteristic radial breathing mode at 120 cm-1, in contrast to that of the Ag wire at 129 cm-1, showing also specifically different 1st-order resonant Raman spectra for both of them, which may be used for identifying accurately the Ag tube from the Ag wire in future experiment. 2) The IR modes of the (4,4) Ag tube span a narrower frequency range than the Ag wire, and its highest frequency IR mode lies at 168 cm-1, which is less than that of the stretched Ag wire, lying at about 182 cm-1. © 2011 American Institute of Physics. (39 refs)
Main heading: Wire
Controlled terms: Lattice theory - Yarn - Nanotubes - Vibrational spectra - Density functional theory - Nanowires
Uncontrolled terms: Ag nanowires - Frequency ranges - Generalized gradient approximations - Geometrical structure - Radial breathing mode - Resonant Raman - Single-walled - Vibrational properties
Classification Code: 535.2 Metal Forming - 761 Nanotechnology - 819.4 Fiber Products - 922.1 Probability Theory - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933 Solid State Physics - 933.1 Crystalline Solids
Funding Details: Number: 2010CB630704,2011CB922100, Acronym: -, Sponsor: -; Number: 11074107, Acronym: -, Sponsor: National Natural Science Foundation of China;
Funding text: This work was supported by the State key program of China through Grant Nos. 2010CB630704 and 2011CB922100. W. Fa also acknowledged support from the Natural Science Foundation of China under Grant No.11074107. FIG. 1. (Color online). (a) Schematic show of the atomic structure of the (4,4) SWSNT, obtained by a cylindrical folding of the 2D triangular lattice, whose two basis vectors are a 1 and a 2 . Here, the chiral vector C h = 4 a 1 + 4 a 2 . (b) The expected image contrast when a [001] nanowire of one-lattice-parameter width (a 0) is projected along [100] and [110] directions. FIG. 2. Calculated cohesive energy (E) vs the unit cell length L z of the infinite (4,4) SWSNT. FIG. 3. (a) The vibrational modes and corresponding frequencies of the (4,4) SWSNT, in which three translational modes and one rotational mode are not included. The symbol of R or IR in the brackets indicates, respectively, the mode is Raman-active or infrared-active. The solid arrows denote the vibrational vectors. (b) The vibrational modes and corresponding frequencies of the stretched one-lattice-parameter-wide fcc Ag wire with the same unit cell length as the (4,4) Ag tube, in which three translational modes and one rotational mode are not included. The symbol of R or IR in the brackets indicates, respectively, the mode is Raman-active or infrared-active. The solid arrows denote the vibrational vectors. FIG. 4. (Color online) The frequency distributions of (a) IR modes and (b) Raman modes, for both the ground-state (4,4) SWSNT and the stretched one-lattice-parameter-wide fcc Ag wire with the same

unit cell length as the (4,4) Ag tube. The arrows indicate their RBMs. FIG. 5. The first-order resonant Raman spectra of (4,4) SWSNT, and the inset gives those of the stretched one-lattice-parameter-wide fcc Ag wire. Here, E -1,2 (E -1,4) denotes the optical transition energy between the 1 st (1 st) van Hove singularity (vHS) in the valence band and the 2 nd (4 th) vHS in the conduction band. And E RBLM is the phonon energy of the Ag wire's RBLM.
Database: Compendex
Data Provider: Engineering Village

17. Study on equipment parameters of time domain electromagnetic method for residual oil exploration

Song, Xijin (1, 2); Dang, Ruirong (2); Guo, Baolong (1); Ren, Zhiping (2)
Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 32, n 3, p 481-487, March 2011; **Language:** Chinese; **ISSN:** 02543087; **Publisher:** Science Press
Author affiliation: (1) Institute of Intelligent Control and Image Engineering, Xidian University, Xi'an 710071, China (2) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A non-contact type equipment parameter design method is presented to detect residual oil. The time-domain responses of two different measurement devices in homogeneous infinite medium are discussed. And the optimum device form is determined. The influence of transmit pulse width and off-time on the response signal is analyzed and the relationship between transmit coil electric characteristic and transmit waveform off-time is studied. Through calculating the effect of coil parameters on off-time of actual transmission waveform, the selection principle of transmitter parameters is presented. The transient process of receiver loop under ramp wave excitation is discussed; the estimation methods of the parallel matched resistance that is employed to remove the vibrating phenomenon and the parasitic capacitance of the receiver coil are given. Based on the above analysis, the equipment parameters were decided and laboratory experiment was carried out. Experimental results indicate that the media with different resistivities can be effectively identified based on either response amplitude or delay time, which provides a good foundation for future residual oil detection in borehole. (15 refs)
Main heading: Time domain analysis
Controlled terms: Capacitance
Uncontrolled terms: Magnetic dipole - OFF time - Residual oil - Time domain electromagnetic methods - Transient process
Classification Code: 701.1 Electricity: Basic Concepts and Phenomena - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

18. A new Magnesium reduction Jar materials and manufacturing technologies

Pengmin-Dong (1); Zhengrong-Guan (2)
Source: *Advanced Materials Research*, v 156-157, p 1471-1477, 2011, *Advanced Manufacturing Technology*; **ISSN:** 10226680; **ISBN-13:** 9780878492053; **DOI:** 10.4028/www.scientific.net/AMR.156-157.1471; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Petroleum University, Xi'an, China (2) Xi'an University of Architecture and Technology, Xi'an, China
Abstract: Magnesium reduction Jar can be critical, consumable parts in magnesium reduction process, this paper Introduced the working environment and the common failure modes of magnesium reduction can, based on the failure can cause magnesium reduction, presents a The new structure, developed a new material, and magnesium can restore the original structure was modified, the use of new casting technology to produce a good magnesium reduction tank. © (2011) Trans Tech Publications. (10 refs)
Main heading: Thermooxidation
Controlled terms: Magnesium castings - Oxidation resistance
Uncontrolled terms: Casting technology - High temperature oxidation resistance - Manufacturing technologies - New material - New structures - Original structures - Reduction process - Working environment
Classification Code: 534.2 Foundry Practice - 539.1 Metals Corrosion - 802.2 Chemical Reactions
Database: Compendex
Data Provider: Engineering Village

19. Transport properties of boron-doped single-walled silicon carbide nanotubes

Yang, Y.T. (1); Ding, R.X. (1); Song, J.X. (1, 2)
Source: *Physica B: Condensed Matter*, v 406, n 2, p 216-219, January 15, 2011; **ISSN:** 09214526; **DOI:** 10.1016/j.physb.2010.10.046; **Publisher:** Elsevier B.V.
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 710075, China
Abstract: The doped boron (B) atom in silicon carbide nanotube (SiCNT) can substitute carbon or silicon atom, forming two different structures. The transport properties of both B-doped SiCNT structures are investigated by the method combined non-equilibrium Green's function with density functional theory (DFT). As the bias ranging from 0.8 to 1.0 V, the negative differential resistance (NDR) effect occurs, which is derived from the great difficulty for electrons tunneling from one electrode to another with the increasing of localization of molecular orbital. The high similar transport properties of both B-doped SiCNT indicate that boron is a suitable impurity for fabricating nano-scale SiCNT electronic devices. © 2010 Elsevier B.V. All rights reserved. (15 refs)
Main heading: Transport properties
Controlled terms: Density functional theory - Nanotubes - Crystal atomic structure - Molecular orbitals - Yarn - Silicon carbide
Uncontrolled terms: Boron-doped - Different structure - Electronic device - Negative differential resistances - Non-equilibrium Green's function - Silicon atoms - Silicon carbide nanotubes - Single-walled
Classification Code: 761 Nanotechnology - 801.4 Physical Chemistry - 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 - 933.1.1 Crystal Lattice
Funding Details: Number: XA-AM-201011, Acronym: -, Sponsor: -; Number: 51308030201, Acronym: -, Sponsor: National Defense Pre-Research Foundation of China; Number: 72105112, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;
Funding text: This work is supported by the National Pre-Research Foundation of China (Grant no. 51308030201), the Fundamental Research Funds for Central Universities (Grant no. 72105112) and Xi'an Applied Materials Innovation Fund Application (Grant no. XA-AM-201011).
Database: Compendex
Data Provider: Engineering Village

20. Absorption equilibrium and thermodynamics of Fenugreek yellow pigment on macroporous resins

Han, Feng (1); Li, Wenhong (2); Tang, Xuan (3); Li, Dong (2)
Source: *Advanced Materials Research*, v 233-235, p 91-94, 2011, *Fundamental of Chemical Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037851197; **DOI:** 10.4028/www.scientific.net/AMR.233-235.91; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Environment Science and Engineering, Chang'an University, Xi'an 710054, China (2) College of Chemical Engineering of Northwest University, Xi'an 710069, China (3) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The adsorption equilibrium and thermodynamics of pigment extracted from Fenugreek after degumming on macroporous resins was investigated under differentinitial concentrations. The suitability of the Freundlich and Langmuir adsorption models to the equilibrium data was investigated. The model fitness was determined by R2. Thermodynamic parameters were calculated by the Van't Hof equation.The results showed that Freundlich model gave a better fit of adsorption isotherms than Langmuir models. The positive value of enthalpy(# H) indicated that the adsorption was endothermic, the negative value of Gibbs free energy (#G) showed the spontaneous and favoured nature of adsorption, and the entropy(#S) was positive.The resins LS-46 showed an effective adsorbtion for Fenugreek yellow pigment. © (2011) Trans Tech Publications, Switzerland. (12 refs)
Main heading: Adsorption
Controlled terms: Free energy - Adsorption isotherms - Gibbs free energy - Resins
Uncontrolled terms: Absorption equilibrium - Adsorption equilibria - Equilibrium data - Fenugreek - Freundlich and Langmuir adsorption - Freundlich models - Langmuir models - Macroporous resin - Negative values - Positive value - Thermodynamic parameter - Yellow pigment
Classification Code: 641.1 Thermodynamics - 802.3 Chemical Operations - 815.1.1 Organic Polymers

Database: Compendex
Data Provider: Engineering Village

21. Annular pressure reduction during primary cementing

Zhou, Desheng (1); Wojtanowicz, Andrew K. (2)
Source: *Journal of Energy Resources Technology, Transactions of the ASME*, v 133, n 3, 2011; **ISSN:** 01950738, **E-ISSN:** 15288994; **DOI:** 10.1115/1.4004809; **Article number:** 031003; **Publisher:** American Society of Mechanical Engineers (ASME)
Author affiliation: (1) College of Petroleum Engineering, Xian Petroleum University, Xian, Shanxi 710065, China (2) Craft and Hawkins Department Petroleum of Engineering, Louisiana State University, 3516 CEBA, Baton Rouge, LA 70803, United States
Abstract: Annular pressure reduction during cementing is a major factor causing annular gas flow. It has been widely accepted and proven experimentally that the pressure reduction phenomenon results from the shear stress opposing downward motion of slurry undergoing volume reduction. The models that have been proposed to describe this process are based on the gel strength and shear stress developments in time and ignore system compressibility. They explain the pressure reduction process observed in the lab where compressibility of the system is very small. However, the models cannot explain the pressure reduction patterns observed on the field where compressibility is significant and the time-dependent effects of cement slurry volume loss significantly contributes to the process. The paper presents a mathematical model combining the effects of gel strength, volume reduction, and compressibility of cement slurry to describe pressure loss in the annular cement column. Results from the model, shown in the paper, compare very well with the data from the laboratory and field tests. Also, the simulated results explain discrepancies between the pressure loss patterns observed in the lab and field tests. © 2011 American Society of Mechanical Engineers. (23 refs)
Main heading: Compressibility
Controlled terms: Shear stress - Flow of gases - Cements - Cementing (shafts)
Uncontrolled terms: Annular pressures - Gel strengths - Pressure reduction - Primary cementing - Simulated results - Stress development - Time-dependent effects - Volume reductions
Classification Code: 412.1 Cement - 631.1.2 Gas Dynamics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

22. The application of ultrasonic flowmeter on trade measurement in Yulin gas field

Xiao, Rongge (1, 2); Wei, Bingqian (1); Duan, Xiaoyun (3); Chen, Gang (1)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 7796-7798, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5988859; **Article number:** 5988859; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Hydraulic and Hydropower, Xi'An University of Technology, Xi'an, 710048, China (2) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an, 710065, China (3) No.2 Gas Producton Plant, Changqing Oilfield Company, Yulin, 719000, China
Abstract: In this paper, the working principle and system components of ultrasonic flowmeter are briefly introduced. In accordance with ultrasonic flowmeter applicated in YuLin gas field, comparing the transmission error of upper and lower streams measurement, on this basis, the pre-Operation measurement error and actual flow test/ calibration are explored and analyzed, and for the better use of ultrasonic flowmeter, authors put forward their understanding and recommendations. © 2011 IEEE. (8 refs)
Main heading: Commerce
Controlled terms: Errors - Gas industry - Flow measurement - Flowmeters
Uncontrolled terms: Flow tests - Operation measurement - System components - Transmission error - Yulin gas field
Classification Code: 522 Gas Fuels - 631.1 Fluid Flow, General - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements
Database: Compendex
Data Provider: Engineering Village

23. The multilevel programming and solutions of production constitution in Oil-field development during mid and late part

Yuan, Shi-Bao (1); Jiang, Hai-Yan (2)
Source: *Advanced Materials Research*, v 181-182, p 1044-1049, 2011, *Advanced Materials Science and Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850152; **DOI:** 10.4028/www.scientific.net/AMR.181-182.1044; **Conference:** 2010 International Conference on Materials Science and Technology, ICMST 2010, December 27, 2010 - December 28, 2010; **Sponsor:** University of Kentucky Lexington; Huazhong University of Science and Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xi'an Petroleum University, Xi'an 710065, China (2) China University of Petroleum, East China Donying, Shandong Province, 257061, China
Abstract: During mid and late period in Oil-field development, there is a restriction between the production and the constitution programming of measure type. The Bi-level programming model is built about field production constitution to reflect the hierarchical and relation of the programming process. In the model, the max number of entire oilfield's gross revenue is marked as the objective function of upper formation programming, and measure production from programming is marked as the objective function of lower level programming, and the new oil well quantity,the measure work load and the measure cost are took as constraints. So the solution algorithm that combined with stochastic algorithm and genetic algorithm is designed, and it is verified that the model and algorithm is effective with examples. Now, the problem that is restrictive between oilfield production and the most superior assignment of work load and cost is solved successfully. (5 refs)
Main heading: Stochastic systems
Controlled terms: Oil field development - Stochastic models - Genetic algorithms - Oil well flooding
Uncontrolled terms: Bi-level programming - Bilevel programming models - Field development - Gross revenue - Multilevel programming - Objective functions - Oilfield production - Programming process - Solution algorithms - Stochastic algorithms - Work loads
Classification Code: 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 731.1 Control Systems - 922.1 Probability Theory - 961 Systems Science
Database: Compendex
Data Provider: Engineering Village

24. A com approach for designing and implementing a material and energy statistical analysis system

Pan, Shaowei (1); Zhang, Liumei (1); Wang, Jiahua (1); Chen, Fang (2)
Source: *Advanced Materials Research*, v 321, p 59-62, 2011, *Advanced Research on Intelligent Materials and Mechanical Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037852194; **DOI:** 10.4028/www.scientific.net/AMR.321.59; **Conference:** 2011 International conference on Intelligent Materials and Mechanical Engineering, MEE2011, September 24, 2011 - September 25, 2011; **Sponsor:** International Science and Education Researcher Association (ISER); Beijing Gireida Education Research Center; VIP-Information Conference Center; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shanxi, 710065, China (2) Low-permeability Oil and Gas Exploration and Development of National Engineering Laboratory, Petroleum Expeloration and Development Petrochina Changqing Oilfield Company, Xi'an, Shanxi, 710018, China
Abstract: This paper discusses the concept and the latest development of Component Object Technology at first. Then it studies the Component Object Technology for developing Material and Energy Statistical Analysis System(MESAS) with support from software framework in detail. This approach may benefit on software development circles, reduce development costs, and strengthen the transplantation and maintenance as well as achieves software reusability. © (2011) Trans Tech Publications, Switzerland. (2 refs)
Main heading: Computer software reusability
Controlled terms: Software design - Statistical methods - Reusability
Uncontrolled terms: Com - Component Objects - Development costs - Energy - Latest development - Software frameworks - Statistical analysis systems
Classification Code: 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.5 Computer Applications - 922.2 Mathematical Statistics
Database: Compendex
Data Provider: Engineering Village

25. Synthesis and behavior evaluation of a relative permeability modifier

Wang, Jun (1); Zhu, Xiuyu (1); Guo, Huiying (2); Gong, Xiyan (1); Hu, Junde (1)
Source: *Journal of Petroleum Science and Engineering*, v 80, n 1, p 69-74, December 2011; **ISSN:** 09204105; **DOI:** 10.1016/j.petrol.2011.10.013; **Publisher:** Elsevier B.V.
Author affiliation: (1) Provincial Key Laboratory of Oil and Gas Chemical Technology, College of Chemistry and Chemical Engineering, Northeast Petroleum University, Daqing 163318, Heilongjiang Province, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Shanxi 710065, China
Abstract: Using N, N-dimethylaminoethyl methacrylate (DMAEMA) and methoxy polyethylene glycol methacrylate (MPEGMA) as raw materials, hydrophobically associating copolymer was synthesized by inverse emulsion polymerization and structurally confirmed by FTIR. Choosing partially hydrolyzed polymer of the copolymer as a relative permeability modifier, its intrinsic viscosity reaches 212.66. mL/g at 25 °C. Its adsorbability on the oil sandstone is investigated, that is to say, the equilibrium concentration is approximately 5100. mg/L while the saturated adsorption is about 0.652. mg/g. Temperature and salt also have a certain effect of RPM system based on the partially hydrolyzed polymer. Finally, the residual resistance factors to water and oil were measured by core displacement test. The results show that the flow resistance of the system to water is 19.9 times as large as that to oil. That is, the system has obvious selectivity to water and oil. © 2011 Elsevier B.V. (20 refs)
Main heading: Emulsification
Controlled terms: Hydrolysis - Emulsion polymerization
Uncontrolled terms: Adsorbabilities - Equilibrium concentration - Hydrophobically associating - Inverse emulsion polymerization - Methoxypolyethylene glycol - N ,N-dimethylaminoethyl methacrylate - Relative permeability modifiers - Residual resistance factor
Classification Code: 802.2 Chemical Reactions - 802.3 Chemical Operations - 815.2 Polymerization
Database: Compendex
Data Provider: Engineering Village

26. Pollutant migration behavior in slurry ponds at Ordos Basin gas well sites

Ma, Yun (1, 2); Chen, Jierong (1, 3)
Source: *ISWREP 2011 - Proceedings of 2011 International Symposium on Water Resource and Environmental Protection*, v 1, p 374-377, 2011, *ISWREP 2011 - Proceedings: of 2011 International Symposium on Water Resource and Environmental Protection*; **ISBN-13:** 9781612843377; **DOI:** 10.1109/ISWREP.2011.5893022; **Article number:** 5893022; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Life Science and Technology, Xi'an Jiaotong University, Xi'an Shaanxi 710049, China (2) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (3) Department of Environmental Science and Engineering, Xi'an Jiaotong University, Xi'an Shaanxi 710049, China
Abstract: With an acceleration in the rate of gas exploration in Ordos Basin, more and more waste drilling mud has been discharged. After a series of treatment, the waste mud had been buried in some slurry ponds. So a significant number of ponds are scattered in the basin, which give more harm to the fragile ecological environment. But until now, there is little research focusing on real environmental effects of pollutants in slurry ponds. This research chose five slurry ponds used in succession during 2005 and 2009 as targets. The migration behavior of organics, oil and sulfide was studied, and their possible effects on shallow groundwater were forecasted. The results showed that the order of these three pollutants' effects on environment was sulfide>oil>organics. According to the migration behavior of mentioned pollutants, it came to conclusion that the sulfide and oil in the slurry ponds used over two years should have brought much influence on shallow groundwater. © 2011 IEEE. (21 refs)
Main heading: Lakes
Controlled terms: Groundwater - Sulfur compounds - Metamorphic rocks - Groundwater pollution - Waste treatment - Petroleum prospecting
Uncontrolled terms: Ecological environments - Gas exploration - Gas well - Groundwater contamination - migration behavior - Pollutant migration - Shallow groundwater - Waste drilling muds
Classification Code: 444.2 Groundwater - 452.4 Industrial Wastes Treatment and Disposal - 453.1 Water Pollution Sources - 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

27. SVM combined with FCM and PSO for fuzzy clustering

Yang, Yifang (1, 2); Chen, Guoqiang (3); Guo, Yanchun (4)
Source: *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*, p 1370-1373, 2011, *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS*

2011; **ISBN-13:** 9780769545844; **DOI:** 10.1109/CIS.2011.305; **Article number:** 6128346; **Conference:** 2011 7th International Conference on Computational Intelligence and Security, CIS 2011, December 3, 2011 - December 4, 2011; **Sponsor:** Beijing Normal University; Guangdong University of Technology; HIC; Xidian University; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an, China (2) College of Science, Xidian University, Xi'an, China (3) School of Computer and Information Engineering, Henan University, Kaifeng Henan, China (4) College of Mathematics and Information Science, Xianyang Normal University, Xianyang, Shaanxi, China
Abstract: FCM algorithm is apt to fall into the local optimization, and what fast FCM algorithm can find optimum is greatly depended on the initialization. PSO-based FCM clustering algorithm avoids the local optima, and also is robust to initialization. The fluctuation however has appeared in the new algorithm, and it had been observed that performance of the clustering algorithms deteriorate with more and more overlaps in the data sets. SVM Classifier can handle linear inseparable problems and has the advantages of high accuracy of classification. Motivated by this observation, in this article a new fuzzy clustering technique that SVM Combined with FCM and PSO for Classification Problems has been proposed. Results of numerical experiments on two standard datasets show that the new algorithm is more efficient than the FCM and PSO-based FCM clustering algorithms, it can not only avoids the local optima and is robust to initialization, and also improve accuracy of classification. © 2011 IEEE. (11 refs)
Main heading: Support vector machines
Controlled terms: Clustering algorithms - Fuzzy clustering - Classification (of information) - Particle swarm optimization (PSO)
Uncontrolled terms: Accuracy of classifications - Clustering - Fuzzy C mean - Fuzzy clustering techniques - Local optimizations - Numerical experiments - Particle swarm - SVM classifiers
Classification Code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 903.1 Information Sources and Analysis - 921.5 Optimization Techniques
Database: Compendex
Data Provider: Engineering Village

28. Numerical simulation of the mutative permeability effect of percolation on low-permeability reservoirs

Liu, S. (1); Xiao, W. (2); Yang, L.-H. (3); Jiang, J.-H. (3)
Source: *Petroleum Science and Technology*, v 29, n 20, p 2151-2159, January 2011; **ISSN:** 10916466, **E-ISSN:** 15322459; **DOI:** 10.1080/10916466.2011.585355; **Publisher:** Bellwether Publishing, Ltd.
Author affiliation: (1) College of Petroleum Engineering, Xi'An Shiyou University, No. 18 Dianzi 2nd Road, Xi'an, Shaanxi Province, 710065, China (2) China ZhenHua Oil Co.LTD., Beijing, China (3) Oil Gas Technology Research Institute, PetroChina Changqing Oilfield Company, Xi'An, Shaanxi Province, China
Abstract: This article presents a multiple-phase numerical simulation model based on a new percolation method called the mutative permeability effect in low-permeability reservoirs and the method to solve those equations is given. Oilfield data are applied to analyze and compare three different percolation patterns. The results of simulating a horizontal well show that the values obtained from the new method are between that of the traditional start-up pressure gradient pattern method and Darcy's method and the data of relative deviation are significant. The new method can provide a more reasonable approach to the seepage characteristics of low-permeability reservoirs. © Taylor & Francis Group, LLC. (11 refs)
Main heading: Pressure gradient
Controlled terms: Petroleum reservoir engineering - Solvents - Flow of fluids - Horizontal wells - Low permeability reservoirs - Numerical models - Numerical methods - Oil fields
Uncontrolled terms: Darcy's law - Permeability effects - Relative deviations - Seepage characteristics - Start-up pressure gradient
Classification Code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 803 Chemical Agents and Basic Industrial Chemicals - 921 Mathematics - 921.6 Numerical Methods - 944.4 Pressure Measurements
Database: Compendex
Data Provider: Engineering Village

29. Negative differential resistance in an (8, 0) carbon/boron nitride nanotube heterojunction

Song, Jiuxu (1, 2); Yang, Yintang (1); Liu, Hongxia (1); Guo, Lixin (3)
Source: *Journal of Semiconductors*, v 32, n 4, April 2011; **ISSN:** 16744926; **DOI:** 10.1088/1674-4926/32/4/042003; **Article number:** 042003; **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 710075, China (3) School of Science, Xidian University, Xi'an 710071, China
Abstract: Using the method combined non-equilibrium Green's function with density functional theory, the electronic transport properties of an (8, 0) carbon/boron nitride nanotube heterojunction coupled to Au electrodes were investigated. In the current voltage characteristic of the heterojunction, negative differential resistance was found under positive and negative bias, which is the variation of the localization for corresponding molecular orbital caused by the applied bias voltage. These results are meaningful to modeling and simulating on related electronic devices. © 2011 Chinese Institute of Electronics. (15 refs)
Main heading: Heterojunctions
Controlled terms: Density functional theory - Current voltage characteristics - Yarn - Molecular orbitals - Bias voltage - Carbon nanotubes - Carbon nitride - Negative resistance
Uncontrolled terms: Applied bias voltage - Au electrodes - Electronic device - Electronic transport properties - Negative bias - Negative differential resistances - non-equilibrium Green's function
Classification Code: 713 Electronic Circuits - 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 801.4 Physical Chemistry - 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

30. Accumulation mechanism of light oils in Chepaizi uplift belt of Junggar Basin

Liu, Hong-Jun (1, 2); Zhang, Zhi-Huan (1); Qin, Li-Ming (3); Zhu, Lei (1); Xi, Wei-Jun (1)
Source: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*, v 35, n 4, p 34-40, August 2011; **Language:** Chinese; **ISSN:** 16735005; **DOI:** 10.3969/j.issn.1673-5005.2011.04.006; **Publisher:** University of Petroleum, China
Author affiliation: (1) State Key Laboratory of Petroleum Resource and Prospecting in China University of Petroleum, Beijing 102249, China (2) School of Oil and Gas Source of Xi'an Shiyou University, Xi'an 710065, China (3) SINOPEC Research Institute of Petroleum Engineering, Beijing 100101, China
Abstract: According to the oil-gas geochemistry and hydrocarbon accumulation geology theory, the light oil accumulation mechanism of Chepaizi uplift belt was studied by using data of geochemical, isotopes, fluid inclusions of light oil and the thermal evolution of source rocks. The results show that the light oils of the area mainly come from Jurassic source rocks of Sikeshu sag, some of which are from Cretaceous source rocks. In the mid-late Neogene period, the Jurassic source rocks are in hydrocarbon-generating peak. And the formed crude oil migrates to the bottom of the Cretaceous or Shawan formation of the Tertiary reservoirs along unconformity or faults and accumulates to form anticlinal or lithologic reservoirs. Some reservoirs mix with Cretaceous low mature oil. In the light oil formation, reservoir sedimentary rate is large, and hydrocarbon charging and expulsion efficiency are all high, and the dissipation amount is small, all of these factors are important reasons for rapid accumulation. (14 refs)
Main heading: Landforms
Controlled terms: Geochemistry - Hydrocarbons - Gas oils - Petroleum reservoir engineering - Rocks - Crude oil
Uncontrolled terms: Accumulation mechanisms - Cretaceous source rock - Fluid inclusion - Hydrocarbon accumulation - Junggar Basin - Light oil - Lithologic reservoirs - Thermal evolution
Classification Code: 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 523 Liquid Fuels - 804.1 Organic Compounds
Database: Compendex
Data Provider: Engineering Village

31. Aluminizing mechanism and corrosion resistance of pipeline steel X80 by combined pack cementation process under low temperature

Huang, Min (1); Wang, Yu (1); Lv, Xiang Hong (1)
Source: *Advanced Materials Research*, v 194-196, p 232-236, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.232; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Petroleum University, No.18, 2nd Dianzi Road, Yanta District, Xi'an, 710065, China

Abstract: In order to improve the corrosion resistance of pipeline steel X80 and maintain its good mechanical properties simultaneously, a low-temperature pack aluminizing process was carried out at 723 K on pipeline steel X80 after a surface mechanical attrition treatment (SMAT). The phase composition, microstructure and element distribution of the as-aluminized pipeline steel X80 were characterized by XRD, SEM and EDS, respectively.The results show that the as-received aluminide layer consists of Fe2Al5, which exhibits a good cohesion with SMATed pipeline steel X80 substrate with the thickness of around 90 μm. The element concentrations of Al and Fe atoms show a gradual change in the range of aluminide layer. After corrosion test processed in 3.5% NaCl solution, there is no obvious corrosion crack or uphills piled up by corrosion products on the surface of as-aluminized SMATed pipeline steel, which can conclude that pack aluminizing assisting by SMAT at low-temperature is an effective way for protecting pipeline steel X80 against corrosion. © (2011) Trans Tech Publications. (15 refs)
Main heading: Corrosion resistance
Controlled terms: Aluminum corrosion - Steel corrosion - Binary alloys - Corrosion protection - Aluminum alloys - Pipelines - Pipeline corrosion - Steel pipe - Sodium chloride - Temperature
Uncontrolled terms: 3.5%Nacl - Aluminides - Aluminizing process - Corrosion cracks - Corrosion products - Corrosion tests - Element concentrations - Element distribution - Fe atoms - Gradual changes - Low temperatures - Low-temperature pack aluminizing - Pack cementation process - Pipeline steel - Pipeline steel X80 - SEM - Surface mechanical attrition treatment (SMAT) - Surface mechanical attrition treatments - XRD
Classification Code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 541.1 Aluminum - 541.2 Aluminum Alloys - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.1 Thermodynamics
Database: Compendex
Data Provider: Engineering Village

32. Well completion system appraisal and decision in oil and gas reservoirs

Wu, X. (1); Xiao, W. (2); Liu, X. (3); Han, G. (1); An, Y. (1)
Source: *Petroleum Science and Technology*, v 29, n 24, p 2592-2600, October 24, 2011; **ISSN:** 10916466, **E-ISSN:** 15322459; **DOI:** 10.1080/10916461003752488; **Publisher:** Taylor and Francis Inc.
Author affiliation: (1) MOE Key Laboratory of Petroleum Engineering, China University of Petroleum, Beijing, China (2) China Zhen Hua Oil Co. Ltd, F205, Ocean Plaza, No.158 FU Xing Men Nei Street, Beijing 100031, China (3) Xi'An Shiyou University, Shaanxi, Xi'an, China
Abstract: To make completion selection mathematically, a comprehensive well completion system evaluation system was established including 3-class, 14-indicator including technical, managerial, economic, and risk indicators. Mutation theory was first introduced to determine the weights. Combined with fuzzy mathematics, the fuzzy membership function mutation was developed to act as the evaluation way. After 3-class judgment, the completion method with the maximum value of membership function was preferred. The method was applied to the East China region and targeted in 10 directional and 2 horizontal wells. Results showed that the comprehensive model is of high accuracy. Copyright © Taylor & Francis Group, LLC. (12 refs)
Main heading: Horizontal wells
Controlled terms: Membership functions - Well completion - Petroleum reservoir evaluation - Function evaluation - Petroleum reservoirs
Uncontrolled terms: Completion methods - Comprehensive evaluation - Comprehensive model - Environmental conditions - Fuzzy membership function - Fuzzy mutations - Oil and gas reservoir - System evaluation
Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921 Mathematics - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

33. The research on dehydrating of heavy oil by ultrasonic

Xiao, Rongge (1, 2); Kou, Jie (3); Wei, Bingqian (2); Chen, Gang (2)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 4598-4601, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5988032; **Article number:** 5988032; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) College of Hydraulic and Hydropower, Xi'an University of Technology, Xi'an, 710048, China (3) College of Pipeline and Civil Engineering, China University of Petroleum, DongYing, Shan Dong, 257064, China

Abstract: Routine dehydration can't be satisfied the practical demand because of the heavier, the higher salinity and the more seriously demulsification of oil. The factors affecting the desalting and dewatering during the ultrasonic pretreatment of crude oil were investigated, including electric field strength, ultrasonic frequency, field temperature, the settlement time, pulse time and working mode, etc. The contrasting results show that sound intensity, radiation time and frequency are the main factors, and the secondary factors are test temperature, working mode and settlement time. Some reasonable operation parameters for ultrasonic demulsification of heavy oil dehydration are determined. The process and technical parameters for the application of heavy oil dehydration by ultrasonic demulsification are provided. © 2011 IEEE. (6 refs)
Main heading: Dehydration
Controlled terms: Electric fields - Heavy oil production - Demulsification - Desalination - Crude oil
Uncontrolled terms: Electric field strength - Field temperature - Operation parameters - Test temperatures - Time and frequencies - Ultrasonic frequency - Ultrasonic pretreatment - Working mode
Classification Code: 445.1 Water Treatment Techniques - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 701.1 Electricity: Basic Concepts and Phenomena - 802.2 Chemical Reactions - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

34. Classical exchange algebra of the nonlinear sigma model on a supercoset target with Z2n grading

Ke, San-Min (1, 2); Li, Xin-Ying (1); Wang, Chun (3); Yue, Rui-Hong (4)
Source: *Chinese Physics Letters*, v 28, n 10, October 2011; **ISSN:** 0256307X, **E-ISSN:** 17413540; **DOI:** 10.1088/0256-307X/28/10/101101; **Article number:** 101101; **Publisher:** IOP Publishing Ltd
Author affiliation: (1) College of Science, Chang'An University, Xi'an 710064, China (2) Key Laboratory for Special Area Highway Engineering, Ministry of Education, Chang'An University, Xi'an 710064, China (3) College of Science, Xi'An Shiyou University, Xi'an 710065, China (4) Faculty of Science, Ningbo University, Ningbo 315211, China
Abstract: The classical exchange algebra satisfied by the monodromy matrix of the nonlinear sigma model on a supercoset target with 2n grading is derived using a first-order Hamiltonian formulation and by adding to the Lax connection terms proportional to constraints. This enables us to show that the conserved charges of the theory are in involution. When n = 2, our results coincide with the results given by Magro for the pure spinor description of AdS5 × S5 string theory (when the ghost terms are omitted). © 2011 Chinese Physical Society and IOP Publishing Ltd. (35 refs)
Main heading: Grading
Controlled terms: Algebra
Uncontrolled terms: First order - Hamiltonian formulations - Monodromy matrix - Nonlinear sigma model - Spinors
Classification Code: 921.1 Algebra
Database: Compendex
Data Provider: Engineering Village

35. Analysis of the PSD and PDF characteristics on typical flow regime of gas-liquid two-phase flow in horizontal pipes

Ge, Xiao Rong (1, 2); Jie, Kou (3); Qian, Wei Bing (2); Gang, Chen (2)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 5592-5597, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5988294; **Article number:** 5988294; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) College of Hydraulic and Hydropower, Xi'an University of Technology, Xi'an, 710048, China (3) College of Pipeline and Civil Engineering, China University of Petroleum, DongYing, Shan Dong, 257064, China
Abstract: Based the experiment of gas-liquid two-phase flow in horizontal pipes, a lot of datas of pressure, pressure difference were analyzed statistically, obtained and summarized the characteristics of probability density function (PSD) and power spectral density function (PDF) on three flow regime: stratified flow, slug flow, annular flow. And compared characteristics of PSD and PDF on pressure, pressure difference signal of differential flow regime. It found that PSD and PDF can be used for flow pattern identification, then provides a new reference method for flow pattern identification. © 2011 IEEE. (12 refs)
Main heading: Probability density function

Controlled terms: Pattern recognition - Liquids - Flow patterns - Power spectral density - Power spectrum - Two phase flow
Uncontrolled terms: Differential flows - Flow pattern identification - Flow regimes - Gas - liquid two-phase flows - Power spectrum density functions - Pressure differences - Reference method - Stratified flows
Classification Code: 631.1 Fluid Flow, General - 922.1 Probability Theory
Database: Compendex
Data Provider: Engineering Village

36. Forward simulation of remaining oil exploration in cross-well by time domain electromagnetic method

Xi-Jin, Song (1, 2); Rui-Rong, Dang (1); Bao-Long, Guo (2); Xue-Long, Wang (3)
Source: *2011 IEEE 3rd International Conference on Communication Software and Networks, ICCSN 2011*, p 280-284, 2011, *2011 IEEE 3rd International Conference on Communication Software and Networks, ICCSN 2011*; **ISBN-13:** 9781612844855; **DOI:** 10.1109/ICCSN.2011.6014722; **Article number:** 6014722; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'An Shiyou University, Xi'an, China (2) Institute of Intelligent Control and Image Engineering, Xidian University, Xi'an, China (3) College of Computer Science and Technology, Xi'An University of Technology, Xi'an, China
Abstract: Based on electromagnetic field theory, this paper derived the general expressions of time domain responses for cross-well electromagnetic logging. The emission waveform may be chosen as bipolar square wave by calculating the spectrums of three types of transmit signals. And the effects of thickness, magnetic permeability and electrical conductivity of the casing on time domain electromagnetic logging responses were analyzed. The computation results show that the casing change whether thinner or thicker has an obvious effect on the time domain logging responses. The simulation results also indicate the higher the casing electrical conductivity, the lower the response signal amplitude; and the lower the magnetic permeability, the more easy the electromagnetic signals through the casing. Furthermore, the sensitivity analysis of the time domain electromagnetic responses to the formation resistivity indicates that the electromagnetic responses are fairly sensitive to the formation resistivity. This result proved the feasibility and effectiveness of cross-well time domain electromagnetic logging technology applies to the field of oil and gas exploration. © 2011 IEEE. (10 refs)
Main heading: Magnetic permeability
Controlled terms: Electric conductivity - Electric logging - Computation theory - Electromagnetic logging - Petroleum prospecting - Time domain analysis - Mechanical permeability - Electromagnetic simulation - Geological surveys - Sensitivity analysis - Electromagnetic field theory
Uncontrolled terms: Cross-well - Electrical conductivity - Electromagnetic response - Electromagnetic signals - Oil and gas exploration - Time domain electromagnetic methods - Time domain electromagnetics - Time-domain electromagnetic response
Classification Code: 481.1 Geology - 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism - 701.1 Electricity: Basic Concepts and Phenomena - 701.2 Magnetism: Basic Concepts and Phenomena - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

37. Synthesis and characterization of titanium dentin porcelain

Guo, Litong (1, 2); Liu, Xuemei (1); Zhang, Ye (1); Guo, Lizhi (3); Guo, Tianwen (4)
Source: *Materials and Manufacturing Processes*, v 26, n 10, p 1269-1272, October 2011; **ISSN:** 10426914, **E-ISSN:** 15322475; **DOI:** 10.1080/10426914.2010.544830; **Publisher:** Bellwether Publishing, Ltd.
Author affiliation: (1) School of Materials Science and Engineering, China University of Mining and Technology, Xuzhou 221116, China (2) School of Mechanical and Electronic Engineering, China University of Mining and Technology, Xuzhou, China (3) Xi'An Shiyou University, Xi'an, China (4) Fourth Military Medical University, Xi'an, China
Abstract: The titanium dentin porcelain was synthesized through normal melting-derived route using borate-silicate system. The porcelain was characterized by thermal expansion, X-ray diffraction (XRD), and cytotoxicity tests. The results of XRD showed that the dentin porcelain is homogeneous vitreous and without crystalloids. The thermal expansion coefficient of dentin porcelains increased with the increasing concentration of CaO (or decreased with the increasing concentration of SiO2). The methyl thiazolyl tetrazolium assay results demonstrated that the cytotoxicity of the titanium porcelain was ranked as 0. It was believed that the titanium dentin porcelain synthesized in this research

was a biocompatible material and could be used for dental implant materials. Copyright © Taylor & Francis Group, LLC. (15 refs)
Main heading: Biocompatibility
Controlled terms: Silicates - Titanium - X ray diffraction - Metal implants - Thermal expansion - Biological materials - Cytotoxicity - Dental prostheses - Silica - Porcelain
Uncontrolled terms: Cytotoxicity test - Dental implant materials - Dentin - Dentin porcelains - Methyl thiazolyl tetrazolium assays - Silicate system - Synthesis and characterizations - Thermal expansion coefficients
Classification Code: 461.2 Biological Materials and Tissue Engineering - 461.9 Biology - 461.9.1 Immunology - 462.3 Dental Equipment and Supplies - 462.4 Prosthetics - 542.3 Titanium and Alloys - 641.1 Thermodynamics - 812.1 Ceramics - 951 Materials Science
Funding Details: Number: 50975276, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20090095120017, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China; Number: 2009A057, Acronym: CUMT, Sponsor: China University of Mining and Technology;
Funding text: Youth Foundation of China University of Mining and Technology (No. 2009A057), and the National Natural Science Foundation of China (No. 50975276).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 (No. 20090095120017),
Database: Compendex
Data Provider: Engineering Village

38. On the source and evaluation of environment risk in the city Brownfield redevelopment

Li, Bangyan (1); Sun, Caiping (2); Zhou, Wenqian (1); Fu, Jin (3); Wu, Yu (4); Ma, Jiting (2); Liu, Li (4)
Source: *ISWREP 2011 - Proceedings of 2011 International Symposium on Water Resource and Environmental Protection*, v 4, p 2803-2805, 2011, *ISWREP 2011 - Proceedings of 2011 International Symposium on Water Resource and Environmental Protection*; **ISBN-13:** 9781612843377; **DOI:** 10.1109/ISWREP.2011.5893461; **Article number:** 5893461; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Architecture, Xi'an University of Architecture and Technology, Xian, China (2) Institute of Foreign Languages, Xi'an Shiyou University, Xian, China (3) Institute for Tourism Studies, HuaQiao University, Quanzhou, China (4) Faculty of Humanities and Social Sciences, Xi'an University of Architecture and Technology, Xian, China
Abstract: This paper attempts to make an preliminary discussion of the origin and identification of the environmental risk in the urban Brownfield redevelopment by using methods and technology in risk administration. Based the method of risk administration, the environmental risk sources of the Brownfield were divided from the land secondary environmental pollution, from remaining buildings and its attached, and from development process. Given an application case by identification and assessment of the Brownfield environment risks through Beforehand, concurrent, and afterwards. © 2011 IEEE. (5 refs)
Main heading: Risk assessment
Controlled terms: Environmental technology
Uncontrolled terms: Brown fields - Brownfield redevelopment - Development process - Environment risks - Environmental pollutions - Environmental risk sources - redevelopment - Risk administration
Classification Code: 454 Environmental Engineering - 914.1 Accidents and Accident Prevention
Database: Compendex
Data Provider: Engineering Village

39. Notice of Retraction: Dynamic simulation and optimization design of polished rod hoisting system based on VB combined with Matlab and ansys

Wang, Erhua (1, 2); Wu, Bo (1); Yan, Wenhui (3); Yang, Shuzi (1)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 245-251, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5986905; **Article number:** 5986905; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Mechanical Science and Engineering, Huazhong University of Science and Technology, Wuhan, Hubei,430074, China (2) Mechanics and Electricity Department, Nanyang Institute of Technology, Nanyang,Henan,473004, China (3) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an,Shannxi,710065, China

Abstract: Polished rod hoisting system is one of the key components in the sucker-rod pumping system.In order to reduce its cost and improve its dynamic performance,the mathematical of dynamic simulation and optimization design is established and calculated respectively. Dynamic analysis result provides theoretic foundation for the optimization of polished rod hoisting system.Aiming at the hoisting system optimized, its dynamic simulation calculation is finished and compared to it before optimization.The research result indicates dynamic performance of polished rod hoisting system can be improved by optimizing the key derrick component.This mothod can provide a new thought for the design and reconstruction of big complicated mechanical system. © 2011 IEEE. (12 refs)
Main heading: Cranes
Controlled terms: MATLAB - Machine design
Uncontrolled terms: Dynamic performance - Hoisting system - Mechanical systems - Optimization design - Polished rod - Simulation and optimization - Simulation calculation - Sucker rod pumping
Classification Code: 601 Mechanical Design - 693.1 Cranes - 723.5 Computer Applications - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

40. Design of software & hardware based on JRB230240B LCD

Zhang, Jiatian (1); Zhan, Jianguo (1); Yan, Zhengguo (1); He, Xiong (2); Ma, Lin (3)
Source: *Advanced Materials Research*, v 301-303, p 467-471, 2011, *Advanced Measurement and Test*; **ISSN:** 10226680; **ISBN-13:** 9783037851975; **DOI:** 10.4028/www.scientific.net/AMR.301-303.467; **Conference:** 2011 2nd International Conference on Advanced Measurement and Test, AMT 2011, June 24, 2011 - June 26, 2011; **Sponsor:** Hong Kong Education Society; **Publisher:** Trans Tech Publications
Author affiliation: (1) Key Laboratory of Photoelectricity Gas and Oil Logging and Detecting, Ministry of Education, Xi'an Shiyou University, Shaanxi Xi'an, China (2) China Panjin Liaohe Oilfield Yulon Industrial Group Co., LTD., China (3) China Petroleum Oriental Geophysical Exploration Co.,LTD., Changqing Assignments Section, China
Abstract: This paper introduces the basic content of JRB320240B, including LCD tube foot function and operation sequence. Gives a kind of simple and practical hardware interface circuit of LCD and MCU. Design two general functions, the painting line and circle; and indicate the algorithm of the bottom function. Then realize dials clock based on bottom function. (6 refs)
Uncontrolled terms: Foot functions - General functions - Hardware interfaces - Interface design - Operation sequences - Painting lines - Program design
Classification Code: 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

41. Analysis of natural gas flow in the back pressure segment of the convergence-expanding nozzle

Wang, Jun-Qi (1); Bai, Bo-Feng (2); Xu, Yong-Gao (3)
Source: *Gao Xiao Hua Xue Gong Cheng Xue Bao/Journal of Chemical Engineering of Chinese Universities*, v 25, n 5, p 765-768, October 2011; **Language:** Chinese; **ISSN:** 10039015; **Publisher:** Zhejiang University
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (3) Oil and Gas Technology Research Institute of Petro China Changqing Oil Field Company, Xi'an 710018, China
Abstract: Using convergence-expanding nozzle, the transonic gas flow can be realized by the change of the flow channel area in the nozzle only. In order to achieve the purpose of gas-water separation, swirl flow is generated by making the natural gas flow through around the delta wing swirl segment in the nozzle. Throughout the whole executive process, the back pressure segment relates to the pressure loss of the whole equipment. In this paper, the soft ware Fluent 6.1 was used to simulate and calculate the entire flow field of the nozzle. Then, after carrying out the analysis of back pressure segment, the full and accurate detail of the variations of pressure and velocity in the back pressure segment was obtained. The results show that, in back pressure segment, overall trend of the whirlpool gradually declines. The distribution of flow parameters is uneven on each section of the back pressure segment along the flow direction. Under the given structure and boundary conditions, the average total pressure loss within the back pressure segment is 0.14 MPa. The Mach number tends to be 1 when fluid flows into the back pressure segment and drops to about 0.05 when flows out of it. The decreasing region of the Mach number begins from the wall and approaches to the pipe centre, and gradually expands. (7 refs)
Main heading: Mach number
Controlled terms: Natural gas - Flow of gases - Supersonic flow - Delta wing aircraft - Channel flow - Gases - Nozzles

Uncontrolled terms: Analysis - Back pressures - Flow - Flow direction - Flow parameters - Pressure loss - Total-pressure loss - Transonic gas
Classification Code: 522 Gas Fuels - 631.1 Fluid Flow, General - 631.1.2 Gas Dynamics - 652.1 Aircraft, General - 943.2 Mechanical Variables Measurements
Database: Compendex
Data Provider: Engineering Village

42. Effect of Cr/Zr on the electrochemical behavior of copper in NaCl/NaOH/HCl solution

Zhang, Ya Ni (1); Zheng, Mao Sheng (2); Zhu, Jie Wu (3)
Source: *Advanced Materials Research*, v 239-242, p 1582-1585, 2011, *Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851234; **DOI:** 10.4028/www.scientific.net/AMR.239-242.1582; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xian Shiyou University, No.18, Dianzi 2nd Road, Xian, 710065, China (2) Institute for Condensed Matter Physics and Materials, Northwest University, No.71, the west section of the South Ring Road, Xian, 710069, China (3) School of Materials Science and Engineering, Xi'an Jiaotong University, No. 28, Xianning Road, Xian, 710049, China
Abstract: The potentiodynamic polarization and cyclic voltommogroms studies were carried out on the copper with micro-addition of Cr and Zr in solutions of 0.5M NaCl, 0.5M NaOH and 0.5M HCl at room temperature. The corrosion resistance of pure copper is deteriorated with addition of the alloying elements Cr and Zr. Significant reducing in the corrosion resistance is observed when Cr and Zr are added simultaneously. Moreover, the lowest corrosion current density is obtained in the NaCl solution followed by the NaOH solution and HCl solution. Compared with the different effect on the passive layer in the NaCl solution, the micro-addition of Cr and Zr leads to the increasing of the corrosion resistance for the passive layer in 0.5M NaOH solution and 0.5M HCl solution. © (2011) Trans Tech Publications. (6 refs)
Main heading: Sodium chloride
Controlled terms: Copper corrosion - Corrosion resistance - Chromium - Zirconium - Alloying elements - Sodium hydroxide
Uncontrolled terms: Corrosion current densities - Cr/Zr - Different effects - Electrochemical behaviors - HCl solution - NaCl solution - NaCl/NaOH/HCl solution - NaOH solutions - Passive layer - Pure copper - Room temperature
Classification Code: 531.1 Metallurgy - 539.1 Metals Corrosion - 543.1 Chromium and Alloys - 544.1 Copper - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village

43. Kinematic forward modeling based on block-model for crosswell seismic

Li, Hui-Feng (1); Wang, Yan-Jun (1); Fan, Ting-En (2)
Source: *Shiyou Diqiu Wuli Kantan/Oil Geophysical Prospecting*, v 46, n 2, p 196-201, April 2011; **Language:** Chinese; **ISSN:** 10007210; **Publisher:** Science Press
Author affiliation: (1) School of Oil and Gas Resources, Xi'an Petroleum University, Xi'an, Shanxi, 710065, China (2) Petroleum Research Center of CNOOC, Beijing 100027, China
Abstract: In forward modeling methods of surface seismic, only upgoing reflection waves were considered, and the information such as transmission wave, interlayer direct wave and downgoing wave were not involved. Furthermore, these methods are only suitable for simple layered model while it cannot be applied to crosswell seismic. In this paper, a kinematic forward modeling method for crosswell seismic is introduced. First, a model building method based on block units is used to build a crosswell seismic geological model. Then, the trial-ray method is used for ray tracing of the geological model. Finally, crosswell synthetic data are obtained. The results show that this forward modeling method based on block units can simulate complex geological structures with faults, pinchouts and so on. The iterate rays converge more quickly in simple models than in complex models. Crosswell seismic wave fields can be identified by crosswell seismic ray-tracing and croswell synthetic data. (5 refs)
Main heading: Ray tracing
Controlled terms: Model buildings - Seismology - Kinematics
Uncontrolled terms: Block-unit - Cross-well - Forward modeling - Geological modeling - Geological structures - Model-building methods - Ray method - Reflection waves
Classification Code: 484.1 Earthquake Measurements and Analysis - 741.1 Light/Optics - 931.1 Mechanics
Database: Compendex

Data Provider: Engineering Village

44. The application of Binary Particle Swarm algorithm in face recognition

Cheng, Guojian (1); Shi, Caiyun (1); Zhu, Kai (2, 3); Gong, Kevin (1)
Source: *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*, p 1229-1233, 2011, *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*; **ISBN-13:** 9780769545844; **DOI:** 10.1109/CIS.2011.272; **Article number:** 6128314; **Conference:** 2011 7th International Conference on Computational Intelligence and Security, CIS 2011, December 3, 2011 - December 4, 2011; **Sponsor:** Beijing Normal University; Guangdong University of Technology; HIC; Xidian University; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Dian Zi 2nd Road 18, Xi'an, Shaanxi 710065, China (2) School of Engineering and Computer Science, University of Pacific, Stockton, CA 95211, United States (3) College of Letters and Sciences, University of California, Berkeley, CA 94720, United States
Abstract: The Binary Particle Swarm Optimization (BPSO) algorithm is introduced for face recognition. To do this, the original face images are first transformed into feature vectors by utilizing two-dimensional Discrete Cosine Transform (DCT). Secondly, the features are selected by means of the BPSO algorithm from the feature vectors, in order to obtain the most representative features of human faces. Compared to Genetic Algorithms (GA), the BPSO algorithm can achieve a higher recognition rate by a few features. The results demonstrate that the BSPO algorithm possesses a high recognition rate for various human face recognition applications, verifying it as an effective feature selection approach. © 2011 IEEE. (9 refs)
Main heading: Face recognition
Controlled terms: Image compression - Discrete cosine transforms - Genetic algorithms - Particle swarm optimization (PSO) - Feature Selection
Uncontrolled terms: Binary particle swarm - Binary particle swarm optimization - BPSO algorithms - Face images - Feature vectors - Human face recognition - Human faces - Two dimensional discrete cosine transform
Classification Code: 723 Computer Software, Data Handling and Applications - 921.3 Mathematical Transformations - 921.5 Optimization Techniques
Database: Compendex
Data Provider: Engineering Village

45. Network traffic monitoring, analysis and anomaly detection [Guest Editorial]

Wang, Wei (1); Zhang, Xiangliang (2); Shi, Wenchang (3); Lian, Shiguo (4); Feng, Dengguo (5)
Source: *IEEE Network*, v 25, n 3, p 6-7, May-June 2011, *Network Traffic Monitoring, Analysis and Anomaly Detection*; **ISSN:** 08908044; **DOI:** 10.1109/MNET.2011.5772054; **Article number:** 5772054; **Publisher:** Institute of Electrical and Electronics Engineers Inc.
Author affiliation: (1) Xi'an Shiyou University, Xi'an, China (2) Division of Mathematical and Computer Sciences and Engineering, King Abdullah University of Science and Technology(KAUST), Saudi Arabia (3) Graduate University, Chinese Academy of Sciences, Beijing, China (4) Nanjing University of Science and Technology, China (5) Institute of Software, Chinese Academy of Sciences, China
Database: Compendex
Data Provider: Engineering Village

46. Bonding between chromium atoms in metal-string complexes from Raman spectra and surface-enhanced Raman scattering: Vibrational frequency of the chromium quadruple bond (*Open Access*)

Huang, Yu-Min (1); Tsai, Huei-Ru (1); Lai, Szu-Hsueh (1); Lee, Sheng Jui (1); Chen, I-Chia (1); Huang, Cheng Liang (2); Peng, Shie-Ming (3); Wang, Wen-Zhen (4)
Source: *Journal of Physical Chemistry C*, v 115, n 28, p 13919-13926, July 21, 2011; **ISSN:** 19327447, **E-ISSN:** 19327455; **DOI:** 10.1021/jp203065v; **Publisher:** American Chemical Society
Author affiliation: (1) Department of Chemistry, National Tsing Hua University, Kuang Fu Road, Hsinchu 30013, Taiwan (2) Department of Applied Chemistry, National Chiayi University, No. 300 Syuefu Rd., Chiayi 60004, Taiwan (3) Department of Chemistry, National Taiwan University, No. 1, Sec. 4, Roosevelt Road, Taipei 10617, Taiwan (4) School of Chemistry and Chemical Engineering, Xian Shiyou University, No. 18 Second Dianzi Road, Xian, Shaanxi Province 710065, China

Abstract: By measuring the vibrational wavenumbers of their stretching modes in Raman and surface-enhanced Raman scattering (SERS) spectra, we investigated the strength of the Cr-Cr bonds in metal-string complexes Cr5(tpda)4X2 and Cr7(teptra)4(NCS)2 (tpda = tripyridyldiamido; teptra = tetrapyridyltriamido; X = Cl-, NCS-). The bands in SERS and Raman differ insignificantly in spectral positions, indicating no major structural variation between the solid and solution forms. For SERS measurements, these complexes were bound to silver or gold nanoparticles in aqueous solution to eliminate the constraint of a crystal lattice and to maintain the complexes in thermal equilibrium; this method is convenient to identify the stable structure. We identified both penta-and heptachromium complexes in both symmetric (s) and unsymmetric (u) forms. For pentachromium complexes, our data agree with the results obtained from structural determination of the crystalline form, but for the heptachromium complex, this experimental evidence is the first for the existence of the u-form structure. From our analysis of the vibrational normal modes, we assign the band at 280 cm-1 to the Cr-Cr symmetric stretching mode of the s-form pentachromium complex. According to comparisons of SERS spectra obtained at either high temperatures or under oxidizing conditions, we assign 570 cm-1 to the stretching mode of the Cr-Cr quadruple bond in the u-form for the pentachromium complex and 554/571 cm -1 analogously for the heptachromium complex. The bands for metal-related modes in SERS spectra might be enhanced because of interaction with the metal nanoparticles. The metal-string complexes with a linear arrangement of metal ions have an increased absorption coefficient in the visible spectra and, consequently, an increased resonance Raman intensity for the metal-metal stretching modes, yielding information about the strength of chromium-chromium multiple bonding. © 2011 American Chemical Society. (26 refs)
Main heading: Metal nanoparticles
Controlled terms: Gold nanoparticles - Metal ions - Crystal structure - Raman scattering - Solutions - Chromium alloys - Binary alloys - Raman spectroscopy - Surface scattering
Uncontrolled terms: Absorption co-efficient - Experimental evidence - Structural determination - Structural variations - Surface enhanced Raman Scattering (SERS) - Surface-enhanced Raman scattering spectrum - Vibrational normal modes - Vibrational wavenumbers
Classification Code: 531.1 Metallurgy - 543.1 Chromium and Alloys - 741.1 Light/Optics - 761 Nanotechnology - 931 Classical Physics; Quantum Theory; Relativity - 933.1.1 Crystal Lattice
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

47. An experimental study on rheological properties of the associating polymer solution in porous medium

Cao, Baoge (1); Luo, Pingya (2)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 32, n 4, p 652-657, July 2011; **Language:** Chinese; **ISSN:** 02532697;
Publisher: Science Press
Author affiliation: (1) Petroleum Engineering Institute, Xi'an Petroleum University, Xi'an 710065, China (2) State Key Laboratory of Oil-Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu 610500, China
Abstract: Rheological rules of the associating polymer solution in porous medium through variations in resistance factors and residual resistance factors along with pore velocity were discussed. The results indicated that above the critical associating concentration (CAC), resistance factors of the associating polymer solution firstly dropped and then rose with the increase of pore velocity, but they started dropping again when they reached to a certain degree. However, below CAC, both resistance factors and residual resistance factors of the associating polymer solution rose firstly and then dropped with the increase of pore velocity. Compared with HPAM, the associating polymer solution was of higher ability to improve the waterflood mobility ratio, moreover, the lower the core permeability, the stronger the ability to improve the waterflood mobility ratio, and the lower the pore velocity that displays the elasticity effect. The increase of resistance factors for the associating polymer solution was mainly resulted from a higher adsorption and retention quantity of solution at low velocity, but from a better elasticity of solution at high velocity. (15 refs)
Main heading: Porous materials
Controlled terms: Elasticity - Rheology - Velocity
Uncontrolled terms: Associating polymers - Porous medium - Residual resistance factor - Resistance factors - Rheological property
Classification Code: 931.1 Mechanics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

48. Structural, electronic and magnetic properties of the 3d transition metal-doped GaN nanotubes

Chen, Guo-Xiang (1, 2); Zhang, Yan (3); Wang, Dou-Dou (4); Zhang, Jian-Min (1); Xu, Ke-Wei (5)
Source: *Solid State Communications*, v 151, n 2, p 139-143, January 2011; **ISSN:** 00381098; **DOI:** 10.1016/j.ssc.2010.11.002; **Publisher:** Elsevier Ltd
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) Laboratoire SPMS, Cole Centrale Paris, CNRS UMR 8580, 92295 Chtenay-Malabry Cedex, France (4) Institute of Telecommunication Engineering, Air Force Engineering University, Xian 710077, Shaanxi, China (5) State Key Laboratory for Mechanical Behavior of Materials, Xian Jiaotong University, Xian 710049, Shaanxi, China
Abstract: We have performed first-principles calculations on the structural, electronic and magnetic properties of seven different 3d transition-metal (TM) impurity (V, Cr, Mn, Fe, Co, Ni and Cu) doped armchair (5,0) and zigzag (8,0) gallium nitride nanotubes (GaNNTs). The results show that there is distortion around 3d TM impurities with respect to the pristine GaNNTs for 3d TM-doped (5,5) and (8,0) GaNNTs. The change of total magnetic moment follows Hund's rule for 3d TM-doped (5,5) and (8,0) GaNNTs, respectively. The total density of states (DOS) indicates that Cr-, Mn-, Fe- and Ni-doped (5,5) GaNNTs as well as Cr-, Mn-, Ni- and Cu-doped (8,0) GaNNTs are all half-metals with 100% spin polarization. The study suggests that such TM-doped nanotubes may be useful in spintronics and nanomagnets.
 (35 refs)
Main heading: Spin polarization
Controlled terms: Nanotubes - Yarn - Density functional theory - Gallium nitride - Magnetic semiconductors - Impurities - Magnetic moments - Magnetic properties - Wide band gap semiconductors - Calculations - Transition metals - III-V semiconductors
Uncontrolled terms: E. density functional theories - Electronic and magnetic properties - First-principles calculation - Gallium nitride nanotubes - GaN nanotubes - Impurities in semi conductors - Total density of state - Transition metal atoms
Classification Code: 531 Metallurgy and Metallography - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 712.1 Semiconducting Materials - 761 Nanotechnology - 819.4 Fiber Products - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 932.1 High Energy Physics - 933.1 Crystalline Solids - 951 Materials Science
Funding Details: Number: 51071098, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2004CB619302, Acronym: -, Sponsor: Major State Basic Research Development Program of China;
Funding text: The authors would like to acknowledge the State Key Development for Basic Research of China (Grant No. 2004CB619302) and the National Natural Science Foundation of China (Grant No. 51071098) for providing financial support for this research.
Database: Compendex
Data Provider: Engineering Village

49. Temperature-insensitive acceleration sensing technology based on π phase of double fiber Bragg gratings

Liu, Qinpeng (1, 2); Qiao, Xueguang (1, 3); Zhao, Jianlin (1); Jia, Zhen'an (2); Fu, Haiwei (2)
Source: *Zhongguo Jiguang/Chinese Journal of Lasers*, v 38, n 2, February 2011; **Language:** Chinese; **ISSN:** 02587025; **DOI:** 10.3788/CJL20113802.0205006; **Article number:** 0205006; **Publisher:** Science Press
Author affiliation: (1) Shaanxi Key Laboratory of Optical Information Technology, School of Science, Northwestern Polytechnic University, Xi'an, Shaanxi 710072, China (2) Shaanxi Key Laboratory of Photoelectric, Gas-Oil Logging and Detecting, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (3) Institute of Fiber Bragg Grating Application Technology, Northwest University, Xi'an, Shaanxi 710069, China
Abstract: A novel temperature-independent technology based on π phase of double fiber Bragg grating (FBG) acceleration is proposed. The double fiber Bragg grating accelerometer is designed. The temperature response and acceleration response of the sensor versus wavelength are researched. The configuration and coating of the accelerometer are designed. The temperature-independent principle based on π phase of double fiber Bragg grating accelerometer is analyzed. The temperature response of FBGs and the acceleration response versus wavelength are analyzed. And the analytical formula of acceleration sensitivity is also deduced. Acceleration response and flat range of the accelerometer are analyzed by experiment. Experimental results indicate that precise measurement can be realized in the large range of temperature, and the sensitivity is 15.52 pm/(m·s-2), relative error is 3.06%. The sensor demonstrates extremely linear response, and linear fitting is 99.8%. There is a good flat response at frequencies less than the mechanical resonance frequency, which indicates that the accelerometer has good temperature-independent characteristic and can realize precise measurement. (17 refs)
Main heading: Fiber Bragg gratings

Controlled terms: Fiber optics - Accelerometers - Acceleration measurement - Acceleration
Uncontrolled terms: Acceleration response - Acceleration sensing - Acceleration sensitivity - Fiber bragg grating accelerometer - Mechanical resonance frequency - Temperature independents - Temperature response - Temperature-insensitive
Classification Code: 741.1.2 Fiber Optics - 943.1 Mechanical Instruments - 943.2 Mechanical Variables Measurements
Database: Compendex
Data Provider: Engineering Village

50. Experimental investigation of two-phase flow instabilities in low-mass-flux water wall tubes of supercritical circular fluidized bed boilers

Huang, Fan (1); Luo, Yushan (1); Wang, Haijun (1); Chen, Tingkuan (1); Wu, Yangyang (2)
Source: *Heat Transfer Engineering*, v 32, n 11-12, p 928-935, January 2011; **ISSN:** 01457632, **E-ISSN:** 15210537; **DOI:** 10.1080/01457632.2011.556357; **Publisher:** Taylor and Francis Ltd.
Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'An Jiaotong University, Xi'an 710049, China (2) Key Laboratory of Photoelectricity Gas Oil Logging and Detecting Ministry of Education, Xi'An Petroleum University, Xi'an, China
Abstract: For the purpose of disclosing the hydrodynamic flow characteristics, under the low mass velocity conditions of the 600-MW supercritical circular fluidized beds boilers, experimental studies on instability of two-phase flow in parallel vertical internally ribbed tubes were conducted. Two kinds of oscillations, pressure-drop oscillation and density-wave oscillation, have been observed. In the range of test parameters the effects of pressure, mass flux, inlet subcooling, compressible volume, exit throttle, and asymmetric heat flux to the two-phase instability were explored and analyzed. Indications from experiment data are: To increase system pressure, mass flux and inlet subcooling will intensify the stability of water wall tubes. To increase exit throttle will intensify the instability of water wall tubes. The bounding pressure and bounding mass flux of density-wave oscillations and the bounding pressure of pressure-drop oscillation have been obtained. Based on the results of testing and using a homogeneous model, the threshold relational expressions of instability were obtained. The results may be used for the design and safe operation of parallel vertical rifled water wall tubes of supercritical circular fluidized beds boilers. Copyright © Taylor and Francis Group, LLC. (9 refs)
Main heading: Stability
Controlled terms: Parallel flow - Drops - Fluidized bed process - Fluidization - Two phase flow - Fluidized beds - Pressure drop - Heat flux - Tubes (components)
Uncontrolled terms: Asymmetric heat fluxes - Density wave oscillation - Experimental investigations - Fluidized bed boilers - Internally ribbed tube - Pressure drop oscillations - Two-phase flow instabilities - Two-phase instability
Classification Code: 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 641.2 Heat Transfer - 802.3 Chemical Operations
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Funding text: This work was supported by the National Natural Science Foundation of China, number 10975111.
Database: Compendex
Data Provider: Engineering Village

51. Effect of Cr and Zr addition on the corrosion behaviour of copper in the chloride solution

Zhang, Ya Ni (1); Zheng, Mao Sheng (2); Zhu, Jie Wu (3)
Source: *Advanced Materials Research*, v 194-196, p 1253-1256, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.1253; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, No.18, Dianzi 2nd Road, Xi'an, 710065, China (2) Institute for Condensed Matter Physics and Materials, Northwest University, No.71, the West Section of the South Ring Road, Xi'an, 710069, China (3) School of Materials Science and Engineering, Xi'an Jiaotong University, No. 28, Xianning Road, Xi'an, 710049, China
Abstract: The corrosion behavior of CuCr, CuZr and CuCrZr alloys in NaCl solution is reported in this paper. The corrosion performance has been evaluated in NaCl solution atmosphere. The results show the corrosion resistance of pure copper decrease with the addition of the alloying elements initially. However, in the later exposure stages, the corrosion resistance of CuZr and CuCrZr alloy deteriorates significantly while the corrosion resistance of CuCr

alloy is slightly better than that of pure copper. In addition, the results of the electrochemical experiments indicate that the different behavior for the element Cr and Zr in the base material and corrosion scales lead to the change of the corrosion resistance. © (2011) Trans Tech Publications. (10 refs)
Main heading: Corrosion resistance
Controlled terms: Aluminum corrosion - Corrosive effects - Corrosion resistant alloys - Atmospheric corrosion - Cold working - Copper alloys - Copper corrosion - Electrochemical corrosion - Alloying elements - Binary alloys - Sodium chloride - Zirconium alloys
Uncontrolled terms: Base material - Chloride solutions - Corrosion behavior - Corrosion behaviour - Corrosion performance - Corrosion scale - CuCr alloy - CuCrZr alloy - Electrochemical experiments - Electrochemical techniques - NaCl solution - Pure copper - Zr addition
Classification Code: 443.1 Atmospheric Properties - 531 Metallurgy and Metallography - 531.1 Metallurgy - 535.2 Metal Forming - 539.1 Metals Corrosion - 541.1 Aluminum - 544.1 Copper - 544.2 Copper Alloys - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 801.4.1 Electrochemistry - 802.2 Chemical Reactions
Database: Compendex
Data Provider: Engineering Village

52. Effect of ECAP on the electrochemical behavior of chromium bronze

Zhang, Ya Ni (1); Xu, Chang Zheng (2); Zheng, Mao Sheng (3); Zhu, Jie Wu (4)
Source: *Advanced Materials Research*, v 239-242, p 98-101, 2011, *Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851234; **DOI:** 10.4028/www.scientific.net/AMR.239-242.98; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xian Shiyou University, No.18, Dianzi 2nd Road, Xian, 710065, China (2) Institute of Baoshan Iron and Steel Co., Baoshan Iron and Steel Co., Ltd., No. 655, Fujin Road, Baoshan Disrict, Shanghai, 201900, China (3) Institute for Condensed Matter Physics and Materials, Northwest University, No.71, the west section of the South Ring Road, Xian, 710069, China (4) School of Materials Science and Engineering, Xian Jiaotong University, No. 28, Xianning Road, Xian, 710049, China
Abstract: The effect of equal channel angular pressing (ECAP) process on the electrochemical behavior of chromium bronze in NaCl solution was investigated by three-electrode cell setup. The result shows the difference of electrochemical behavior between X plane and Y plane is still exist, and even in the unodd number passes for "route C" of ECAP process. ECAP process don't change the corrosion nature of chromiun bronze, but the corrosion potential of 12 passes ultra-fine grain (UFG) chromium bronze is a little more positive than that of 0 pass chromium bronze. For better understanding the effect of ECAP on the electrochemical behavior of chromium bronze, we chose the cold-rolled materials with the same composition as reference materials. The result shows that ECAP process is more benefical to electrochemical behavior of chromium bronze than cold-rolled process. On the other hand, the result of EIS also shows that ECAP process is more benefical to form compacted corrosion layers on the surface of specimens. © (2011) Trans Tech Publications. (7 refs)
Main heading: Equal channel angular pressing
Controlled terms: Electrochemical corrosion - Metal cladding - Chromium - Sodium chloride - Cold rolling
Uncontrolled terms: Chromium-bronze - Chromiun - Corrosion layers - Corrosion potentials - ECAP - Electrochemical behaviors - NaCl solution - Reference material - Three electrode cells - Ultra fine grain - X-Plane
Classification Code: 535.1.2 Rolling Mill Practice - 535.2 Metal Forming - 539.1 Metals Corrosion - 543.1 Chromium and Alloys - 801.4.1 Electrochemistry - 802.2 Chemical Reactions
Database: Compendex
Data Provider: Engineering Village

53. Kinetic mechanism of inorganic scale plugging removal at near wellbore zone by high power ultrasonic technology

Pu, Chun-Sheng (1, 2); Rao, Peng (1, 3); Xu, Hong-Xing (1); Wu, Fei-Peng (1)
Source: *Chongqing Daxue Xuebao/Journal of Chongqing University*, v 34, n 4, p 47-52, April 2011; **Language:** Chinese; **ISSN:** 1000582X; **Publisher:** Chongqing University
Author affiliation: (1) School of Petroleum Engineering, China University of Petroleum, Dongying 257061, Shangdong, China (2) School of Petroleum Engineering, Xi'an Petroleum University, Xi'an, 710065 Shaanxi, China (3) Qinghai Oil field, China National Petroleum Compang, Dunhuang 736200, Ganshu, China
Abstract: Based on the theory of solid and liquid coupling wave mechanics, the micro-dynamical characteristics caused by the transport of ultrasonic in porous media at near wellbore zone, including the elastic deformation of

rock, the elastic crossflow of pore fluid and frame solid, and fluid squirt-flow produced by pore elastic deformation, are analyzed. Analysis of kinetics of peristaltic difference of porosity radius in porous media is presented. The characteristics of the removal of inorganic scale particle in porous media by using ultrasonic technology are also studied. Besides, by applying high power ultrasonic technology, the acoustic energy gathering in porous media at near wellbore zone leading to fracture of part rocks is illustrated. According to these analyses, the micro-dynamical mechanisms, such as inorganic scale fragmentation, ultrasonic cavitations, ultrasonic friction, ultrasonic peristaltic transport and ultrasonic fracture-making, occurred in inorganic scale plugging removal by high power ultrasonic technology are proposed. (11 refs)
Main heading: Porous materials
Controlled terms: Pore fluids - Transport properties - Kinetics - Fracture - Elastic deformation
Uncontrolled terms: Dynamical characteristics - Dynamical mechanisms - High-power ultrasonics - Inorganic scale - Kinetics and mechanism - Peristaltic transport - Ultrasonic cavitation - Ultrasonic technology
Classification Code: 631.1 Fluid Flow, General - 631.3 Flow of Fluid-Like Materials - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

54. Controllable bulk solvent-free melt ring-opening polymerization (ROP) of l-lactide catalyzed by Ni(II) and Ni(II)-Ln(III) complexes based on the Salen-type Schiff-base ligand

Jin, Wen-Juan (1); Ding, Li-Qin (1, 2); Chu, Zeng (1); Chen, Lei-Lei (1); Lü, Xing-Qiang (1, 3); Zheng, Xiao-Yan (1); Song, Ji-Rong (1); Fan, Dai-Di (1)
Source: *Journal of Molecular Catalysis A: Chemical*, v 337, n 1-2, p 25-32, March 1, 2011; **ISSN:** 13811169; **DOI:** 10.1016/j.molcata.2011.01.009; **Publisher:** Elsevier B.V.
Author affiliation: (1) Shaanxi Key Laboratory of Degradable Medical Material, Shaanxi Key Laboratory of Physico-inorganic Chemistry, Northwest University, Taibai North Road 229, Xi'an 710069, Shaanxi, China (2) School of Chemistry and Chemical Engineering, Xi'An Shiyou University, Xi'an 710065, Shaanxi, China (3) State Key Laboratory of Structure Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, Fujian, China
Abstract: A monometallic (Ni2+, 1) and a series of bimetallic (Ni 2+-Ln3+, Ln = Ce (2); Ln = Nd (3); Ln = Sm (4); Ln = Eu (5); Ln = Tb (6); Ln = Ho (7); Ln = Tm (8)) complexes based on the Salen-type Schiff-base ligand H2L (H2L = N,N′_bis(3- methoxysalicylidene)ethylene-1,2-diamine) were synthesized and characterized by EA, FT-IR, ESI-MS and X-ray crystallography. The catalysis results showed that the two kinds of complexes with different active species, could efficiently catalyze the bulk solvent-free melt ring-opening polymerization (ROP) of l-lactide with moderate molecular weights and narrow molecular weight distributions. Especially for the series of bimetallic complexes 2-8, the involvement of rare ions effectively passivated the catalytic behaviors on the ROP of l-lactide, while was in favor of the increase of polymeric molecular weights (Mw or Mn) and the polymerization controllability, and the type of rare ions was important and influential factor contributing to the catalytic behaviors. © 2011 Elsevier B.V. All rights reserved. (44 refs)
Main heading: Transition metals
Controlled terms: Metal complexes - X ray crystallography - Catalysis - Ligands - Molecular weight distribution - Ethylene - Ring opening polymerization - Synthesis (chemical) - Nickel compounds - Solvents
Uncontrolled terms: Bimetallic complexes - Bulk solvents - Catalytic behavior - Influential factors - L-lactide - Mixed-metal complexes - Narrow molecular weight distributions - Schiff-base ligands
Classification Code: 531 Metallurgy and Metallography - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.2 Polymerization - 931.3 Atomic and Molecular Physics - 933.1.1 Crystal Lattice
Funding Details: Number: 20871098, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NWU, Sponsor: Northwest University; Number: 08YZZ48,09YJC23,20100014, Acronym: SKLSC, Sponsor: State Key Laboratory of Structural Chemistry;
Funding text: This work was supported by the National Natural Science Foundation of China (20871098), the State Key Laboratory of Structural Chemistry (20100014), the Provincial Key Item of Shaanxi, Graduate Innovation and Creativity Funds (08YZZ48), Graduate Cross-discipline Funds (09YJC23) and Bachelor Graduate Innovation and Creativity Funds of Northwest University in PR China.
Database: Compendex
Data Provider: Engineering Village

55. Metal-metal bonding and structures of metal-string complexes: Tripyridyldiamido pentanickel and pentacobalt from IR, Raman, and surface-enhanced Raman scattering spectra (*Open Access*)

Huang, Yu-Min (1); Lai, Szu-Hsueh (1); Lee, Sheng Jui (1); Chen, I-Chia (1); Huang, Cheng Liang (2); Peng, Shie-Ming (3); Wang, Wen-Zhen (4)
Source: *Journal of Physical Chemistry C*, v 115, n 5, p 2454-2461, February 10, 2011; **ISSN:** 19327447, **E-ISSN:** 19327455; **DOI:** 10.1021/jp110311t; **Publisher:** American Chemical Society
Author affiliation: (1) Department of Chemistry, National Tsing Hua University, Kuang Fu Road, Hsinchu, 30013, Taiwan (2) Department of Applied Chemistry, National Chiayi University, No. 300 Syuefu Road, Chiayi, 60004, Taiwan (3) Department of Chemistry, National Taiwan University, No. 1, Sec. 4, Roosevelt Road, Taipei 10617, Taiwan (4) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, No. 18 Second Dianzi Road, Xi'an, Shaanxi Province 710065, China
Abstract: We recorded infrared, Raman, and surface-enhanced Raman scattering (SERS) spectra of metal-string complexes Ni5(tpda)4X2 and Co5(tpda)4X2 (tpda = tripyridyldiamido, X = Cl-, NCS-) and free ligand tripyridyldiamine (H 2tpda) to determine their vibrational wavenumbers and the strength of the metal-metal bonds. For SERS measurements, these complexes were adsorbed on silver or gold nanoparticles in aqueous solution to eliminate the constraint of a crystal lattice and to maintain the complexes in thermal equilibrium. The spectra of SERS and Raman modes show insignificant deviation in spectral features and band positions. We observe a single breathing band of pyridyl in Co5(tpda)4X2, indicating the existence of only the symmetric form, whereas split pyridyl lines are observed for Ni 5(tpda)4X2 and assigned to arise because of a varied environment of coordination: square planar for the inner nickels and square pyramidal for the outer nickels in the complexes. From our analysis of the vibrational normal modes, we assign lines at 257/266 and 302/313 cm -1 to Ni5, at 287/284 and 355/360 cm-1 to Co5 symmetric stretching modes, and at 255/267 and 297/305 cm -1 and 319/323 and 391/392 cm-1 to Ni5 and Co5 asymmetric stretching, respectively, for complex with axial ligand Cl/NCS. The bonding in Ni-Ni is weaker than for Co-Co, consistent with the prediction from molecular-orbital theory. © 2011 American Chemical Society. (34 refs)
Main heading: Raman scattering
Controlled terms: Ligands - Cobalt alloys - Molecular orbitals - Solutions - Chemical bonds - Gold alloys - Surface scattering - Binary alloys - Gold nanoparticles
Uncontrolled terms: Asymmetric stretching - Metal-metal bonding - Molecular orbital theory - Surface-enhanced Raman scattering spectrum - Symmetric stretching - Thermal equilibriums - Vibrational normal modes - Vibrational wavenumbers
Classification Code: 547.1 Precious Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 741.1 Light/Optics - 761 Nanotechnology - 801.4 Physical Chemistry - 931 Classical Physics; Quantum Theory; Relativity - 931.3 Atomic and Molecular Physics
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

56. Hamiltonian of Green - Schwarz IIB superstring theory in AdS3 × S3 background

Ke, San-Min (1, 2); Wang, Chun (3); Wang, Zhan-Yun (4, 5); Jiang, Ke-Xia (6); Shi, Kang-Jie (4)
Source: *Chinese Physics Letters*, v 28, n 7, July 2011; **ISSN:** 0256307X, **E-ISSN:** 17413540; **DOI:** 10.1088/0256-307X/28/7/071101; **Article number:** 071101; **Publisher:** IOP Publishing Ltd
Author affiliation: (1) College of Science, Chang'An University, Xi'an 710064, China (2) Key Laboratory for Special Area Highway Engineering, Ministry of Education, Chang'An University, Xi'an 710064, China (3) College of Science, Xi'An Shiyou University, Xi'an 710065, China (4) Institute of Modern Physics, Northwest University, Xi'an 710069, China (5) School Oof Electronic Engineering, Xi'An Institute of Posts and Telecommunications, Xi'an 710121, China (6) Department of Physics, Engineering College of CAPF, Xi'an 710086, China
Abstract: We parameterize the Green-Schwarz IIB superstring in the AdS3 × S3 background under the light cone gauge by the method of Metsaev and Tseytlin in AdS3 and by the method of Rahmfeld and Rajaraman in S3. After some calculation, we obtain the corresponding Maurer - Cartan 1-forms and the action. Then we fix two bosonic variables x + = $_{\tau}$ and y5 = $_{\sigma,}$ perform the partial Legendre transformation of the remaining bosonic variables, and find a Lagrangian that is linear in velocity after eliminating the metric of the world sheet. We also give the Hamiltonian and prove that the system is local and the Poisson bracket of the theory can be well defined. Using these results, one can further study the properties of solution space, solution transformation and the structure of the flat current algebra of the superstring in the AdS3 × S3 background. © 2011 Chinese Physical Society and IOP Publishing Ltd. (35 refs)
Main heading: Hamiltonians
Controlled terms: Linear transformations - Bosons

Uncontrolled terms: 'current - 1-forms - Lagrangian - Legendre transformations - Poisson brackets - Properties of solutions - Solution space - Superstring theory
Classification Code: 921.3 Mathematical Transformations - 931.3 Atomic and Molecular Physics
Database: Compendex
Data Provider: Engineering Village

57. Corrosion behaviour of ultra-fine grain chromium bronze prepared by equal-channel angular pressing in Nacl solution

Zhang, Ya Ni (1); Xu, Chang Zheng (2); Zheng, Mao Sheng (3); Zhu, Jie Wu (4)
Source: *Advanced Materials Research*, v 194-196, p 554-557, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.554; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, No18, The Senond Dian Zi Er Road, Xi'an, 710065, China (2) Institute of Baoshan Iron and Steel Co., Baoshan Iron and Steel Co., Ltd, No. 655, Fujin Road, Baoshan Disrict, Shang Hai, 201900, China (3) Institute for Condensed Matter Physics and Materials, Northwest University, No.229, Tai Bai North Road, Xi'an, 710069, China (4) School of Materials Science and Engineering, Xi'an Jiaotong University, No.28, West Road, Xi'an, 710049, China
Abstract: The corrosion resistance of Ultra-fine grain (UFG) chromium bronze, prepared by Equal-channel angular pressing (ECAP), was investigated at room temperature and atmospheric pressure by electrochemistry technique and immersion experiment. The electrochemistry experiment showed that ECAP processing don't change the corrosion nature of chromiun bronze, the corrosion potential of UFG chromium bronze is a little more positive than that of CG chromium bronze, the differences are in the range of 10mV-20mV. Meantime, the immersion experiment showed that the UFG chromium bronze is more resistant to corrosion than its CG counterpart. The difference between UFG chromium bronze and its CG counterpart is also significant in terms of corrosion morphology. Though the structure is uniform corrosion, the microstructure is honeycomb-like morphology for CG chromium bronze and the corrosion pit is deeper. The shallower corrosion pits are displayed for UFG chromium bronze and grain drop off in local region. © (2011) Trans Tech Publications. (10 refs)
Main heading: Equal channel angular pressing
Controlled terms: Bronze - Atmospheric corrosion - Electrochemistry - Corrosive effects - Pitting - Atmospheric pressure - Corrosion resistance - Electrochemical corrosion - Grain size and shape - Sodium chloride
Uncontrolled terms: Chromium-bronze - Chromiun - Corrosion behavior - Corrosion behaviour - Corrosion morphology - Corrosion pits - Corrosion potentials - ECAP processing - Equal-channel angular pressing (ECAP) - Local region - NaCl solution - Room temperature - Ultra fine grain - Uniform corrosion
Classification Code: 443.1 Atmospheric Properties - 535.2 Metal Forming - 539.1 Metals Corrosion - 544.2 Copper Alloys - 546.2 Tin and Alloys - 801.4.1 Electrochemistry - 802.2 Chemical Reactions
Database: Compendex
Data Provider: Engineering Village

58. SSC resistance of super 13Cr martensitic stainless steel

Lu, Xiang-Hong (1); Zhao, Guo-Xian (1); Wang, Yu (1); Zhang, Jian-Bing (1); Xie, Kai-Yi (2)
Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 2, p 17-21+25, February 2011; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) Hengyang Valin MPM Co. Ltd., Hengyang 421001, Hunan, China
Abstract: H2S stress corrosion cracking (SSC) behavior of super 13Cr martensitic stainless steel at the simulated and standard environments has been studied with four-point bent test, electrochemical measurement as well as Scanning Electron Microscopy (SEM) analysis methods. The results show that the super 13Cr martensitic stainless steel behaves a high SSC susceptibility at the standard environments, and the cracks stem from surface corrosion pits because of the occurrence of H2S and Cl- making the pitting potential of super 13Cr martensitic stainless steel decreased significantly. While at the simulated environments, the SSC susceptibility of super 13Cr martensitic stainless steel decreased, and no cracks are found on the surface of the test specimen. (8 refs)
Main heading: Stress corrosion cracking
Controlled terms: Scanning electron microscopy - Residual stresses - Steel corrosion - Chlorine compounds - Martensitic stainless steel - Pitting - Cracks

Uncontrolled terms: Analysis method - Electrochemical measurements - Four-point - Pitting potential - Simulated environment - Surface corrosion - Test specimens
Classification Code: 539.1 Metals Corrosion - 545.3 Steel
Database: Compendex
Data Provider: Engineering Village

59. Design and analysis on practical automobile parameters recording system

Min, Wei (1); Juan, Wei (2)
Source: *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*, v 4, p 4-6, 2011, *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*; **ISBN-13:** 9781424487257; **DOI:** 10.1109/CSAE.2011.5952791; **Article number:** 5952791; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, China (2) School of Communication Engineering, Xidian University, Xi'an, China
Abstract: An electronic instrument which is called automobile parameters recorder can real-time gather and record the automobile driving conditions, which is very important to the driving safety and the analysis of the traffic accident responsibility. The working environment of the parameters recorder is severe and its external disturbance is strong. In order to insure proper operation, the strong anti-interference ability must be needed. The structure, principle, speed calculating methods, software designing and the anti-interference strategies of the system are mainly presented in this paper. © 2011 IEEE. (4 refs)
Main heading: Data acquisition
Controlled terms: Accidents - Reliability analysis - Automobile electronic equipment - Design
Uncontrolled terms: Analysis of the traffic - Automobile driving - Calculating methods - Design and analysis - Electronic instruments - External disturbances - Recording systems - Working environment
Classification Code: 662.4 Automobile and Smaller Vehicle Components - 715.2 Industrial Electronic Equipment - 723.2 Data Processing and Image Processing - 914.1 Accidents and Accident Prevention
Database: Compendex
Data Provider: Engineering Village

60. Stents cavity processing technique

Zhao, Ning (1); Sun, Yanping (1, 2)
Source: *Advanced Materials Research*, v 154-155, p 933-937, 2011, *Materials Processing Technologies*; **ISSN:** 10226680; **ISBN-13:** 9780878492046; **DOI:** 10.4028/www.scientific.net/AMR.154-155.933; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechenical Engineering, Northwestern Polytechnical University, China (2) School of Mechenical Engineering, Xi'An Shiyou University, China
Abstract: According to the characteristic of the thin-walled components, through the analysis which carries on to the complex stents structure and the material, This article found the reason of the components' distortion, and then designed the self-made jig, the self-made cutting tool, and choiced the optimized processing parameter and so on, summarized the processing technique of the stents cavity, improved the components processing quality and the processing efficiency. © (2011) Trans Tech Publications, Switzerland. (1 refs)
Main heading: Stents
Controlled terms: Cutting tools - Thin walled structures - Cutting
Uncontrolled terms: Distortion - Processing parameters - Processing quality - Processing technique - Stents cavity - Thin walled components
Classification Code: 462.4 Prosthetics - 603.2 Machine Tool Accessories
Database: Compendex
Data Provider: Engineering Village

61. Effects of process conditions on properties of nano-magnetic fluid

Chen, Bing (1); Fan, Yu Guang (1)

Source: *Advanced Materials Research*, v 194-196, p 700-703, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.700; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Electric One Road, Yata District, Xi'an, 710065, China
Abstract: In order to analyze the influences of process condition on kerosene-based Fe3O4, which are prepared in chemical co-precipitation, orthogonal experiment was used. How process condition influenced the size of nano-particles and saturation magnetization was studied, and the best process condition as 40ml×min-1 NaOH adding speed, 10ml×min -1 sodium oleate adding speed, 45°C reaction temperature, 15min holding time and pH value of 2 of coating sodium oleate was obtained. The performance of magnetic particles was characterized by transmission electron microscopy (TEM) and WSM vibration magnetometer. The diameter of Fe 3O4 nano-particles was less than 10nm, saturation magnetization was 2.66×104A×m-1, viscosity of nano-magnetic fluid was 18mPa×s, and density was 1.13×10 3kg×m-3. This research enhanced the foundation of using nano-magnetic fluid. © (2011) Trans Tech Publications. (5 refs)
Main heading: Saturation magnetization
Controlled terms: Chemical analysis - Coprecipitation - Magnetite - Nanoparticles - High resolution transmission electron microscopy - Nanomagnetics - Sodium - Sodium hydroxide - Magnetic fluids
Uncontrolled terms: Chemical co-precipitation - Holding time - Magnetic particle - Nano-magnetic fluid - Orthogonal design - Orthogonal experiment - pH value - Process condition - Reaction temperature - Sodium oleate - TEM
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 - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 933 Solid State Physics
Database: Compendex
Data Provider: Engineering Village

62. Research on FTA of fire and explosion in the crude oil gathering-transport combination station (*Open Access*)

Xue, Zhao-Mei (1)
Source: *Procedia Engineering*, v 11, p 575-582, 2011, *5th Conference on Performance-Based Fire and Fire Protection Engineering*; **ISSN:** 18777058; **DOI:** 10.1016/j.proeng.2011.04.698; **Publisher:** Elsevier Ltd
Author affiliation: (1) Safety Engineering Major, School of Electronic Engineering, Xi'an Shiyou University, Shaanxi Province, Xi'an 710065, China
Abstract: Based on FTA of safety-system engineering and analysis of risk or hazard factors of technological process and materials, it is determined of the fault tree factor table of crude oil gathering-transport combination station and established of the fire and explosion fault tree. By means of Boolean algebra simplification, the minimum path sets of the system are achieved. Then the occurrence probability of the fault tree top event is given together with the three importance-degree analysis of the basic event. Through the fault tree analysis, the paper discusses qualitatively and quantitatively the main factors of fire and explosion in combination station, and some corresponding improvement measures are proposed. The analysis result can provide theoretical direction for design, construction, management and maintenance of crude oil gathering-transport combination station. © 2011 Published by Elsevier Ltd. (7 refs)
Main heading: Fault tree analysis
Controlled terms: Explosions - Factor analysis - Risk analysis - Risk assessment - Boolean algebra - Crude oil - Petroleum transportation - Fires
Uncontrolled terms: Fire and explosion - Gathering-transport combination station - Hazard factors - Importance degrees - Improvement measure - Minimum path sets - Occurrence probability - Technological process
Classification Code: 512.1 Petroleum Deposits - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 914.1 Accidents and Accident Prevention - 914.2 Fires and Fire Protection - 921.1 Algebra - 922 Statistical Methods - 922.2 Mathematical Statistics
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

63. Research on morphology of N80 casing drilling steel fatigue crack growth with low-frequency noise

Wang, Dang Hui (1); Xu, Tian Han (1); Yao, Ting Zhen (1)
Source: *Advanced Materials Research*, v 239-242, p 2795-2798, 2011, *Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851234; **DOI:** 10.4028/www.scientific.net/AMR.239-242.2795; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Second Dian Zi Road, Xi'an, 710065, China
Abstract: Microstructure and low-frequency noise test were measured for N80 steel casing drilling, through SEM analyzed their morphology. Results showed that: (1) power spectral density of 1/f noise increases two orders of magnitude after fatigue crack growth. (2) 1/f noise parameters of $_{\gamma}$ and B are significantly increased, indicating that the process of fatigue produced more cracks, defects, and combination centers, which were proved by microstructure morphology. From the mechanism of fatigue crack growth of N80, defects and cracks resulting from fatigue are the numbers of kind of fluctuations. In essence, low-frequency noise is a type of fluctuations, which can serve as a viable tool to study the defects and the characterization of defects. © (2011) Trans Tech Publications. (12 refs)
Main heading: Fatigue crack propagation
Controlled terms: Morphology - Microstructure - Spectral density - Spurious signal noise
Uncontrolled terms: 1/F noise - Casing drilling - Fatigue crack growth - Low-Frequency Noise - N80 casing drilling steel9 - N80 Steel - Orders of magnitude - SEM - Steel fatigue
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

64. The coarsening of dendrite arm spacing during solidification of Al-Cu-Mn alloy

He, Zhi (1)
Source: *Advanced Materials Research*, v 239-242, p 2029-2033, 2011, *Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851234; **DOI:** 10.4028/www.scientific.net/AMR.239-242.2029; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) College of Material Science and Engineering, Xi'an Shiyou University, No18,Dianzi Er Road, Xi'an, 710065, China
Abstract: A secondary dendrite arm spacing coarsening model for multi-component alloy is proposed, where the back diffusion flux in solid is simplified by introducing the parameter of solute boundary layer,#i. The simplified model was applied to the predication of the secondary arm spacing of directional solidified Al-Cu-Mn alloy. The good agreement between the experimental results and the calculated lines shows that this simplified model is satisfactory for the prediction of dendrite arm coarsening during solidification in multi-component alloys. © (2011) Trans Tech Publications. © (2011) Trans Tech Publications. (11 refs)
Main heading: Aluminum alloys
Controlled terms: Coarsening - Copper alloys - Solidification - Ternary alloys - Manganese alloys - Boundary layers
Uncontrolled terms: Al-Cu-Mn alloy - Back diffusion - Dendrite arm spacing - Directional solidification - Multi-component alloy - Secondary arm spacing - Secondary dendrite arm spacing - Secondary dendrite coarsening - Simplified models - Solute boundary layer
Classification Code: 541.2 Aluminum Alloys - 543.2 Manganese and Alloys - 544.2 Copper Alloys - 802.3 Chemical Operations - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

65. The research of a drill bit for underground casing drilling in radial water jet penetration perforation

Zhu, Lin (1); Xiao, De Ming (1)
Source: *Advanced Materials Research*, v 189-193, p 3017-3021, 2011, *Manufacturing Process Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850312; **DOI:** 10.4028/www.scientific.net/AMR.189-193.3017; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) Department of Mechanical Engineering, Xi'an Shiyou University, No.18, Electronic Second Road East, Xi'an, 710065, China

Abstract: The drill bit for underground casing drilling was taken as object of study, and systemic research have been done for N80 casing drilling in Radial water jet deep penetration perforation. A new drill bit was designed after researched the actual drilling conditions, the characteristic of current commonly used drill bits and the property of blades edge materials. The reasonable original-edge angle, cutting parameters have been obtained for the new drill bit. We choose some other commonly used drill bit, and then contrast experiments result have been done by the new drill bit. The test results show that the new drill bit have the advantages of centering reliable, drilling smooth and sub-chip completely, and it can meet the requirements of the down hole casing drilling. © (2011) Trans Tech Publications. (7 refs)
Main heading: Bits
Controlled terms: Drills - Jets - Rock drilling
Uncontrolled terms: Casing - Casing drilling - Contrast experiment - Cutting parameters - Deep penetration - Edge angle - Test results - Water jets
Classification Code: 603.2 Machine Tool Accessories - 631.1 Fluid Flow, General
Database: Compendex
Data Provider: Engineering Village

66. Adaptive PID control strategy for the drilling-rig rotary system

Li, Lin (1); Nurzat (1); Zhang, Qizhi (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 32, n 1, p 158-161, January 2011; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Key Laboratory of Drilling-Rig Controlling Technology of Shaanxi Province, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In drilling process, the stick-slip oscillation of a drill bit can lead to stalling and an equipment failure of the drilling-rig rotary system, which reduces the drilling permeability and increases the drilling cost. In order to solve those problems, the present paper built a model to describe drilling-rig torsion characteristics and presented an adaptive PID control strategy to restrain the stick-slip oscillation of a drill bit. The paper proposed that the input state of the drilling-rig rotary system should be controlled linearly to compensate for the stick-slip oscillation caused by nonlinear characteristics of drilling rigs. The adaptive PID control was designed to ensure the tracking control and the optimal operating status of the system output when parameters of the drilling-rig rotary system were greatly variable and uncertain. Moreover, the adaptive PID control could elevate the speed of dynamic response and shorten the adjustment time of the system. A simulation experiment was conducted on models of drilling-rig torsion characteristics and the friction torsion between a drill bit and rocks. The results demonstrated that the adaptive PID control could restrain the stick-slip oscillation of a drill bit effectively, improve characteristics of the dynamic and static response and enhance the stability and reliability of the drilling-rig rotary system. (14 refs)
Main heading: Three term control systems
Controlled terms: Drilling rigs - Drills - Uncertainty analysis - Adaptive control systems - Stick-slip - Torsional stress - Slip forming
Uncontrolled terms: Adaptive Control - Adaptive-pid controls - Dynamic and static response - Nonlinear characteristics - Rotary systems - Stability and reliabilities - Stick-slip oscillation - Torsion characteristic
Classification Code: 412 Concrete - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 731.1 Control Systems - 922.1 Probability Theory - 931.1 Mechanics
Database: Compendex
Data Provider: Engineering Village

67. A new type of packing apparatus with high efficiency and the experimental research of its mass-transfer performance

Zhou, Sanping (1); Lu, Ximan (2)
Source: *Advanced Materials Research*, v 291-294, p 3245-3249, 2011, *Materials Processing Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851937; **DOI:** 10.4028/www.scientific.net/AMR.291-294.3245; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Mechanical Engineering Institute of Xi'an Shiyou University, Xi'an, 710065, China (2) Hualu Engineering and Technology CO.,LTD., Xi'an, 710065, China
Abstract: In this paper, a new type of packing apparatus with high efficiency and uniform flow was developed to deal with wall effect and scaling effect of packed column. A desorption experiment was made in a circular cold-model experiment packed column by using air-water-CO2 as working substance, determining the height of mass transfer

unit of liquid phase of the cold-model experiment packed column under different gas-liquid loads, with and without the packing apparatus. The experimental results show that under different spray densities, the height of mass transfer unit of liquid phase of the packed column added with the packing apparatus decreased approximately above 19% more than that not added the packing apparatus; the height of mass transfer unit of liquid phase lowers more with the decrease of the spray density, which demonstrated that the mass transfer efficiency of the packed column added with the packing apparatus was much higher than that of the column not added the packing apparatus. © (2011) Trans Tech Publications, Switzerland. (5 refs)
Main heading: Mass transfer
Controlled terms: Efficiency - Desorption - Liquids - Cold working - Air
Uncontrolled terms: Desorption tests - Experimental research - Gas liquids - Height of mass transfer unit - High efficiency - Liquid Phase - Mass transfer efficiency - Mass transfer performance - Packed column - Scaling effects - Spray density - Uniform flow - Wall effects
Classification Code: 535.2 Metal Forming - 641.3 Mass Transfer - 802.3 Chemical Operations - 804 Chemical Products Generally - 913.1 Production Engineering
Database: Compendex
Data Provider: Engineering Village

68. Investigation of phase composition and microstructure of the FeAl/Al 2O3 composites fabricated by mechanical alloying process and pressureless sintering process

Jiang, Tao (1)
Source: *Advanced Materials Research*, v 239-242, p 968-971, 2011, *Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851234; **DOI:** 10.4028/www.scientific.net/AMR.239-242.968; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Second Dian Zi Road, Xi'an, 710065, China
Abstract: The FeAl/Al2O3 composites were fabricated by pressureless sintering process. The FeAl intermetallics compounds powders were fabricated by mechanical alloying and heat treatment process. The FeAl intermetallics compounds powders and Al2O3 powders were mixed and the FeAl/Al2O3composite powders were prepared. The FeAl/Al2O3 composites bulks were fabricated by pressureless sintering process at 1600°C for 2h. The phase composition and microstructure of FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition and microstructure of the FeAl/Al2O3 composites sintered bulks were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were fabricated by mechanical alloying for 60h. The FeAl intermetallics compounds powders were fabricated by heat treatment at 800°C, 900°C and 1000°C. The microstructure showed that the mean particles size of the FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment process was rather fine and about 4-5μm. The XRD patterns results showed that there existed the FeAl phase and Al2O3 phase in sintered composites. The FeAl/Al 2O3 composites bulks exhibited the homogenous and compact microstructure. The mean particles size of FeAl was about 4-5μm and the mean particles size of Al2O3 was about 5-10μm. The density and relative density of the FeAl/Al2O3 composites increased gradually with the increase of FeAl content. © (2011) Trans Tech Publications. (12 refs)
Main heading: Microstructure
Controlled terms: Sintering - Phase composition - Alumina - Aluminum oxide - Iron alloys - Fabrication - Binary alloys - Powders - Iron compounds - Intermetallics - Mechanical alloying
Uncontrolled terms: Compact microstructure - Composite powders - FeAl intermetallics - FeAl/Al2O3 composites - Heat treatment process - Intermetallics compounds - Particles sizes - Pressureless sintering - Pressureless sintering process - Relative density - Sintered bulk - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

69. Study on the deep-hole honing of cavity of oxygen-free copper

Liu, Zhan Feng (1); Feng, Ya Zhou (1)
Source: *Advanced Materials Research*, v 189-193, p 3158-3161, 2011, *Manufacturing Process Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850312; **DOI:** 10.4028/www.scientific.net/AMR.189-193.3158; **Conference:** 2nd

International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi Er Road, Xi'an, 710065, China
Abstract: In this paper, taking the cavity in oxygen-free copper as the object, a set of special honing head suitable for processing the cavity structure of oxygen-free copper are designed and manufactured based on the characters and grindability of materials. The experiment of honing under different grinding parameters has been done for the new honing head. Through the theoretical analysis and test, reasonable honing parameters and optimal abrasive are identified for the honing head. The results shows that the machining-process of honing the cavity of oxygen-free copper by the designed a set of special honing head is conducted smoothly and achieved the good machining effect. © (2011) Trans Tech Publications. (3 refs)
Main heading: Oxygen
Controlled terms: Honing - Copper - Machining
Uncontrolled terms: Cavity structure - Deep-hole honing - Grindabilities - Grinding parameters - Oxygen-free copper
Classification Code: 544.1 Copper - 604.2 Machining Operations - 804 Chemical Products Generally
Database: Compendex
Data Provider: Engineering Village

70. MQL technology including the BTA deep hole drilling machining

Peng, Hai (1); Li, Tong (1)
Source: *Advanced Materials Research*, v 189-193, p 3071-3074, 2011, *Manufacturing Process Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850312; **DOI:** 10.4028/www.scientific.net/AMR.189-193.3071; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi 2nd Road, Xi'an, 710065, China
Abstract: The traditional cast-type method of BTA deep-hole drilling(such as BTA or DF) has cutting fluid consumption of the existence of large, high production costs, pollution of the environment and endangering the health of the operator and other problems. In this paper, the MQL technology (minimum lubrication technology) is applied to the method of BTA deep-hole machining (ie, near-dry deep-hole processing), we also analyzed the function and effect of MQL machining cutting fluid. Through the near-dry deep-hole drilling experiment, we find that a water-soluble cutting fluid has good atomization effect and the processing system also has fine effect of cooling and chip evacuation. We proposed mixed-use oil and the low-temperature cold spray methods to improve the tool lubrication and cooling effect for some great issues such as tool wear. © (2011) Trans Tech Publications. (3 refs)
Main heading: Cutting fluids
Controlled terms: Cutting tools - Temperature - Lubrication
Uncontrolled terms: Chip evacuation - Cold spray - Cooling effects - Deep-hole drilling - Hole processing - Low temperatures - Lubrication technology - MQL technology - Near-dry cutting - Processing systems - Production cost - Tool wear - Type methods
Classification Code: 603.2 Machine Tool Accessories - 607.2 Lubrication - 641.1 Thermodynamics
Database: Compendex
Data Provider: Engineering Village

71. Cutting test and analysis of the emulsified deep-hole cutting fluid

Peng, Hai (1); He, Dan (1)
Source: *Advanced Materials Research*, v 189-193, p 3066-3070, 2011, *Manufacturing Process Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850312; **DOI:** 10.4028/www.scientific.net/AMR.189-193.3066; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi 2nd Road, Xi'an, 710065, China
Abstract: This paper depicts the types and functions of cutting fluid, compared functions, advantages and disadvantages with several other cutting fluids. According to the characteristics of BTA deep-hole machining and

cutting fluid requirements, some of cutting fluids were chose to do the drilling test. In order to satisfy the lubrication and cooling effect of the cutter, the oil-in-water type cutting fluid which through a comparative analysis of the experiment was used in the deep-hole machining, in the meanwhile, it can reduce the economic costs and environmental pollution. © (2011) Trans Tech Publications. (5 refs)
Main heading: Cutting fluids
Controlled terms: Drilling fluids - Emulsification - Water pollution
Uncontrolled terms: Comparative analysis - Cooling effects - Cutting test - Deep-hole machining - Drilling tests - Economic costs - Emulsified-type - Environmental pollutions - Oil-in-water
Classification Code: 453 Water Pollution - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

72. Experimental research on superlong deep-hole drilling processing technology for steel of 4145H drill collar

Liu, Zhanfeng (1); Li, Ruiliang (1)
Source: *Advanced Materials Research*, v 201-203, p 2597-2600, 2011, *Advanced Manufacturing Systems*; **ISSN:** 10226680; **ISBN-13:** 9783037850398; **DOI:** 10.4028/www.scientific.net/AMR.201-203.2597; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi Er Road, Xi'an, Shaanxi (710065), China
Abstract: Through the analysis for steel of 4145H drill collar, Research into the various factors of cutting, such as the cutting tool material, cutting-tool angle and cutting parameters, combined with the actual structure of the workpiece and the superlong deep-hole processing method for study. In the test, the machining process is analyzed, especially the process of boring and honing. The test result indicates that the trepanning process is stable and reliable to solve the superlong deep hole (#71mm×7500mm) of 4145H drill collar steel processing problems of production if the optimizing cutting method is appropriate and the cutting tools and the cutting parameters are rational. © (2011) Trans Tech Publications. (2 refs)
Main heading: Drills
Controlled terms: Cutting - Drilling - Turning
Uncontrolled terms: Cutting parameters - Deep holes - Deep-hole drilling - Drill collar - Drilling technology - Experimental research - Hole processing - Machining Process - Processing technologies - Steel processing - Superlong deep-holes processing - Test results - Tool angle - Tool materials - Work pieces
Classification Code: 603.2 Machine Tool Accessories - 604.2 Machining Operations
Database: Compendex
Data Provider: Engineering Village

73. Influence of volume fraction of bainite on mechanical properties of X80 pipeline steel with excellent deformability

Zhang, Xiaoyong (1); Gao, Huilin (1); Zhang, Xueqin (2); Yang, Yan (1)
Source: *Materials Science Forum*, v 695, p 271-274, 2011, *Eco-Materials Processing and Design XII*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-13:** 9783037852224; **DOI:** 10.4028/www.scientific.net/MSF.695.271; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) CNPC Tubular Goods Research Institute, Xi'an 710065, China
Abstract: The pipeline steel with excellent deformability with ferrite and bainite dual-phase microstructure are obtained by inter-critically accelerating cooling method, aiming to get good deformation capability of avoiding failure from the geological disasters such as landslides and earthquake. The influence of volume fraction of bainite on the mechanical properties of dual-phase pipeline steels was investigated by means of microscopic analysis method and mechanical properties testing. The results indicated that both yield strength and ultimate tensile strength of the steels increase almost linearly with the increasing volume fraction of bainite, while ductility, work hardening exponent and impact absorption energy decrease. When the volume fraction of bainite is about 50%, the yield strength, the yield strength/ tensile strength ratio (Y/T), work hardening exponent, uniform elongation and impact absorption energy of X80 pipeline steels with excellent deformability is 665MPa, 0.8, 0.12, 8% and 245J respectively. © (2011) Trans Tech Publications. (12 refs)

Main heading: Volume fraction
Controlled terms: Pipelines - Strain hardening - Yield stress - Deformation - Steel pipe - Bainite - Disaster prevention - Tensile strength - Disasters
Uncontrolled terms: Deformation capability - Dual phase microstructure - Mechanical properties testing - Microscopic analysis - Pipeline steel - Ultimate tensile strength - Work hardening exponent - X80 pipeline steels
Classification Code: 531.2 Metallography - 537.1 Heat Treatment Processes - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.1 Thermodynamics - 914.1 Accidents and Accident Prevention - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

74. A fault diagnosis of suck rod pumping system based on wavelet packet and RBF network

Wu, Wei (1); Sun, Wen Li (1); Wei, Hang Xin (1)
Source: *Advanced Materials Research*, v 189-193, p 2665-2669, 2011, *Manufacturing Process Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037850312; **DOI:** 10.4028/www.scientific.net/AMR.189-193.2665; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi Er Road East, Xi'an, 710065, China
Abstract: In order to diagnose the fault of the pump oil well, a fault diagnosis method based on the wavelet packet and the neural network is introduced. Firstly, the dynamometer card of the pumping well is gathered and normalized, then these data are decomposed by using three layers of wavelet packet. It makes up eight energy eigenvectors which are regarded as the input eigenvector of the RBF network. The experiment indicates that the method can not only detect the fault of the pumping oil well but also can recognize the fault type of it. It shows that the method is very effective for safety protection and fault diagnosis in the pumping oil well. © (2011) Trans Tech Publications. (9 refs)
Main heading: Eigenvalues and eigenfunctions
Controlled terms: Failure analysis - Pumps - Wavelet analysis - Fault detection - Radial basis function networks - Dynamometers - Packet networks - Oil well flooding
Uncontrolled terms: Dynamometer card - Eigenvector - Fault diagnosis - RBF Network - Wavelet packet
Classification Code: 511.1 Oil Field Production Operations - 618.2 Pumps - 921 Mathematics - 943.1 Mechanical Instruments
Database: Compendex
Data Provider: Engineering Village

75. Experimental study on deep hole drilling gamma titanium aluminide

Zhu, L. (1); Chen, X. (1); Viehweger, B. (2)
Source: *Key Engineering Materials*, v 455, p 293-296, 2011, *Manufacturing Automation Technology Development*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9780878492305; **DOI:** 10.4028/www.scientific.net/KEM.455.293; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China (2) Fachlty 3, Brandenburg University of Technology, Cottbus, Germany
Abstract: γ–titanium aluminide is a new intermetallic structural 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. But high strength, hardness and brittleness of the material also make processing difficultly. High cutting force and cutting temperature affecting a decline in cutting lifetime and cutting efficiency. 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 drills with appropriate tool material and geometric parameters. The experimental result shows: this drill bit is stable and efficient in drilling and can achieve a good quality. (4 refs)
Main heading: Fracture mechanics
Controlled terms: Drills - Titanium alloys - Cutting - High strength alloys - Ablation
Uncontrolled terms: Cutting performance - Cutting temperature - Deep hole drilling - Deep holes - Gamma-titanium aluminide - High specific strength - High temperature resistance - Titanium aluminides
Classification Code: 531.1 Metallurgy - 542.3 Titanium and Alloys - 603.2 Machine Tool Accessories - 641.2 Heat Transfer - 931.1 Mechanics
Database: Compendex

Data Provider: Engineering Village

76. Study on a novel photonic crystal temperature sensor

Fu, Hai-wei (1); Zhao, Hui (2); Qiao, Xue-guang (1); Li, Yan (2); Zhao, Da-zhuang (2); Yong, Zhen (2)
Source: *Optoelectronics Letters*, v 7, n 6, p 419-422, November 2011; **ISSN:** 16731905; **DOI:** 10.1007/s11801-011-0065-4; **Publisher:** Springer Verlag
Author affiliation: (1) Department of Physics, Northwest University, Xi'an 710069, China (2) School of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In this paper, a model of photonic crystal temperature sensor based on crystal microcavity in a straight photonic crystal waveguide is proposed. The transmission characteristics of light in the sensor under different temperatures are simulated by using finite-difference time-domain (FDTD) method. The thermal expansion and thermal-optic effects of silicon are taken into account. The results show that the resonant wavelength of microcavity increases linearly as the temperature rising. The wavelength shift along with temperature is 6. 6 pm /°C. © 2011 Tianjin University of Technology and Springer-Verlag Berlin Heidelberg. (10 refs)
Main heading: Photonic crystals
Controlled terms: Microcavities - Finite difference time domain method - Thermal expansion - Temperature sensors - Light transmission - Optical waveguides
Uncontrolled terms: Crystal microcavity - Crystal temperatures - Photonic crystal waveguide - Resonant wavelengths - Temperature rising - Transmission characteristics - Wavelength shift
Classification Code: 641.1 Thermodynamics - 714 Electronic Components and Tubes - 714.3 Waveguides - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 921 Mathematics - 944.5 Temperature Measuring Instruments - 951 Materials Science
Funding Details: Number: 60727004, Acronym: -, Sponsor: -; Number: 09JS041, Acronym: -, Sponsor: -; Number: 2007AA03Z413, Acronym: -, Sponsor: -;
Funding text: * This work has been surpported by the National 863 Project of China (No.2007AA03Z413), the National Nature Science Foundation of China (No. 60727004), and the Project of Education Office of Shanxi Province of China (No.09JS041). ** E-mail: hwfu@xsyu.edu.cn
Database: Compendex
Data Provider: Engineering Village

77. Analysis of cased hole resistivity logging signal frequency effect on detection

Wu, Yinchuan (1); Zhang, Jiatian (1); Yan, Zhengguo (1)
Source: *Lecture Notes in Electrical Engineering*, v 98 LNEE, n VOL. 2, p 247-252, 2011, *Electrical Engineering and Control - Selected Papers from the 2011 International Conference on Electric and Electronics, EEIC 2011*; **ISSN:** 18761100, **E-ISSN:** 18761119; **ISBN-13:** 9783642217647; **DOI:** 10.1007/978-3-642-21765-4_31; **Publisher:** Springer Verlag
Author affiliation: (1) Key Laboratory of Photoelectricity Gas and Oil Logging, Detecting Ministry of Education, Xi'An Shiyou University, Xi'an 710065, China
Abstract: The skin effect of metal casing is analyzed, a ultra-low frequency signal source is put forward in cased hole resistivity logging technology. In this technology, the direct detection signal order is microvolt, the useful signal order is nanovolt. Based on the characteristics of this technology, the phase sensitive technique is put forward in this paper for improving the accuracy of data acquisition. The logging signal frequency effect on detection is analyzed, and the specific solution is given. The results have been applied in design of signal source and weak signal acquisition system. © 2011 Springer-Verlag Berlin Heidelberg. (6 refs)
Main heading: Data acquisition
Controlled terms: Signal detection
Uncontrolled terms: Cased hole - Direct detection - Phase sensitive detection - Phase-sensitive technique - Resistivity logging - Signal frequencies - Signal source - Ultra low frequencies
Classification Code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing
Database: Compendex
Data Provider: Engineering Village

78. Origin of calcite cement in the sandstone reservoirs of the upper triassic Yanchang formation in southeast of Ordos basin

Yuan, Zhen (1, 2); Li, Wen-Hou (1)
Source: *Jilin Daxue Xuebao (Diqiu Kexue Ban)/Journal of Jilin University (Earth Science Edition)*, v 41, n SUPPL. 1, p 17-23, September 2011; **Language:** Chinese; **ISSN:** 16715888; **Publisher:** Editorial Board of Jilin University
Author affiliation: (1) Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China
Abstract: By applying theory of petrology, mineralogy and geochemistry, the cause of calcite cement commonly in Yanchang Formation of southeast Ordos basin are studied systemically. The results show that the calcite cement distributed in the reservoir with micritic matrix and crystal-stock structure. The calcite cemens have relatively lighter carbon and oxygen isotope and the #13OPDB ranges from 2.50‰ to -9.83‰, #13OPDB ranges from -10.58‰ to -27.24‰. The majority is closely related to the decarboxylation of organic matter during the middle diagenetic stage of slight saline-brackish lake in closed-semi-closed environment. And the minority is related to methane generation. On this basis, the effects of calcite cement for reservoir are calculated. The elimination of primary porosity is 17.29%. (19 refs)
Main heading: Carbon
Controlled terms: Cements - Crystal structure - Isotopes - Oxygen - Carboxylation - Reservoirs (water) - Calcite - Metamorphic rocks
Uncontrolled terms: Calcite-cement - Diagenetics - Ordos Basin - Oxygen isotopes - Yanchang Formation
Classification Code: 412.1 Cement - 441.2 Reservoirs - 482.2 Minerals - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 933.1.1 Crystal Lattice
Database: Compendex
Data Provider: Engineering Village

79. Research on the effects of geometric parameters of ring blank on cold profiled ring rolling process

Li, Lanyun (1); Li, Xiao (1); He, Zhi (1)
Source: *International Journal of Materials and Product Technology*, v 42, n 3-4, p 195-208, 2011; **ISSN:** 02681900; **DOI:** 10.1504/IJMPT.2011.045464; **Publisher:** Inderscience Publishers
Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Material Science and Engineering, Xi'An Shiyou University, Xi'an, 710065, China
Abstract: Cold profiled ring rolling is an advanced but complex metal forming process under coupled effects with multi-factors, such as geometric parameters of ring blank and rolls, forming process parameters, material properties, friction, etc. Among these factors, the geometric parameters of ring blank play significant roles because they directly affect the dimensional accuracy and internal quality of deformed ring. In this paper, through numerical simulation for typical cold profiled ring rolling process (cold T-shaped ring rolling) based on dynamic elastic-plastic 3D-FEM under ABAQUS/explicit environment, the effects of three geometric parameters of ring blank (average radius, radial thickness and axial width) on filling behaviour, diameter expansion and forming quality around the groove entrance have been investigated. It can be found that, 1 increasing the average radius benefits the ring diameter expansion and filling behaviour, but worsens the forming quality of groove entry 2 increasing the radial thickness is harmful to the diameter expansion, filling behaviour and the forming quality of groove entry 3 increasing the axial width benefits the filling behaviour, but does harm to the diameter expansion and the forming quality of groove entry. These achievements provide an important basis for design and optimisation of ring blank dimensions in cold profiled ring rolling process. © 2011 Inderscience Enterprises Ltd. (26 refs)
Main heading: ABAQUS
Controlled terms: Expansion - Geometry - Filling - Cold rolling - Elastoplasticity
Uncontrolled terms: Average radius - Axial width - Cold profiled ring rollings - Complex metal forming - Diameter expansions - Dimensional accuracy - Process parameters - Radial thickness
Classification Code: 535.1.2 Rolling Mill Practice - 691.2 Materials Handling Methods - 723.5 Computer Applications - 921 Mathematics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

80. The shale gas potential of China

Wang, Xiuli (1); Wang, TianJiao (2)
Source: *SPE Production and Operations Symposium, Proceedings*, p 706-712, 2011, *Society of Petroleum Engineers - SPE Production and Operations Symposium 2011, SPEOKC 2011*; **ISBN-13:** 9781617827112; **DOI:** 10.2118/142304-ms; **Publisher:** Society of Petroleum Engineers (SPE)

Author affiliation: (1) XGas, China (2) Xi'an Petroleum University, China
Abstract: China is energy hungry and shale gas, a recent engineering feat in the United States, is likely to prove an invaluable asset for China as well. Currently about 70% of China's total energy is still from coal and only 4% derives from natural gas. Natural gas per capita in China is about 2.2 thousand cubic feet per year while, in the United States, it is about 77.4. To reach a semblance of a developed country's energy profile, China has to increase its natural gas usage and this is an expressed policy of the government. With growing international demand in natural gas, shale gas has become the brightest spot. It is an unconventional energy source, extracted from reservoirs with very low porosity (2% or less) and permeability (0.1 to 0.0001 md or even less). There are abundant reserves around the world, about 16,000 trillion cubic feet (Tcf). In China, shale gas resources are widely distributed in the Sichuan, Tarim, and Ordos basins and other continental sedimentary basins with shale gas formation conditions. The estimated potential shale gas resources in China amount to about 1,084 to 3,530 Tcf. Despite this potential, China's shale gas exploration and development is still at its infancy. This paper investigates the status of shale gas development in China and describes shale gas accumulations, their geographical distribution and the economic value of shale gas production to the country. If, emulating the United States experience, where in the course of less than ten years shale gas contribution to total gas production increased from essentially zero to 17% (estimated), Chinese shale gas could deliver 1.8 Tcf of gas (from a total projected gas consumption of 10.6 Tcf) with an annual value of preventable imports of about $ 18 billion by 2020. Copyright 2011, Society of Petroleum Engineers. (19 refs)
Main heading: Shale gas
Controlled terms: Petroleum prospecting - Natural gas - Geographical distribution - Energy resources - Gases - Geological surveys
Uncontrolled terms: Developed countries - Gas accumulation - Gas consumption - Gas development - Gas exploration - Gas productions - International demand - Sedimentary basin
Classification Code: 405.3 Surveying - 481.1 Geology - 512.1.2 Petroleum Deposits : Development Operations - 512.2 Natural Gas Deposits - 522 Gas Fuels - 525.1 Energy Resources and Renewable Energy Issues - 902.1 Engineering Graphics
Database: Compendex
Data Provider: Engineering Village

81. Fuzzy comprehensive evaluation of the garment CAD

Yang, Xiao-Xia (1); Zhang, Xiao-Ping (1); Min, Yan (2)
Source: *Advanced Materials Research*, v 267, p 843-847, 2011, *Manufacturing Systems and Industry Application*; **ISSN:** 10226680; **ISBN-13:** 9783037851517; **DOI:** 10.4028/www.scientific.net/AMR.267.843; **Conference:** 2011 International Conference on Materials Engineering for Advanced Technologies, ICMEAT 2011, May 5, 2011 - May 6, 2011; **Sponsor:** National University of Singapore; Asia Pacific Human-Computer Interaction Research Center; **Publisher:** Trans Tech Publications
Author affiliation: (1) College of Textile and Garment, Qingdao University, Qingdao 266071, China (2) Information Center, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The fuzzy synthesis judgment is a very effective multi-factor decision method to make the comprehensive appraisal to the things affected by many factors. Affected by many uncertain factors, the garment CAD is suited with the fuzzy synthesis judgment theory to carry on the quality synthetic evaluation. Based on the fuzzy comprehensive evaluation theory and step, it is established that the second-level fuzzy synthesis judgment model of garment CAD, by carrying on the questionnaire survey to the educational circles, the garment CAD software developer, the enterprise's experts, and the rich experienced personnel. The judgment factor and the factor weight evaluated by the experts also can be regarded as the clothing enterprises' reference when they select and purchase the garment CAD. © (2011) Trans Tech Publications, Switzerland. (4 refs)
Main heading: Computer aided design
Controlled terms: Surveys - Quality control - Fuzzy set theory
Uncontrolled terms: CAD softwares - Decision method - Factor weight - Fuzzy comprehensive evaluation - Judgment factor - Judgment matrix - Judgment model - Multi-factor - Questionnaire surveys - Second-level - Synthetic evaluation - The fuzzy synthesis judgment - Uncertain factors
Classification Code: 723.5 Computer Applications - 913.3 Quality Assurance and Control - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
Database: Compendex
Data Provider: Engineering Village

82. Rough truth degrees of formulas and approximate reasoning in rough logic

She, Yanhong (1); He, Xiaoli (1); Wang, Guojun (2)
Source: *Fundamenta Informaticae*, v 111, n 2, p 223-239, 2011; **ISSN:** 01692968; **DOI:** 10.3233/FI-2011-561;
Publisher: IOS Press
Author affiliation: (1) Xi'An Shiyou University, Xi'an 710065, China (2) College of Mathematics and Information Science, Shaanxi Normal University, Xi'an, 710062, China
Abstract: A propositional logic PRL for rough sets was proposed in [1]. In this paper, we initially introduce the concepts of rough (upper, lower) truth degrees on the set of formulas in PRL. Then, by grading the rough equality relations, we propose the concepts of rough (upper, lower) similarity degree. Finally, three different pseudo-metrics on the set of rough formulas are obtained, and thus an approximate reasoning mechanism is established. (29 refs)
Main heading: Grading
Controlled terms: Approximation theory - Formal logic - Rough set theory
Uncontrolled terms: Approximate reasoning - Equality relations - Propositional logic - Pseudo-metrices - Rough logic - Similarity degree - Truth degree
Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

83. Research on the remote monitoring and control system for heating supply pipeline based on GPRS and ZigBee

Wang, Liping (1); Wei, Qianru (1); Wei, Hangxin (2)
Source: *Applied Mechanics and Materials*, v 65, p 117-121, 2011, *Mechatronic Systems and Automation Systems, MSAS 2011*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037851845; **DOI:** 10.4028/www.scientific.net/AMM.65.117; **Conference:** 2011 International Conference on Mechatronic Systems and Automation Systems, MSAS 2011, July 23, 2011 - July 24, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xijing University, TaiBai road, Xi An, 710071, China (2) Xi'an Shiyou University, 24-502, 18 Dianzierlu, Xi'an, 710065, China
Abstract: In order to solve the problems of parameters acquisition for heating supply pipeline, the design and implementation of remote monitoring and control system based on GPRS is presented. In addition, the ZigBee technology is also used to reduce the power consumption of the terminal instruments. The hardware of this system includes three layers: master station (monitoring computer), relay station and slave station (terminal instruments). The software system has been developed by using configuration software. The application of the system shows that the method in this paper has more stability and power saving. © (2011) Trans Tech Publications. (6 refs)
Main heading: Zigbee
Controlled terms: Computer hardware - Control systems - Monitoring - Pipelines - Remote control
Uncontrolled terms: Configuration software - GPRS - Heat supply - Power savings - Relay stations - Remote monitoring and control - Software systems - Three-layer - Zig-Bee - ZigBee technology
Classification Code: 619.1 Pipe, Piping and Pipelines - 722 Computer Systems and Equipment - 722.3 Data Communication, Equipment and Techniques - 731.1 Control Systems
Database: Compendex
Data Provider: Engineering Village

84. Research on comprehensive evaluation method based on mixed efficacy function and structural equation modeling

Wu, Xun (1); Li, Qiang (2)
Source: *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*, p 315-317, 2011, *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*; **ISBN-13:** 9780769544649; **DOI:** 10.1109/BCGIn.2011.85; **Article number:** 6003911;
Publisher: IEEE Computer Society
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, China (2) School of Economics and Finance, Xi'an Jiaotong University, Xi'an, China
Abstract: Based on the output values of the index of evaluation forms and integration thinking of the combined evaluation techniques, this essay forms an indexed comprehensive evaluation method with the integration of mixed efficacy function and structural equation modeling. © 2011 IEEE. (5 refs)
Main heading: Function evaluation

Controlled terms: Integral equations
Uncontrolled terms: Comprehensive evaluation - Output values - Structural equation modeling
Classification Code: 921.2 Calculus - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

85. High temperature-pressure FBG sensor applied to special environments

Wang, Hong-Liang (1); Song, Juan (1); Feng, De-Quan (1); Wu, Hua-Chun (1)
Source: *Guangxue Jingmi Gongcheng/Optics and Precision Engineering*, v 19, n 3, p 545-551, March 2011;
Language: Chinese; **ISSN:** 1004924X; **DOI:** 10.3788/OPE.20111903.0545; **Publisher:** Chinese Academy of Sciences
Author affiliation: (1) Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Ministry of Education, Xi'an Shiyou University, Xi'an 710065, China
Abstract: With the aim to serve in bad environments and to meet the requirements of real-time and long-term service, a new kind of double parameters and high temperature-pressure fiber Bragg grating(FBG) sensor with a temperature-compensator was put forward. Firstly, the constant elasticity alloy was selected based on the special environments for the sensor. Then, a new kind of structure combined with a circular cylinder and a circular diaphragm was designed by taking the optimized constant elasticity alloy as the substrates. Finally, three experiments of temperature, pressure and temperature-pressure were performed. Experimental results indicate that the sensor not only has great temperature and pressure detection ranges, but also can realize the linear measurement within the ranges of 0~60 MPa and 0~350 °C. The experiments offer the pressure sensitivities in 0.0136 nm/MPa, temperature sensitivity in 0.0201 nm/°C, and the static errors in 0.046% and 0.029%, respectively. These indicators can meet the requirements of practical engineering applications. (15 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Fiber optic sensors - Circular cylinders - Elasticity
Uncontrolled terms: Fiber Bragg Grating Sensors - High temperature and high pressure - Optical fiber gratings - Practical engineering applications - Pressure and temperature - Temperature and pressures - Temperature compensators - Temperature sensitivity
Classification Code: 741.1.2 Fiber Optics
Database: Compendex
Data Provider: Engineering Village

86. Design and application of forced heat dispersing device of superdeep drilling rig in high temperature

Bao, Zefu (1); Dai, Haifeng (1, 2); Zang, Peng (1); Wang, Jiangping (1)
Source: *Advanced Materials Research*, v 339, n 1, p 561-565, 2011, *Advanced Manufacturing Systems*; **ISSN:** 10226680; **ISBN-13:** 9783037852491; **DOI:** 10.4028/www.scientific.net/AMR.339.561; **Conference:** 2011 International Conference on Materials and Products Manufacturing Technology, ICMPMT 2011, October 28, 2011 - October 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xian Petroleum University, Shaanxi, Xian, China (2) Hebei Huayuan Worldbest Petroleum Machinery Co. Ltd., Hebei, China
Abstract: The system about the eddy current brake in drilling rig is very important and friable component. The temperature will arise with the winch lift the heave object and break, which will affect the winch. The conventional drilling rigs are cooled by air blast or water circulation, which always can't content the request of drilling rig winch brake system. For this situation, I am to design and manufacture the forced heat-dispersing unit for ZJ70/4500DZ drilling rig winch. This device unified the formerly forced-air cooling and water cooling characteristic, and what's more, it consists of air cooler, water tank, water pump valves, manifold and instruments. It has lots of advantages, for example: structure compact, easy installation and maintenance and so on. The article in the bases of analyses the ZJ70 drilling rig winch system characteristic and the theory of the formerly heat-dispersing, to introduced the approach of design and composition design. © (2011) Trans Tech Publications. (3 refs)
Main heading: Water tanks
Controlled terms: Brakes - Cranes
Uncontrolled terms: Air blast - Air cooler - Brake systems - Composition design - Conventional drilling - Design and application - Eddy current brakes - Forced air cooling - Forced heat dispersing device - High temperature - Higher temperatures - System characteristics - Water circulation - Water cooling - Water pump
Classification Code: 446.1 Water Supply Systems - 602 Mechanical Drives and Transmissions - 619.2 Tanks - 693.1 Cranes

Database: Compendex
Data Provider: Engineering Village

87. Research of sensor about detecting sand production in oil and gas wells

Dang, Ruirong (1); Zhang, Weina (1); Gao, Guowang (1)
Source: *Proceedings - IEEE 2011 10th International Conference on Electronic Measurement and Instruments, ICEMI 2011*, v 1, p 180-183, 2011, *Proceedings - IEEE 2011 10th International Conference on Electronic Measurement and Instruments, ICEMI 2011*; **ISBN-13:** 9781424481590; **DOI:** 10.1109/ICEMI.2011.6037708; **Article number:** 6037708; **Conference:** IEEE 2011 10th International Conference on Electronic Measurement and Instruments, ICEMI 2011, August 16, 2011 - August 18, 2011; **Sponsor:** Chinese Institute of Electronics (CIE); Computer Measurement Group; IEEE Beijing Section; National Natural Science Foundation of China; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'an Shiyou University, Xi'an, China
Abstract: There's no report on sand production detection sensor at home, and no application in heavy oil abroad. In order to meet the needs of heavy oil sand production detection, a PZT sensor is developed which used piezoelectric material. The performance test and a large number of indoor and field experiments show that the sensor can not only distinguish the strong noise and sand signal, but also have stable performance and meet the requirements of sand production of heavy oil. © 2011 IEEE. (8 refs)
Main heading: Crude oil
Controlled terms: Oil sands - Heavy oil production - Sand
Uncontrolled terms: Detection sensors - Field experiment - Oil and gas well - Performance tests - PZT sensors - Quantitative detection - Sand production - Stable performance
Classification Code: 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits
Database: Compendex
Data Provider: Engineering Village

88. A novel characteristic method on fatigue crack growth of N80 casing drilling steel

Wang, Dang Hui (1); Xu, Tian Han (1)
Source: *Advanced Materials Research*, v 194-196, p 224-227, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.224; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, No.18, The Second Dian Zi Road, Xi'an, 710065, China
Abstract: Electrical parameters and low-frequency noise test were measured for N80 steel casing drilling, through extracting low-frequency parameters and combining with conventional fatigue crack growth characterization methods and analyzing their morphology. After fatigue crack growth, the results showed that: (1) Electrical parameters of N80 increase, and power spectral density of 1/f noise increases two orders of magnitude. (2) Values of $_{\gamma}$ and B are significantly increased, indicating that the process of fatigue produced more cracks, defects, and combination centers, from the mechanism of fatigue crack growth of N80, defects and cracks resulting from fatigue are the numbers of kind of fluctuations. In essence, low-frequency noise is a type of fluctuations, which show that low-frequency noise as the characterization of non-destructive., which can serve as a viable tool to study the defects and the characterization of defects. © (2011) Trans Tech Publications. (12 refs)
Main heading: Fatigue crack propagation
Controlled terms: Power spectral density - Spurious signal noise
Uncontrolled terms: 1/F noise - Casing drilling - Characteristic method - Electrical parameter - Fatigue crack growth - Low frequency - Low-Frequency Noise - N80 Steel - Non destructive - Orders of magnitude
Classification Code: 511.1 Oil Field Production Operations - 703.1 Electric Networks - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

89. The design of C-language graphics library functions based on JRD320240B

Zhang, Jiatian (1); Zhang, Xiaomei (1); Yan, Zhengguo (1)

Source: *Advanced Materials Research*, v 271-273, p 417-422, 2011, *Advanced Materials and Information Technology Processing, AMITP 2011*; **ISSN:** 10226680; **ISBN-13:** 9783037851579; **DOI:** 10.4028/www.scientific.net/AMR.271-273.417; **Conference:** 2011 International Conference on Advanced Materials and Information Technology Processing, AMITP 2011, April 17, 2011 - April 18, 2011; **Sponsor:** Hainan University; Asia Pacific Human-Computer Interaction Research Center; **Publisher:** Trans Tech Publications
Author affiliation: (1) Key Laboratory of Photoelectricity Gas and oil Logging, Detecting Ministry of Education, Xi'an Shiyou University, Shaanxi Xi'an 710065, China
Abstract: The paper mainly introduces C-language graphics library functions based on JRD320240B. For example, it can display Chinese word, character list, painting line and picture on any point of the LCD. And gives the corresponding hardware interface circuit, software flow diagram of C8051F020 and JRD320240B. The paper has reference value in practical application. © (2011) Trans Tech Publications, Switzerland. (3 refs)
Main heading: Liquid crystal displays
Controlled terms: C (programming language)
Uncontrolled terms: C8051F020 - Flow diagram - Hardware interfaces - JRD320240B - Library functions - Painting lines - Reference values
Classification Code: 723.1.1 Computer Programming Languages
Database: Compendex
Data Provider: Engineering Village

90. Notice of Retraction: The analysis of microbial communities with gene detecting techniques in oil reservoir

Wang, Junqi (1); Liu, Bin (1); Cheng, Haiying (2)
Source: *5th International Conference on Bioinformatics and Biomedical Engineering, iCBBE 2011*, 2011, *5th International Conference on Bioinformatics and Biomedical Engineering, iCBBE 2011*; **ISBN-13:** 9781424450893; **DOI:** 10.1109/icbbe.2011.5780039; **Article number:** 5780039; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, China (2) Oil Production Technology Research Institute, Dagang Oilfield Company, Tianjin, China
Abstract: In the oil field development, microbial oil recovery technology is very popular for its simple process, low investment and non-damage to the oil reservoir. The growth and reproduction of microorganism is closely related with microbial community structure, however, at present there is no any technical quality standards can be dependent for microbial detection technologies, which making it difficult to determine the increase production mechanism of microbial oil recovery. In this study, by adding nutrients in the output water samples of the oil well, under the lab simulated oil reservoir conditions of high temperature, high pressure and anaerobic culture, through the gene base sequence analysis, the micro gene can be increased with different restriction enzymes, then separate them using capillary gel electrophoresis , research the length and abundance of each fragment , thus get the microbial community structure of different period, which provides an effective method in tracking microbial communities dynamics. © 2011 IEEE. (9 refs)
Main heading: Microorganisms
Controlled terms: Oil well flooding - Damage detection - Oil field development - Petroleum reservoirs - Genes - Petroleum reservoir engineering
Uncontrolled terms: Capillary gel electrophoresis - Detecting technique - Detection technology - Increase productions - Microbial communities - Microbial community structures - Oil reservoirs - Restriction enzymes
Classification Code: 461.2 Biological Materials and Tissue Engineering - 461.9 Biology - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

91. Investigation of microstructure and property of the Fe3Al/ Al2O3 composites fabricated by mechanical alloying process and plasma active sintering process

Jiang, Tao (1)
Source: *Advanced Materials Research*, v 194-196, p 1689-1692, 2011, *Advanced Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850336; **DOI:** 10.4028/www.scientific.net/AMR.194-196.1689; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, No.18, The Second Dian Zi Road, Xi'an, 710065, China

Abstract: The Fe3Al/Al2O3 composites were fabricated by plasma active sintering process. The Fe3Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment, then the Fe3Al powders and Al2O3 powders were mixed and the Fe3Al/Al2O3 composite powders were prepared, so the Fe3Al/Al2O3 composites were fabricated by plasma active sintering process at 1200oC for 5min under the pressure of 30MPa. The phase composition and microstructure of the Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition, microstructure and mechanical property of the Fe3Al/Al 2O3 composites sintered bulks were investigated. The XRD patterns results showed that there existed Fe3Al phase and Al2O 3 phase in the sintered composites. The Fe3Al/Al 2O3 composites sintered bulks exhibited the homogenous and compact microstructure, the Fe3Al particles were homogenously distributed in the Al2O3 matrix. The mean particles size of Fe3Al intermetallics was about 2-3μm and mean particles sizes of Al2O3 was about 2-3μm. The density and relative density of the Fe3Al/Al2O3 composites increased gradually with the increase of Fe3Al content. The fracture strength and fracture toughness of the Fe3Al/Al2O3 composites increased gradually with the increase of Fe3Al content. The elastic modulus and hardness(HRA) of Fe3Al/Al2O 3 composites decreased gradually with the increase of Fe 3Al content. © (2011) Trans Tech Publications. (15 refs)
Main heading: Sintering
Controlled terms: Alumina - Aluminum oxide - Binary alloys - Iron alloys - Powders - Microstructure - Phase composition - Fabrication - Intermetallics - Fracture toughness - Fracture - Mechanical alloying
Uncontrolled terms: Al content - Al powder - Compact microstructure - Composite powders - Fe3Al/Al2O3 composite - Fracture strengths - Intermetallics compounds - matrix - Microstructure and mechanical properties - Microstructure and properties - Particles sizes - Relative density - Sintered bulk - Sintering process - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

92. Analysis of the capability of casing tripping in horizontal well

Guo, Jianming (1); Wang, Yanping (1); Li, Junjie (2)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 3876-3879, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5987846; **Article number:** 5987846; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Petroleum Engineering, Xi'an ShiYou University, Xi'an, China (2) Operating Company II, Gaosheng Service Department, Liaohe Oilfield, Panjin, China
Abstract: The emergence of horizontal wells brought new vigor to the oil and gas exploration. However, the casing is bended with the hole at the curved portion in horizontal wells, which makes running casing more difficult, because the resistance is larger in horizontal wells than that in vertical ones. Whether the casing strings can run in the bending of horizontal wells relates to the completion style, which can be judged according to casing force analysis. Through the force analysis of casing string units in two and three dimensions wellbores, we get the generic algorithm to calculate the axial loading of directional wells. The algorithm is applicable to calculate the axial loading of all types of casing strings. The accurate analysis of frictional resistance can provide a reliable basis for the drilling equipment selection, optimizing the parameters of casing strings, and choosing the way to trip in. © 2011 IEEE. (8 refs)
Main heading: Horizontal wells
Controlled terms: Axial loads - Oil well drilling - Drilling equipment - Horizontal drilling - Infill drilling - Computer programming - Friction
Uncontrolled terms: Accurate analysis - Axial loading - Casing strength - Equipment selection - Frictional resistance - Generic algorithm - Oil and gas exploration - Three dimensions
Classification Code: 408 Structural Design - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.1 Computer Programming
Database: Compendex
Data Provider: Engineering Village

93. Influence of northern Shaanxi saline soil saturated with water on electrochemical corrosion behavior of X80 pipeline steel

Xu, Congmin (1)

Source: *Huagong Xuebao/CIESC Journal*, v 62, n 3, p 773-778, March 2011; **Language:** Chinese; **ISSN:** 04381157; **Publisher:** Chemical Industry Press
Author affiliation: (1) Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, Shaanxi, China
Abstract: The electrochemical corrosion behavior of X80 pipeline steel was investigated in northern Shaanxi saline soil saturated with water by using electrochemical measurement, scanning electron microscopy (SEM) and energy dispersive spectrum (EDS) analysis. The results showed that the corrosion tendency and corrosion rate of X80 steel significantly increased, pitting depth and area increased continuously, which was induced by change of corrosion morphology from uniform corrosion to localized corrosion. Corrosion mechanism was oxygen-concentration corrosion cell and localized corrosion autocatalysis effect, and corrosion rate was controlled by oxygen diffusion process. The characteristics of double capacitive reactance arcs and Warburg impedance could be found in electrochemical impedance spectra, the resistance of charge transfer and diffusion mass transfer in pitting became bigger and bigger, and binding layer resistance significantly decreased. It was dependent on the integrity and compactness of corrosion product films. The corrosion product was basically a mixture of iron oxides, iron sulfides and salts in soil. © All Rights Reserved. (18 refs)
Main heading: Corrosion rate
Controlled terms: Corrosive effects - Pitting - Iron oxides - Mass transfer - Electrochemical corrosion - Pipeline corrosion - Scanning electron microscopy - Oxygen - Sulfur compounds - Underground corrosion - Pipelines - Charge transfer - Soils - Steel corrosion - Steel pipe
Uncontrolled terms: Corrosion product film - Electrochemical corrosion behavior - Electrochemical impedance spectra - Electrochemical measurements - Energy dispersive spectrum (EDS) - Oxygen concentrations - Saline soil - X80 pipeline steels
Classification Code: 483.1 Soils and Soil Mechanics - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.3 Mass Transfer - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village

94. Study of context-aware phone communication strategy

Liu, Guangxing (1); Zhang, Qingsheng (2)
Source: *Proceedings - 2011 8th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2011*, v 2, p 1236-1240, 2011, *Proceedings - 2011 8th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2011*; **ISBN-13:** 9781612841816; **DOI:** 10.1109/FSKD.2011.6019633; **Article number:** 6019633; **Conference:** 2011 8th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2011, Jointly with the 2011 7th International Conference on Natural Computation, ICNC'11, July 26, 2011 - July 28, 2011; **Sponsor:** Coll. Inf. Sci. Technol. Donghua Univ.; **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 University of Posts and Telecommunications, Xi'an, China
Abstract: The commonly used phone communication is designed on the assumption that caller actively telephones callee without any knowledge of callee's situation. Along with the development of computing and sensor technology, context information of user can be sensed, inferred from pervasive environment. Caller can determine in what situation callee locates with context information of callee. Some research work shows that caller uses this context information for presence instead of availability. That is, caller may make a phone communication while callee is in unavailable state. It still brings callee interruptible even if context information of callee is shared. Exposing context information to caller is also privacy concern of callee. In order to solve these problems, a communication strategy between caller and callee is proposed to reduce callee's interruption and enhance callee's privacy. We validate the communication strategy with the real communication history data. © 2011 IEEE. (3 refs)
Main heading: Telephone sets
Controlled terms: Semantics - Ubiquitous computing
Uncontrolled terms: Communication pattern - Communication strategy - Context information - Context-aware communications - Pervasive environments - Privacy concerns - Real communication - Sensor technologies
Classification Code: 461.4 Ergonomics and Human Factors Engineering - 718.1 Telephone Systems and Equipment - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

95. Comparison and limitation analysis of approaches for porosity evaluation from NMR and three porosity logs in low permeability gas sands with bad borehole

Tang, Wen (1); Xu, Rui (2); Zhi, Ling-Ling (2); Wang, Xiao-Gang (3)
Source: *Society of Petroleum Engineers - SPE Middle East Unconventional Gas Conference and Exhibition 2011, UGAS*, p 54-61, 2011, *Society of Petroleum Engineers - SPE Middle East Unconventional Gas Conference and Exhibition 2011, UGAS*; **ISBN-13:** 9781617823596; **Publisher:** Society of Petroleum Engineers (SPE)
Author affiliation: (1) School of Petroleum Resource, Xi'an Shiyou University, China (2) Tuha Division, CNPC Well Logging Company Ltd., China (3) China Oilfield Services Limited, China
Abstract: In this paper, we compare four methods of calculating reservoir porosity in low permeability gas sandstones with bad borehole condition, they are neutron-density crossplot technology, DMR technology, piecewise scale methods from acoustic time logging and SMR technology. The principle and limitation of these methods are analysised. When the borehole condition is good, these four technologies are all available, but in the wells with bad borehole, the technology of calculating reservoir porosity by integrating interval transit time logging and NMR logging, the neutron-density crossplot are recommended. For the NMR data acquired from CMR tool, the NMR porosity must be calibrated from deep lateral resistivity or deep induction resistivity logging, but these technologies are still the most useful because the computation process are simple and the odd error is less than DMR technology. The piecewise scale methods is also not recommended because it will spend too much time for log analysts. Copyright 2011, Society of Petroleum Engineers. (9 refs)
Main heading: Porosity
Controlled terms: Gas permeability - Neutron logging - Acoustic logging - Petroleum reservoir evaluation - Density measurement (specific gravity) - Nuclear magnetic logging
Uncontrolled terms: Computation process - Interval transit time - Low permeability - Neutron density - Porosity logs - Reservoir porosity - Resistivity logging - Scale method
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 751.2 Acoustic Properties of Materials - 931.2 Physical Properties of Gases, Liquids and Solids - 941.2 Acoustic Variables Measurements
Database: Compendex
Data Provider: Engineering Village

96. A context-aware phone communication strategy based on availability of callee

Liu, Guangxing (1); Zhang, Qingsheng (2)
Source: *2011 3rd International Workshop on Intelligent Systems and Applications, ISA 2011 - Proceedings*, 2011, *2011 3rd International Workshop on Intelligent Systems and Applications, ISA 2011 - Proceedings*; **ISBN-13:** 9781424498574; **DOI:** 10.1109/ISA.2011.5873308; **Article number:** 5873308; **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 University of Posts and Telecommunications, Xi'an, China
Abstract: Traditional phone communication is designed on the assumption that caller actively telephones callee without any knowledge of callee's situation. Caller often doesn't make successful calling as callee is not available at that time. Along with the development of pervasive computing and sensor technology, context information of user can be sensed, inferred from pervasive environment. Before starting a phone communication, caller can determine in what situation callee locates with context information of callee. A communication strategy between caller and callee is proposed to reduce callee's interruption and enhance callee's privacy. For the minimum of callee's decision burden from the proposed communication strategy, we use rough set theory to extract callee's phone communication pattern for the automatic phone communication decision. © 2011 IEEE. (7 refs)
Main heading: Rough set theory
Controlled terms: Telephone sets - Learning systems - Semantics - Computation theory - Decision theory - Ubiquitous computing
Uncontrolled terms: Communication pattern - Communication strategy - Context information - Context-Aware - Context-aware communications - Pervasive environments - Sensor technologies
Classification Code: 461.4 Ergonomics and Human Factors Engineering - 718.1 Telephone Systems and Equipment - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.5 Computer Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
Database: Compendex
Data Provider: Engineering Village

97. Impacts of different pile parameters on stress and settlement of composite foundation

Cui, Ying (1, 2); Zhao, Junhai (1); Sun, Shanshan (1)

Source: *Applied Mechanics and Materials*, v 90-93, p 387-392, 2011, *Advances in Civil Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037852422; **DOI:** 10.4028/www.scientific.net/AMM.90-93.387; **Conference:** 2011 International Conference on Civil Engineering and Transportation, ICCET 2011, October 14, 2011 - October 16, 2011; **Sponsor:** Shandong Jianzhu University, School of Civil Engineering; Shandong University, School of Civil Engineering; Shandong Univ. Sci. Technol. Sch. Civ. Eng. Archit.; Yantai University, School of Civil Engineering; Shandong Prov. Key Lab Appraisal Retrofitting Build. Struct.; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Civil Engineering, Chang'an University, Xi'an 710061, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The composite foundation fully takes the carrying capacity of pile and soil into account, which decreases the settlement of oil storage tank foundation and differential settlement of oil storage tank bottom apparently. Analyzing the changes of stress and settlement under different conditions and optimizing the parameters of pile have important significance in engineering practice. in this paper, with an actual project of oil storage tank for background, basing on the Drucker-Prager yield criterion, the FEM model of composite foundation has been carried out by using ANSYS procedure. And with simulating the status of composite foundation under the working load, the project properties of composite foundation are investigated. Further more, analysis on the impacts of different pile parameters on stress and settlement of composite foundation have been carried out. in the end, the optimization scheme of composite foundation design has been proposed. © (2011) Trans Tech Publications. (8 refs)
Main heading: Piles
Controlled terms: Tanks (containers) - Structural design - Foundations
Uncontrolled terms: ANSYS procedure - Composite foundations - Differential settlements - Drucker Prager yield criterion - Engineering practices - FEM model - FEM models - Oil storage tank - Optimization scheme - Properties of composites - Working loads
Classification Code: 408.1 Structural Design, General - 408.2 Structural Members and Shapes - 483.2 Foundations - 619.2 Tanks
Database: Compendex
Data Provider: Engineering Village

98. PSO-BP neural network in reservoir parameter dynamic prediction

Zhang, Liumei (1); Ma, Jianfeng (1); Wang, Yichuan (1); Pan, Shaowei (2)
Source: *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*, p 123-126, 2011, *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*; **ISBN-13:** 9780769545844; **DOI:** 10.1109/CIS.2011.35; **Article number:** 6128088; **Conference:** 2011 7th International Conference on Computational Intelligence and Security, CIS 2011, December 3, 2011 - December 4, 2011; **Sponsor:** Beijing Normal University; Guangdong University of Technology; HIC; Xidian University; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Computer Networks and Information Security (Ministry of Education), Xidian University, School of Computer Science and Technology, Xi'an, China (2) School of Computer Science and Technology, Xian Shiyou University, Xi'an, China
Abstract: In compare with the traditional Artificial Neural Network, PSO-BP neural network has fast convergence and is immune to local minimum. This paper presents an application of PSO-BP neural network for dynamic predicting small layer reservoir parameters of fault block E1f11-1 in well ZHUANG 2. By defining input and output neuron number, our method firstly realizes quantization of input neuron. Then we choose proper samples for training neural network in order to build a dynamic prediction model of reservoir parameters. Such model has been successfully tested and the model itself is appropriate for predicting unknown reservoir parameters. Testing result indicates that PSO-BP neural network is superior to the genetic algorithm optimized BP neural network and the pure neural network. Finally, PSO-BP neural network gained certain achievements for dynamically predicting reservoir parameters according as dynamic production information. © 2011 IEEE. (13 refs)
Main heading: Neural networks
Controlled terms: Forecasting - Genetic algorithms
Uncontrolled terms: BP neural networks - Dynamic prediction - Dynamic production - Fast convergence - Input and outputs - Local minimums - Pso-bp neural networks - Reservoir parameters
Classification Code: 723.4 Artificial Intelligence
Database: Compendex
Data Provider: Engineering Village

99. Reduction of probabilistic gas reserves uncertainty by geological constraints

Wang, Jiahua (1); Lu, Tao (2); Chen, Fengxi (2); Wang, Xudong (2); Wang, Yong (2)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 38, n 6, p 764-768, December 2011;
Language: Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) Exploration and Development Research Institute of PetroChina, Changqing Oilfield Company, Shaanxi Xi'an 710021, China
Abstract: With a major gas reservoir of the second member of Shanxi Formation in the YL gas field as an example, reservoir modeling constrained by geological conditions, including distribution of sand bodies and lateral and vertical heterogeneity, is carried out to reduce uncertainty of results of gas reservoir modeling and uncertainty of probabilistic reserves of the major gas reservoir. The geological constraints include: (1) there is almost no sand body in most of the southeastern part in the study area; (2) owing to sand bodies concentrated in the middle and bottom parts of braided channels, the proportion curves of petrophysical parameters of the gas reservoir show that porosity, permeability, and oil saturation present low values on the top and high values on the bottom of the channels. Comparison with 400 realizations obtained without any geological constraints, 100 realizations with constraint No.1, and 23 realizations with constraints No.1 and No.2, and the calculation of the probabilistic reserves P90, P50, and P10 show that owing to the geological constraints, the uncertainty of the probability reserves of the major gas reservoir is reduced significantly. (18 refs)
Main heading: Gases
Controlled terms: Geology - Natural gas fields - Gas industry - Petroleum reservoir engineering - Probability distributions - Gas permeability - Uncertainty analysis - Petroleum reservoirs - Proven reserves
Uncontrolled terms: Geological constraint - Heterogeneity - Probabilistic reserves - Reservoir modeling - Uncertainty
Classification Code: 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 922.1 Probability Theory - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

100. Synthesis, spectra and bond studies on a novel Cu-Ru complex of magnetic dilution

Wang, Wen-Zhen (1); Li, Yan (1); Liao, Dai-Zheng (2)
Source: *Advanced Materials Research*, v 335-336, p 944-950, 2011, *Advanced Materials and Structures*; **ISSN:** 10226680; **ISBN-13:** 9783037852460; **DOI:** 10.4028/www.scientific.net/AMR.335-336.944; **Conference:** 2011 International Conference on Materials and Products Manufacturing Technology, ICMPMT 2011, October 28, 2011 - October 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) Department of Chemistry, Nankai University, Tianjin, 300071, China
Abstract: A novel complex [Ru(phen)3][Cu(opba)]&middot 6H2O has been prepared and characterized structurally. The crystal structure showed that the complex consisted of dication [Ru(phen)3]2+and complex dianion [Cu(opba)]2-. The IR, Uv-vis, EPR spectra were studied, and EPR spectra showed hyperfine structure from copper isotopes 63Cu and 65Cu, and superhyperfine(shf) from 14N coupling, giving parameters g// = 2.207,g#?= 2.026,A// Cu = 196 G,A# Cu = 43 G,A// N = 13 G,A# N = 17 G. The bond parameters were evaluated based on the EPR spectra, indicating substantial π–bonding character in the Cu-N and Cu-O bonds in the complex [Cu(opba)]2-. The spin density on nitrogen and oxygen atoms is 0.081 and 0.195, respectively. © (2011) Trans Tech Publications. (15 refs)
Main heading: Crystal structure
Controlled terms: Binary alloys - Ruthenium compounds - Copper compounds - Electron spin resonance spectroscopy
Uncontrolled terms: Bonding character - Dianions - Dications - EPR spectra - Hyperfine structure - Magnetic dilution - Oxamato complex - Oxygen atom - Ru(phen) - Spin densities - Superhyperfine
Classification Code: 801 Chemistry - 933.1.1 Crystal Lattice
Database: Compendex
Data Provider: Engineering Village

101. Features of satellite altimetric gravity anomaly and its geology significance in Grenada area

Zhang, Chunguan (1); Yuan, Bingqian (1); Hu, Gencheng (2)
Source: *ICMREE2011 - Proceedings 2011 International Conference on Materials for Renewable Energy and Environment*, v 2, p 1360-1362, 2011, *ICMREE2011 - Proceedings 2011 International Conference on Materials for*

Renewable Energy and Environment; **ISBN-13:** 9781612847504; **DOI:** 10.1109/ICMREE.2011.5930587; **Article number:** 5930587; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, XSYU, Xi'an, China (2) Exploration Department, China National Offshore Oil Corporation, CNOOC, Beijing, China
Abstract: This study area is located southeast of Caribbean Sea, an area of about 79,000 km2. This paper, through collection of satellite altimetric gravity data produced by geophysical data corporation of University of Leeds, England, tries to process satellite altimetric gravity data by adopting regularization filter and vertical second derivative methods in this area, analyzes characteristics of the satellite altimetric gravity anomaly, discusses geological implications of gravity field. Combining with the regional geological research results of the predecessors, this paper determines the structural framework, and divides the tectonic units in this area. The results show that the characteristics of the satellite altimetric gravity anomaly are apparent, from the northwest to the southeast, the features of the gravity highs and the gravity lows alternating zonal distribution reflecting the framework of the uplifts and the depressions alternating zonal distribution in this area; the structures are complex in this area, and there developed many faults, and the discordogenic faults on both sides of the Margarita-Grenada arc controlled the regional tectonic evolution and the boundary of the tectonic units in this area; this area can be divided into four tectonic units, including Blanquilla arc, Grenada basin, Margarita-Grenada arc and Tobago basin, faulted contact between these tectonic units. These conclusions provide geophysical basis for renewable energy, such as geothermal research. © 2011 IEEE. (10 refs)
Main heading: Satellites
Controlled terms: Geophysics - Faulting - Geothermal fields - Aneroid altimeters - Gravitation
Uncontrolled terms: Caribbean Sea - Geological research - Geothermal research - Gravity anomalies - Grenada - Renewable energies - Structural frameworks - University of Leeds
Classification Code: 481.3 Geophysics - 481.3.1 Geothermal Phenomena - 484.1 Earthquake Measurements and Analysis - 615.1 Geothermal Energy - 655.2 Satellites - 931.5 Gravitation, Relativity and String Theory - 944.3 Pressure Measuring Instruments
Database: Compendex
Data Provider: Engineering Village

102. Identification of pipeline circuit design

Zhang, Jiatian (1); Ma, Jianming (1); Yan, Zhengguo (1)
Source: *Lecture Notes in Electrical Engineering*, v 97 LNEE, n VOL. 1, p 71-76, 2011, *Electronics and Signal Processing - Selected Papers from the 2011 International Conference on Electric and Electronics, EEIC 2011*; **ISSN:** 18761100, **E-ISSN:** 18761119; **ISBN-13:** 9783642216961; **DOI:** 10.1007/978-3-642-21697-8_10; **Publisher:** Springer Verlag
Author affiliation: (1) Key Laboratory of Photoelectricity Gas and Oil Logging and Detecting, Ministry of Education, Xi'An Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: In order to identify oil pipeline, this paper puts a kind of pipeline circuit for recognition, and presents the principle diagram of system, and analyses the circuit in detail. This circuit can identify the single pipeline and many pipelines connecting each other at the terminal. The experiment's results show that the scheme is practicable. © 2011 Springer-Verlag Berlin Heidelberg. (3 refs)
Main heading: Pipelines
Controlled terms: Integrated circuit manufacture - Electric network analysis - Timing circuits
Uncontrolled terms: Circuit designs - Identify - Oil pipelines
Classification Code: 619.1 Pipe, Piping and Pipelines - 703.1.1 Electric Network Analysis - 713.4 Pulse Circuits - 714.2 Semiconductor Devices and Integrated Circuits
Database: Compendex
Data Provider: Engineering Village

103. The design of human machine interface based on DMT644480T056-01W

Zhang, Jiatian (1); Qiao, Aijun (1); Yan, Zhengguo (1)
Source: *CCIE 2011 - Proceedings: 2011 IEEE 2nd International Conference on Computing, Control and Industrial Engineering*, v 1, p 58-61, 2011, *CCIE 2011 - Proceedings: 2011 IEEE 2nd International Conference on Computing, Control and Industrial Engineering*; **ISBN-13:** 9781424495979; **DOI:** 10.1109/CCIENG.2011.6007956; **Article number:** 6007956; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Photoelectricity Gas and Oil Logging and Detecting Ministry of Education, Xi'An Shiyou University, Shaanxi Xi'an 710065, China

Abstract: With the rapid development of information technology, touch screen applications has become increasingly popular in China, already formed gradually industry, touch input devices will be the future development of the information technology of the mainstream products. Based on DMT64480T056-01W touch c8051f020 SCM LCD, hardware interface design as an example, detail the use of its generate graphics to display the man-machine interface and the touch-key test control method, so as to achieve color touch LCD monitor control. Gives interface circuit principle of the microcontroller and serial control LCD module, main control program design method, and the program design of its main function. It Solves the problems of choosing LCD, driving, and complex software programming in microprocessor use big dot matrix LCD monitor process. © 2011 IEEE. (5 refs)
Main heading: Liquid crystal displays
Controlled terms: Product design - Man machine systems - Touch screens
Uncontrolled terms: C8051F020 - Complex software - Control program - Hardware interfaces - Human Machine Interface - Interface circuits - Man machine interface - Program design
Classification Code: 722.2 Computer Peripheral Equipment - 913.1 Production Engineering
Database: Compendex
Data Provider: Engineering Village

104. Integration scheduling optimization for critical chain multi-project

Li, Jun-Ting (1, 2); Wang, Run-Xiao (1); Yang, Yun-Tao (1)
Source: *Jisuanji Jicheng Zhizao Xitong/Computer Integrated Manufacturing Systems, CIMS*, v 17, n 8, p 1772-1779, August 2011; **Language:** Chinese; **ISSN:** 10065911; **Publisher:** CIMS
Author affiliation: (1) School of Mechatronics, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Economics and Management, Xi'an Shiyou University, Xi'an 710065, China
Abstract: To solve resource conflict problems among projects in multi-project scheduling, and obtain minimum loss of delay as well as overall scheduling optimization scheme, a new heuristic approach for critical chain multi-project scheduling was proposed. The heuristic scheduling rules transformed project priority into the relative size of the loss per unit time delay for project, and then it was applied to the Resource Scheduling Method(RSM) to work out activities priority. This method achieved integration scheduling optimization in the case of minimal loss of delay for overall multi-project in theory. Application of the proposed approach was realized by integrating the critical chain multi-project network concept model, the mathematical model, optimization objectives and scheduling algorithm. A case study was carried out to demonstrate the effectiveness and integrity of the proposed approach. (13 refs)
Main heading: Heuristic methods
Controlled terms: Optimization - Scheduling - Chains - Heuristic algorithms - Scheduling algorithms
Uncontrolled terms: Critical chain - Heuristic approach - Heuristic scheduling - Multi-project scheduling - Multi-projects - Resource conflict - Resource-scheduling - Scheduling optimization
Classification Code: 602.1 Mechanical Drives - 723.1 Computer Programming - 912.2 Management - 921.5 Optimization Techniques
Database: Compendex
Data Provider: Engineering Village

105. Remediation of DNAPL-contaminated aquifers using density modification method with colloidal liquid aphrons

Yan, Yong-Li (1); Deng, Qiang (1); He, Fei (2); Zhang, Xin-Qiang (1); Liu, Yin-Ping (1)
Source: *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, v 385, n 1-3, p 219-228, July 20, 2011; **ISSN:** 09277757, **E-ISSN:** 18734359; **DOI:** 10.1016/j.colsurfa.2011.06.012; **Publisher:** Elsevier B.V.
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Shaanxi Yanchang Petroleum Co. Ltd., Xi'an 710075, China
Abstract: Entrapped and pooled dense non-aqueous phase liquid (DNAPL) often persists in aquifers and serves as a long-term source of groundwater contamination. Despite vigorous research efforts over the last two decades, all current DNAPL pool remediation strategies suffer from a combination of inefficiency, enhanced risk of contaminant spreading due to uncontrolled mobilization, and or high treatment costs. In the present contribution, we report a novel strategy that makes the density of the representative DNAPL of trichloroethene (TCE) reduction utilizing colloidal liquid aphrons (CLAs) in the remediation process. The effects of the electrolyte (AlCl3) concentrations, the volume fraction of the dispersed oil phase (n-octane) and temperature on the demulsification behavior of CLA dispersion were discussed. Steady-state flow and dynamic viscoelasticity were measured by using a controlled stress rheometer HAAKE RS 6000 with cone-plate geometry in an attempt to reveal the rheological properties of CLAs. A series of batch experiments was conducted to evaluate the recovery efficiency of DNAPL from sand pack under different volumes, flow rates of CLAs

and surfactant (Tergitol 15-S-9) flushing solutions. Experimental results suggest that CLAs can be destabilized by a low concentration of Al3+ in the continuous phase. The flow behavior of CLAs presents the typical non-Newtonian liquids with strong shear thinning properties and it could be well described by the Hershel-Bulkley model. Above the phase volume ratio (PVR=Vorg/Vaq) of 8, the systems display viscoelastic behavior. Relative to water, the density reversal of TCE occurs at an electrolyte concentration of 0.05M, which effectively prevents TCE downward migration during surfactant flushing. As much as 94% of the TCE entrapped in the sand column is removed under the conditions of amounts of 1 PV (pore volume) for CLAs, 4 PV and 1.5mL/min for Tergitol solution. This approach holds great promise for manipulating DNAPL densities prior to or during remediation processes. © 2011 Elsevier B.V. (29 refs)
Main heading: Aquifers
Controlled terms: Groundwater pollution - Non Newtonian flow - Air - Electrolytes - Surface active agents - Aluminum chloride - Groundwater resources - Remediation - Shear thinning - Viscoelasticity
Uncontrolled terms: Colloidal liquid aphrons - Colloidal liquids - Controlled-stress rheometers - Dense non-aqueous phase liquids - Density modifications - DNAPL - Electrolyte concentration - Groundwater contamination
Classification Code: 444.2 Groundwater - 453.1 Water Pollution Sources - 454.2 Environmental Impact and Protection - 631.1 Fluid Flow, General - 702 Electric Batteries and Fuel Cells - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids
Funding Details: Number: 2010JK789, Acronym: -, Sponsor: -; Number: 21073140, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors gratefully acknowledge financial support by the National Natural Science Foundation of China (No. 21073140) and Shaanxi Province Education Bureau Science & Technology Research Program (No. 2010JK789).
Database: Compendex
Data Provider: Engineering Village

106. Influence of accelerated cooling in critical zone on the microstructure and properties for X100 pipeline steel

Zhang, Xiaoyong (1); Gao, Huilin (1); Ji, Lingkang (2); Liu, Heng (1)
Source: *Jixie Gongcheng Xuebao/Journal of Mechanical Engineering*, v 47, n 22, p 36-42, November 20, 2011;
Language: Chinese; **ISSN:** 05776686; **DOI:** 10.3901/JME.2011.22.036; **Publisher:** Chinese Mechanical Engineering Society
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Tubular Goods Research Institute, China National Petroleum Corporation, Xi'an 710065, China
Abstract: The influence of accelerated cooling in (a+g) critical zone on the microstructure characterization and properties of an X100 pipeline steel is investigated by means of thermal simulation technique, microscopic analysis method and mechanical property testing. The results show that dual-phase microstructure of bainitic+ferrit (B+F) can be obtained by using accelerated cooling method in (a+g) critical zone, and (B+F) dual-phase microstructure has a continued yield capacity, high tendency of initial strain hardening and large uniform deformability. When accelerated cooling temperature is of 830~850°C in critical zone, X100 pipeline steel can get excellent mechanical properties such as high strength-toughness, good ductility, high strain hardening exponent and low yield/tensile ratio because of the formation of fine bainite and ferrite with high density dislocation. When accelerated cooling temperature decreases, the strength of X100 pipeline steel decreases and its strain hardening exponent increases because of increasing of ferrite volume fraction. © 2011 Journal of Mechanical Engineering. (10 refs)
Main heading: Ferrite
Controlled terms: Bainite - Steel testing - Toughness - Strain - Cooling - Density (specific gravity) - Pipelines - Strain hardening - Microstructure - Steel pipe
Uncontrolled terms: Critical zones - Dual phase microstructure - Mechanical property testing - Microstructure and properties - Microstructure characterization - Properties - Strain-hardening exponent - X100 pipeline steels
Classification Code: 531.2 Metallography - 537.1 Heat Treatment Processes - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.2 Heat Transfer - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

107. Development of downlink communication system for steerable drilling application (*Open Access*)

Dang, Rui-Rong (1); Yin, Guang (1); Gao, Guo-Wang (1); Liang, Lu (1)

Source: *Procedia Engineering*, v 24, p 319-323, 2011, *International Conference on Advances in Engineering 2011, ICAE 2011*; **ISSN:** 18777058; **DOI:** 10.1016/j.proeng.2011.11.2649; **Conference:** 2011 International Conference on Advances in Engineering, ICAE 2011, December 24, 2011 - December 25, 2011; **Publisher:** Elsevier Ltd
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil and Gas, Ministry of Education, Xi'An Shiyou University, Xi'an 710065, China
Abstract: In order to improve the reliability of information transmission in steering drilling system, the downlink instruction encoding and decoding based on the transmission mode of mud pressure pulses were researched. According to analyze the characteristics of mud pressure pulses, the scheme applied negative pulses to transmit downlink instructions was established. Furthermore, the receiving system which identified instructions by detecting the time difference between falling edges of adjacent pulses was developed. A series of field experiments have been conducted by using the system. Experimental results show that the download instructions applied the mud pressure negative pulses can be decoded reliably and the recognition ability of instructions is improved considerably. © 2011 Published by Elsevier Ltd. (6 refs)
Main heading: Decoding
Controlled terms: Drilling fluids
Uncontrolled terms: Downlink communications - Drilling fluid pulse - Instruction downlinks - Instruction encoding - Pressure acquisitions - Recognition abilities - Reliability of information - Steerable drillings
Classification Code: 723.2 Data Processing and Image Processing
Funding Details: Number: 2010JZ005, Acronym: -, Sponsor: -; Number: 09JS039, Acronym: -, Sponsor: -; Number: 09JK691, Acronym: -, Sponsor: Education Department of Shaanxi Province;
Funding text: The work described in this paper was supported by grants from Key Project of Shaanxi Province for Natural Science Basic Research (Project No. 2010JZ005), Education Department of Shaanxi Province (Project No. 09JK691) and Key research projects of Shaanxi province department of education's key laboratory (Project No. 09JS039).
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

108. Wave packet dynamics in hydrogenated graphene at low hydrogen coverages

Liang, Qifeng (1, 2); Song, Yanan (1); Yang, Aping (3); Dong, Jinming (1)
Source: *Journal of Physics Condensed Matter*, v 23, n 34, August 31, 2011; **ISSN:** 09538984, **E-ISSN:** 1361648X; **DOI:** 10.1088/0953-8984/23/34/345502; **Article number:** 345502; **Publisher:** IOP Publishing Ltd
Author affiliation: (1) Department of Physics, Group of Computational Condensed Matter Physics, Nanjing University, Nanjing 210093, China (2) Department of Physics, Shaoxing University, Shaoxing 312000, China (3) School of Science, Xian Shiyou University, Xian 710065, China
Abstract: The dynamics of an electrons wave packet on hydrogenated graphene at low hydrogen coverages has been simulated using the tight-binding model. It is found that the bonding between the hydrogen and carbon atoms induces an impurity electron state at an energy of 0.14eV above the Dirac crossing energy E D, at which the impuritys scattering of electrons is resonantly enhanced. The asymmetry found in the energy-dependent transmission is explained by the Fano resonance, which has never been mentioned before. The impurity state having positive energy bias and the asymmetrical electron transmission can be used to explain the asymmetrical transporting behaviors measured in the experiment. By comparing the numerical simulations for an ordered sample with those for a disordered one, we conclude that the interference plays an important role in the electrons localization on the hydrogenated graphene. © 2011 IOP Publishing Ltd. (33 refs)
Main heading: Graphene
Controlled terms: Hydrogenation - Electrons - Resonance - Wave packets
Uncontrolled terms: Carbon atoms - Electron transmission - Energy dependent - Fano resonances - Impurity state - Positive energies - Tight binding model - Wave-packet dynamics
Classification Code: 761 Nanotechnology - 802.2 Chemical Reactions - 804 Chemical Products Generally - 931.1 Mechanics - 931.4 Quantum Theory; Quantum Mechanics
Database: Compendex
Data Provider: Engineering Village

109. Hole straightness measurement of automatic control system design (*Open Access*)

Liu, Y.S. (1, 2); Wang, T.Q. (1, 2); Ma, X.Y. (1, 2); Ning, Y.P. (1, 2)

Source: *Procedia Engineering*, v 15, p 288-292, 2011, *2011 International Conference on Advanced in Control Engineering and Information Science, CEIS 2011*; **ISSN:** 18777058; **DOI:** 10.1016/j.proeng.2011.08.056; **Conference:** 2011 International Conference on Advanced in Control Engineering and Information Science, CEIS 2011, August 18, 2011 - August 19, 2011; **Publisher:** Elsevier Ltd
Author affiliation: (1) Xi'an Shiyou University, 18# in Electronic 2 Road, Xi'an 710065, China (2) No. 1 Shuyouchu of PCOC of CNPC, Xi'an, 710021, China
Abstract: In this paper, the instrument is designed by basing on principle of the measurement method of straightness error measurement of deep hole, the design technologies of A/D converters, automatic control and computer are used. The instrument can automatically acquire data, the process of acquire data is convenient, fast, safe and the data is reliable. © 2011 Published by Elsevier Ltd. (3 refs)
Main heading: Automation
Controlled terms: Analog to digital conversion - Process control - Computer control systems
Uncontrolled terms: A/D converter - Deep holes - Design technologies - Interface technology - Measurement methods - Straightness - Straightness errors - Straightness measurement
Classification Code: 723.5 Computer Applications - 731 Automatic Control Principles and Applications - 731.1 Control Systems
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

110. The influence of various aids on performance of nanoparticle products in synthesis of magnesium sulfonate

Liang, Shengrong (1, 2); Fan, Jun (1); Zhang, Juntao (2); Ding, Liqin (2); Zhang, Jinghe (2)
Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 27, n 2, p 213-217, April 2011; **Language:** Chinese; **ISSN:** 10018719; **DOI:** 10.3969/j.issn.1001-8719.2011.02.010; **Publisher:** Science Press
Author affiliation: (1) School of Chemical Engineering, Northwest University, Xi'an 710069, China (2) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The product performance was studied when naphthenate or salicylate were used as co-surfactant in synthesis of nanoparticle type magnesium sulfonate. The influence of co-promoter (amino compounds) addition mode on product performance was also investigated. The microstructure changes of nanoparticles in the various products were analyzed by the freeze-etching replication transmission electron microscopy (FERTEM), which were related with the above-mentioned influence factors. By means of this study the appropriate aids or their addition mode may be optimized. (10 refs)
Main heading: Nanoparticles
Controlled terms: Magnesium - Surface active agents - High resolution transmission electron microscopy - Synthesis (chemical)
Uncontrolled terms: Amino-compounds - Co-surfactants - Freeze-etching - Microstructure changes - Naphthenate - Product performance
Classification Code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 741.3 Optical Devices and Systems - 761 Nanotechnology - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 933 Solid State Physics
Database: Compendex
Data Provider: Engineering Village

111. Measuring method for differential sensing gratings modulated with matching grating

Shao, Jun (1, 2); Liu, Junhua (2); Qiao, Xueguang (1); Jia, Zhenan (1)
Source: *Advanced Materials Research*, v 291-294, p 2639-2642, 2011, *Materials Processing Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851937; **DOI:** 10.4028/www.scientific.net/AMR.291-294.2639; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Key Lab. of Optical Fiber Sensing, School of Science, Xi'an Shiyou University, Xi'an, China (2) School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China
Abstract: In order to increase the sensitivity, a new measuring method is proposed that two sensing fiber gratings change differentially modulated with a matching grating. The simulation of this method indicates that it can raise the

sensitivity one time higher than that of a sensing fiber grating, as well as restrict the effect of temperature. © (2011) Trans Tech Publications, Switzerland. (11 refs)
Uncontrolled terms: Differential sensors - Effect of temperature - Fiber grating - Measuring method - Modulate - Sensing fibers
Classification Code: 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

112. Rough truth degrees of formulas and approximate reasoning in rough logic

She, Yanhong (1); He, Xiaoli (1); Wang, Guojun (2)
Source: *Fundamenta Informaticae*, v 107, n 1, p 67-83, 2011; **ISSN:** 01692968; **DOI:** 10.3233/FI-2011-393;
Publisher: IOS Press BV
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
Abstract: A propositional logic PRL for rough sets was proposed in [1]. In this paper, we initially introduce the concepts of rough (upper, lower) truth degrees on the set of formulas in PRL. Then, by grading the rough equality relations, we propose the concepts of rough (upper, lower) similarity degree. Finally, three different pseudo-metrics on the set of rough formulas are obtained, and thus an approximate reasoning mechanism is established. (29 refs)
Main heading: Grading
Controlled terms: Formal logic - Approximation theory
Uncontrolled terms: Approximate reasoning - Equality relations - Propositional logic - Pseudo-metrices - Rough logic - Similarity degree - Truth degree
Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

113. Experimental validation that optical scintillation obeys the same rules of share price fluctuations

Yang, C. (1, 2); Li, X. (2); Jiang, W. (2); Rao, C. (2)
Source: *Progress in Electromagnetics Research Symposium*, p 750-753, 2011, *PIERS 2011 Suzhou - Progress in Electromagnetics Research Symposium, Proceedings*; **ISSN:** 15599450; **ISBN-13:** 9781934142189; **Conference:** Progress in Electromagnetics Research Symposium, PIERS 2011 Suzhou, September 12, 2011 - September 16, 2011; **Sponsor:** Cent. Opt. Electromagn. Res. Zhejiang Univ.; Soochow University; Suzhou Association for Science and Technology; The Electromagnetics Academy; The Electromagnetics Academy at Zhejiang University; Zhejiang University; **Publisher:** Electromagnetics Academy
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an 710065, China (2) Institute of Optics and Electronics, Chinese Academy of Sciences, Chengdu 610209, China
Abstract: It is traditionally treated that when optical wave propagates through a turbulent atmosphere, the optical signal fluctuates "randomly". However, this paper validates that the optical signal fluctuations are not "random" by experiments. 3 optical propagation experiments are performed: ground-to-satellite-to-ground, horizontal propagation, and stellar observation. The experiments results show that: when it is observed in a small-scale period, the optical wave propagating through the atmosphere fluctuates "randomly"; but when it is observed in a large-scale period, the optical scintillation follows the same rules of share price fluctuations. Utilizing the techniques of share transaction to predict the optical scintillation has potential value for free-space optical communication system and laser transmitter system. (2 refs)
Main heading: Light propagation
Controlled terms: Scintillation - Optical communication
Uncontrolled terms: Experimental validations - Free space optical communication systems - Laser transmitter systems - Optical scintillation - Optical signals - Optical waves - Potential values - Turbulent atmosphere
Classification Code: 717.1 Optical Communication Systems - 741.1 Light/Optics
Database: Compendex
Data Provider: Engineering Village

114. Electrocatalytic oxidation of hydroxylamine at Ni(II)-morin complex modified carbon nanotube paste electrode

Zheng, Li (1); Song, Jun-Feng (1, 2)
Source: *Journal of Applied Electrochemistry*, v 41, n 1, p 63-70, January 2011; **ISSN:** 0021891X; **DOI:** 10.1007/s10800-010-0207-6; **Publisher:** Kluwer Academic Publishers
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, 710065 Xi'an, China (2) Institute of Analytical Science, Northwest University, 710069 Xi'an, China
Abstract: A modified electrode, nickel(II)-morin complex modified multi-wall carbon nanotube paste electrode (Ni(II)-MR-MWCNT-PE), has been fabricated by electrodepositing Ni(II)-MR complex on the surface of MWCNTPE in alkaline solution. The Ni(II)-MR-MWCNT-PE exhibits the characteristic of improved reversibility and enhanced current responses of the Ni(III)/Ni(II) couple compared with Ni(II)-MR complex modified carbon paste electrode (CPE). It also shows better electrocatalytic activity toward the oxidation of hydroxylamine than the Ni(II) modified MWCNT-PE (Ni(II)-MWCNT-PE) and Ni(II)-MR-CPE. Kinetic parameters such as the electron transfer coefficient #a, rate constant ks of the electrode reaction and the catalytic rate constant k cat of the catalytic reaction are determined. Moreover, the catalytic currents present linear dependence on the concentration of hydroxylamine from 2.5 × 10-6 to 4.0 × 10-4 mol L-1 by amperometry. The detection limit and sensitivity are 8.0 × 10 -7 mol L-1 and 56.2 mA L mol-1, respectively. The modified electrode for hydroxylamine determination is of the property of simple preparation, good stability, fast response and high sensitivity. © Springer Science+Business Media B.V. 2010. (31 refs)
Main heading: Electrocatalysis
Controlled terms: Amines - Rate constants - Yarn - Nickel compounds - Electrodes - Multiwalled carbon nanotubes (MWCN)
Uncontrolled terms: Carbon nanotube paste electrodes - Catalytic reactions - Electro-catalytic oxidation - Electrocatalytic activity - Electron transfer coefficient - Hydroxylamine - Modified carbon paste electrode - Modified electrodes
Classification Code: 761 Nanotechnology - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds - 819.4 Fiber Products - 933.1 Crystalline Solids
Database: Compendex
Data Provider: Engineering Village

115. An autonomous electric logger for hydraulic fracturing process

Yue-Long, Wang (1, 2); Lu, Zhang (2); Ai-Qing, Huo (2); Nan, Tang (2)
Source: *2011 IEEE 3rd International Conference on Communication Software and Networks, ICCSN 2011*, p 330-333, 2011, *2011 IEEE 3rd International Conference on Communication Software and Networks, ICCSN 2011*; **ISBN-13:** 9781612844855; **DOI:** 10.1109/ICCSN.2011.6014453; **Article number:** 6014453; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Marine Engineering, Northwestern Polytechnical University, China (2) Shaanxi Key Laboratory of Oil-Drilling Rigs Controlling Technique, Xi'An Shiyou University, Xi'an, China
Abstract: Downhole test data for hydraulic fracturing process is an important foundation of fracturing evaluation and technique improving. However, data acquiring and recording of fracturing process by downhole electric logger, which has a limited memory and a pre-configuring work programme according to a fracturing project, may lose many valuable records due to the difference between this programme and real fracturing operation process. In this paper, the pressure curve and its features of normal fracturing process has been analyzed. A method to distinguish distinct stages of fracturing process has been proposed by a simple logic estimating technique based on pressure and its gradient. An autonomously recording strategy has been given which can distinguish crucial stage and record data in a shorter period than normal. And a test under laboratory condition indicated the design was efficaciously. © 2011 IEEE. (8 refs)
Main heading: Hydraulic fracturing
Uncontrolled terms: autonomously recording - electric logger - Fracturing operations - Fracturing process - Hydraulic fracturing process - Laboratory conditions - Limited memory - Pressure curve
Classification Code: 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

116. Properties of two lead-free solder alloys and comparison with Sn37Pb

Xu, Tianhan (1); Zhao, Maiqun (2); Wang, Danghui (1)
Source: *Advanced Materials Research*, v 154-155, p 540-544, 2011, *Materials Processing Technologies*; **ISSN:** 10226680; **ISBN-13:** 9780878492046; **DOI:** 10.4028/www.scientific.net/AMR.154-155.540; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010

- November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) Shool of Materials Science and Engineering, Xi'An Shiyou University, Xian 710049, China (2) Shool of Materials Science and Engineering, Xi'An University of Technology, Xian 710049, China
Abstract: The microstructures and properties of Sn3Ag2.8Cu and Sn3Ag2.8Cu-0.1Ce solder alloys were investigated by means of OM, SEM and EDX and compared to that of Sn37Pb. The results show that the wettability of Sn3Ag2.8Cu-0.1Ce is more favorable, Sn3Ag2.8Cu exhibits poorer wetting behaviour compared to that of Sn37Pb solder; the conductivities of Sn3Ag2.8Cu-0.1Ce and Sn3Ag2.8Cu soldesr are almost 20 percent and 8 percent higher than that of Sn37Pb respectively; the fractography of tensile specimen of Sn3Ag2.8Cu is smooth and light, and is a quasi-cleavage fracture mechanism, whereas that of Sn3Ag2.8Cu-0.1Ce is dark and rough, and has a fibrous pattern, and is a ductile fracture mechanism; the fractography of Sn3Ag2.8Cu-0.1Ce includes more ompact and more uniform dimples than that of Sn3Ag2.8Cu, this is cause of the trace amounts of Ce refining the microstructure; brazing with the Cu substrate, the diffusion layer of Sn3Ag2.8Cu solder with Cu substrate includes more irregular IMC compared to Sn3Ag2.8Cu-0.1Ce and Sn37Pb. © (2011) Trans Tech Publications, Switzerland. (10 refs)
Main heading: Lead-free solders
Controlled terms: Brittle fracture - Ternary alloys - Microstructure - Copper alloys - Ductile fracture - Wetting - Binary alloys - Tin alloys - Fracture mechanics - Copper - Lead alloys - Silver alloys
Uncontrolled terms: Cu substrate - Diffusion layer thickness - Diffusion layers - Fracture mechanisms - Lead-free solder - Lead-free solder alloy - Microstructures and properties - Properties - Quasi cleavage fracture - SEM - Sn-37Pb - Solder alloys - Tensile specimens - Trace amounts - Wetting behaviour
Classification Code: 538.1.1 Soldering - 544.1 Copper - 544.2 Copper Alloys - 546.1 Lead and Alloys - 546.2 Tin and Alloys - 547.1 Precious Metals - 931.1 Mechanics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

117. The calculation on liquid holdup in horizontal gasliquid two-phase annular flow

Xiao, Rongge (1, 2); Wei, Bingqian (1); Chen, Gang (1); Xun, Hongyun (1)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 5362-5364, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5988204; **Article number:** 5988204; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Hydraulic and Hydropower, Xi'an University of Technology, Xi'an, 710048, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: Liquid holdup is one of the important parameters in the calculation of multiphase flow , annular flow is a common flow regime in the condensating natural gas pipeline. In this paper, based the momentum equation, combined with pig experimental data of gas-liquid two-phase annular flow in largescale loop, calculated the theoretical liquid holdup. The calculated theoretical data and experimental date were compared and analyzed, the results showed that theory and experiment had a good agreement, thus the experimental and theoretical calculation methods on liquid holdup of gas-liquid two-phase annular flow phase were established. © 2011 IEEE. (10 refs)
Main heading: Liquids
Controlled terms: Natural gas pipelines
Uncontrolled terms: Amount of fluid/sweep-out - Annular flows - Flow regimes - Gas liquids - Liquid hold ups - Momentum equation - Theoretical calculations - Two phase annular flow
Classification Code: 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines
Database: Compendex
Data Provider: Engineering Village

118. Preparation of FeAl coating on P110 steel at low temperature

Wei, Hang-Biao (1); Wang, Yu (2); Li, Wen-Chuan (1); Ling, Guo-Ping (1)
Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 32, n SUPPL., p 166-169, October 2011; **Language:** Chinese; **ISSN:** 10096264; **Publisher:** Editorial Office of Transactions of Materials
Author affiliation: (1) School of Materials Science and Engineering, Zhejiang University, Hangzhou 310027, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710056, China

Abstract: A novel method is developed to form FeAl coating on P110 steel through electrodepositing Al from AlCl3-EMIC (molar ratio 2:1) ionic liquid followed by heat treatment at low temperature. The metallurgical feature and phase structure of coatings were studied by optical microscope (OM), scanning electron microscope (SEM), energy dispersive spectroscopy (EDS) and X-ray diffraction(XRD). The results show that the temperature of aluminization lower than 620°C can maintain the required hardness of P110 steel. The rate of aluminization increases obviously when the temperature is higher than 590°C. The FeAl coating about 8 μm in thickness is obtained by electrodeposition of 6 μm Al coating followed by heat treatment at 620°C for 24 h. (10 refs)
Main heading: Ionic liquids
Controlled terms: Aluminum coatings - Electrodes - X ray diffraction - Electrodeposition - Phase structure - Binary alloys - Energy dispersive spectroscopy - Heat treatment - Temperature - Aluminum alloys - Aluminum chloride - Scanning electron microscopy
Uncontrolled terms: Al coatings - Aluminization - Fe-Al coating - FeAl - Low temperatures - Molar ratio - Optical microscopes - Scanning electron microscopes
Classification Code: 537.1 Heat Treatment Processes - 539.3.1 Electroplating - 541.2 Aluminum Alloys - 641.1 Thermodynamics - 804 Chemical Products Generally - 813.2 Coating Materials - 931.2 Physical Properties of Gases, Liquids and Solids - 933 Solid State Physics
Database: Compendex
Data Provider: Engineering Village

119. Experimental research on the surface roughness characteristics in ultrasonic vibration lapped surface of titanium alloy

Zhu, L. (1); Li, J.Y. (1, 2)
Source: *Applied Mechanics and Materials*, v 43, p 420-423, 2011, *Advance in Mechatronics Technology*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037850008; **DOI:** 10.4028/www.scientific.net/AMM.43.420;
Conference: 6th China-Japan International Conference on Mechatronics, CJCM'2010, September 10, 2010 - September 12, 2010; **Sponsor:** Soochow University of China; Shinshu University of Japan; **Publisher:** Trans Tech Publications
Author affiliation: (1) Dept. of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shanxi, 710065, China (2) Xianyang Baoshi Steel Pipe and Rope Co., Ltd., Xianyang, Shanxi, 712000, China
Abstract: Based on the machining principle of ultrasonic vibration lapping, the surface roughness characteristics of plastic difficult-to-machine titanium alloys are studied through experiments using self-developed ultrasonic vibration lapping device. And the effects of workpiece speed, ultrasonic amplitude and grain size on surface roughness were researched by using single-factor testing way. The research results show that surface roughness is decreased to a certain extent for the assistance of ultrasonic vibration. The corresponding results provide certain reference value for the optimization of processing parameter in ultrasonic vibration lapping. © (2011) Trans Tech Publications. (5 refs)
Main heading: Titanium alloys
Controlled terms: Surface roughness - Ultrasonic waves - Lapping - Ultrasonic effects
Uncontrolled terms: Experimental research - Grain size - Processing parameters - Reference values - Research results - Ultrasonic amplitude - Ultrasonic vibration - Ultrasonic vibration lapping - Workpiece speed
Classification Code: 542.3 Titanium and Alloys - 604.2 Machining Operations - 606.2 Abrasive Devices and Processes - 753.1 Ultrasonic Waves - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

120. Application of Heteropolysaccharide in Acid Gas Injection

Zhang, Jie (1); Guo, Gang (2); Li, Shugang (3)
Source: *Carbon Dioxide Sequestration and Related Technologies*, p 361-374, September 30, 2011; **ISBN-13:** 9780470938768; **DOI:** 10.1002/9781118175552.ch19; **Publisher:** John Wiley and Sons
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China (2) Changqing Oil Field Company, PetroChina, Xi'an, China (3) China National Offshore Oil Company, Tianjin, China
Main heading: Water absorption
Controlled terms: Clay - Oil well flooding
Uncontrolled terms: Acid gas injection - Heteropolysaccharide - Mud ball
Classification Code: 483.1 Soils and Soil Mechanics - 511.1 Oil Field Production Operations - 802.3 Chemical Operations
Database: Compendex

Data Provider: Engineering Village

121. A lower bound for the smarandache function value s(n!±1)

Guo, Yanchun (1); Ren, Ganglian (1); Yang, Yifang (2)
Source: *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*, p 1405-1407, 2011, *Proceedings - 2011 7th International Conference on Computational Intelligence and Security, CIS 2011*; **ISBN-13:** 9780769545844; **DOI:** 10.1109/CIS.2011.313; **Article number:** 6128354; **Conference:** 2011 7th International Conference on Computational Intelligence and Security, CIS 2011, December 3, 2011 - December 4, 2011; **Sponsor:** Beijing Normal University; Guangdong University of Technology; HIC; Xidian University; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Mathematics and Information Science, Xianyang Teacher's University, Xianyang, 712000, Shaanxi, China (2) College of Science, Xi'an Shiyou University, Xi'an, 710065, Shaanxi, China
Abstract: For any integer a > 0, the famous Smarandache function S(a) is defined as the smallest positive integer k such that a|k!. That is S(a) = min{k|k $_{\in}$ N, a|k!}, where N denotes the set of all positive integers. The main purpose of this paper is using the elementary method to study the lower bound of the Smarandache function S(a), and get that if n > 103, then S(n!±1)/n $_{\geq}$ [log n/log log n], where [log n/log log n] is the integral part of log n/log log n. © 2011 IEEE. (9 refs)
Uncontrolled terms: Elementary methods - Integral part - Lower bounds - Positive integers - Shifted factorial - Smarandache functions
Classification Code: 723.4 Artificial Intelligence
Database: Compendex
Data Provider: Engineering Village

122. Real-time detection and segmentation of submerged-arc welding defects in X-ray radiography images

Gao, Weixin (1); Hu, Yuheng (2); Mu, Xiangyang (1); Wu, Xiaomeng (1)
Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 32, n 6, p 1215-1224, June 2011; **Language:** Chinese; **ISSN:** 02543087; **Publisher:** Science Press
Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Dept. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison WI53706, United States
Abstract: An efficient X-ray radiography image analysis algorithm is developed for the real time detection and segmentation of submerged-arc welding defects. The raw X-ray image is first pre-processed to remove impulsive noise, enhance gray scale contrast with sin function, and segment the region of interests (ROI) where the welding image locates. Next, a segmentation method based on OTSU is studied, and examples show that the method can obtain good segmentation result. Lastly, a density based spatial clustering method is developed for defect detection and segmentation. Compared with a baseline threshold segmentation algorithm, the proposed clustering segmentation method demonstrates significant performance enhancement. 100 X-ray radiography images obtained from a real factory were tested; and the proposed algorithm achieves a sensitivity of 74/78 and specificity of 19/21. Compared with previously reported algorithms, the proposed algorithm is robust, efficient and directly applicable to real world applications. (22 refs)
Main heading: X ray radiography
Controlled terms: Clustering algorithms - Cluster analysis - Image segmentation - Nondestructive examination - Defect density - Image enhancement - Impulse noise - Image reconstruction - Signal detection
Uncontrolled terms: Clustering - Clustering segmentation - Density-Based Spatial Clustering - Performance enhancements - Segmentation methods - Segmentation results - The region of interest (ROI) - Threshold segmentation
Classification Code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 903.1 Information Sources and Analysis - 933.1 Crystalline Solids - 933.3 Electronic Structure of Solids
Database: Compendex
Data Provider: Engineering Village

123. Service selection constraint model and optimization algorithm for web service composition (*Open Access*)

Wang, Xue-Long (1, 2); Jing, Zhang (1); Yang, Huai-Zhou (2)

Source: *Information Technology Journal*, v 10, n 5, p 1024-1030, 2011; **ISSN:** 18125638, **E-ISSN:** 18125646; **DOI:** 10.3923/itj.2011.1024.1030; **Publisher:** Asian Network for Scientific Information
Author affiliation: (1) School of Computer Science and Engineering, Xi'an University of Technology, Xi'an, 710048, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: The Web service composition system with static configuration can not adapt to the failure-prone environment and the variable Quality-of-Service (QoS) of component services. Therefore, a dynamic configuration method of Web service composition, Service Selection Constraint Model, is presented in this study. The candidate component services with same functionality are organized as a service class. The functional dependency relationships between component services are reflected as the service selection constraints. The optimal configurations conforming to multi-objective QoS constraints, known as the Pareto optimal solutions, are searched by a special ant colony optimization algorithm for Web service (AC04WS). The feasibility and soundness of the method are proved by simulation experiments and corresponding analysis. By using the presented method, not only the QoS of service composition system is greatly improved, but also the multiple functional and non-functional constraints are satisfied. © 2011 Asian Network for Scientific Information. (14 refs)
Main heading: Web services
Controlled terms: Ant colony optimization - Quality of service - Artificial intelligence - Pareto principle - Websites
Uncontrolled terms: Ant Colony Optimization algorithms - Constraint model - Dynamic configuration - Functional dependency - Pareto optimal solutions - Service compositions - Service selection - Web service composition
Classification Code: 723.4 Artificial Intelligence - 921.5 Optimization Techniques
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

124. Design of downhloe oil-water cyclone separator and the study of laboratory experiment

Cai, Wenbin (1); Xu, Yuangang (1); Zhang, Qi (2)
Source: *Advanced Materials Research*, v 339, n 1, p 630-633, 2011, *Advanced Manufacturing Systems*; **ISSN:** 10226680; **ISBN-13:** 9783037852491; **DOI:** 10.4028/www.scientific.net/AMR.339.630; **Conference:** 2011 International Conference on Materials and Products Manufacturing Technology, ICMPMT 2011, October 28, 2011 - October 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Petroleum Engineering Academy, XI'an Shiyou University, XI'an, Shanxi, 710065, China (2) Petroleum Engineering Academy, China University of Petroleum, Dong Ying, Shan Dong, 257061, China
Abstract: The cyclone plays an important role in the downhole oil-water separator during artificial lift for high water cut oil well, the processes of oil-water separation is completing in the cyclone. The oil-water cyclone separator was designed based on the oil and water density contrast and the cyclone separation theory; the laboratory experiment of cyclone separator was carried out and the relationship of the cyclone oil cut of apex and split ratio, oil-water separation efficiency and the velocity, the pressure loss of the cyclone and the velocity were also studied. When the reinjectivity is within 70% of the produced volume, cyclone separator has good water-oil separation ability, split ratio increased with the increase of the vecolity, when the flow vecolity reached 0.25m/s, the split ratio over 30%. But with the increase of the velocity, the increased rate of the split ratio is reduced. The relationship of the flow rate and cyclone intrinsic pressure loss is nonlinear exponential curve. © (2011) Trans Tech Publications. (4 refs)
Main heading: Oil wells
Controlled terms: Cyclone separators - Storms
Uncontrolled terms: Cyclone - Downholes - Laboratory experiment - Oil water separation - Split ratio
Classification Code: 443.3 Precipitation - 512.1.1 Oil Fields - 802.1 Chemical Plants and Equipment
Database: Compendex
Data Provider: Engineering Village

125. Calculating the phase equilibria of Al Rich Al-Cu-Mg alloys

He, Zhi (1); Li, Lanyun (1); Liu, Yongqin (2)
Source: *Advanced Materials Research*, v 287-290, p 2411-2414, 2011, *Applications of Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851920; **DOI:** 10.4028/www.scientific.net/AMR.287-290.2411; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) College of Material Science and Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China

Abstract: This paper investigates a new method, the Levenberg-Marquardt method, to calculate the phase equilibria of the Al-Cu-Mg ternary alloys. The Levenberg-Marquardt method is the best algorithm to obtain the least-square solution of non-linear equations. Its application to ternary Al-Cu-Mg system is executed in detail in this paper. The calculated phase equilibria agrees well with the experimental results. Furthermore, the Levenberg-Marquardt method is not sensitive to the initial values. © (2011) Trans Tech Publications. (11 refs)
Main heading: Phase equilibria
Controlled terms: Magnesium alloys - Copper alloys - Least squares approximations - Ternary alloys - Aluminum alloys
Uncontrolled terms: Al-Cu-Mg - Al-Cu-Mg alloys - Initial values - Least-square solution - Levenberg-Marquardt method
Classification Code: 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 544.2 Copper Alloys - 549.2 Alkaline Earth Metals - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

126. An approach for plotting reservoir profile with the rendering of material and texture of OpenGL

Pan, Shaowei (1); Li, Husong (2); Zhang, Liumei (1)
Source: *Advances in Intelligent and Soft Computing*, v 104, p 175-178, 2011, *Advances in Computer Science, Intelligent System and Environment*; **ISSN:** 18675662; **ISBN-13:** 9783642237768; **DOI:** 10.1007/978-3-642-23777-5_29; **Publisher:** Springer Verlag
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an, Shanxi 710065, China (2) Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd, Shen Zhen, Guang Dong 518040, China
Abstract: This paper proposes an OpenGL approach with the rendering of material and texture for plotting reservoir profile. Such approach realizes the plotting along X or Y axis and arbitrary direction. At last, the application example shows correctness and intuitiveness of plotting reservoir profile by illustrating sectional drawing from subzone sedimentary facies between S1 and S2 in 106 well of one oil field. © 2011 Springer-Verlag Berlin Heidelberg. (3 refs)
Main heading: Application programming interfaces (API)
Controlled terms: Drawing (graphics) - Rendering (computer graphics) - Oil fields
Uncontrolled terms: Application examples - Arbitrary direction - Cutting planes - OpenGL - Sedimentary facies
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 - 902.1 Engineering Graphics
Database: Compendex
Data Provider: Engineering Village

127. SiC/Cr-Al-Si/glass multilayer oxidation resistant coating for carbon/carbon composites

Huang, M. (1, 2); Li, K.-Z. (2); Li, H.-J. (2); Fu, Q.-G. (2); Wang, Y. (1)
Source: *Surface Engineering*, v 27, n 5, p 340-344, June 2011; **ISSN:** 02670844, **E-ISSN:** 17432944; **DOI:** 10.1179/174329409X409431; **Publisher:** Maney Publishing
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: Multilayer oxidation resistant SiC/Cr-Al-Si/glass coating for C/C composites was prepared by a three step method of pack cementation, plasma spraying and slurry dipping. The phase composition, microstructure and oxidation resistance of multilayer SiC/Cr-Al-Si/glass coating were studied by XRD, SEM and isothermal oxidation test at 1773 K in air respectively. Double layer SiC/Cr-Al-Si coating consisting of Al3·21Cr 0·47, Cr3Si and Al2O3 can protect C/C composites from oxidation for only 61 h due to its high porosity. When a layer of borosilicate glass doped with MoSi2 was coated on the surface of the as sprayed Cr-Al-Si coating, multilayers of SiC/Cr-Al-Si/glass coating were formed such that they can protect C/C composites from oxidation for 95 h with only 5·3% weight loss and the corresponding weight loss rate is only 0·92×1024 g cm-2 h-1. The positive effect of the borosilicate glass coating on the oxidation resistance of the coating may be attributed to its own fluidity at high temperature. © 2011 Institute of Materials, Minerals and Mining. (14 refs)
Main heading: Silicon carbide
Controlled terms: Molybdenum compounds - Multilayers - Aluminum coatings - Aluminum oxide - Oxidation resistance - Zirconium compounds - Carbon carbon composites - Chromium compounds - Alumina - Carbon - Plasma spraying - Borosilicate glass

Uncontrolled terms: Corresponding weights - High temperature - Isothermal oxidations - Multi-layer-coating - Oxidation resistant - Oxidation resistant coating - Pack cementation - SiC/Cr-Al-Si/glass
Classification Code: 415.4 Structural Materials Other Than Metal, Plastics or Wood - 539.1 Metals Corrosion - 802.2 Chemical Reactions - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 812.3 Glass - 813.1 Coating Techniques - 813.2 Coating Materials - 932.3 Plasma Physics
Database: Compendex
Data Provider: Engineering Village

128. Spectroscopic ellipsometry study on HfO2 thin films deposited at different RF powers

Liu, Wenting (1); Liu, Zhengtang (2)
Source: *Advanced Materials Research*, v 287-290, p 2165-2168, 2011, *Applications of Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851920; **DOI:** 10.4028/www.scientific.net/AMR.287-290.2165; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an 710072, China
Abstract: HfO2 thin films were prepared by radio frequency (RF) magnetron sputtering at different RF powers. The influence of RF power on optical properties of HfO2 thin films were investigated by spectroscopic ellipsometry (SE) together with high-resolution transmission electron microscopy (HR-TEM) and Fourier transform infrared spectroscopy (FTIR). The results show that there is a SiO2 interface layer between HfO2 thin film and Si substrate. A four layer structured model consisting of SiO 2 interfacial layer was used to fit the SE data. With the increasing RF power, the refractive index of the HfO2 thin films increases firstly and then decreases and, the extinction coefficient of the HfO 2 thin films increases little. © (2011) Trans Tech Publications. (16 refs)
Main heading: Refractive index
Controlled terms: Magnetron sputtering - Spectroscopic ellipsometry - Interfaces (materials) - Hafnium oxides - High resolution transmission electron microscopy - Fourier transform infrared spectroscopy - Silica - Thin films
Uncontrolled terms: Extinction coefficients - FTIR - HfO2 thin film - Interface layer - Interfacial layer - Radio frequency magnetron sputtering - Rf-power - Si substrates - Structured model
Classification Code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 801 Chemistry - 804 Chemical Products Generally - 941.4 Optical Variables Measurements - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

129. Synergized action of CuCl on recycled cigarette butts as corrosion inhibitor for N80 steel at 90 °c in 15% HCl

Zhang, Juantao (1); Zhao, Jun (2); Zhang, Ningsheng (1, 3); Qu, Chengtun (3); Zhang, Xiang (2)
Source: *Industrial and Engineering Chemistry Research*, v 50, n 12, p 7264-7272, June 15, 2011; **ISSN:** 08885885, **E-ISSN:** 15205045; **DOI:** 10.1021/ie102288b; **Publisher:** American Chemical Society
Author affiliation: (1) Tubular Goods Research Center of CNPC, 710065, Xi'an, China (2) School of Energy and Power Engineering, Xi'An Jiaotong University, 710049, Xi'an, China (3) Xi'An Shiyou University, 710065, Xi'an, China
Abstract: One of effective ways to reduce pollution from cigarette butts is introduced by recycling the cigarette butts. Inhibitor from recycled cigarette butts shows good inhibition properties, but we do not know whether CuCl can help to improve the inhibition efficiency. So, in this study, the impact of CuCl on recycled cigarette butts as corrosion inhibitor for N80 steel at 90 °C in 15% HCl is studied by weight loss, electrochemical noise, polarization, impedance, and X-ray photoelectron spectroscopy. All the results show that the inhibition efficiency of water extracts from cigarette butts in the presence of CuCl is higher than in absence of CuCl, and it can reach 95.3% when 9% water extracts with copper added is used. The X-ray photoelectron spectroscopy results indicate that the N80 steel specimen surface is undamaged and covered with a protective coat formed by copper-added water extracts from cigarette butts. CuCl has synergizing action on recycled cigarette butts as a corrosion inhibitor for N80 steel at 90 °C in 15% HCl. © 2011 American Chemical Society. (49 refs)
Main heading: Chlorine compounds
Controlled terms: Recycling - Steel research - Electrochemical impedance spectroscopy - Efficiency - Photons - Extraction - Photoelectrons - Steel corrosion - X ray photoelectron spectroscopy - Copper compounds - Corrosion inhibitors - Electrochemical corrosion
Uncontrolled terms: Added water - Cigarette butts - Electrochemical noise - Inhibition efficiency - Inhibition property - N80 Steel - Water extracts - Weight loss

Classification Code: 452.3 Industrial Wastes - 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 711 Electromagnetic Waves - 801 Chemistry - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 901.3 Engineering Research - 913.1 Production Engineering - 931.3 Atomic and Molecular Physics
Database: Compendex
Data Provider: Engineering Village

130. Study on continuous monitoring glucose concentration with terbium gallium garnet crystal

Li, Dongming (1, 2); Jia, Shuhai (1); Wang, Ji (1)
Source: *Advanced Materials Research*, v 317-319, p 53-57, 2011, *Equipment Manufacturing Technology and Automation*; **ISSN:** 10226680; **ISBN-13:** 9783037852163; **DOI:** 10.4028/www.scientific.net/AMR.317-319.53;
Conference: 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) Department of Optical Information Science and Technology, School of Science, Xi'an Jiaotong University, Xi'an 710049, China (2) Xi'an Shiyou University, Second Dianzi Road, 710065, China
Abstract: In a continuing effort to develop a noninvasive means of monitoring glucose levels using many methods. In this paper a laser, closed-loop, system was designed and a model was developed to extract the glucose concentration information by Faraday rotation with Terbium Gallium Garnet Crystal(TGG Tb 3Ga5O12). The system was tested using various concentrations of glucose. The results show that for a static, non-moving sample, glucose can be predicted. For the physiologic range (0-16mmol/l) for either laser wavelength (523nm or 632.8nm), the Correlation coefficient value (R2) are 09977and 0.9995 respectively. The measurement results of 24 hours show the system with good stability, which error is less than 0.05%. © (2011) Trans Tech Publications. (15 refs)
Main heading: Glucose
Controlled terms: Gallium - Terbium - Garnets
Uncontrolled terms: Closed-loop - Continuous glucose monitoring - Continuous monitoring - Correlation coefficient - Faraday rotations - Garnet crystals - Glucose concentration - Glucose level - Good stability - Laser wavelength - Measurement results - TGG
Classification Code: 547.2 Rare Earth Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 804.1 Organic Compounds
Database: Compendex
Data Provider: Engineering Village

131. Microstructure of brazed joint and properties of two lead-free solder powders

Xu, Tian-Han (1, 2); Wang, Dang-Hui (1)
Source: *Cailiao Rechuli Xuebao/Transactions of Materials and Heat Treatment*, v 32, n 1, p 28-33, January 2011;
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: Wettability, sphericity and particle size distribution of lead-free solder powders of Sn3Ag2.8Cu and Sn3Ag2.8Cu-0.1Ce and microstracture of brazed joint by the two solder were investigated by means of scanning electron microscopy (SEM) and laser particle size analyzer, and the microstructure of brazed joint and wettability of the powders were compared with those of the corresponding alloys. The results show that the particle size distribution and sphericity of both Sn3Ag2.7Cu-0.1Ce and Sn3Ag2.8Cu powder are good. The Sn3Ag2.8Cu-0.1Ce solder powder possesses better wettability compared to Sn37Pb and Sn3Ag2.8Cu powders. Brazing with Cu substrate, the diffusion layer of Sn3Ag2.8Cu-0.1Ce solder powder is thinner than that of Sn3Ag2.8Cu powder, but the diffusion layers of both Sn3Ag2.8Cu and Sn3Ag2.8Cu-0.1Ce powders with Cu substrate are thicker than that of the corresponding alloy. The Sn3Ag2.8Cu-0.1Ce powder exhibits favorable combination of properties. (14 refs)
Main heading: Microstructure
Controlled terms: Copper - Joints (structural components) - Particle size analysis - Powders - Binary alloys - Brazing - Silver alloys - Tin alloys - Copper alloys - Lead alloys - Particle size - Scanning electron microscopy - Wetting - Lead-free solders - Ternary alloys - Light transmission - Size distribution
Uncontrolled terms: Brazed joint - Cu substrate - Diffusion layers - Laser particle size analyzer - Lead free solders - Powder properties - SEM - Sn-37Pb - Sn-Ag-Cu - Solder powders - Wettability

Classification Code: 408.2 Structural Members and Shapes - 538.1.1 Soldering - 544.1 Copper - 544.2 Copper Alloys - 546.1 Lead and Alloys - 546.2 Tin and Alloys - 547.1 Precious Metals - 741.1 Light/Optics - 922.2 Mathematical Statistics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

132. Research on intelligent frequency conversion control system of pumping unit with auto-adapted function

Xiangqian, Xu (1, 2); Haobin, Zhou (2); Mao, Li (3)
Source: *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*, v 5, p 2246-2248, 2011, *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*; **ISBN-13:** 9781612840857; **DOI:** 10.1109/EMEIT.2011.6023557; **Article number:** 6023557; **Conference:** 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011, August 12, 2011 - August 14, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Engeering Machinery, Chang' An University, Xi'an, China (2) School of Materials Science and Engineering, Xi'An Shiyou University, Xi'an, China (3) Changqing Oilfield Company, Machine Manufacture Plant, Xi'an, China
Abstract: According to present beam pumping unit, the intelligent frequency conversion control system with auto-adapted function is developed on the basis of advanced technology and methods both in the domestic and abroad. The application of frequency changer not only solved the impact problem at startup, but also improved the power factor significantly. For the solution to shortage of liquid in some oil wells and in order to achieve good running effect, the control system collected the parameters of motor unit continuously under the conditions of relatively original and the conditions of normal working and the data of dynamic liquid level. Using the algorithm processing, the control system controlled the velocity of mining fluid by frequency conversion to guarantee for liquid balance. © 2011 IEEE. (8 refs)
Main heading: Energy conservation
Controlled terms: Liquids - Pumps - Control systems
Uncontrolled terms: Advanced technology - auto-adapted - Beam pumping unit - Dynamic liquid levels - Frequency conversion control - Impact problem - Power factors - Pumping unit
Classification Code: 525.2 Energy Conservation - 618.2 Pumps - 731.1 Control Systems
Database: Compendex
Data Provider: Engineering Village

133. Research on pressure-drop type instabilities between different parallel vertical rifled tubes at lower mass velocity

Deng, Zhi-An (1); Luo, Yu-Shan (1); Wang, Hai-Jun (1); Chen, Ting-Kuan (1); Wu, Yuan (2)
Source: *Hedongli Gongcheng/Nuclear Power Engineering*, v 32, n 2, p 68-71+85, April 2011; **Language:** Chinese; **ISSN:** 02580926; **Publisher:** Atomic Energy Press
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
Abstract: An experimental study was carried out on the pressure-drop type instabilities of the two-phase flow of the parallel vertical rifled tube in the high-pressure vapor-water test loop. The comparison of the effects of two types of tubes on the two-phase flow instabilities have been conducted. The results show that with the increase of inlet pressure and mass flow rate, the boundary heat flux of pressure-drop type oscillations increases; the boundary dryness thresholds of pressure-drop type oscillations increase with the increase of inlet pressure. In addition, with the increase of mass flow rat, the boundary dryness thresholds of pressure-drop type oscillations are increased with rifled tube of $\Phi 31.8$ mm×6 mm, but first increased and then decreased for the rifled tube of $\Phi 28.6$ mm×5.8 mm. It is also found that the range of the boundary dryness thresholds and the periods of the oscillations of pressure-drop type oscillations for two types of tubes are similar. Under the same operation parameters, the rifled tube of $\Phi 31.8$ mm×6 mm is more stable.
Main heading: Two phase flow
Controlled terms: Oscillating flow - Heat flux - Tubes (components) - Drops - Mass transfer - Parallel flow - Pressure drop
Uncontrolled terms: Boundary heat flux - High-pressure vapor - Mass flow rate - Operation parameters - Pressure-drop type oscillations - Rifled tube - 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

134. Test evaluation of high strain line pipe material

Chen, Hongyuan (1, 2); Ji, Lingkang (1, 2, 3); Wang, Haitao (1, 2); Qu, Deqiang (4); Gong, Shaotao (1, 2); Li, He (1, 2); Huang, Chengshuai (1, 2); Xie, Wenjiang (1, 2)
Source: *Proceedings of the International Offshore and Polar Engineering Conference*, p 581-585, 2011, *Proceedings of the 21st (2011) International Offshore and Polar Engineering Conference, ISOPE-2011*; **ISSN:** 10986189, **E-ISSN:** 15551792; **ISBN-13:** 9781880653968; **Publisher:** International Society of Offshore and Polar Engineers
Author affiliation: (1) China National Petroleum Corporation, Tubular Goods Research Institute, Xi'an, Shannxi, China (2) Key Lab of Oil Tubular Mechanical and Environmental Behaviour, CNPC, Xi'an, Shannxi, China (3) School of Materials Science and Engineering, Xian Jiaotong University, Xi'an, Shannxi, China (4) School of Materials, Xian Shiyou University, Xi'an, Shannxi, China
Abstract: Tubular Goods Research Institute of China National Petroleum Corporation has experience in both test and research of high grade materials in strain-based design of pipelines. The evaluation of line pipe materials for strain-based design including the conventional performance, longitudinal tensile properties of pipe body which related to strain capacity, resistance to strain aging are mentioned. Full scale test and numerical calculating of pipe deformation are also involved besides these. A systematic program to evaluate pipes for strain-based design (SBD) is present in the paper. Finally a material specification is introduced. Copyright © 2011 by the International Society of Offshore and Polar Engineers (ISOPE). (2 refs)
Main heading: Specifications
Controlled terms: Pipelines
Uncontrolled terms: China national petroleum corporations - High grade materials - High strains - Line pipes - Longitudinal tensile - Material specification - Numerical calculating - Strain-based design
Classification Code: 619.1 Pipe, Piping and Pipelines - 902.2 Codes and Standards
Database: Compendex
Data Provider: Engineering Village

135. Effect of HCO3- concentration on CO2 corrosion for Q235 steel

Wei, Ai Jun (1); Huo, Fu Yong (2); Jiang, Hua Yi (1)
Source: *Advanced Materials Research*, v 197-198, p 1723-1727, 2011, *New and Advanced Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037850350; **DOI:** 10.4028/www.scientific.net/AMR.197-198.1723; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) Provincial Key Laboratory Of Unusual Well Stimulation, Xi'an Shiyou University, Dian Zi 2 Lu, Xi'an, 710065, China (2) Xi'an Changqing Technology Engineering Co.Ltd, XiAn, 710018, China
Abstract: The effects of HCO3- concentration on CO2 corrosion for Q235 steel were investigated by weight loss tests and potentiodynamic polarization curve and EIS (Electrochemical Impedance Spectroscopy) techniques. The results showed that the corrosion rate of Q235 steel decreased wih on increase of HCO3- concentration when [HCO3-] was lower than 600mg/L. An evident active-passive behavior exhibited in anodic process at 1000mg/L&middotHCO 3-. The cathodic reactions were promoted by increasing [HCO3-] when it reached 1000mg/L, H2CO 3 and HCO3- become the most important cathodic reaction. Anodic behavior was an active process at higher [HCO3 -] concentration and the anodic current density increased with the increase of [HCO3-] concentration. © (2011) Trans Tech Publications. (4 refs)
Main heading: Corrosion rate
Controlled terms: Electrochemical corrosion - Electrochemical impedance spectroscopy - Steel corrosion - Carbon dioxide - Polarization
Uncontrolled terms: Active process - Anodic behavior - Anodic current density - Anodic process - Cathodic reactions - EIS - Passive behavior - Polarization curve - Potentiodynamic polarization curves - Q235 steel - Weight loss tests
Classification Code: 539.1 Metals Corrosion - 545.3 Steel - 801 Chemistry - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village

136. Influences of atomizing pressure on preparation processing of lead-free solder powder

Xu, Tianhan (1); Zhao, Maiqun (2); Wang, Danghui (1)
Source: *Advanced Materials Research*, v 183-185, p 2091-2094, 2011, *Environmental Biotechnology and Materials Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037850220; **DOI:** 10.4028/www.scientific.net/AMR.183-185.2091;
Conference: 2011 International Conference on Environmental Biotechnology and Materials Engineering, EBME 2011, March 26, 2011 - March 28, 2011; **Sponsor:** Harbin University of Commerce; Heilongjiang Province Institute of Food Science and Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Materials Science and Engineering, Xi'an University of Technology, Xi'an 710048, China
Abstract: An investigation on the melt delivery tube tip pressure and the effective atomizing efficiency of atomizing powder was carried out. The results show that all of melt delivery tube tip pressures are negative value in the atomization gas pressure range of $_{0.4\sim0.9}$ MPa, and they monotonously increase with increasing the atomizing pressure; when the atomizing pressure is higher than 0.7 MPa, the negative pressure of the melt delivery tube tip is slowly increasing with continuously increasing the atomizing pressure; the atomized powder possesses higher effective atomizing efficiency, more uniform size distribution, better sphericity and smoother surface at the atomizing pressure of 0.7 MPa and the pressure of the melt delivery tube tip of -39.44 kPa. © (2011) Trans Tech Publications. (7 refs)
Main heading: Efficiency
Controlled terms: Atomization - Tubes (components) - Lead-free solders
Uncontrolled terms: Air atomization - Atomization gas - Atomization gas pressure - Atomized powders - Lead free solders - Negative pressures - Negative values - Powder product - Powder properties
Classification Code: 538.1.1 Soldering - 619.1 Pipe, Piping and Pipelines - 802.3 Chemical Operations - 913.1 Production Engineering
Database: Compendex
Data Provider: Engineering Village

137. Study on demodulate technique of high-speed dynamic vibration signal for fiber grating

Jia, Zhen-An (1); Ying, Xu-Dong (1); Qiao, Xue-Guang (1, 2); Ding, Feng (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 22, n 5, p 729-732, May 2011; **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 Shiyou University of Petrolenm, Xi'an, 710065, China (2) Northwest University, Xi'an, 710069, China
Abstract: A demodulation system for fiber Bragg grating(FBG) vibration sensor based on amplified spontaneous emission(ASE) is studied. Using the improved light source, the degree of linear fitting is 0.9994, the linear demodulation for wavelength is realized in the linear range of 2. 5 nm rising edge, and the dynamic measurement range can reach 40-50 dB. The results indicate that this demodulation system has simple structure, fast response speed and good output linearity, and is very suitable for measurement of high-speed dynamic signals. (14 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Bandpass filters - Light sources - Optical variables measurement - Demodulation
Uncontrolled terms: Edge filters - Fiber Bragg grating(FBG) - Fiber light source - Fiber sensor - Wavelength demodulation
Classification Code: 703.2 Electric Filters - 941.4 Optical Variables Measurements
Database: Compendex
Data Provider: Engineering Village

138. A novel fiber bragg grating accelerometer with vertical high frequency and horizontal low frequency

Weng, Yinyan (1); Qiao, Xueguang (1, 2); Xiang, Guanghua (1); Zhang, Jinghua (1); Zhou, Rui (1); Yang, Yang (1); Zheng, Jing (1)
Source: *2011 Symposium on Photonics and Optoelectronics, SOPO 2011*, 2011, *2011 Symposium on Photonics and Optoelectronics, SOPO 2011*; **ISBN-13:** 9781424465545; **DOI:** 10.1109/SOPO.2011.5780593; **Article number:** 5780593; **Publisher:** IEEE Computer Society
Author affiliation: (1) Northwest University, Xi'an, Shannxi 710069, China (2) Key Laboratory of Photoelectricity Gas-oil Logging and Detecting, Xi'an Shiyou University, Ministry of Education, Xi'an, Shannxi 710065, China

Abstract: A novel fiber Bragg grating acceleration sensor with high frequency in vertical direction and low frequency in horizontal direction based on a structure of stainless steel capillary is proposed. In vertical direction its resonant frequency can reach 2200Hz and in horizontal direction its sensitivity can reach 209pm/g so that we can change the direction of the capillary conveniently according to the practical requirements of high frequency or high sensitivity in seismic exploration. © 2011 IEEE. (6 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Natural frequencies - Steel fibers - Fiber optic sensors
Uncontrolled terms: Acceleration sensors - Fiber bragg grating accelerometer - High frequency vibration - Low-frequency vibration - Practical requirements - Seismic exploration - Vertical direction - Vibration acceleration sensor
Classification Code: 741.1.2 Fiber Optics - 819.4 Fiber Products
Database: Compendex
Data Provider: Engineering Village

139. Notice of Retraction: A new high sensitivity fiber Bragg gratings acceleration sensor based on four beams and a ring

Shao, Jun (1, 2); Liu, Junhua (2); Qiao, Xueguang (1); Jia, Zhenan (1); Wang, Ping (2)
Source: *2011 International Conference on Electric Information and Control Engineering, ICEICE 2011 - Proceedings*, p 5639-5641, 2011, *2011 International Conference on Electric Information and Control Engineering, ICEICE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424480395; **DOI:** 10.1109/ICEICE.2011.5777655; **Article number:** 5777655; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Lab. of Optical Fiber Sensing, School of Science, Xi'An Shiyou University, Xi'an 710065, China (2) School of Electrical Engineering, Xi'An Jiaotong University, Xi'an 710049, China
Abstract: A new FBG accelerometer is proposed which elastic element is four beams and a ring. The theoretical model is derived on the basis of material mechanics. It shows that the acceleration has the advantage of high sensitivity with wide work frequency band through optimal designing the ring. It has good prospect for application on oil field. © 2011 IEEE. (5 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Oil fields - Acceleration
Uncontrolled terms: Acceleration sensors - Elastic element - four beams - High sensitivity - Material mechanics - New high - Theoretical modeling - Work frequency
Classification Code: 512.1.1 Oil Fields
Database: Compendex
Data Provider: Engineering Village

140. Kinetic modelling of the adsorption of fenugreek yellow pigment on macroporous resins

Han, Feng (1); Li, Wenhong (2); Li, Dong (2); Tang, Xuan (3)
Source: *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*, p 6917-6920, 2011, *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424491711; **DOI:** 10.1109/RSETE.2011.5965954; **Article number:** 5965954; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Environment Science and Engineering, Chang'an University, Xi'an, China (2) College of Chemical Engineering, Northwest University, Xi'an, China (3) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: The adsorption equilibrium and Kinetic modelling of pigment extracted from Fenugreek after degumming on macroporous resins LS-46 was investigated under differentinitial concentrations. The suitability of the Freundlich and Langmuir adsorption models to the equilibrium data was investigated. The model fitness was determined by R2.Kinetic analyses were conducted using pseudo firstand second-order models and the intraparticle diffusion model. The results showed that Freundlich model gave a better fit of adsorption isotherms than Langmuir models. Adsorption kinetics were more accurately represented by a pseudo one-order model and the intraparticle diffusion model, the adsorption process is mainly controlled by the step of liquid film diffusion, and by the combined effect of intraparticle diffusion. © 2011 IEEE. (6 refs)
Main heading: Adsorption
Controlled terms: Resins - Kinetic theory - Liquid films - Adsorption isotherms - Diffusion - Dyes - Kinetics
Uncontrolled terms: Adsorption equilibria - Fenugreek - Freundlich and Langmuir adsorption - Intra-particle diffusion - Intraparticle diffusion models - Kinetic modelling - Macroporous resin - Yellow pigments

Classification Code: 631.1 Fluid Flow, General - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 815.1.1 Organic Polymers - 931 Classical Physics; Quantum Theory; Relativity
Database: Compendex
Data Provider: Engineering Village

141. Simultaneous sensing of displacement and temperature with a single FBG

Wei, Ting (1, 2); Qiao, Xue-Guang (1, 2); Jia, Zhen-An (1)
Source: *Optoelectronics Letters*, v 7, n 1, p 0026-0029, January 2011; **ISSN:** 16731905; **DOI:** 10.1007/s11801-011-0014-2; **Publisher:** Springer Verlag
Author affiliation: (1) Shaanxi Laboratory of Photoelectric Sensing Logging, Xi'an Shiyou University, Xi'an 710065, China (2) Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an 710068, China
Abstract: A novel fiber Bragg grating (FBG) sensor with simultaneous sensing of displacement and temperature is presented. The FBG is affixed on the cantilever inclinedly. The midpoint of FBG exactly coincides with the zero strain layer of a rectangular beam. The vertical displacement can be measured by the broadened bandwidth of FBG as the bandwidth is insensitive to temperature, while the temperature can be measured by the center wavelength shift as the wavelength shift is insensitive to vertical displacement. With 0.1 nm spectral resolution of the analyzer, sensitivities of bandwidth-displacement and center wavelength-temperature are 0.48 nm/mm and 0.05 nm/°C, resolutions are 0.2 mm and 2.0 °C, and sensing ranges of displacement and temperature are up to 8.5 mm and 45°C respectively. Experimental results match theoretical analyses very well. © Tianjin University of Technology and Springer-Verlag Berlin Heidelberg 2011. (10 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Bandwidth
Uncontrolled terms: Center wavelength - Fiber Bragg Grating Sensors - Rectangular beams - Sensing ranges - Simultaneous sensing - Strain layers - Vertical displacements - Wavelength shift
Classification Code: 716.1 Information Theory and Signal Processing
Funding Details: Number: 2008D-5006-03-08, Acronym: -, Sponsor: -; Number: 708087, Acronym: -, Sponsor: -; Number: 60727004, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: MOE, Sponsor: Ministry of Education of the People's Republic of China; Number: 09JS041, Acronym: -, Sponsor: Education Department of Shaanxi Province; Number: 2007AA03Z413, Acronym: -, Sponsor: National High-tech Research and Development Program;
Funding text: * This work has been supported by the National High Technology Research and Development Program of China (No.2007AA03Z413), the National Natural Science Foundation of China (No.60727004), the Shaanxi Province "13115" Major Scientific and Technological Innovation Works Special Project (No.708087), the Major Science and Technology Project of Ministry of Education of China (No.Z08119), the Innovation Founda-tion of the PetroChina (No. 2008D-5006-03-08), and the Shaanxi Provincial Department of Education Project (No.09JS041). ** E-mail: yolandeweiting @gmail.com
Database: Compendex
Data Provider: Engineering Village

142. Effects of support on the properties of light fuel hydrodesulfurization catalyst

Huang, Fenglin (1); Yan, Shuang (2); Tang, Xuan (2)
Source: *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*, p 3136-3139, 2011, *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781612844572; **DOI:** 10.1109/CECNET.2011.5769345; **Article number:** 5769345; **Publisher:** IEEE Computer Society
Author affiliation: (1) Department of Energy and Power Engineering, Xi'an Jiaotong University, XJTU, Xi'an, China (2) Engineering and Technology Research Center of Refining and Chemical Engineering, Xi'an Shiyou University, XSYU, Xi'an, China
Abstract: This research reviews the effects of the single component, the mixed oxides and the mesoporous materials on catalyst. Titanium dioxide and zirconium dioxide as single component support show higher activity than alumina in hydrodesulfurization, but their specific surface area need be increased further. Compared with the single component, the mixed oxides with higher specific surface area and strength can improve hydrodesulphurization activity. It is pointed out that mesoporous materials with higher specific surface area, larger pore diameter, narrower pore size distribution and longer-range ordered pore, are advantaged to other supports in hydrodesulphurization of the large molecule substance such as aromatic sulfides. © 2011 IEEE. (25 refs)
Main heading: Hydrodesulfurization

Controlled terms: Pore size - Sulfur compounds - Catalysts - Aluminum oxide - Mesoporous materials - Titanium dioxide - Alumina - Specific surface area - Zirconia
Uncontrolled terms: Hydrodesulfurization catalysts - Hydrodesulphurization - Light fuel - Mixed oxide - Pore diameters - Research review - Single components - Zirconium dioxide
Classification Code: 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

143. Analysis for adaptability of reducing LPG C2 content in absorbing-stabilizing system

Huang, Fenglin (1); Qu, Xueli (2); Tang, Xuan (2)
Source: *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*, p 7380-7384, 2011, *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424491711; **DOI:** 10.1109/RSETE.2011.5966074; **Article number:** 5966074; **Publisher:** IEEE Computer Society
Author affiliation: (1) Department of Energy and Power Engineering, Xi'an Jiaotong University, XJTU, Xi'an, China (2) Engineering and Technology Research Center of Refining and Chemical Engineering, Xi'an Shiyou University, XSYU, Xi'an, China
Abstract: According to the low yield of propylene existing in gas fractionation device due to higher C2 content in LPG, the factors affecting on LPG quality in the absorbing-stabilizing system were analyzed. Some technics such as optimization of operating condition and energy-efficient process were adopted to intensify the separation effect, offering the advice with lower C2 content (no more than 0. I %/) in LPG, fulfilling the technological requirements of doubletower process for gas fractionation device. © 2011 IEEE. (9 refs)
Main heading: Energy efficiency
Uncontrolled terms: Absorbing-stabilizing - Absorption-desorption - Energy-efficient process - Fractionation devices - Low-yield - Optimization of operating conditions
Classification Code: 525.2 Energy Conservation
Database: Compendex
Data Provider: Engineering Village

144. Study on local embrittlement of welding heat-affected zone in X80 pipeline steels

Hao, Shiying (1, 2); Gao, Huilin (2); Zhang, Xiaoyong (2); Zhou, Yong (2)
Source: *China Welding (English Edition)*, v 20, n 2, p 36-40, June 2011; **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
Abstract: The relationship between the microstructure and toughness of welding heat-affected zone in X80 grade pipeline steels is studied. It is found that the intercritical reheated coarse-grained heat-affected zone (ICCGHAZ) of experimental steels has the lowest toughness values when the secondary peak temperature is at intercritical $(\alpha+\gamma)$ region during multi-pass welding. The local embrittlement is mainly attributed to the morphology, amount and size of M-A constituent. It is also found that the microstructural inhabitance at ICCGHAZ has a deleterious effect on the toughness. On the basis of above experimental results, it is suggested that the local embrittlement should be prevented by using pre-heating thermal cycle which could eliminate the microstructural inhabitance and using post-heating thermal cycle which could improve the morphology, amount and size of M-A constituent. ©2011 Editorial Board of CHINA WELDING. (5 refs)
Main heading: Microstructure
Controlled terms: Embrittlement - Pipelines - Thermal cycling - Steel pipe - Corrosion - Heat affected zone - Welding
Uncontrolled terms: Coarse-grained heat-affected zones - Deleterious effects - Local embrittlement - Micro-structural - Multi-pass welding - Pipeline steel - Secondary peak - Thermal cycle - X-80 pipeline
Classification Code: 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

145. Inhibition of aloe in corrosion experimental research

Wei, Ai-Jun (1); Bei, Feng (1); Xin, Zhang (2); Huo, Fu-Yong (3)

Source: *Advanced Materials Research*, v 233-235, p 648-651, 2011, *Fundamental of Chemical Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037851197; **DOI:** 10.4028/www.scientific.net/AMR.233-235.648; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Provincial Key Laboratory of Unusual Well Stimulation, Xi'an Shiyou University, Xi'an, China (2) Guangxi Petrochemical Company of PetroChina Company Limited, Guangxi, China (3) Xi'An Changqing Technology Engineering Co. Ltd., Xi'an, China
Abstract: In this corrosion test, simulated brine is used as corrosion medium, added different concentrations of aloe juice. Static weight-loss method is employed, meanwhile, we calculated corrosion rate of Q235 steel and researched on the corrosion inhibition effect of aloe in different temperatures. Results show that aloe is a good inhibitor, rate of corrosion inhibition can reach 80% or more and suitable for the temperature of work environment is less than 60 °C. © (2011) Trans Tech Publications, Switzerland. (4 refs)
Main heading: Corrosion rate
Controlled terms: Corrosion inhibitors - Steel corrosion
Uncontrolled terms: Corrosion inhibition - Corrosion medium - Corrosion tests - Experimental research - Green corrosion inhibitors - Inhibition efficiency - Q235 steel - Rate of corrosions - Weight loss method - Work environments
Classification Code: 539.1 Metals Corrosion - 539.2.1 Protection Methods - 545.3 Steel - 803 Chemical Agents and Basic Industrial Chemicals
Database: Compendex
Data Provider: Engineering Village

146. L-band variable wavelength erbium-doped fiber laser based on over-coupler

Yang, Yang (1); Qiao, Xueguang (1, 2); Liu, Yinggang (2); Zhou, Rui (1); Zhang, Jinghua (1); Zhang, Jing (1)
Source: *Guangxue Xuebao/Acta Optica Sinica*, v 31, n 2, p 0214003, February 2011; **Language:** Chinese; **ISSN:** 02532239; **DOI:** 10.3788/AOS201131.0214003; **Publisher:** Chinese Optical Society
Author affiliation: (1) Physics Department, Northwest University, Xi'an, Shaanxi 710069, China (2) Key Laboratory of Photoelectricity Gas-Oil Logging and Detecting, Ministry of Education, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: The principles and characteristics of a novel fiber loop mirror (FLM), which is composed of polarization controller (PC) and an over-coupler whose coupling ratio is sensitive to wavelength are investigated. The notch depths and positions of loops' reflection spectrum can be changed by adjusting the PC in the loops. The linear cavity of the L-band variable wavelength fiber laser consists of high-birefringence fiber loops and the over-coupler fiber loops. The reflectivity of various wavelengthes and the laser gain are controlled by changing the states of the polarization controllers in the cavity. In the experiment, the stable output wavelength can be changed from 1564 nm to 1592 nm, over 28 nm tuning range. Within this range, the 3 dB line-width is less than 0.2 nm and the side mode suppression ratio (SMSR) is more than 40 dB. (15 refs)
Main heading: Fiber lasers
Controlled terms: Laser mirrors - Birefringence - Fibers - Polarization - Erbium
Uncontrolled terms: Erbium doped fiber laser - Fiber loop mirrors - High birefringence fibers - Output wavelengths - Over-coupler - Polarization controllers - Side mode suppression ratios - Wavelength tunable
Classification Code: 547.2 Rare Earth Metals - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 744.4 Solid State Lasers - 744.7 Laser Components
Database: Compendex
Data Provider: Engineering Village

147. Low-temperature pack aluminizing of X80 pipeline steel through addition of zinc and surface self-nanocrystallization

Wang, Yu (1); Huang, Min (1); Xie, Xiang Xu (1)
Source: *Advanced Materials Research*, v 233-235, p 2516-2521, 2011, *Fundamental of Chemical Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037851197; **DOI:** 10.4028/www.scientific.net/AMR.233-235.2516; **Conference:** 2011 International Conference on Chemical Engineering and Advanced Materials, CEAM 2011, May 28, 2011 - May 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: Rapid low-temperature pack aluminizing was achieved on pipeline steel X80 through combined effect of surface refinement treatment and modification of pack powder. Self-nanocrystallization surface of pipeline steel X80 was obtained by surface mechanical attrition treatment (SMAT). In addition, zinc (Zn), which has lower melting

point than that of Al, was added in the pack powder, to enhance the concentration of active aluminum (Al) atom. The mechanism of the low- temperature pack aluminizing was analyzed by examining the distribution of atoms and coating thickness using EDS and SEM. The study shows that aluminizing rate of as-SMATed pipeline steel with self-nanocrystallization surface is higher than that of non-SMATed pipeline steel under the same pack condition. The addition of Zn can increase the activity of diffusion atoms and accelerate the aluminizing by changing the state of pack powder from a single solid phase to a mixture of solid phase and liquid phase. The diffusion of atoms in this low-temperature pack aluminizing is considered as bulk diffusion which is driven by the activity of diffusion atoms in an unstable state following Fick law. © (2011) Trans Tech Publications, Switzerland. (13 refs)
Main heading: Atoms
Controlled terms: Nanocrystals - Pipelines - Steel pipe - Temperature - Thickness measurement - Surface treatment - Diffusion - Nanocrystallization
Uncontrolled terms: Bulk diffusions - Coating thickness - Combined effect - Fick Law - Liquid Phase - Low temperatures - Modification of pack powder - Pipeline steel - Pipeline steel X80 - Solid-phase - Surface mechanical attrition treatments - Surface refinement - Unstable state - X-80 pipeline
Classification Code: 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 641.1 Thermodynamics - 761 Nanotechnology - 931.3 Atomic and Molecular Physics - 933 Solid State Physics - 933.1 Crystalline Solids - 943.2 Mechanical Variables Measurements
Database: Compendex
Data Provider: Engineering Village

148. Investigation of fabrication and microstructure of the Fe 3Al/Al2O3 composites by hot-pressing process

Jiang, Tao (1); Jin, Haiyun (2)
Source: *Materials Science Forum*, v 695, p 385-388, 2011, *Eco-Materials Processing and Design XII*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-13:** 9783037852224; **DOI:** 10.4028/www.scientific.net/MSF.695.385; **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 Fe3Al/Al2O3 composites were fabricated by hot-pressing process at 1300oC for 2h under the pressure of 35MPa, by using the Fe3Al intermetallics compounds powders fabricated by mechanical alloying and heat treatment. The phase composition and microstructure of the Fe3Al intermetallics compounds powders and Fe3Al/Al 2O3 composites were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were prepared by mechanical alloying for 60h and heat treatment process at 800oC and 1000oC. The XRD patterns results showed that there existed Fe3Al phase and Al2O3 phase in sintered composites. The Fe 3Al/Al2O3 composites exhibited homogenous and compact microstructure, the Fe3Al particles were homogenously distributed in Al2O3 matrix. The mean particles size of Fe3Al was about 3-4μm and the mean particles size of Al 2O3 matrix was about 4-5μm. © (2011) Trans Tech Publications. (12 refs)
Main heading: Microstructure
Controlled terms: Binary alloys - Fabrication - Intermetallics - Powders - Hot pressing - Iron alloys - Alumina - Aluminum oxide - Heat treatment - Iron compounds - Mechanical alloying
Uncontrolled terms: Compact microstructure - Fe3Al/Al2O3 - Heat treatment process - Hot-pressing process - Intermetallics compounds - Particles sizes - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 545.2 Iron Alloys - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

149. Estimation of bed load transport rate based on grain froude similarity considering the existence of sand waves

Wei, Bingqian (1); Xun, Hongyun (1); Sun, Xiaojun (1); Xiao, Rongge (1, 2)
Source: *Advanced Materials Research*, v 148-149, p 30-35, 2011, *Manufacturing Processes and Systems*; **ISSN:** 10226680; **ISBN-13:** 9780878492015; **DOI:** 10.4028/www.scientific.net/AMR.148-149.30; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications

Author affiliation: (1) Institute of Water Resources and Hydro-Electric Engineering, Xi'an University of Technology, Xi'an 710048, Shaanxi, China (2) College of Oil and Gas Resources, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: It is very important for reservoir management to estimate the sedimentation amount deposited in a reservoir. Firstly, the formula for estimating the bed load transport rate in the bed of sand waves of prototype by model experiment was derived based on the similarity of grain Froude number; Secondly, several model experiments that the bed forms is similar with the prototype were carried, and the formula was verified. As a result, when the ratio of grain diameter in the prototype and model is great enough, and the bed forms in the model is similar with that in the prototype, a satisfactory result can be obtained by using the estimation formula for estimating the bed load transport rate of the prototype that sand waves occur in the bed. (10 refs)
Main heading: Sand
Controlled terms: Reservoir management
Uncontrolled terms: Bed forms - Bed-load transport rate - Estimation formulae - Grain diameter - Grain froude similarity - Model experiment - Model experiments - Sand wave bed - Sand waves
Classification Code: 483.1 Soils and Soil Mechanics - 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

150. Aluminizing oil casing steel N80 by a low-temperature pack processing modified with zinc addition

Huang, Min (1); Wang, Yu (1); Zhang, Xiao Yong (1)
Source: *Surface Review and Letters*, v 18, n 3-4, p 141-146, June-August 2011; **ISSN:** 0218625X; **DOI:** 10.1142/S0218625X11014588; **Publisher:** World Scientific
Author affiliation: (1) School of Materials Science and Engineering, Xi'An Petroleum University, Xi'an 710065, China
Abstract: Different aluminide coatings were prepared on oil casing steel N80 at a relatively lower temperature of 530°C for 2 h by pack powder modified with different content of zinc (Zn). The cross-sectional microstructure, element distribution and properties of as-aluminized oil casing steel N80 were investigated by SEM, EDS, micro-hardness test and electrochemical corrosion measurement. Results show that aluminide coating with around 50 μm in thickness can be successfully achieved by a low-temperature pack aluminizing processing with the addition of Zn. Zn in the pack powder can enhance the uniformity and continuity of the coating layer, while it has little effect on the thickness of as-packed coating with the increasing content of Zn from 38.8 wt.% to 84.4 wt.%. As the content of Zn is over 58.8 wt.%, two layer coating consisting of pure Zn layer and FeAl aluminide layer can be formed on oil casing steel N80 substrate. Furthermore, oil casing steel N80 with aluminizing coating shows a higher microhardness than that of original one except in the depth range of pure Zn layer, but the microhardness of oil casing steel substrate does not decrease after aluminizing which can be inferred that low-temperature aluminizing processing reported here will not bring any damages on the mechanical properties of oil casing steel N80. Additionally, a lower self-corrosion current density of oil casing steel N80 with aluminizing coating also indicates that low-temperature aluminizing processing is helpful to the corrosion resistance of oil casing steel N80. © 2011 World Scientific Publishing Company. (15 refs)
Main heading: Corrosion resistance
Controlled terms: Aluminum corrosion - Binary alloys - Electrochemical corrosion - Aluminum alloys - Aluminum coatings - Temperature - Aluminum coated steel - Microhardness - Steel corrosion - Corrosion resistant coatings - Microstructure - Powder coatings
Uncontrolled terms: Corrosion current densities - Cross-sectional microstructure - Element distribution - Low temperatures - Lower temperatures - Microhardness tests - mircrohardness - Oil casing steel N80
Classification Code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 541.1 Aluminum - 541.2 Aluminum Alloys - 545.3 Steel - 641.1 Thermodynamics - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 813.2 Coating Materials - 951 Materials Science
Funding Details: Number: YS30230203, Acronym: -, Sponsor: -; Number: 2011JQ6003, Acronym: -, Sponsor: Natural Science Foundation of Shaanxi Province;
Funding text: This work was supported by Natural Science Foundation of Shaanxi Province under grant No. 2011JQ6003 and Key Discipline Research for Materials Processing Engineering of Shaanxi Province (YS30230203).
Database: Compendex
Data Provider: Engineering Village

151. Influences of atomizing pressure on properties and microstructure at brazed joint of lead-free solder powder

Xu, Tianhan (1, 2); Jin, Haiyun (2); Zhao, Maiqun (3); Wang, Danghui (1)

Source: *Materials Science Forum*, v 695, p 89-92, 2011, *Eco-Materials Processing and Design XII*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-13:** 9783037852224; **DOI:** 10.4028/www.scientific.net/MSF.695.89; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) Shool of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Xi'an Jiaotong University, Xi'an 710049, China (3) Shool of Materials Science and Engineering, Xi'an University of Technology, Xi'an 710049, China
Abstract: The effects of the atomizing pressure on the microstructures and properties of the lead-free solder powder by the supersonic atomizer method were investigated. The microstructures of the brazed joint of solder paste were also observed. The results showed that with increasing atomizing pressures from 0.4 to 0.7 MPa, the powder particles are refined significantly and the effective atomization efficiency increases rapidly, but the oxygen content slightly rises. When the atomizing pressures increases from 0.7 to 0.9 MPa, the effective atomization efficiency only increases slightly, meanwhile both sphericity and roughness of the powder deteriorate. The atomized powder exhibits high effective atomizing efficiency, uniform size distribution, good sphericity and smooth surface when the atomizing pressure is 0.7 MPa. The diffusion layer brazed welded by Sn3Ag2.8Cu paste with Cu substrate is thicker and more irregular than that of by Sn37Pb paste. © (2011) Trans Tech Publications. (7 refs)
Main heading: Microstructure
Controlled terms: Efficiency - Brazing - Lead alloys - Atomization - Copper alloys - Tin alloys - Binary alloys - Ternary alloys - Lead-free solders - Silver alloys
Uncontrolled terms: Air atomization - Atomization efficiency - Atomization gas - Microstructures and properties - Powder particles - Powder products - Powder properties - Properties and microstructures
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 - 913.1 Production Engineering - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

152. Diagenesis of deep sandstone reservoirs and a quantitative model of porosity evolution: Taking the third member of Shahejie Formation in the Wendong Oilfield, Dongpu Sag, as an example (*Open Access*)

Wang, Ruifei (1); Shen, Pingping (2); Zhao, Liangjin (3)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 38, n 5, p 552-559, October 2011; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) PetroChina Research Institute of Petroleum Exploration and Development, Beijing 100083, China (3) Sinopec Zhongyuan Oilfield Company, Puyang 457001, China
Abstract: The diagenesis and porosity evolution in the deep 3rd member of Shahejie Formation of the Wendong Oilfield was analyzed using thin-sections, casting thin-sections, X-ray diffractometry, scanning electron micrograph observations, and other data. Sandstone reservoirs are currently at the late diagenetic period. Pores consist of primary pores and the inter-granular dissolved and intra-granular dissolved pores of feldspar, debris and carbonate cements. Physical properties are mainly controlled by carbonate cementation and dissolution, and distribution of abnormally high fluid pressure. The evolution of porosity parameters shows that primary porosity is 36.75%, the porosity loss rate is 40.49% during the process of mechanic compaction, the porosity loss rate is 37.25% during the process of cementation and metasomasis, and the porosity increase rate is 17.88% during the process of dissolution. The proportion of primary porosity is 55.03%, and that of the secondary porosity is 44.97%. The error rate in the quantitative study of porosity is 0.96%, and the main influencing factor of the error rate is sorting coefficient of detrital rock (S0). (28 refs)
Main heading: Porosity
Controlled terms: Cements - Feldspar - Petroleum reservoir engineering - Cementing (shafts) - Dissolution - X ray diffraction analysis - Oil well flooding - Petroleum reservoirs - Sedimentology - Sandstone - Scanning electron microscopy
Uncontrolled terms: Carbonate cementation - Casting thin sections - Deep reservoirs - Dongpu Sag - Porosity evolutions - Scanning electron micrographs - Secondary pores - Third member of shahejie formations
Classification Code: 412.1 Cement - 481.1 Geology - 482.2 Minerals - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Funding Details: Number: 11JK0741, Acronym: -, Sponsor: -; Number: 2010JQ5002, Acronym: -, Sponsor: Agriculture Department of Shaanxi Province;
Funding text: Received date: 22 Nov. 2010; Revised date: 12 Jul. 2011. * Corresponding author. E-mail: sirwrf2003@163.com Foundation item: Supported by the Natural Science Foundation Project, Shaanxi Province

(2010JQ5002); the Special National Science Project of the Education Department, Shaanxi (11JK0741).
Open Access type(s): All Open Access, Gold
Database: Compendex
Data Provider: Engineering Village

153. The design of wireless communication system in oil log spot

Dong, Peng Min (1); Dang, Xiao Li (1); Wang, Tian Qi (1); Li, Guan Zhu (2); Zhang, Jian Li (2); Xu, Dong Hong (2); Yao, Zhi Gang (2)
Source: *Advanced Materials Research*, v 201-203, p 2349-2353, 2011, *Advanced Manufacturing Systems*; **ISSN:** 10226680; **ISBN-13:** 9783037850398; **DOI:** 10.4028/www.scientific.net/AMR.201-203.2349; **Conference:** 2nd International Conference on Manufacturing Science and Engineering, ICMSE 2011, April 9, 2011 - April 11, 2011; **Sponsor:** Guangxi University; Guilin University of Electronic Technology; University of Wollongong; Korea Maritime University; Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, No.18, Dian Zi Er Road, 710065, Xi'an, Shanxi, China (2) WDEC TuHa Mud Logging and Engineering Company, Tu Ha, 838202, China
Abstract: This article that based on the communication technology of 2.4G global free frequency range adopts technical route which can stabilize and reliable work in high-intensity magnetic field and other disturb spot acquisition of signal technology. The technical route is that collecting the spot signal and making the wireless communication, then restoring the signal to logging. The modern information communication in oil log will come true through this process. This technology not only overcome many malpractice which exist in the wired communication but also allow the logging cabin far from well site, which both reduce the cost of logging and improve the work efficiency © (2011) Trans Tech Publications. (3 refs)
Main heading: Technology transfer
Controlled terms: Signal processing
Uncontrolled terms: Communication technologies - Frequency ranges - Information communication - Oil log - Spot information - Technical route - The wireless communication - Wired communication - Wireless communication system - Wireless communications - Work efficiency
Classification Code: 716.1 Information Theory and Signal Processing
Database: Compendex
Data Provider: Engineering Village

154. Fast detecting and tracking algorithm of Infrared target under complex background

Gao, Guowang (1, 2); Li, Lipin (1); Song, Jiuxu (1); Qin, Hanlin (2)
Source: *ICEOE 2011 - 2011 International Conference on Electronics and Optoelectronics, Proceedings*, v 2, p V2430-V2434, 2011, *ICEOE 2011 - 2011 International Conference on Electronics and Optoelectronics, Proceedings*; **ISBN-13:** 9781612842738; **DOI:** 10.1109/ICEOE.2011.6013275; **Article number:** 6013275; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Photoelectric Logging and Detecting of Oil And Gas, Ministry of Education, Xi'an Shiyou University, Xi'an Shanxi, China (2) School of Technical Physics, Xidian University, Xi'an, Shanxi, China
Abstract: A tracking algorithm of Infrared target is proposed that is the combination of non-linear edge detection and Mean Shift method. The non-linear edge detection algorithm employs dual-window arithmetic operators that has the advantage of few calculation amount, high speed, good image quality and so on. The result of edge detection is binary images. Based on these information, the Mean Shift method is improved to implement target tracking. The tracking algorithm of improved Mean Shift combines the information of the local standard deviation calculation of the target area, describes the target based on the probability density function about gray value and the local standard deviation and selects cascade kernel function to calculate the target density that make up the shortage only using gray to describe the target features. Experimental results show that the edge of infrared target under complex background is detected clearly and infrared target is auto-tracked accurately. © 2011 IEEE. (8 refs)
Main heading: Edge detection
Controlled terms: Probability density function - Binary images - Statistics - Target tracking
Uncontrolled terms: Complex background - Edge detection algorithms - Fast detecting - Infrared target - Kernel function - Local standard deviation - Mean Shift methods - Tracking algorithm
Classification Code: 723.2 Data Processing and Image Processing - 922.1 Probability Theory - 922.2 Mathematical Statistics

Database: Compendex
Data Provider: Engineering Village

155. Advanced well completion engineering: Third edition

Renpu, Wan (1, 2, 3, 4)
Source: *Advanced Well Completion Engineering: Third Edition*, p 1-715, July 2011; **ISBN-13:** 9780123858689; **DOI:** 10.1016/C2010-0-66820-9; **Publisher:** Gulf Professional
Author affiliation: (1) China Petroleum University, China (2) Southwestern Petroleum University, China (3) Xi'an Petroleum University, China (4) Jianghan Petroleum Institute, China
Abstract: Once a natural gas or oil well is drilled, and it has been verified that commercially viable, it must be "completed" to allow for the flow of petroleum or natural gas out of the formation and up to the surface. This process includes: casing, pressure and temperature evaluation, and the proper instillation of equipment to ensure an efficient flow out of the well. In recent years, these processes have been greatly enhanced by new technologies. Advanced Well Completion Engineering summarizes and explains these advances while providing expert advice for deploying these new breakthrough engineering systems. The book has two themes: one, the idea of preventing damage, and preventing formation from drilling into an oil formation to putting the well introduction stage; and two, the utilization of nodal system analysis method, which optimizes the pressure distribution from reservoir to well head, and plays the sensitivity analysis to design the tubing diameters first and then the production casing size, so as to achieve whole system optimization. With this book, drilling and production engineers should be able to improve operational efficiency by applying the latest state of the art technology in all facets of well completion during development drilling-completion and work over operations. © 2011, Elsevier Inc. All rights reserved. (223 refs)
Main heading: Oil wells
Controlled terms: Natural gas wells - Petroleum reservoirs - Natural gas - Wellheads - Sensitivity analysis - Oil well drilling
Uncontrolled terms: Engineering systems - Operational efficiencies - Pressure and temperature - Production casings - State-of-the-art technology - System analysis method - System optimizations - Well completion engineering
Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

156. Optimization and study on a high-performance ASE fiber source

Liu, Ying-Gang (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Zhang, Wei (2); Feng, De-Quan (1); Fan, Wei (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 22, n 10, p 1475-1478, October 2011; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Shaaxi Key Laboratory of Photoelectric Sensing Logging, Xi'an Shiyou University, Xi'an 710065, China (2) School of Environmental and Municipal Engineering, Xi' an University of Architecture and Technology, Xi'an 710055, China
Abstract: Based on the application requirements of light source in fiber Bragg grating (FBG) sensing system a two-stage double-pass and erbium-doped amplified spontaneous emission (ASE) fiber source is designed. The structure of source, way of output, length of erbium-doped fiber and pump power are optimized. The results show that under the optimal condition, the ASE output with central wavelength at 1564.5 nm, output power of 35.8 mW and 85 nm bandwidth in C+L band spectrum is achieved. Its flatness from 1525 nm to 1605 nm is less than 2 dBm and especially within 1537 nm and 1 597 nm, the flatness is less than 0.5 dBm. The output bandwidth, power and spectral flatness have been enhanced simultaneously, which could meet the demands in fiber Bragg grating sensing systems. (17 refs)
Main heading: Light sources
Controlled terms: Fiber Bragg gratings - Bandwidth - Erbium - Spontaneous emission
Uncontrolled terms: Amplified spontaneous emission source - Amplified spontaneous emissions - Application requirements - Central wavelength - Double pass - Er-doped fibers - Erbium doped - Erbium doped fibers - Fiber sources - Gain flatness - In-fiber Bragg gratings - L-band spectrum - Optimal conditions - Output power - Pump power - Sensing systems - Spectral flatness - Two stage
Classification Code: 547.2 Rare Earth Metals - 711 Electromagnetic Waves - 716.1 Information Theory and Signal Processing
Database: Compendex
Data Provider: Engineering Village

157. New method of quantitative evaluation on pressurization resulted from tectonic compression in Kuqa depression

Zhang, Feng-Qi (1, 2); Wang, Zhen-Liang (1); Song, Yan (3); Zhao, Meng-Jun (3); Liu, Shao-Bo (3); Fang, Shi-Hu (3)
Source: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*, v 35, n 4, p 1-7, August 2011; **Language:** Chinese; **ISSN:** 16735005; **DOI:** 10.3969/j.issn.1673-5005.2011.04.001; **Publisher:** University of Petroleum, China
Author affiliation: (1) Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) Research Institute of Petroleum Exploration and Development, PetroChina, Beijing 100083, China
Abstract: Based on compaction effect of tectonic compression, the quantitative evaluation method of pressurization resulted from tectonic compression under truly stratum conditions was investigated. By means of estimation on the sealing coefficient of the main tectonic zone in Kuqa depression and simulation of the maximum principal stress in Kuqa depression in the late Himalaya period, the pressurization amplitude and the contribution resulted from tectonic compression were estimated. The results show that the pressurization amplitude and the contribution of tectonic compression in the late Himalaya period in Kelasu region are the biggest, and secondly in Keshen and Dongqiu regions, and relatively smaller in Dabei and Dina regions. The pressurization amplitudes are 10-13 MPa, 6-10 MPa and generally less than 3 MPa respectively in Kelasu region, Keshen and Dongqiu regions, Dabei and Dina regions. The pressurization contributions of tectonic compression are generally 25%-30%, 12%-25% and less than 5% respectively in Kelasu region, Keshen and Dongqiu regions, Dabei and Dina regions. The pressurization resulted from tectonic compression is none in Yingmaili region, Tabei uprift. (19 refs)
Main heading: Pressurization
Controlled terms: Tectonics - Compaction
Uncontrolled terms: Foreland basin - Kuqa depression - New method - Quantitative evaluation - Tectonic compressions
Classification Code: 481.1 Geology
Database: Compendex
Data Provider: Engineering Village

158. Inversion calculation and site application for high-resolution dual laterolog (HRDL) tool

Liu, Zhenhua (1); Zhang, Jianhua (1)
Source: *Advances in Intelligent and Soft Computing*, v 128, p 245-250, 2011, *Advances in Multimedia, Software Engineering and Computing Vol.1: Proceedings of the 2011 MSEC International Conference on Multimedia, Software Engineering and Computing, November 26-27, Wuhan, China*; **ISSN:** 18675662; **ISBN-13:** 9783642259883; **DOI:** 10.1007/978-3-642-25989-0_41; **Publisher:** Springer Verlag
Author affiliation: (1) Xian Shiyou University, Xian 710065, China
Abstract: A fast and efficient inversion algorithm was suggested for the new developed high-resolution dual laterolog (HRLD) tool. The algorithm can yield reliable estimates for the depth of invasion zone and true-formation resistivity simultaneously. Both the behaviour of HRDL measurements and inversion were studied for various bed thickness from 0.4m to 4m. The present results indicated that the HRLD tool improved the vertical resolution obviously, but the HRLD measurements deviate the true value of formation due to the invasion and shoulder effect. These environment influences can be corrected from the inversion process, thus the original formation parameters can be obtained. A site application of the present inversion algorithm gave the distribution of the true-formation resistivity in a real formation scale. It is helpful for log analysts to evaluate the reservoirs. © Springer-Verlag Berlin Heidelberg 2011. (6 refs)
Uncontrolled terms: Environment influence - Formation parameter - Formation resistivity - Invasion - Inversion - Inversion algorithm - Inversion calculations - Vertical resolution
Classification Code: 701.1 Electricity: Basic Concepts and Phenomena - 723.1 Computer Programming
Database: Compendex
Data Provider: Engineering Village

159. Investigation and analysis of Xi'an college students' health literacy

Zhang, Quancheng (1); Cui, Guangzhi (2)
Source: *Proceedings 2011 International Conference on Human Health and Biomedical Engineering, HHBE 2011*, p 994-997, 2011, *Proceedings 2011 International Conference on Human Health and Biomedical Engineering, HHBE 2011*; **ISBN-13:** 9781612847269; **DOI:** 10.1109/HHBE.2011.6028991; **Article number:** 6028991; **Conference:** 2011

International Conference on Human Health and Biomedical Engineering, HHBE 2011, August 19, 2011 - August 22, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'an Shiyou University, Department of Physical Education, Xi'an, 710065, China (2) Xi'an Shiyou University, Hospital of Xi'an Shiyou University, Xi'an, 710065, China
Abstract: This research has investigated the current situation, and influential factors and cognition degree of 1200 college students' health literacy in Xi'an through Questionnaire survey. The results of the research show that the overall level of health literacy assessment of students in Xi'an university is 67.31%. The elementary knowledge and ideas, life styles and behavior, basic function is 70.09%, 67.79% and 82.22% respectively. The health literacy assessment of male students is 65.03%, and health literacy assessment of female students is 70.75%. This suggests that there is a big difference between female students and male students (p (5 refs)
Main heading: Students
Controlled terms: Health - Surveys
Uncontrolled terms: cognition degree - College students - Colleges and universities - Health literacy - Health promotion - Investigation and analysis - Questionnaire surveys - Science and Technology
Classification Code: 461.6 Medicine and Pharmacology
Database: Compendex
Data Provider: Engineering Village

160. Comparing different feature extraction methods of pump dynamograph based on support vector machine

Wu, Wei (1); Meng, Yangyang (1)
Source: *Lecture Notes in Electrical Engineering*, v 123 LNEE, p 501-506, 2011, *Advances in Automation and Robotics, Vol. 2 - Selected Papers from the 2011 International Conference on Automation and Robotics, ICAR 2011*; **ISSN:** 18761100, **E-ISSN:** 18761119; **ISBN-13:** 9783642256455; **DOI:** 10.1007/978-3-642-25646-2_65; **Conference:** 2011 International Conference on Automation and Robotics, ICAR 2011, December 1, 2011 - December 2, 2011; **Sponsor:** IERI Circuits and Systems Society; Information Engineering Research Institute (IERI); **Publisher:** Springer Verlag
Author affiliation: (1) School of Mechanical Engineering, Xian Shiyou University, 710065, China
Abstract: The paper use two different methods of image moment invariants and wavelet packet-energy entropy (WP-EE) to extract the pump dynamograph's eigenvector, then making the collected date is training samples and test samples for the support vector machine (SVM) classifier separately, finally comparing the accuracy of two methods. The experimental results show that when choosing classifier based on support vector machine, the method of extracting image moment invariants has more higher accuracy than the other method. © 2011 Springer-Verlag. (6 refs)
Main heading: Support vector machines
Controlled terms: Entropy - Vectors - Image processing - Wavelet analysis
Uncontrolled terms: Feature extraction methods - Image moments - Test samples - Training sample - Wavelet packet energies
Classification Code: 641.1 Thermodynamics - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 921 Mathematics - 921.1 Algebra
Database: Compendex
Data Provider: Engineering Village

161. Calculation of axial expansion in vertical shell and tube heat exchanger with expansion joint

Li, Xiao Hong (1)
Source: *Key Engineering Materials*, v 480-481, p 868-871, 2011, *Materials Engineering for Advanced Technologies*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9783037851319; **DOI:** 10.4028/www.scientific.net/KEM.480-481.868; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) Mechanic Engineering College, Xian Shiyou University, Xi' an 710065, China
Abstract: In this paper, the axial elongation of vertical shell and tube heat exchanger with expansion joint are studied based on thetheories of static mechanics. The axial elongations of heat exchanger's tube side and shell side that causes by thermal expansion, internal pressure and gravity are considered individually. By comparing and analyzing a typical example, it is shown that thermal expansion is the key reason other than internal pressure and gravity to the axial elongation of tube side and shell side structure. The results show that the axial elongation induced by internal pressure and gravity except thermal expansion is only 5% of total and can be eliminated in engineering practice. © (2011) Trans Tech Publications, Switzerland. (5 refs)

Main heading: Heat exchangers
Controlled terms: Shells (structures) - Thermal Engineering - Elongation - Expansion joints - Thermal expansion
Uncontrolled terms: Axial elongation - Axial expansion - Engineering practices - Shell-side - Static mechanics - Vertical shells
Classification Code: 408.2 Structural Members and Shapes - 616.1 Heat Exchange Equipment and Components - 641.1 Thermodynamics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

162. Assembly and motion simulation of turntable of drilling rig based on solidworks

Wang, Jiangping (1); Shang, Qi (1); Bao, Zefu (1)
Source: *Key Engineering Materials*, v 474-476, p 2253-2257, 2011, *Advanced Materials and Computer Science*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9783037850978; **DOI:** 10.4028/www.scientific.net/KEM.474-476.2253; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) School of Mechanical Engineering, Xian Shiyou University, Xian, Shaanxi (710065), China
Abstract: Three-dimensional solid model of a turntable of a drilling rig is built utilizing the modeling functions of an engineering software SolidWorks. The virtual assembly for every components of the turntable is accomplished with the given assembly sequence in SolidWorks environment. The motion simulation and animation of simulation processes for the turntable under given conditions are carried out with module SOSMOSMotion of SolidWorks, and the dynamic interference check is also completed, so as to guarantee the correctness of the part design and improve the overall design efficiency, accuracy and intuitiveness. The study of assembly and motion simulation of the turntable based on SolidWorks can lay the foundation for communication and evaluation of design process as well as the manufacturing of the overall drilling rig. © (2011) Trans Tech Publications. (3 refs)
Main heading: Phonographs
Controlled terms: Computer software - Drilling rigs - Virtual prototyping - Virtual reality
Uncontrolled terms: Assembly sequence - Engineering software - Evaluation of designs - Model functions - Motion simulations - Simulation process - Three-Dimensional Solid Modeling - Virtual assembly
Classification Code: 511.2 Oil Field Equipment - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 752.3.1 Sound Reproduction Equipment
Database: Compendex
Data Provider: Engineering Village

163. Application of image mosaic algorithm in lateral multi-lens video logging

Hu, Hong-Tao (1); Lin, Xia (1); Li, Zhou-Li (2)
Source: *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011*, v 1, p 539-542, 2011, *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011*; **ISBN-13:** 9780769542966; **DOI:** 10.1109/ICMTMA.2011.137; **Article number:** 5720840; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Computer Science, Xi'an ShiYou University, Xi'an, China (2) School of Electronic Engineering, Xi'an ShiYou University, Xi'an, China
Abstract: The wall sequence images acquired by lateral multi-lens video logging method had some peculiarities that the overlap region of adjacent images can be estimated. This paper proposed an image mosaic algorithm which first estimated the overlap areas of adjacent images, and then matched for the areas with SIFT feature matching algorithm. To achieve seamless image stitching, the gradated in-and-out linear fusion algorithm had been adopted to match overlap images. The experiments showed that this method can rapidly and accurately extract the corresponding adjacent image matching points, acquire the panoramic mosaic image of the lateral multi-lens video logging, and lay a foundation for the logging results analysis in the next stage. (8 refs)
Main heading: Image fusion
Controlled terms: Image acquisition
Uncontrolled terms: Image mosaic - Image mosaic algorithms - Linear images - Logging methods - Multi-lens - Panoramic mosaic image - Sequence images - SIFT Feature
Classification Code: 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing
Database: Compendex
Data Provider: Engineering Village

164. Application of ID3 algorithm in exercise prescription

Zhang, Quancheng (1); You, Kun (1); Ma, Gang (2)
Source: *Lecture Notes in Electrical Engineering*, v 99 LNEE, n VOL. 3, p 669-675, 2011, *Electrical Power Systems and Computers - Selected Papers from the 2011 International Conference on Electric and Electronics, EEIC 2011*; **ISSN:** 18761100, **E-ISSN:** 18761119; **ISBN-13:** 9783642217463; **DOI:** 10.1007/978-3-642-21747-0_85; **Conference:** 2011 International Conference on Electric and Electronics, EEIC 2011, June 20, 2011 - June 22, 2011; **Sponsor:** Nanchang University; **Publisher:** Springer Verlag
Author affiliation: (1) Department of Physical Education, Xi'an Shiyou University, Xi'an, 710065, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: This paper adopts the ID3 algorithm for mining hidden classification rules from mass students' physical constitution evaluation and sports training result data. It is helpful for PE teacher on planning exercise prescriptions toward college students with different physical constitution conditions by decision support. The algorithm generates a decision tree by choosing attributes with maximum information gain ratio for classification (Fig. 1). Such process involves a classification training set R(Table 1) towards original data, a information gain calculation according to overall evaluation of the physical constitution, separately investigate information gain ratio between physical constitution overall evaluation and each classification attribute, eliminating classification attribute IDs which has no practical significance. © Springer-Verlag Berlin Heidelberg 2011. (10 refs)
Main heading: Classification (of information)
Controlled terms: Data mining - Students - Decision support systems - Decision trees - Teaching
Uncontrolled terms: Classification analysis - Classification rules - Decision supports - Exercise prescription - ID3 algorithm - Information gain - Information gain ratio - Sports trainings
Classification Code: 716.1 Information Theory and Signal Processing - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 903.1 Information Sources and Analysis - 912.2 Management - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 961 Systems Science
Database: Compendex
Data Provider: Engineering Village

165. Study and field application on broken-down tecnology of acoustic and negative pressure

Yuan, Shibao (1)
Source: *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*, p 5259-5261, 2011, *2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424494392; **DOI:** 10.1109/MACE.2011.5988177; **Article number:** 5988177; **Conference:** 2011 2nd International Conference on Mechanic Automation and Control Engineering, MACE 2011, July 15, 2011 - July 17, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'an Shiyou University, XI'an, China
Abstract: Due to the damage and sanding of the formation, the oil productivity is severely affected. The applicability of the conventional flowing technology with gassy water is very limited. The effect of broken-down is not very satisfying. In order to solve this problem above mentioned, this paper proposed the Acoustic Assistant drainage and Broken-down Technology. This technology combines the Acoustic Assistant drainage with the flowing technology with gassy water together. Through the common function of acoustic vibration and flowing with gassy water, the sweeping areas are enlarged, at the same time, the back-drainage of the formation is strengthened, which makes the ultimate effect of broken-down is improved. This technology has been widely applied in the GUDAO oilfield, SHENGLI, the effect is obviously better than that of the conventional flowing technology with gassy water. It has a good effect on new wells, the wells with long time shut-in and the wells with low productivity. © 2011 IEEE. (5 refs)
Main heading: Productivity
Controlled terms: Oil fields
Uncontrolled terms: Acoustic vibration - Broken down - Effect analysis - Field application - Gudao oilfield - Negative pressures - Oil productivities
Classification Code: 512.1.1 Oil Fields
Database: Compendex
Data Provider: Engineering Village

166. Effects of sensitizing treatment on microstructure and mechanical properties of 2205 duplex stainless steel

Luo, She-Ji (1); Zheng, Xin-Xia (2)
Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 5, p 76-80, May 2011; **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) School of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The effect of sensitizing treatment on the microstructure and the mechanical properties of 2205 duplex stainless steel was studied by means of optical microscopy (OM), scanning electron microscopy (SEM), transmission electron microscopy (TEM) and mechanical property testing. The results show that the σ phase and the X phase are precipitated at the boundaries ferrite/austenite and ferrite/ferrite under sensitizing treatment at 850°C, and the precipitated phase content increases with increasing of sensitizing treatment time. Sensitizing treatment leads the increase of the strength and dramatic decrease of the plasticity. The tensile fracture surfaces are characteristic of cleavage and facet, and the second cracking exists on the main fracture surface as the sensitizing treatment time increases. When sensitizing treatment time is 2 h, the impact toughness of the samples at room temperature decreases from 290 J to 10 J. The impact fracture surfaces are changed from dimple to cleavage. The decrease of the impact toughness can be attributed to appearance of the precipitated phase. (10 refs)
Main heading: Ferrite
Controlled terms: Fracture testing - Microstructure - Stainless steel - Tensile strength - High resolution transmission electron microscopy - Steel testing - Fracture - Fracture toughness - Scanning electron microscopy
Uncontrolled terms: 2205 duplex stainless steel - Fracture surfaces - Mechanical property testing - Microstructure and mechanical properties - Precipitated phase - Sensitizing treatment - Temperature decrease - Tensile fracture surfaces
Classification Code: 531.2 Metallography - 545.3 Steel - 741.3 Optical Devices and Systems - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

167. Development of full position portable coiled tubing Straightener

Liu, Xiaoliu (1); Shang, Qi (2)
Source: *Advanced Materials Research*, v 308-310, p 627-631, 2011, *Advanced Design Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037852132; **DOI:** 10.4028/www.scientific.net/AMR.308-310.627; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Material and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: To solve the problems of bending, deformation, complicated, hard to center occurred in the assembly welding of coiled tubing; the coiled tubing Straightener is developed by backward applying the theory of three-point bending. Its prominent features are: pressure head pushes directly from the middle; external circular arc explorators on the two sides rotate and support. It realizes the fast and damage-free straightening of coiled tubing. By replacing pressure head, changing the external circular arc radius of explorators on the two sides and adjusting the distance between two symmetrical support points, it can do the precise straightening of available metal coiled tubing of all specifications. © (2011) Trans Tech Publications. (3 refs)
Main heading: Coiled tubing
Uncontrolled terms: Circular arc - Damage-free - Pressure head - Pressure heads - Prominent features - Straightener - Three point bending
Classification Code: 619.1 Pipe, Piping and Pipelines
Database: Compendex
Data Provider: Engineering Village

168. Optimization and control researches into the cooling system of pneumatic disc brake

Zhengyong, Duan (1); Yong, Peng (1); Heng, Wu (1)
Source: *Communications in Computer and Information Science*, v 225 CCIS, n PART 2, p 644-652, 2011, *Applied Informatics and Communication - International Conference, ICAIC 2011, Proceedings*; **ISSN:** 18650929; **ISBN-13:** 9783642232190; **DOI:** 10.1007/978-3-642-23220-6_82; **Publisher:** Springer Verlag
Author affiliation: (1) Xi'an Shiyou University, Shaanxi Xi'an, China

Abstract: This paper present some researches into the cooling and control system of pneumatic disc brake. Firstly, obtain that the friction torque has a great variation with the structure parameters of the pneumatic disc brake during running-in and non-running-in periods, then put forward the selection criterion of the friction torque when do strength check and thermal analysis for it. Secondly, based on the frictional mechanics, bring forward the heat transfer conditions when the brake works on the worst braking condition safely, furthermore, design some key parameters for this brake, to propose that to one type disc brake, its coefficient of rib must be more than 3.6. And finally, in terms of the design of the brake, determine that, for the cooling system, these parameters need to be monitored or controlled are the angular speed and torque of the shaft of the drawworks, the temperatures of the coolant at the inlet and the outlet, pressure of the compressed air which can be controlled manually, flows of the coolant and the cool water which controlled automatically. © 2011 Springer-Verlag. (11 refs)
Main heading: Pneumatics
Controlled terms: Brakes - Coolants - Friction - Cooling - Cooling systems - Thermoanalysis - Thermoelectric equipment - Compressed air
Uncontrolled terms: Braking conditions - Disc brakes - Frictional mechanics - Heat transfer conditions - Optimization and control - Pneumatic disc brakes - Selection criteria - Structure parameter
Classification Code: 602 Mechanical Drives and Transmissions - 615.4 Thermoelectric Energy - 632.3 Pneumatics - 641.2 Heat Transfer - 801 Chemistry - 803 Chemical Agents and Basic Industrial Chemicals
Database: Compendex
Data Provider: Engineering Village

169. Slippage effect and quasi starting pressure in low permeability water-bearing gas reservoirs

Liu, Xiaojuan (1); Yan, Jian (1); Liu, Yi (2)
Source: *Society of Petroleum Engineers - SPE Reservoir Characterisation and Simulation Conference and Exhibition 2011, RCSC 2011*, p 138-146, 2011, *Society of Petroleum Engineers - SPE Reservoir Characterisation and Simulation Conference and Exhibition 2011, RCSC 2011*; **ISBN-13:** 9781618394224; **Conference:** SPE Reservoir Characterisation and Simulation Conference and Exhibition 2011, RCSC 2011, October 9, 2011 - October 11, 2011; **Sponsor:** ADCO; ADMA-OPCO; Baker Hughes; et al.; Kuwait Oil Company; ZADCO; **Publisher:** Society of Petroleum Engineers
Author affiliation: (1) Xi'an Shiyou University, China (2) Changqing Oilfield Company, China
Abstract: Lab tests were carried out to study the gas slippage and quasi starting pressure in water-bearing gas reservoirs of low permeability. The permeability of the testing cores is mainly lower than 1 mD. The testing results indicate that: for similar water saturation, the lower the permeability is, the more serious the gas slippage is. For similar permeability, with the increasing of water saturation, the gas slippage effect increases first and then decreases. The turning point is called critical water saturation (Sw)c 1. The relationship between the critical water saturation and the core coefficient is binomial, where the core coefficient is the ratio between permeability and porosity. By curve fitting, it was found that, when the water saturation is lower than a critical value, gas slip factor is a logarithmic function of the ratio of core coefficient and water saturation; when water saturation is higher than the critical value, the gas slip factor is a logarithmic function of the multiplication of core coefficient and water saturation. The quasi starting pressure gradient may exist when the gas flow in porous media that contains water. The reason is that the increase of capillary resistance is larger than gas slippage as the water saturation rises. In further, it was concluded that there is another critical water saturation (Sw)c2. When the water saturation is larger than the critical value (Sw)c2, the quasi starting pressure gradient exists. The relationship between the quasi starting pressure gradient and the ratio of core coefficient and water saturation is a power function. Further more, the relationship between the critical water saturation and absolute permeability is also a power function. Copyright 2011, Society of Petroleum Engineers. (5 refs)
Main heading: Gases
Controlled terms: Flow of gases - Gas permeability - Pressure gradient - Petroleum reservoir evaluation - Curve fitting - Low permeability reservoirs - Porous materials
Uncontrolled terms: Absolute permeability - Flow in porous media - Gas slippage effect - Logarithmic functions - Permeability and porosities - Quasi starting pressure gradients - Starting pressure - Water- bearing gas reservoirs
Classification Code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 631.1.2 Gas Dynamics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids - 944.4 Pressure Measurements - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

170. Enterprise knowledge transfer performance comprehensive evaluation research

Si, Xunlian (1); Song, Shuxia (1)
Source: *Proceedings - 2011 International Conference of Information Technology, Computer Engineering and Management Sciences, ICM 2011*, v 4, p 145-149, 2011, *Proceedings - 2011 International Conference of Information Technology, Computer Engineering and Management Sciences, ICM 2011*; **ISBN-13:** 9780769545226; **DOI:** 10.1109/ICM.2011.208; **Article number:** 6113712; **Conference:** 2011 International Conference on Information Technology, Computer Engineering and Management Sciences, ICM 2011, September 24, 2011 - September 25, 2011; **Sponsor:** California State University San Bernardino; CSR Zhuzhou Institute Co., LTD; Nanjing University of Information Science and Technology; The International Information Management Association; US Jiangsu Economy Trade and Culture Association; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'An Shiyou University, Xi'an Shaanxi 710065, China
Abstract: Based on the characteristics of enterprise knowledge transfer, an evaluation index system for enterprise knowledge transfer has been established whose second-level targets include the knowledge source factor, enterprise internal environmental factor, knowledge characteristics and enterprise cooperation scene. The application of the fuzzy Borda analysis method has been introduced which is based on checked tussah acquisition methood to determine all levels of index weight.Finally, an example is comprehensively evaluated by the proposed Delphi method and fuzzy evaluation method. Practical results have shown the scientific value and feasibility of this model. © 2011 IEEE. (11 refs)
Main heading: Knowledge management
Uncontrolled terms: Analysis method - Comprehensive evaluation - Enterprise cooperations - Evaluation index system - Fuzzy evaluation method - Knowledge characteristics - Knowledge transfer - Knowledge transfer performance
Classification Code: 723.5 Computer Applications - 903.3 Information Retrieval and Use
Database: Compendex
Data Provider: Engineering Village

171. Development of CPU module test device based on the virtual instrument

Jia, Huiqin (1)
Source: *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*, v 3, p 1308-1312, 2011, *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*; **ISBN-13:** 9781612840857; **DOI:** 10.1109/EMEIT.2011.6023334; **Article number:** 6023334; **Conference:** 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011, August 12, 2011 - August 14, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Electronics Engineering Institute, Xi'an Shiyou University, China
Abstract: The current method for test CPU module is to load the Built-in-Test program in IDE 386 software, which is used to test all the performance of CPU module, and must run under Windows 98 operation system. But now because the most computers install the windows XP operation system, if the above method is used, so it's needed to install two operation systems on test computers. In order to realize the automatic test, CPU Module Test Device (CMTD) is designed and developed, which is used to test CPU module with various types and buses automatically. The virtual instrument PXI architecture is used to design the CMTD and simulate CPU bus signals, designed adapter is used to connect CPU signals with PXI bus module. Test-Item configuration file is used to describe the Test-Flow, and the Intel command is sent to CPU through RS-232 interface, the open-circuit and short-circuit test of all the CPU signals is realized using the propose of matrix switch and multimeter. Test software is designed under the graphical LabVIEW platform, and which realized the functions of system self-test, system calibration, Built-in-Test, covering test, test result query and report generation. Now the device is in use on CPU module production line, which improves the detection efficiency of CPU modules. © 2011 IEEE. (8 refs)
Main heading: Digital instruments
Controlled terms: Automatic testing - Software testing - Windows operating system - Computer programming languages - XML
Uncontrolled terms: Adapter - Built in tests - Configuration files - RS-232 - Virtual instrument
Classification Code: 723 Computer Software, Data Handling and Applications - 723.1.1 Computer Programming Languages - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

172. DLA simulation with sticking probability for viscous fingering

Zhang, Jianhua (1); Luo, Jun (1); Liu, Zhenhua (1)

Source: *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*, p 4044-4047, 2011, *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*; **ISBN-13:** 9781612844572; **DOI:** 10.1109/CECNET.2011.5768540; **Article number:** 5768540; **Publisher:** IEEE Computer Society
Author affiliation: (1) Science College, Xi'an Shiyou University, Xi'an, China
Abstract: The morphological evolution of viscous fingering, which occurred in two-dimensional Hele-Shaw cells with various displaced fluids, were simulated using a modified diffusion-limited aggregation (DLA) model on off-lattices. Different from other DLA models, the present model introduced three adjusted parameters. They control the morphological evolution of DLA clusters from a skeletal pattern to a fleshy pattern, so that experimental viscous fingering occurred in a Hele-Shaw cell can be simulated with various shapes. The fractal dimension of fractal clusters can be calculated simultaneously. The present algorithm was used to simulate the experiments of glue and glycerol displaced by water respectively in a Hele-Shaw cell. The present simulation and experiment are in good agreement. In addition, the calculation results of fractal dimensions for viscous fingering indicated that the great viscosity of displaced fluid responds to high fractal dimension for same driving fluid. The present computer model can simulate different viscous fingerings for various experimental conditions and provides a new investigation site for fluid dynamic behaviors of viscous fingering. © 2011 IEEE. (9 refs)
Main heading: Fractal dimension
Controlled terms: Fluid dynamics - Diffusion in liquids
Uncontrolled terms: Calculation results - Computer modeling - Diffusion limited aggregation - Dynamic behaviors - Experimental conditions - Morphological evolution - Sticking probability - Viscous fingering
Classification Code: 921 Mathematics - 931.1 Mechanics
Database: Compendex
Data Provider: Engineering Village

173. Analysis and evaluation of operation mode for 35kV loop-network of oilfield distribution

Meng, Wu Xiao (1); Li, Yan Su (1); Xin, Gao Wei (1)
Source: *Advances in Intelligent and Soft Computing*, v 104, p 227-232, 2011, *Advances in Computer Science, Intelligent System and Environment*; **ISSN:** 18675662; **ISBN-13:** 9783642237768; **DOI:** 10.1007/978-3-642-23777-5_38; **Publisher:** Springer Verlag
Author affiliation: (1) Xi'An Shiyou University, Xi'an, Shaanxi Province, China
Abstract: Two operation mode of 35kV loop-network of oilfield are introduced in this paper. The power flow calculation and evaluation are also given for each mode. Comparing two modes from economy, reliability and sensitivity, results show that the closed loop mode is feasible. © 2011 Springer-Verlag Berlin Heidelberg.
Main heading: Electric load flow
Controlled terms: Oil well flooding
Uncontrolled terms: Analysis and evaluation - Closed loop mode - Closed loops - Loop networks - Open-loop - Operation mode - Power flow calculations - Reliability and sensitivity
Classification Code: 511.1 Oil Field Production Operations - 706.1 Electric Power Systems
Database: Compendex
Data Provider: Engineering Village

174. Application study on detection of pipeline weld defects based on SVMs

Meng, Wu Xiao (1); Xin, Gao Wei (1); Nan, Tang (1)
Source: *Advances in Intelligent and Soft Computing*, v 104, p 221-226, 2011, *Advances in Computer Science, Intelligent System and Environment*; **ISSN:** 18675662; **ISBN-13:** 9783642237768; **DOI:** 10.1007/978-3-642-23777-5_37; **Publisher:** Springer Verlag
Author affiliation: (1) Xi'An Shiyou University, Xi'an, Shaanxi Province, China
Abstract: A new method which is based on Support Vector Machines (SVMs) for the identification of pipeline weld defects is proposed. In order to enhance the quality of the image, a lot of actions, such as image enhancement, morphological processing and edge detection, have been dealt with. As a result, many problems, such as excessive noise, fuzzy edge and low contrast, have been solved and it's beneficial to extract the features of the image. Firstly, the results of the identification of the second category are given. Then combined with the characteristics of multiple classifications, three structures of clustering are presented and the structure of one against one has been adopted to identify the samples after analysis. The experimental results show that the proposed model has a lot of advantages, such as the identification accuracy, high speed, easy to implement, etc, and it's suitable for identification of pipeline weld defects. © 2011 Springer-Verlag Berlin Heidelberg. (10 refs)

Main heading: Image segmentation
Controlled terms: Feature extraction - Edge detection - Support vector machines - Pipelines - Welds - Defects - Image enhancement
Uncontrolled terms: Application studies - Identification accuracy - Low contrast - Morphological processing - Multiple Classification - Pipeline welds - Support vector machine (SVMs) - Weld defects
Classification Code: 538.2 Welding - 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

175. Stage isolation failure of non-packer reasons in openhole horizontal completion

Zhou, Desheng (1); Yuan, Hong (2)
Source: *SPE Production and Operations Symposium, Proceedings*, p 795-801, 2011, *Society of Petroleum Engineers - SPE Production and Operations Symposium 2011, SPEOKC 2011*; **ISBN-13:** 9781617827112; **DOI:** 10.2118/142367-ms; **Publisher:** Society of Petroleum Engineers (SPE)
Author affiliation: (1) Xian Petroleum University, China (2) IHS, China
Abstract: Multistage fracturing in openhole horizontal completion is an economic technology in the production of low permeability reservoirs. Openhole horizontal completion requires sealing the surface of horizontal wellbore rock directly to create stages for fracturing. Packers are usually used to create the sealing stages. However, stage isolation failure is not uncommon during openhole fracturing. Packer is commonly blamed for the failure in the industry. The paper studies the other (non-packer) reasons of the isolation failure based on rock mechanics, fracturing theory, and finite element analysis. The paper presents that stage isolation may be failure even for perfect packers. Four sources may yield the multistage isolation failures in addition to packer itself. They are wellbore wavy, wellbore diameter change, wellbore deformation to oval shape, and axial fracture and fracture initializing location. To avoid the non-packer isolation failure, horizontal wellbore survey, stress and deformation around a openhole horizontal wellbore should be analyzed. Engineers may use the paper to improve multistage fracturing in openhole horizontal completion. It is also useful in packer selecting, setting, and designing for an openhole horizontal completion. Copyright 2011, Society of Petroleum Engineers. (2 refs)
Main heading: Deformation
Controlled terms: Fracture - Packers - Horizontal wells - Finite element method - Low permeability reservoirs - Boreholes - Petroleum reservoir evaluation - Rock mechanics
Uncontrolled terms: Economic technology - Horizontal completions - Multistage fracturing - Openhole - Sealing stages - Stress and deformation - Wellbore
Classification Code: 483.1 Soils and Soil Mechanics - 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 921.6 Numerical Methods - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

176. Designing of temperature and thermal displacement measurement system in machine tools

Bao, Zefu (1); Zang, Peng (1); Wang, Jiangping (1)
Source: *Advanced Materials Research*, v 308-310, p 1459-1464, 2011, *Advanced Design Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037852132; **DOI:** 10.4028/www.scientific.net/AMR.308-310.1459; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xian Petroleum University, Shaanxi, China
Abstract: This paper describes the multi-sensor of the data acquisition and signal analyzing based on the development of virtual instrument. It sets up a virtual instrumentation with the function of data acquisition and signal analysis, based on computer, temperature sensor, displacement sensor, PCI data acquisition card, and software of Lab VIEW 8.5. The data acquisition, preprocessing, displaying, storage and data playback? are integrated in this platform, forming an easy-to-use temperature and thermal error detection system. © (2011) Trans Tech Publications. (5 refs)
Main heading: Data acquisition
Controlled terms: Digital storage - Machine tools - Signal processing - Digital instruments

Uncontrolled terms: Data acquisition cards - Detection system - Displacement sensor - Lab VIEW - Multi sensor - NC-machining - Signal analyzing - Thermal displacements - Thermal error - Virtual instrument - Virtual Instrumentation
Classification Code: 603.1 Machine Tools, General - 716.1 Information Theory and Signal Processing - 722.1 Data Storage, Equipment and Techniques - 723.2 Data Processing and Image Processing
Database: Compendex
Data Provider: Engineering Village

177. Research on lowering actuating pressure of injection wells of ultra-low permeable reservoirs (*Open Access*)

Zhang, Rongjun (1); Li, Shiquan (1)
Source: *Procedia Engineering*, v 18, p 128-132, 2011, *2nd SREE Conference on Chemical Engineering, CCE 2011*; **ISSN:** 18777058; **DOI:** 10.1016/j.proeng.2011.11.020; **Conference:** 2nd SREE Conference on Chemical Engineering, CCE 2011, December 17, 2011 - December 18, 2011; **Sponsor:** Society for Resources, Environment and Engineering (SREE); **Publisher:** Elsevier Ltd
Author affiliation: (1) Xi'an shiyou university, Xi'an Shaanxi, Xi'an, 710065, China
Abstract: With the improving skills of oil exploration and exploitation, the proportion of the production of ultra-low permeable reservoirs is increasing. But the developing process has encountered many problems, such as poor reservoir properties, high injection actuating pressure, etc. Aimed at lowering the injection actuating pressure of ultra-low permeable oilfield, author has finished the indoor gradient test of actuating pressure, selected and evaluated a system of surface acting agent which later applied in the X oilfield as well. The results show that the gradient actuating pressure of Z reservoir in X oilfield ranges between 0.0308 MPa/cm to 0.2215 MPa/cm. And because the SAA system could largely reduce the surface tension between fluid and rock, the injection actuating pressure then can be reduced by 40%-50%. And its application efficiency was 75%. As a result, it is feasible to use SAA to lower the injection actuating pressure of ultra-low permeable reservoirs. © 2010 Published by Elsevier Ltd. (3 refs)
Main heading: Petroleum reservoir engineering
Controlled terms: Injection (oil wells) - Oil field development - Low permeability reservoirs - Oil well flooding
Uncontrolled terms: Developing process - Injection wells - ITS applications - Low permeable reservoirs - Oil exploration - Reservoir property - Surface actings - Ultra low permeability
Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

178. Mechanics-experimental researches on pipe unstable deformation under external pressure

Yong, Kang (1)
Source: *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*, p 2304-2306, 2011, *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781612844572; **DOI:** 10.1109/CECNET.2011.5768654; **Article number:** 5768654; **Publisher:** IEEE Computer Society
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an, China
Abstract: It is a practical and efficient method to research the mechanism of pipe deformation under external pressure by means of pipe collapse-experiments. This article descripts pipe deformation experimental principles include the installations, experimental techniques, and experimental procedures and so on. The methods accord with the actual process of pipe deformation and particularly are propitious to record the test data and observe the processes of pipe deformation. It is very easy to record the test data and adjust the experimental methods. By the experimental data the factors influencing the pipe deformations under external pressure are analyzed and compared with present API theoretical methods, the results from the analysis are importance of which research the mechanism of pipe in failure of collapse deformation. © 2011 IEEE. (6 refs)
Main heading: Deformation
Uncontrolled terms: Collapse experiments - Experimental methods - Experimental procedure - Experimental research - Experimental techniques - External pressures - Ovality - Pipeline deformations
Classification Code: 903.2 Information Dissemination
Database: Compendex
Data Provider: Engineering Village

179. Concurrent design of the petroleum drilling machine based on PDM platform

Sun, Yanping (1); Bao, Zefu (1); Wu, Chunyan (1); Kang, Xiaoqing (1); Sun, Wen (1)
Source: *Advanced Materials Research*, v 295-297, p 2446-2450, 2011, *Manufacturing Science and Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851944; **DOI:** 10.4028/www.scientific.net/AMR.295-297.2446; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechenical Engineering, Xi'an Shiyou University, China
Abstract: Through to the petroleum drilling machine serial design pattern malpractice's analysis, this article proposed petroleum drilling machine's concurrent design uses in the petroleum drilling machine enterprise based on PDM the platform. Elaborated the concurrent design in the petroleum drilling machine production process's application, analyzed PDM and the concurrent design relational model as well as PDM and the petroleum drilling machine's concurrent design key technologies. © (2011) Trans Tech Publications. (3 refs)
Main heading: Drilling equipment
Controlled terms: Oil well drilling
Uncontrolled terms: Concurrent design - Design Patterns - Key technologies - Petroleum drilling - Petroleum drilling machine - Relational Model
Classification Code: 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

180. Study on unsupported Nano-MoS2 catalyst for clean fuel

Zhu, Yuqin (1); Zhou, Danli (2)
Source: *Advanced Materials Research*, v 287-290, p 1860-1865, 2011, *Applications of Engineering Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851920; **DOI:** 10.4028/www.scientific.net/AMR.287-290.1860; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xian Shiyou University, Xian, China (2) Hua Lu Engineering Technology Co.Ltd., Xian, China
Abstract: In the work, nano-sized MoO3 and unsupported MoS2 hydro desulfurization catalysts were synthesized using a novel hydrothermal reduction method. The influences of the temperature and the synthetic methods on the growth morphology of molybdenum disulfide were systematically investigated. It was found that the MoS2 fibers were easy to be bended and had lots of defects, which increased the number of active sites on the catalyst and easily met the requirements of deep hydrotreating desulfurization of diesel oil. © (2011) Trans Tech Publications. (11 refs)
Main heading: Hydrothermal synthesis
Controlled terms: Layered semiconductors - Hydrodesulfurization - Nanocatalysts - Sulfur compounds - Molybdenum oxide - Diesel fuels - Catalyst activity
Uncontrolled terms: Active site - Clean fuel - Diesel oil - Growth morphology - Hydro desulfurizations - Hydrothermal reduction - Hydrotreating - Hydrotreating desulfurization catalyst - Molybdenum disulfide - Nano-sized - Synthetic methods - Unsupported nano-MoS2
Classification Code: 523 Liquid Fuels - 712.1 Semiconducting Materials - 761 Nanotechnology - 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally
Database: Compendex
Data Provider: Engineering Village

181. Experimental research on ultrasonic vibration deep hole honing of titanium alloy

Zhao, Hongbing (1); Nan, Yingfei (1)
Source: *Advanced Materials Research*, v 314-316, p 1107-1111, 2011, *Advanced Manufacturing Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037852156; **DOI:** 10.4028/www.scientific.net/AMR.314-316.1107; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China

Abstract: Deep hole honing is the primary way of finishing, the main problems existing now are the low efficiency, high surface roughness, especially in the processing of difficult to cut materials. In this study, the test is on the titanium alloy and uses the self-developed ultrasonic vibration honing equipment. The results show that in the same conditions, the ultrasonic vibration in deep-hole honing can improve the efficiency about 1 times, and meanwhile the surface roughness can reach below 0.8μm, the oilstone is uneasy to block, and the technical effects are better than traditional honing process. © (2011) Trans Tech Publications. (4 refs)
Main heading: Honing
Controlled terms: Efficiency - Ultrasonic effects - Titanium alloys - Surface roughness - Ultrasonic waves
Uncontrolled terms: Deep holes - Difficult-to-cut materials - Experimental research - Ultrasonic vibration
Classification Code: 542.3 Titanium and Alloys - 753.1 Ultrasonic Waves - 913.1 Production Engineering - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

182. New multi-stage distribution substation planning algorithm based on multilayer Hopfield neural network

Yanan, Cui (1); Suli, Yan (1); Weixin, Gao (1); Nan, Tang (1)
Source: *Proceedings - 2011 4th International Symposium on Computational Intelligence and Design, ISCID 2011*, v 1, p 114-118, 2011, *Proceedings - 2011 4th International Symposium on Computational Intelligence and Design, ISCID 2011*; **ISBN-13:** 9780769545004; **DOI:** 10.1109/ISCID.2011.37; **Article number:** 6079649; **Conference:** 2011 4th International Symposium on Computational Intelligence and Design, ISCID 2011, October 28, 2011 - October 30, 2011; **Sponsor:** Bristol University; IEEE (Hong Kong) Computational Intelligence Chapter; Zhejiang University; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: This paper presents the mathematical model for multi-stage distribution substation planning. In order to decide the substation-planning scheme in each stage simultaneously, this work put forward a new method for getting initial feasible solution. The initial feasible solution makes load points in every stage into consideration by classifying new substations into several classes. Based on the initial feasible solution, we present Hop field neural network to calculate each substation's planning scheme in every stage simultaneously. The energy function of the neural network and calculation algorithm are given in this paper. A real multi-stage planning example is also given, and the comparison between the calculated scheme and the scheme that is done by power institution shows that the presented algorithm is effective. © 2011 IEEE. (14 refs)
Main heading: Hopfield neural networks
Controlled terms: Electric substations
Uncontrolled terms: Calculation algorithms - Distribution substations - Energy functions - Feasible solution - Load points - Multi-stage planning - Planning scheme - Substation planning
Classification Code: 706.1 Electric Power Systems
Database: Compendex
Data Provider: Engineering Village

183. Structure design of downhole robot in oil well

Wei, Hang Xin (1); Wu, Wei (1); Wang, Zhi Guo (1)
Source: *Applied Mechanics and Materials*, v 80-81, p 996-999, 2011, *Information Engineering for Mechanics and Materials*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037852125; **DOI:** 10.4028/www.scientific.net/AMM.80-81.996; **Conference:** 2011 International Conference on Information Engineering for Mechanics and Materials, ICIMM 2011, August 13, 2011 - August 14, 2011; **Sponsor:** Zhejiang Economic and Trade Polytechnic; Institute of Electronic and Information Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xi'an ShiYou university, DianZiErLu road, Xi'an city 710065, China
Abstract: In order to carry the testing instrument to the required position in the horizontal/ inclined oil well, the downhole robot is designed. The downhole robot has a self driving force which is produced by the electrical motor in the robot, so it can carry the testing instrument reliably. In addition, the mechanical structure is simplified compared with that of the other downhole robot. Firstly, the mechanical structure design of the robot is introduced. The robot includes three parts: driving module, centralizing module, and base. Then, the driving force required and the power for the electrical motor in the driving module are calculated when the robot runs in the oil well. The simulation result shows that the downhole robot can work reliably in the oil well. © (2011) Trans Tech Publications. (6 refs)
Main heading: Robots

Controlled terms: Machine design - Instrument testing - Manufacture - Oil wells
Uncontrolled terms: Downhole robot - Downholes - Driving forces - Electrical motors - Mechanical design - Mechanical structures - Simulation result - Structure design - Testing instrument
Classification Code: 512.1.1 Oil Fields - 537.1 Heat Treatment Processes - 601 Mechanical Design - 731.5 Robotics - 913.4 Manufacturing
Database: Compendex
Data Provider: Engineering Village

184. Study on the method of data organization in data warehouse based on predicate clustering

Fang, Ming (1); Lei, Yang (1)
Source: *Proceedings of 2011 International Conference on Computer Science and Network Technology, ICCSNT 2011*, v 2, p 1283-1286, 2011, *Proceedings of 2011 International Conference on Computer Science and Network Technology, ICCSNT 2011*; **ISBN-13:** 9781457715846; **DOI:** 10.1109/ICCSNT.2011.6182194; **Article number:** 6182194; **Conference:** 2011 International Conference on Computer Science and Network Technology, ICCSNT 2011, December 24, 2011 - December 26, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, China
Abstract: Traditional data warehouse mainly adopts methods of data organization of dual level of granularity, partitioning data and so on, which are department-oriented or OLAP and cannot satisfy the need of customized data analysis. The article proposes a method of data organization in data warehouse based on predicate classification through analyzing conditions (predicate) of former queries and statistics. The method, which bases on affinitive frequency structures an equivalence relation, generates relative materialized views through predicate classification and selection of core predicate in order to form customer-oriented method of data organization in data warehouse. In sum, this method improves the efficiency of data analysis for customers and provides a new quotable method for organizing data in data warehouse. © 2011 IEEE. (6 refs)
Main heading: Data warehouses
Controlled terms: Classification (of information) - Data handling
Uncontrolled terms: Data organization - Equivalence relations - Frequency structure - Materialized view - Method of organizations - predicate
Classification Code: 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 723.3 Database Systems - 903.1 Information Sources and Analysis
Database: Compendex
Data Provider: Engineering Village

185. Design and research on the refitment of deep-hole machine tool

Zhao, Hongbing (1); Chen, Xin (1)
Source: *Advanced Materials Research*, v 314-316, p 1117-1120, 2011, *Advanced Manufacturing Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037852156; **DOI:** 10.4028/www.scientific.net/AMR.314-316.1117; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: Engine lathe has many advantages, such as low cost, multi-use of one machine, etc. In this paper, the design method of reforming C630 engine lathe to a deep-hole machine tool has been researched. In addition, the cutting fluid system and other mechanism of deep-hole machine tool have been researched too. © (2011) Trans Tech Publications. (3 refs)
Main heading: Machine design
Controlled terms: Engines - Cutting fluids - Lathes
Uncontrolled terms: Design method - DF system - Low costs - Lubricating oil system - One-machine
Classification Code: 601 Mechanical Design - 603.1 Machine Tools, General
Database: Compendex
Data Provider: Engineering Village

186. Weak signal detection research based on Duffing oscillator used for downhole communication

Liu, Xuanchao (1); Liu, Xiaolong (1)
Source: *Journal of Computers*, v 6, n 2, p 359-367, 2011; **ISSN:** 1796203X; **DOI:** 10.4304/jcp.6.2.359-367; **Publisher:** Academy Publisher
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 statuses and the low-pass filter with simplicity and availability was proposed for signal demodulation. The results show that the method could effectively detect the weak changes of input signal and suppress strong noise; it is feasible, advanced and practical used for downhole acoustic telemetry system. © 2011 ACADEMY PUBLISHER. (10 refs)
Main heading: Circuit simulation
Controlled terms: Telemetering equipment - Signal detection - Oscillators (electronic) - Timing circuits - Low pass filters
Uncontrolled terms: Acoustic telemetry systems - Chaos circuits - Downholes - Duffing oscillator - Weak signal detection
Classification Code: 703.1.1 Electric Network Analysis - 703.2 Electric Filters - 713.2 Oscillators - 713.4 Pulse Circuits - 716.1 Information Theory and Signal Processing
Database: Compendex
Data Provider: Engineering Village

187. A new type of ECG signal sample and analysis system

Liu, Xuanchao (1); Feng, Xiaoli (1); Li, Peipei (1)
Source: *Advanced Materials Research*, v 225-226, p 949-952, 2011, *Advanced Research on Automation, Communication, Architectonics and Materials*; **ISSN:** 10226680; **ISBN-13:** 9783037851036; **DOI:** 10.4028/www.scientific.net/AMR.225-226.949; **Conference:** 2011 International Conference on Automation, Communication, Architectonics and Materials, ACAM2011, June 18, 2011 - June 19, 2011; **Sponsor:** International Science and Education Researcher Association (ISER); Yellow River Conservancy Technical Institute; Beijing Gireida Education Co.Ltd.; Beijing Gireida Education Research Center; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: With the change of the human life style, heart disease has become one of the main diseases threatening human life and health. Promptly, accurately and completely achieving electrocardiogram (ECG) signal has vital significance for discovering and treating heart disease as soon as possible. However, the traditional professional electrocardiograph has complex structure, high price, and it is not suitable to carry on the popularization application. Therefore, this article proposes a new type of ECG signal sample and analysis system based on a personal computer, which realizes acquisition and analysis function through the LabVIEW programming. The research result shows that it has not only perfect function, convenient operation, easy to use, but also low price, and it is very suitable to universal application. So, it has very good practical value. © (2011) Trans Tech Publications. (6 refs)
Main heading: Electrocardiograms
Controlled terms: Cardiology - Personal computers - Computer programming - Diseases
Uncontrolled terms: Analysis system - Complex structure - DAQ - ECG signals - Electrocardiogram monitoring - Electrocardiogram signal - Heart disease - High price - Human lives - LabViEW - LabVIEW programming - Research results - Universal application
Classification Code: 461.6 Medicine and Pharmacology - 462.1 Biomedical Equipment, General - 722.4 Digital Computers and Systems - 723.1 Computer Programming
Database: Compendex
Data Provider: Engineering Village

188. Constructing and scaling the Gross National Happiness Index of Farmers in new countryside building of Shaanxi province-Empirical analyses on the base of comprehensive fuzzy evaluation

Liu, Jun Feng (1)
Source: *International Conference on Management and Service Science, MASS 2011*, 2011, *International Conference on Management and Service Science, MASS 2011*; **ISBN-13:** 9781424465811; **DOI:** 10.1109/ICMSS.2011.05998915; **Article number:** 5998915; **Publisher:** IEEE Computer Society
Author affiliation: (1) Economic and Management School, Xi'an ShiYou University, Xi'an, China
Abstract: This article explores the meaning of GNH brought up, analyzes the factors effecting GNH of farmer and constructs the Indexes of Farmers in new countryside set up, furthermore, scales it in the sample of survey data of two contrysides in WuGong county of Shaanxi province, with the empirical analyses on the base of comprehensive fuzzy evaluation, and catches up with some suggestions in leving up the Happiness Index of Farmers at last. © 2011 IEEE. (9 refs)
Main heading: Agriculture
Uncontrolled terms: Comprehensive fuzzy evaluation methods - Comprehensive fuzzy evaluations - Constructing - Empirical analysis - Happiness Index - New countrysides - Scaling - Survey data
Classification Code: 821 Agricultural Equipment and Methods; Vegetation and Pest Control
Database: Compendex
Data Provider: Engineering Village

189. Experimental research on the system performance in near-dry deep hole drilling

Zhao, H.B. (1); Nan, Y.F. (1)
Source: *Key Engineering Materials*, v 455, p 98-102, 2011, *Manufacturing Automation Technology Development*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9780878492305; **DOI:** 10.4028/www.scientific.net/KEM.455.98; **Publisher:** Trans Tech Publications Ltd
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: The near-dry deep hole drilling system was taken as object in this study, and the contrast experiment between the deep hole drilling system and the traditional (wet) deep-hole drilling system, including the cutting force, the tool wear, the surface quality and the chip-break have been done. The results show that the near-dry system drill stability and have better effort in cooling, lubrication, chip removal effective. The tool life and surface quality within the hole are better, at the same time, it can greatly reducing the amount of cutting fluid, the costs and the pollution of the environment. So we can get a conclusion that it is an ideal system in green drilling process. (6 refs)
Main heading: Cutting fluids
Controlled terms: Surface properties - Drilling fluids - Cutting tools - Manufacture
Uncontrolled terms: Amount of cuttings - Contrast experiment - Cutting forces - Deep hole drilling - Drilling process - Experimental research - Near-dry cutting - Pulverization
Classification Code: 537.1 Heat Treatment Processes - 603.2 Machine Tool Accessories - 913.4 Manufacturing - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

190. Study of spatially varying ground motion under complicated ground

Su, Hai (1)
Source: *ICMREE2011 - Proceedings 2011 International Conference on Materials for Renewable Energy and Environment*, v 2, p 1937-1941, 2011, *ICMREE2011 - Proceedings 2011 International Conference on Materials for Renewable Energy and Environment*; **ISBN-13:** 9781612847504; **DOI:** 10.1109/ICMREE.2011.5930716; **Article number:** 5930716; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an, Shanxi, China
Abstract: This paper addresses the influence of soft local site on the propagation of seismic waves. A previously developed coupled Boundary Elements-Finite Elements (BE-FE) algorithm is employed for the analysis in time domain. The Ricker wavelet with its well defined range of dominant frequencies are considered for wave incidence. The considered local site in a valley shape has a uniform soft, or a soft layer over medium subsoil bounded by a half space of hard soil. The investigation shows that the local site can significantly amplify and alter the characteristics of the propagating waves. The propagation of the seismic w. ave is overestimated in the complicated geological structure, The arrival time of seismic wave is different due to incident wave angel. Smaller incident angel, stronger non-uniform ground motions. Consequently, the structural response will be strongly affected. © 2011 IEEE. (16 refs)
Main heading: Seismic waves
Controlled terms: Soils - Time domain analysis - Finite element method - Geometry

Uncontrolled terms: Dominant frequency - Geological structures - Propagating waves - Ricker wavelets - Site effects - Spatially varying ground motion - Structural response - valley
Classification Code: 483.1 Soils and Soil Mechanics - 484 Seismology - 921 Mathematics - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

191. Mechanical analysis of drill strings in horizontal directional drilling

Dou, Yihua (1); Cao, Yinping (1)
Source: *ICPTT 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines - Proceedings of the International Conference on Pipelines and Trenchless Technology 2011*, p 2272-2284, 2011, *ICPTT 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines - Proceedings of the International Conference on Pipelines and Trenchless Technology 2011*; **ISBN-13:** 9780784412022; **DOI:** 10.1061/41202(423)240; **Conference:** International Conference on Pipelines and Trenchless Technology 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines, ICPTT 2011, October 26, 2011 - October 29, 2011; **Sponsor:** Cent. Underground Infrastruct. Res. Educ. Univ. Texas Arlington; China-U.S. Jt. Cent. Trenchless R D China Univ. Geosci.; et al.; Pipeline Div. Am. Soc. Civ. Eng. (ASCE); School of Engineering of China University of Geosciences; Soil Rock Drill. Prot. Eng. Res. Cent. China Minist. Educ.; **Publisher:** American Society of Civil Engineers (ASCE)
Author affiliation: (1) College of Mechanical Engineering, Xi'An Shiyou University, Xi'an 710065, China
Abstract: A large number of failure cases on horizontal directional drilling arise from complex forces, difficult mechanical analysis and lack of theoretical basis of construction parameters. So it's of great engineering value to make mechanical properties of horizontal directional drilling clear. The mechanical analysis models of directional drilling and completed-pipeline in three working conditions of drilling guide hole, expanding hole and pulling back completed-pipeline are established in this paper with the synthetical consideration of well structure, BHA, service environment, mechanic and process parameters. The spatial deformation curve of tubular string is fitted by spline function, and the deformation curves of tubular string in suspending and horizontal section are acquired by weighted residual method and elastic foundation beam method separately. In addition, with the consideration of support and subsidence, the tangent points of tubular string in suspending section and shaft lining are analyzed. Position of weakest point, failure reason of drill string in horizontal section and choice rules of roller centralizer and connector are determined based on above research. Also, the security of drill string in horizontal section is validated by two-criterion approach. The conclusions drawn from the paper have great guidance effect on engineering application. © 2011 ASCE. (5 refs)
Main heading: Pipelines
Controlled terms: Horizontal drilling - Directional drilling - Deformation - Drills - Trenching - Degrees of freedom (mechanics) - Drill strings
Uncontrolled terms: Construction parameter - Elastic foundation beam method - Engineering applications - Horizontal directional drilling - Service environment - Spatial deformation - Two-Criterion Approach - Weighted residual method
Classification Code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 603.2 Machine Tool Accessories - 619.1 Pipe, Piping and Pipelines - 931.1 Mechanics
Database: Compendex
Data Provider: Engineering Village

192. Information technology: The important means for effective teaching and efficient class: An example of security analysis and investment

Pang, Ming (1)
Source: *Proceedings of the International Conference on Uncertainty Reasoning and Knowledge Engineering, URKE 2011*, v 2, p 115-118, 2011, *Proceedings of the International Conference on Uncertainty Reasoning and Knowledge Engineering, URKE 2011*; **ISBN-13:** 9781424499830; **DOI:** 10.1109/URKE.2011.6007922; **Article number:** 6007922; **Publisher:** IEEE Computer Society
Author affiliation: (1) College of Economics and Management, Xi'An Shiyou University, Xi'an, China
Abstract: Improving the effective teaching and realizing the efficient class is one of the core subjects in education innovation. The effective teaching is the fundament of the efficient class. With the help of taking the example of security analysis and investment, combining with years' teaching practice and investigation of many grades of students, this paper presents the conclusion that efficient class will be realized with fortifying every teaching phase and utilizing multi-media teaching methods and information technology. The teaching phases needing to be fortified include effective preparation before class, in-class teaching organization and guidance in appropriate break-rough points, multi-level and multi-angle participation from students, and the effective teaching appraisal etc. Throughout usage of the

information technology on above mentioned phases will achieve the goal of emphasizing the effective teaching and constructing the efficient class. © 2011 IEEE. (10 refs)
Main heading: Security systems
Controlled terms: Engineering education
Uncontrolled terms: Effective teaching - Efficient Class - Multi-Media - Multimedia instruction - Security analysis - Teaching evaluation - Teaching methods - Teaching practices
Classification Code: 901.2 Education - 914.1 Accidents and Accident Prevention
Database: Compendex
Data Provider: Engineering Village

193. Study of borehole instability rule and the application in Sulige Gas Field

Zhang, Yi (1)
Source: *Asia-Pacific Power and Energy Engineering Conference, APPEEC*, 2011, *2011 Asia-Pacific Power and Energy Engineering Conference, APPEEC 2011 - Proceedings*; **ISSN:** 21574839, **E-ISSN:** 21574847; **ISBN-13:** 9781424462551; **DOI:** 10.1109/APPEEC.2011.5748362; **Article number:** 5748362; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of petroleum engineering, Xi'an Shiyou University, Xi'an, Shaanxi, China
Abstract: Shale borehole instability problem is the global and universal problem. There are lots of causes of Bore Hole Lost Stability; it included two aspects-natural aspect and artificial aspect. To solve the borehole instability problem, mud chemic and sandstone mechanics was worked on. Sugeli gas field is one of the main area of Changqing Oil Field, its density limit of drilling fluid is narrow, so we should choose the high precision density limit of drilling fluid to prevent the reservoir damage and drilling accident in the drilling process. Simultaneously, hydration of this area is bad, the wall side is stability when using the water free under balance drilling fluid, once it occur the water it is heavy caving. This paper base on the study of borehole instability rules, use the rules in Sulige Gas Field mud density prediction. The result shows the practice of M-C criterion is the biggest, and then is D-P criterion, the last is the Lade criterion, the lade criterion is first used by this software in our country to predict the borehole stability, and the result of it is reliable. © 2011 IEEE. (7 refs)
Main heading: Drilling fluids
Controlled terms: C (programming language) - Stability - Boreholes - Gas industry - Natural gas fields
Uncontrolled terms: Borehole instability - Borehole stability - Density limit - Drilling process - Formation pressure - Mud density predictions - Reservoir damage - Sulige gas field
Classification Code: 512.2.1 Natural Gas Fields - 522 Gas Fuels - 723.1.1 Computer Programming Languages
Database: Compendex
Data Provider: Engineering Village

194. On filters of pseudo MTL-algebras

Wang, Wei (1)
Source: *Proceedings 2011 International Conference on Mechatronic Science, Electric Engineering and Computer, MEC 2011*, p 929-932, 2011, *Proceedings 2011 International Conference on Mechatronic Science, Electric Engineering and Computer, MEC 2011*; **ISBN-13:** 9781612847221; **DOI:** 10.1109/MEC.2011.6025617; **Article number:** 6025617; **Conference:** 2011 International Conference on Mechatronic Science, Electric Engineering and Computer, MEC 2011, August 19, 2011 - August 22, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Department of Applied Mathematics, Xi'An Shiyou University, Xi'an 710065, China
Abstract: We investigate the properties of filters in pseudo MTL-algebras and discuss the relations among several kinds of filters in pseudo MTL-algebras. By further investigating the structure of Boolean and normal filter of pseudo MTL-algebras, we give a positive answer to an open problem that in pseudo BL-algebras whether every Boolean filter is a normal filter. © 2011 IEEE. (12 refs)
Main heading: Bandpass filters
Controlled terms: Linearization - Algebra
Uncontrolled terms: Booleanfilter - filter - MTL-algebras - Nonclassicallogics - normalfilter - Pseudo B L-algebra
Classification Code: 703.2 Electric Filters - 921.1 Algebra
Database: Compendex
Data Provider: Engineering Village

195. Reduction of pounding responses between bridge decks

Su, Hai (1)
Source: *Proceedings 2011 International Conference on Transportation, Mechanical, and Electrical Engineering, TMEE 2011*, p 1351-1354, 2011, *Proceedings 2011 International Conference on Transportation, Mechanical, and Electrical Engineering, TMEE 2011*; **ISBN-13:** 9781457717017; **DOI:** 10.1109/TMEE.2011.6199456; **Article number:** 6199456; **Conference:** 2011 International Conference on Transportation, Mechanical, and Electrical Engineering, TMEE 2011, December 16, 2011 - December 18, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Petroleum Resources, Xi'An Shiyou University, Xi'an, Shanxi, China
Abstract: The study addresses the influence of bumpers as reduction measures at the bridge decks. The considered devices are steel spring, steel spring with additional viscous damper or steel spring with additional friction element. Gap between bridge decks remains. The reduction measure is placed at one end of the neighbouring girders. The considered earthquakes are the 1994 Northridge earthquake and the 1995 Kobe earthquake. For the nonlinear analysis a finite element method is used. The investigation shows that compared to the other measures the best reduction of the pounding force can be achieved with a friction device. © 2011 IEEE. (11 refs)
Main heading: Bridge decks
Controlled terms: Friction - Nonlinear analysis - Beams and girders - Earthquakes - Finite element method - Tribology
Uncontrolled terms: Bridge girder - Friction devices - pounding - Reduction measures - Viscous damping
Classification Code: 401.1 Bridges - 408.2 Structural Members and Shapes - 484 Seismology - 921.6 Numerical Methods - 931 Classical Physics; Quantum Theory; Relativity
Database: Compendex
Data Provider: Engineering Village

196. Notice of Retraction: Constructivism-based multimodal teaching model of college english writing

Li, Hong (1)
Source: *Proceedings - PACCS 2011: 2011 3rd Pacific-Asia Conference on Circuits, Communications and System*, 2011, *Proceedings - PACCS 2011: 2011 3rd Pacific-Asia Conference on Circuits, Communications and System*; **ISBN-13:** 9781457708565; **DOI:** 10.1109/PACCS.2011.5990327; **Article number:** 5990327; **Publisher:** IEEE Computer Society
Author affiliation: (1) Department of Foreign Languages, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: Based on the basic theories of constructivism and the prominent advantages of the multimodal cognition, we propose a new teaching model of college English writing-multimodal teaching model. In the multimodal teaching process, the four language learning approaches, namely, listening, speaking, reading and writing are applied to activate various senses of students, bringing the superiority of multimodal cognition into full play and making students actively accomplish the knowledge construction of English writing in a dynamic and multimodal learning environment and effectively improve their writing ability. © 2011 IEEE. (9 refs)
Main heading: Computer aided instruction
Controlled terms: Students
Uncontrolled terms: Constructivism - English writings - Knowledge construction - Language learning - Multi-modal - Multi-modal learning - Multimodal teachings - Writing abilities
Classification Code: 723.5 Computer Applications - 901.2 Education
Database: Compendex
Data Provider: Engineering Village

197. 3D numerical simulation of a new type of throttle control valve

Zhou, S.P. (1)
Source: *Advanced Materials Research*, v 215, p 199-203, 2011, *Digital Design and Manufacturing Technology II*; **ISSN:** 10226680; **ISBN-13:** 9783037850718; **DOI:** 10.4028/www.scientific.net/AMR.215.199; **Conference:** 2011 Global Conference on Digital Design and Manufacturing Technology, January 23, 2011 - January 25, 2011; **Sponsor:** Committee of Drawing Technique,China Graphics Society (CGS); Zhejiang University of Technology; Yangzhou University; **Publisher:** Trans Tech Publications
Author affiliation: (1) Institute of Mechanical Engineering, Xi'An Shiyou University, Xi'an 710065, China
Abstract: According to the requirements of hydraulic pressure controlling system of the State 863 Plan of China: "the development of cased hole twin packer cell", a new type of two-way valve used in the hydraulic pressure controlling system of downhole tester was developed, which could control the direction of liquid movement. The valve has not only the sealing function of seal valve, but also the adjustment function of the rate of flow of throttle valve. It is different from the ordinary two-way valve in structure because of its particular demands of function and performance. In this paper, a

study was carried out on the flow field and flow characteristics in the throttle control valve by means of hydromechanics numerical simulation and with the resulting analysis, structural optimization was performed to the throttle control valve. The result that obtained by simulation calculation can provide theoretic reference for the valve design. (7 refs)
Main heading: Structural optimization
Controlled terms: Pressure control - Hydraulic machinery - Numerical models - Safety valves
Uncontrolled terms: 3-D numerical simulation - Cased hole - Downholes - Flow characteristic - Hydraulic pressure - Hydraulic pressure control - Numerical simulation - Numerical stimulation - Sealing functions - Simulation calculation - Throttle control - Throttle valve - Valve design
Classification Code: 619.1.1 Pipe Accessories - 632.2 Hydraulic Equipment and Machinery - 731.3 Specific Variables Control - 914.1 Accidents and Accident Prevention - 921 Mathematics - 921.5 Optimization Techniques
Database: Compendex
Data Provider: Engineering Village

198. Impact of resource complementarity and status similarity on inter-firm partnership formation - Moderating effect of environmental competitiveness

Pei, Xudong (1)
Source: *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*, p 95-97, 2011, *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*; **ISBN-13:** 9780769544649; **DOI:** 10.1109/BCGIn.2011.32; **Article number:** 6003856; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, China
Abstract: Based on resource-based theory and social network theory, the moderating effect of environmental competitiveness on the relationship among complementary resources, status similarity and partnership formation analyzed. The results show that although firms need to develop partnership based on complementary resources and similar status, this relationship may vary with the level of environmental competitiveness. Environmental competitiveness negatively moderates the relationship between resource complementarity, status similarity and partnership formation. © 2011 IEEE. (18 refs)
Main heading: Competition
Controlled terms: Mergers and acquisitions
Uncontrolled terms: Environmental competitiveness - Moderating effect - Partnership formation - Resource complementarily - Resource-based theory - Status similarity
Classification Code: 911.2 Industrial Economics
Database: Compendex
Data Provider: Engineering Village

199. 3D modeling and open-close motion simulation of the triple eccentric butterfly valve

Chen, B. (1); Fan, Y.G. (1)
Source: *Advanced Materials Research*, v 215, p 191-194, 2011, *Digital Design and Manufacturing Technology II*; **ISSN:** 10226680; **ISBN-13:** 9783037850718; **DOI:** 10.4028/www.scientific.net/AMR.215.191; **Conference:** 2011 Global Conference on Digital Design and Manufacturing Technology, January 23, 2011 - January 25, 2011; **Sponsor:** Committee of Drawing Technique,China Graphics Society (CGS); Zhejiang University of Technology; Yangzhou University; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, 710065, China
Abstract: It was achieved with the benefit of excellent molding function of CAD/CAM, to solve the designing problems of rotation center of triple eccentric butterfly valve and to improve the seal performance. The Solid Edge software is applied to analyze the process of 3D modeling and motion simulation with details, as well as check both static and dynamic interference. In this way, the reasonable eccentric angle α, cone-apex angle 2β, radial eccentricity e and axial eccentricity C of valve board are acquired. It is effective to shorten the design period of triple eccentric butterfly valve, also improve the design efficiency and quality. (5 refs)
Main heading: Computer software
Controlled terms: Computer aided design
Uncontrolled terms: 3-d modeling - Butterfly valve - Simulation - Solid Edge - Triple eccentric
Classification Code: 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

200. Study on preparation of oil-based Fe3O4 nano magnetic fluid

Chen, Bing (1); Fan, Yuguang (1); Zhou, Sanpin (1)
Source: *Advanced Materials Research*, v 148-149, p 808-811, 2011, *Manufacturing Processes and Systems*; **ISSN:** 10226680; **ISBN-13:** 9780878492015; **DOI:** 10.4028/www.scientific.net/AMR.148-149.808; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: Adopting chemical coprecipitation and mechanical dispersion to prepare oil based magnetic fluid is a good way to increase the stability of magnetic fluid. This paper uses orthogonal design to analyze the influences from different factors, and The size of nano-particles and saturation magnetization were characterized by TEM and WSM vibration magnetometer. The results show that the NaOH solution adding speed of 0.4 ml/s and reaction temperature of 50°C-55°C, sodium oleate solution adding speed of 0.3ml/s and heating temperature of 65°C, heat-maintaining time of 20min are proper reaction conditions. (6 refs)
Main heading: Saturation magnetization
Controlled terms: Vibration analysis - Body fluids - Chemical stability - Coprecipitation - Nanoparticles - Sodium hydroxide - Magnetite - Nanomagnetics - Particle size analysis - Magnetic fluids
Uncontrolled terms: Chemical co-precipitation - Heating temperatures - Mechanical dispersion - NaOH solutions - Oil based - Oil-base magnetic fluid - Orthogonal design - Orthogonal experiment - Reaction conditions - Reaction temperature - Sodium oleate - TEM
Classification Code: 461.2 Biological Materials and Tissue Engineering - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 761 Nanotechnology - 801 Chemistry - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 933 Solid State Physics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

201. The numerical analysis and simulation of pipeline collapse

Kang, Yong (1)
Source: *ICPTT 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines - Proceedings of the International Conference on Pipelines and Trenchless Technology 2011*, p 965-972, 2011, *ICPTT 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines - Proceedings of the International Conference on Pipelines and Trenchless Technology 2011*; **ISBN-13:** 9780784412022; **DOI:** 10.1061/41202(423)102; **Conference:** International Conference on Pipelines and Trenchless Technology 2011: Sustainable Solutions for Water, Sewer, Gas, and Oil Pipelines, ICPTT 2011, October 26, 2011 - October 29, 2011; **Sponsor:** Cent. Underground Infrastruct. Res. Educ. Univ. Texas Arlington; China-U.S. Jt. Cent. Trenchless R D China Univ. Geosci.; et al.; Pipeline Div. Am. Soc. Civ. Eng. (ASCE); School of Engineering of China University of Geosciences; Soil Rock Drill. Prot. Eng. Res. Cent. China Minist. Educ.; **Publisher:** American Society of Civil Engineers (ASCE)
Author affiliation: (1) Mechanical Engineering College, Xi'An Shiyou University, Xi'an, Shaanxi, 710065, China
Abstract: The pipe collapses under external pressure were analyzed and 3D-simulated by means of the ANSYS FEA. The paper mainly discuses the deformation theory of the pipeline of API by utilizing the ANSYS to simulate and analyses the 3D-deformation of the pipe under the symmetrical external pressure. And factors such as geometries, pressure, and its properties, which affect the capability of the resistance to the pipeline collapse, are presented. In addition, X-Component and Y-component of displacement models provided by ANSYS FEA simulates and analyses the deformation of the pipeline collapse under the symmetrical pressure and displays the 3D-simulations of von-mises stress distribution, which also simulate the whole pipe practical mechanical collapse testing. © 2011 ASCE. (10 refs)
Main heading: Finite element method
Controlled terms: Pipelines - Trenching - Deformation
Uncontrolled terms: Analysis and simulation - ANSYS - Deformation theory - Displacement model - External pressures - Mechanical collapse - Pipeline collapse - Von Mises stress distribution
Classification Code: 619.1 Pipe, Piping and Pipelines - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

202. The analysis and simulation of the pipe collapse deformation

Yong, Kang (1)
Source: *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*, p 804-807, 2011, *2011 International Conference on Consumer Electronics, Communications and Networks, CECNet 2011 - Proceedings*; **ISBN-13:** 9781612844572; **DOI:** 10.1109/CECNET.2011.5768655; **Article number:** 5768655; **Publisher:** IEEE Computer Society
Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China
Abstract: The processes of pipe collapse under external pressure have be calculated and simulated by means of the ANSYS FEA. It introduces the destruction theory of the pipe and some formula by API, and analyses the factors such as geometries, pressure, and its properties, which affect the capability of the resistance to the pipe collapse. The relationship between strain and stress of pipe has been descried. In addition, X-Component of displacement model provided by ANSYS FEA simulates and analyses the deformation of the pipe under the symmetrical pressure and display the whole simulation pictures in different stages of pipe collapse, which are not easy to been observed through the practical mechanical by testing. © 2011 IEEE. (8 refs)
Main heading: Deformation
Controlled terms: Finite element method
Uncontrolled terms: Analysis and simulation - ANSYS - Different stages - Displacement model - External pressures - simulation - Strain and stress
Classification Code: 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

203. One well evaluation in low permeability gas sandstones from Nuclear Magnetic Resonance (NMR) logs

Wen, Tang (1)
Source: *Society of Petroleum Engineers - SPE Middle East Unconventional Gas Conference and Exhibition 2011, UGAS*, p 23-28, 2011, *Society of Petroleum Engineers - SPE Middle East Unconventional Gas Conference and Exhibition 2011, UGAS*; **ISBN-13:** 9781617823596; **Publisher:** Society of Petroleum Engineers (SPE)
Author affiliation: (1) School of Petroleum Resource, Xi'an Shiyou University, Xi'an, Shaanxi, China
Abstract: It is difficult for petrophysicists in evaluating reservoir porosity, permeability and irreducible water saturation in low permeability because of the complicated pore structure. NMR logs have the advantage in this aspect. In this paper, with the analysis of a well with low permeability sandstones, we proposed the models to calculate reservoir porosity based on three parameters models from conventional logs, the parameters of classic SDR and Timur-Coates models arc calibrated from 36 core samples, from this, the permeability estimation models from NMR logs are obtained. At the same time, the relationship between pore structure index ($\#K/_{\phi}$) and irreducible water saturation are established for bound water saturation calculation. The application of this well shows that these methods and models are usable in low permeability sandstones. Copyright 2011, Society of Petroleum Engineers. (12 refs)
Main heading: Pore structure
Controlled terms: Nuclear magnetic resonance - Gas permeability - Nuclear magnetic logging - Porosity - Petroleum reservoir evaluation - Sandstone - Low permeability reservoirs
Uncontrolled terms: Conventional logs - Irreducible water saturation - Low permeability sandstone - Nuclear magnetic resonance logs - Permeability estimation - Reservoir porosity - Three parameters - Well evaluations
Classification Code: 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

204. Study on magnetic field and free boundary of magnetic fluid seal

Fan, Yuguang (1); Chen, Fangyu (1); Chen, Bing (1)
Source: *Advanced Materials Research*, v 156-157, p 1097-1100, 2011, *Advanced Manufacturing Technology*; **ISSN:** 10226680; **ISBN-13:** 9780878492053; **DOI:** 10.4028/www.scientific.net/AMR.156-157.1097; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, 710065, China

Abstract: Magnetic fluid was invested in 20thcn 60s, and nowadays, it is used as an effective way for mechanical seal. This paper follows the seal requirements of stirred reactor rotating axis, analyzes the applicability for its seal condition. Meanwhile, in this paper the magnetic field is calculated by numerical simulation, the free boundary of magnetic fluid is analyzed in conditions of static seal and dynamic seal. The boundary analysis for magnetic fluid seal can directly show its position, when the boundary of magnetic fluid moves to the lower extreme of pole teeth, it can be considered the seal is invalid. This is a simple way to supervise the magnetic fluid seal. © (2011) Trans Tech Publications, Switzerland. (4 refs)
Main heading: Seals
Controlled terms: Numerical models - Magnetic fluids - Magnetic fields
Uncontrolled terms: Boundary analysis - Free boundary - Magnetic field analysis - Magnetic fluid seals - Mechanical seals - Numerical simulation - Seal requirements - Stirred reactors
Classification Code: 619.1.1 Pipe Accessories - 701.2 Magnetism: Basic Concepts and Phenomena - 708.4 Magnetic Materials - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

205. A novel remote meter-reading system based on virtual instrument

Jia, Huiqin (1); Ru, Zhang (1)
Source: *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*, v 4, p 350-354, 2011, *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*; **ISBN-13:** 9781424487257; **DOI:** 10.1109/CSAE.2011.5952866; **Article number:** 5952866;
Publisher: IEEE Computer Society
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an 710065, China
Abstract: In order to monitor the factory district energy automatically, decrease production cost, the Remote Meter Reading System(RMRS) is developed. Design of which uses virtual instrument software architecture, and all the meters with RS-485 interface are connected to enterprise information network through modules, which can invert RS-485 bus interface to Ethernet. The remote meter-reading software is developed under LabVIEW platform, Database is the core of application software, and information about the meters, classes and history data are connected to database. Using this architecture, it's convenient to manage all the information. Test data is obtained by communication sub-program, which realize the 645 terms through virtual instrument software architecture. Finally functions such as remote meter-reading, system data management, software privilege, instrument alarm promp, report generation and print are realized. Field result shows that this system can not only provide the original data for energy analysis also can observe the trend of history curve. © 2011 IEEE. (9 refs)
Main heading: Database systems
Controlled terms: Computer programming languages - Software testing - Application programs - Information management - Digital instruments - Information services - Network architecture
Uncontrolled terms: 645 Terms - Information networks - LabViEW - Remote meter reading - Remote meter-reading system - RS-485 bus - Virtual instrument - Virtual instrument software architectures
Classification Code: 723 Computer Software, Data Handling and Applications - 723.1.1 Computer Programming Languages - 723.3 Database Systems - 723.5 Computer Applications - 903.4 Information Services
Database: Compendex
Data Provider: Engineering Village

206. Impact of relational mechanisms and formal contracts on firms' innovation performance

Pei, Xudong (1)
Source: *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*, p 105-107, 2011, *Proceedings of the 2011 International Conference on Business Computing and Global Informatization, BCGIn 2011*; **ISBN-13:** 9780769544649; **DOI:** 10.1109/BCGIn.2011.35; **Article number:** 6003859;
Publisher: IEEE Computer Society
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, China
Abstract: Based on interactive theory, this paper focuses on relational mechanisms and formal contracts and analyzes their effect on firm's innovation performance. The results show that although relational mechanisms and formal contracts affect firm's innovation performance, improvement of innovation performance is stronger when relational mechanisms and formal contracts are used jointly than when used separately © 2011 IEEE. (20 refs)
Uncontrolled terms: Formal contracts - Innovation performance - Interactive effect - Relational mechanisms

Classification Code: 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723.1 Computer Programming
Database: Compendex
Data Provider: Engineering Village

207. Mechanical test on pipe collapse under external pressure

Kang, Yong (1)
Source: *Advanced Materials Research*, v 291-294, p 1255-1258, 2011, *Materials Processing Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851937; **DOI:** 10.4028/www.scientific.net/AMR.291-294.1255; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Xi'an Shiyou University, 24-502, 18 Dianzierlu, Xi'an, Shaanxi, 710065, China
Abstract: Many factors result in pipe collapses under certain external pressure. The relations among them have been studied by the pipe collapse tests. This pepper focused on the test analyses of steel pipe collapse resistance. Those include a pipe collapse pressure test under external pressure and illustrate both test and preparing theoretical analysis, and results of the collapse pressure with the effects on the tendency of ovality. In addition to various pipe collapse data and mechanical test methods, this study will offer a summary of the findings for the further intention of theories researches. © (2011) Trans Tech Publications, Switzerland. (5 refs)
Main heading: Steel pipe
Controlled terms: Tensile testing
Uncontrolled terms: Collapse pressure - Collapse resistance - External pressures - In-pipe - Mechanical tests - Ovality - Tensile tests - Test analysis - Test samples
Classification Code: 545.3 Steel - 619.1 Pipe, Piping and Pipelines
Database: Compendex
Data Provider: Engineering Village

208. Antecedence of partnership formation between Buyer and Supplier in manufacturing engineering based on matching theory

Pei, Xudong (1)
Source: *Advanced Materials Research*, v 323, p 181-185, 2011, *Innovation Manufacturing and Engineering Management, IMEM 2011*; **ISSN:** 10226680; **ISBN-13:** 9783037852255; **DOI:** 10.4028/www.scientific.net/AMR.323.181; **Conference:** 2011 International Conference on Innovation Manufacturing and Engineering Management, IMEM 2011, October 21, 2011 - October 23, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an,710065, China
Abstract: Based on the matching theory, the antecedence of partnership formation between Buyer and Supplier in manufacturing engineering is explored. The results show that strategic level matching and operational level matching are positively associated with partnership formation, and cultural level matching moderates effects of strategic level matching and operational level matching on partnership formation. © (2011) Trans Tech Publications, Switzerland. (24 refs)
Main heading: Mergers and acquisitions
Controlled terms: Manufacture
Uncontrolled terms: Level matching - Manufacturing engineering - Matching theory - Operational cultural level matching - Operational level - Partnership formation - Strategic level
Classification Code: 537.1 Heat Treatment Processes - 913.4 Manufacturing
Database: Compendex
Data Provider: Engineering Village

209. Contribution of strain and elasto-optical effect to resonant mode in the two-dimensional photonic crystals force sensor

Li, Yan (1); Fu, Hai-Wei (1); Li, Xiao-Li (1); Shao, Min (1)
Source: *Advanced Materials Research*, v 216, p 148-152, 2011, *Optical, Electronic Materials and Applications*; **ISSN:** 10226680; **ISBN-13:** 9783037850732; **DOI:** 10.4028/www.scientific.net/AMR.216.148; **Conference:** International Conference on Optical, Electronic Materials and Applications 2011, OEMA 2011, March 4, 2011 - March 6, 2011; **Sponsor:** National Natural Science Foundation of China (NSFC); **Publisher:** Trans Tech Publications

Author affiliation: (1) Shool of Science, Xi'an Shiyou University, Xi'an, Shanxi Provine 710065, China
Abstract: The resonant wavelength of the two-dimensional photonic crystal force sensor model changing with normal stress along y direction is calculated by finite-difference time-domain method. The result shows that the variation of the size and shape of the resonant cavity has a main contribution to the variation of the resonant wavelength. The elasto-optical effect of GaAs medium can not obviously change the wavelength of the resonant cavity below score of megapascal. © (2011) Trans Tech Publications. (9 refs)
Main heading: Photonic crystals
Controlled terms: Cavity resonators - Finite difference time domain method - Semiconducting gallium - III-V semiconductors - Gallium arsenide
Uncontrolled terms: Elasto-optical effects - Force sensor - GaAs - Normal stress - Resonant cavity - Resonant mode - Resonant wavelengths - Size and shape - Two-dimensional photonic crystals
Classification Code: 712.1 Semiconducting Materials - 712.1.1 Single Element Semiconducting Materials - 804 Chemical Products Generally - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

210. Cutting mechanism study on technology in near-dry deep-hole drilling

Peng, H. (1); Wei, H.X. (1)
Source: *Key Engineering Materials*, v 455, p 251-256, 2011, *Manufacturing Automation Technology Development*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9780878492305; **DOI:** 10.4028/www.scientific.net/KEM.455.251;
Publisher: Trans Tech Publications Ltd
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: Near-dry deep hole processing technology is a kind of technology which dry cutting technology is applied to deep hole processing to save energy and decrease environmental pollution. In this paper, the structure and work principle of near-dry deep-hole drilling system were introduced and the cutting mechanism of near-dry deep-hole drilling was analyzed which include the mechanism of cutting fluid atomization and flow, the mechanism of atomized cutting fluid cool and lubricate, and the mechanism of separating chips into short pieces and discharge chips by air stream, etc. The mathematical mode of gas-liquid two-phase flow of atomized cutting fluid in drilling shaft and the cooling and lubrication mechanism of the capillary in cutting zone were introduced. It is found that near-dry deep hole processing has better cooling and lubrication effect through experiments. (4 refs)
Main heading: Air
Controlled terms: Cutting - Two phase flow - Cutting fluids - Environmental technology - Lubrication
Uncontrolled terms: Cutting mechanisms - Deep hole drilling - Deep hole processing - Environmental pollutions - Gas - liquid two-phase flows - Lubrication effect - Lubrication mechanism - Near-dry cutting
Classification Code: 454 Environmental Engineering - 607.2 Lubrication - 631.1 Fluid Flow, General - 804 Chemical Products Generally
Database: Compendex
Data Provider: Engineering Village

211. Influencing factors of partnership formation in construction industry

Pei, Xudong (1)
Source: *Applied Mechanics and Materials*, v 71-78, p 556-559, 2011, *Frontiers of Green Building, Materials and Civil Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037852033; **DOI:** 10.4028/www.scientific.net/AMM.71-78.556; **Conference:** 2011 International Conference on Green Building, Materials and Civil Engineering, GBMCE 2011, August 22, 2011 - August 23, 2011; **Sponsor:** Control Engineering and Information Science Research Association; Int. Front. Sci. Technol. Res. Assoc.; Trans Tech Publications; Chongqing Xueya Conferences Catering Co.,Ltd; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: The influencing factors of partnership formation in construction industry are studied using a meta-analysis. The results show that trust, commitment, interdependence, joint problem solving, information sharing, conflict resolution and joint action are positively associated with partnership formation in construction industry. © (2011) Trans Tech Publications. (25 refs)
Main heading: Construction industry
Controlled terms: Mergers and acquisitions - Problem solving
Uncontrolled terms: Conflict Resolution - Influencing factor - Influencing factors - Information sharing - Joint actions - Meta-analysis - Partnership formation

Classification Code: 405 Construction Equipment and Methods; Surveying
Database: Compendex
Data Provider: Engineering Village

212. An application research on IPv6 multicasting testing method (*Open Access*)

Yang, Wenyang (1); Zhang, Liumei (1)
Source: *Procedia Engineering*, v 24, p 143-151, 2011, *International Conference on Advances in Engineering 2011, ICAE 2011*; **ISSN:** 18777058; **DOI:** 10.1016/j.proeng.2011.11.2617; **Conference:** 2011 International Conference on Advances in Engineering, ICAE 2011, December 24, 2011 - December 25, 2011; **Publisher:** Elsevier Ltd
Author affiliation: (1) School of Computer Science, Xi'An Shiyou University, Xi'an 710065, Shaanxi, China
Abstract: In this paper, we proposed a testing method to evaluate the system which is developed by IPv6 multicasting for conform the international and industry standards, implementing the functionality as well as meeting business requirements during practical use. The paper also presents a design and implements method for hybrid multiplex integrated network access equipment System by IPv6 multicasting under AN6016-01 system research project context. Moreover, it conducts an IPv6 multicast simulation test on system basic factors through Spirent Testcenter. Testing result shows, it is difficult for instrument ports of Testcenter to meet testing requirements when handle massive users in an application senario. But long time performance testing among massive users may be conducted via aggregation switch. IPv6 multicast simulation testing may effectively discover problems in system development and application. But this testing method does not suitable for the actual application scenarios (ONU+STB+TV), it is only suitable in laboratory. Finally, the paper proposes a common solution about laboratory testing. © 2011 Published by Elsevier Ltd. (7 refs)
Main heading: Multicasting
Controlled terms: Internet protocols - Instrument testing
Uncontrolled terms: Application research - Business requirement - Design and implements - Ipv6 multicast technologies - Laboratory testing - Related protocols of mld - Testing method - Testing requirements
Classification Code: 716 Telecommunication; Radar, Radio and Television - 717 Optical Communication - 718 Telephone Systems and Related Technologies; Line Communications - 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications
Open Access type(s): All Open Access, Bronze
Database: Compendex
Data Provider: Engineering Village

213. Influencing factors of communication in buyer-supplier partnership

Pei, Xudong (1)
Source: *Communications in Computer and Information Science*, v 236 CCIS, n PART 6, p 105-109, 2011, *Information and Management Engineering - International Conference, ICCIC 2011, Proceedings*; **ISSN:** 18650929; **ISBN-13:** 9783642240966; **DOI:** 10.1007/978-3-642-24097-3_18; **Publisher:** Springer Verlag
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: Inter-organizational communication has been documented as a critical factor in promoting collaboration among firms. However, the influencing factors of communication remain unclear. Based on social exchange theory, this paper explores the influencing factors of communication in the context of buyer-supplier partnership. The results show that trust, commitment and dependence are positively associated with communication in buyer-supplier partnership. © 2011 Springer-Verlag. (15 refs)
Main heading: Sales
Controlled terms: Mergers and acquisitions
Uncontrolled terms: commitment - Critical factors - dependence - Inter-organizational - Social exchange theory - trust
Classification Code: 716 Telecommunication; Radar, Radio and Television
Database: Compendex
Data Provider: Engineering Village

214. Study on the factors of partnership success in upstream oil and gas industry

Pei, Xudong (1)
Source: *Applied Mechanics and Materials*, v 71-78, p 2505-2508, 2011, *Frontiers of Green Building, Materials and Civil Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037852033; **DOI:** 10.4028/www.scientific.net/AMM.71-78.2505; **Conference:** 2011 International Conference on Green Building, Materials and Civil Engineering,

GBMCE 2011, August 22, 2011 - August 23, 2011; **Sponsor:** Control Engineering and Information Science Research Association; Int. Front. Sci. Technol. Res. Assoc.; Trans Tech Publications; Chongqing Xueya Conferences Catering Co.,Ltd; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: Based on social exchange theory, this paper analyzes the factors of partnership success in upstream oil and gas industry. The results show that trust, commitment, the two-way communication and joint problem solving are positively associated with partnership success in upstream oil and gas industry. © (2011) Trans Tech Publications. (17 refs)
Main heading: Problem solving
Controlled terms: Mergers and acquisitions - Gases - Gas industry
Uncontrolled terms: Factors - Partnership success - Social exchange theory - Two way communications - Upstream oil and gas industry
Classification Code: 522 Gas Fuels
Database: Compendex
Data Provider: Engineering Village

215. Dynamics study of a dynamic balancing linkage with small fluctuations in load

Ren, Tao (1); Qu, Wen Tao (1); Sun, Wen (1)
Source: *Applied Mechanics and Materials*, v 86, p 176-179, 2011, *Advances in Power Transmission Science and Technology*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037852330; **DOI:** 10.4028/www.scientific.net/AMM.86.176; **Conference:** International Conference on Power Transmission, ICPT 2011, October 25, 2011 - October 29, 2011; **Sponsor:** Chinese Mechanical Engineering Society (CMES); Chinese Society of Aeronautics and Astronautics (CSAA); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Shaanxi, Xi'an 710065, China
Abstract: The fluctuations of the net crank torque on crankshaft remain the main reasons of both higher motor input power and lower efficiency. The later results in high system energy cost. The paper presents a novel linkage model based on rocking-bar linkage. The linkage demonstrates a smaller fluctuation in net crank torque. Therefore the motor efficiency is improved and input power is reduced greatly. The new model enhances the system energy saving. By establishing the linkage dynamics models, analyses contrasting the effects of energy saving were performed under the actual load conditions. © 2011 Trans Tech Publications. (10 refs)
Main heading: Energy conservation
Controlled terms: Crankshafts - Dynamics
Uncontrolled terms: Crank torque - Dynamic balancing - Dynamics analysis - Dynamics models - Input power - Load condition - Model-based OPC - Motor efficiencies - New model - Oscillating block linkage - Small fluctuation - System energy
Classification Code: 525.2 Energy Conservation - 601.2 Machine Components
Database: Compendex
Data Provider: Engineering Village

216. The realization of drilling fault diagnosis based on hybrid programming with matlab andVB

Wang, Jiangping (1); Hu, Yingcai (1)
Source: *Communications in Computer and Information Science*, v 143 CCIS, n PART 1, p 35-40, 2011, *Advanced Research on Electronic Commerce, Web Application, and Communication - International Conference, ECWAC 2011, Proceedings*; **ISSN:** 18650929; **ISBN-13:** 9783642203664; **DOI:** 10.1007/978-3-642-20367-1_6; **Publisher:** Springer Verlag
Author affiliation: (1) School of Mechanical Engineering, Xi'An Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: This paper presents a method using hybrid programming with Matlab and VB based on ActiveX to design the system of drilling accident prediction and diagnosis. So that the powerful calculating function and graphical display function of Matlab and visual development interface of VB are combined fully. The main interface of the diagnosis system is compiled in VB,and the analysis and fault diagnosis are implemented by neural network tool boxes in Matlab.The system has favorable interactive interface,and the fault example validation shows that the diagnosis result is feasible and can meet the demands of drilling accident prediction and diagnosis. © 2011 Springer-Verlag Berlin Heidelberg. (4 refs)
Main heading: Failure analysis
Controlled terms: Fault detection - Accidents - MATLAB

Uncontrolled terms: Accident diagnosis - Accident prediction - Drilling engineering - Drilling fault diagnosis - Graphical displays - Hybrid programming - Interactive interfaces - Visual development
Classification Code: 723.5 Computer Applications - 914.1 Accidents and Accident Prevention - 921 Mathematics
Database: Compendex
Data Provider: Engineering Village

217. Study on the importance of computer technique in modern analytical chemistry teaching

Jiao, Long (1)
Source: *TEIN 2011 - 2011 2nd ETP/IITA Conference on Telecommunication and Information*, v 2, p 253-255, 2011; **Language:** Chinese; **ISBN-13:** 9789881824202; **Conference:** 2011 2nd ETP/IITA Conference on Telecommunication and Information, TEIN 2011, April 3, 2011 - April 4, 2011; **Sponsor:** Engineering Technology Press; Thammasat University; **Publisher:** Engineering Technology Press
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: The demands and challenges to the modern college education of analytical chemistry, which are caused by the advancement of analytical chemistry and the development of the economy in our country, was analyzed. These demands and challenges indicate that the reform in teaching methods of analytical chemistry is of great necessity for college faculties. Moreover, the important role that computer plays in the analytical chemistry teaching were described in detail. Thus, the importance of applying computer technique to current analytical chemistry teaching is demonstrated. ©2011 ETP. (6 refs)
Main heading: Chemical analysis
Controlled terms: Teaching
Uncontrolled terms: College education - College faculty - Computer techniques - Teaching methods
Classification Code: 801 Chemistry - 804 Chemical Products Generally - 901.2 Education
Database: Compendex
Data Provider: Engineering Village

218. QSPR studies on the aqueous solubility of selected PCDD/Fs by using artificial neural network combined with principal component analysis

Long, Jiao (1)
Source: *5th International Conference on Bioinformatics and Biomedical Engineering, iCBBE 2011*, 2011, *5th International Conference on Bioinformatics and Biomedical Engineering, iCBBE 2011*; **ISBN-13:** 9781424450893; **DOI:** 10.1109/icbbe.2011.5781211; **Article number:** 5781211; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, China
Abstract: A practicable quantitative structure property relationship (QSPR) model for predicting aqueous solubility, Sw, of 23 polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs) was developed. Linear artificial neural network (L-ANN) was used to develop the calibration model of Sw. The input variables of L-ANN were obtained from 11 structural descriptors of the investigated PCDD/Fs by using principal component analysis (PCA). Leave one out cross validation was carried out to assess the predictive ability of the model. The result of leave one out cross validation is satisfactory. The R2 between the predicted and experimental Sw is 0.9631 and the RMS%RE is 4.87 for all the investigated compounds. It is demonstrated that L-ANN combined with PCA is a practicable method for developing QSPR model for Sw of PCDD/Fs. In addition, PCA is shown to be an applicable approach for the generation of input variables when developing an L-ANN model. © 2011 IEEE. (16 refs)
Main heading: Principal component analysis
Controlled terms: Organic pollutants - Solubility - Neural networks
Uncontrolled terms: Aqueous solubility - Component analysis - Leave-one-out cross validations - PCDD/Fs - Polychlorinated dibenzo- p - dioxins - Polychlorinated dibenzofurans - QSPR - Quantitative structure-property relationship models
Classification Code: 801.4 Physical Chemistry - 804.1 Organic Compounds - 922.2 Mathematical Statistics
Database: Compendex
Data Provider: Engineering Village

219. Experiments and analysis of near-dry deep-hole drilling system

Peng, H. (1); Yuan, F. (1)

Source: *Key Engineering Materials*, v 455, p 355-359, 2011, *Manufacturing Automation Technology Development*; **ISSN:** 10139826, **E-ISSN:** 16629795; **ISBN-13:** 9780878492305; **DOI:** 10.4028/www.scientific.net/KEM.455.355; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi (710065), China
Abstract: Based on the characteristics of near-dry cutting and BTA deep-hole drilling, this paper presented design method of near-dry deep-hole processing system, and then studied on it through experiments. The results show that the near-dry deep-hole processing system has better effects on discharge chips and coolant. At the same time, near-dry cutting function was better than BTA cutting with appropriate cutting parameters through comparing with BTA cutting machining. (3 refs)
Main heading: Cutting
Uncontrolled terms: Cutting machining - Cutting parameters - Deep hole drilling - Deep hole processing - Design method - Near-dry cutting
Classification Code: 511.1 Oil Field Production Operations
Database: Compendex
Data Provider: Engineering Village

220. Design of EMC test software based on configurable file

Jia, Huiqin (1)
Source: *Applied Mechanics and Materials*, v 48-49, p 387-390, 2011, *Measuring Technology and Mechatronics Automation*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037850190; **DOI:** 10.4028/www.scientific.net/AMM.48-49.387; **Conference:** 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011, January 6, 2011 - January 7, 2011; **Sponsor:** IEEE Instrumentation and Measurement Society; Shanghai University of Engineering Science; City University of Hongkong; Changsha University of Science and Technology; Hunan University of science and Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, Shannxi 710065, China
Abstract: According to EMC Standard,fulfilling one Test-Item generally includes below process: select and configure the parameters of instrument,form and execute the Test-Flow, therefore the main task of EMC is to configure instrument and form the Test-Item. In this paper the authors present a new method using configuration file to describe EMC Test-Item to improve the expansibility and maintainability of EMC test software. Multi-layered software architecture is designed according to EMC test operating sequence, and COM component technology is used to design the core module of each layer to guarantee plug&play for the new program-controlled instruments. Because of using the form of configuration file to describe Test-Item, the new Test-Item will be produced through Test-Engine calling Test-Item Configuration Generator. The Virtual Instrument Software Architecture is used to design and realize the frame of EMC software, and the Visual C++ software platform is used to realize the above design method. Application using configuration file make EMC software has the features of easy to use, easy update and expandability. © (2011) Trans Tech Publications. (7 refs)
Main heading: Application programs
Controlled terms: Testing - Software architecture - C++ (programming language) - Electromagnetic compatibility - Design - Software testing
Uncontrolled terms: Component - Component technologies - Configurable - Configuration files - Design method - EMC test - EMC test software - Expandability - Layered architecture - Main tasks - Multi-layered - Operating sequences - Software platforms - Virtual instrument software architectures - VISUAL C++
Classification Code: 711.1 Electromagnetic Waves in Different Media - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.1.1 Computer Programming Languages - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

221. Time-Varying Sliding Mode Adaptive Control for Rotary Drilling System (*Open Access*)

Li, Lin (1); Zhang, Qi-zhi (1); Rasol, Nurzat (1)
Source: *Journal of Computers*, v 6, n 3, p 564-570, 2011; **ISSN:** 1796203X; **DOI:** 10.4304/jcp.6.3.564-570; **Publisher:** Academy Publisher
Author affiliation: (1) Key Laboratory of Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China
Abstract: This paper presents a time-varying sliding mode adaptive controller in order to handle the stick-slip oscillation of nonlinear rotary drilling system. The time-varying sliding mode controller with strong robust has two time-varying sliding surfaces, one of them induced time-varying integral sliding mode control can control the transient

stage of the rotary drilling system and ensure the system remains the sliding condition whatever in usual or existing the parameter changes and disturbances to arrive at a controller capable of global stability. The herein developed controller is, a time-varying sliding mode adaptive controller has tracking performance and identification of drilling parameters. Lyapunov principles have been carried out to verify the stability and robustness of system. The simulation results show that the controller has faster dynamic responses and suppress stick-slip in oil well drill string, can achieve global stability of rotary drilling system. © 2011 ACADEMY PUBLISHER. (22 refs)
Main heading: Stick-slip
Controlled terms: Controllers - Drill strings - Oil well drilling - Oil wells - Slip forming - Sliding mode control - Time varying control systems - Adaptive control systems
Uncontrolled terms: Adaptive Control - Integral sliding mode control - Rotary drilling system - Sliding mode controller - Sliding-mode adaptive controllers - Stability and robustness - Stick-slip oscillation - Time-varying sliding mode controls
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 - 732.1 Control Equipment - 931.1 Mechanics
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

222. Investigation of phase composition and microstructure of the FeAl/Al 2O3 composites fabricated by mechanical alloying and plasma active sintering process

Jiang, Tao (1)
Source: *Advanced Materials Research*, v 284-286, p 226-229, 2011, *Materials and Design*; **ISSN:** 10226680; **ISBN-13:** 9783037851913; **DOI:** 10.4028/www.scientific.net/AMR.284-286.226; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The FeAl/Al2O3 composites were fabricated by plasma active sintering process in this research the FeAl intermetallics compounds powders were fabricated by mechanical alloying and heat treatment process. The FeAl intermetallics compounds powders and Al2O3 powders were mixed and the FeAl/Al2O3 composite powders were prepared. The FeAl/Al2O3 composites bulks were fabricated by plasma active sintering process at 1200°C for 5min under the pressure of 30MPa. The phase composition and microstructure of the FeAl/Al2O 3 composites sintered bulks were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were fabricated by mechanical alloying for 60h. The FeAl intermetallics compounds powders were fabricated by heat treatment at 800°C, 900°C and 1000°C. The microstructure showed that the mean particles size of the FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment process was rather fine and about 4-5μm. The XRD patterns results showed that there existed the FeAl phase and Al2O3 phase in the sintered composites. The FeAl/Al2O3 composites sintered bulks exhibited the homogenous and compact microstructure. The microstructure of the FeAl/Al2O3 composites became more compact and homogenous with the increase of FeAl content. The mean particles size of FeAl was about 2-3μm and the mean particles size of Al2O3 was about 2-3μm. The density and relative density of the FeAl/Al2O 3 composites increased gradually with the increase of FeAl content. © (2011) Trans Tech Publications, Switzerland. (12 refs)
Main heading: Sintering
Controlled terms: Microstructure - Fabrication - Iron compounds - Binary alloys - Iron alloys - Phase composition - Intermetallics - Powders - Alumina - Aluminum oxide - Mechanical alloying
Uncontrolled terms: Compact microstructure - Composite powders - FeAl intermetallics - FeAl/Al2O3 composites - Heat treatment process - Intermetallics compounds - Particles sizes - Relative density - Sintered bulk - Sintering process - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

223. Reforming to improve the teaching quality of computer programming language

Gao, Rongfang (1)
Source: *ICCSE 2011 - 6th International Conference on Computer Science and Education, Final Program and Proceedings*, p 1267-1269, 2011, *ICCSE 2011 - 6th International Conference on Computer Science and Education, Final Program and Proceedings*; **ISBN-13:** 9781424497188; **DOI:** 10.1109/ICCSE.2011.6028863; **Article number:**

6028863; **Conference:** 6th International Conference on Computer Science and Education, ICCSE 2011, August 3, 2011 - August 5, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi Province, 710065, China
Abstract: Training of computer programming ability has aroused increasing attention in the course of Computer Programming Language. This paper analyzed main problems in the subject of computer language course which shows that the major difficulties in teaching the computer languge include obsolete and fragmentary contents of the course, insufficient modularization programming, and little practice training. Then, the reforming teaching mode of thinking, training method and particular steps of the course are proposed. To improve student's practical ability, the training of programming method and ability of students are emphasized in this paper. Therefore, a better result has been acheaved in the proposed teaching practice. © 2011 IEEE. (4 refs)
Main heading: Modular construction
Controlled terms: Computer programming languages - Teaching - Students
Uncontrolled terms: Modularizations - Teaching modes - Teaching practices - Teaching quality - Training methods
Classification Code: 405.2 Construction Methods - 723.1.1 Computer Programming Languages
Database: Compendex
Data Provider: Engineering Village

224. Investigation of phase composition and microstructure of the B 4C/BN nanocomposite powders fabricated by chemical reaction and heat treatment process

Jiang, Tao (1)
Source: *Advanced Materials Research*, v 335-336, p 195-198, 2011, *Advanced Materials and Structures*; **ISSN:** 10226680; **ISBN-13:** 9783037852460; **DOI:** 10.4028/www.scientific.net/AMR.335-336.195; **Conference:** 2011 International Conference on Materials and Products Manufacturing Technology, ICMPMT 2011, October 28, 2011 - October 30, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The B4C/BN nanocomposite powders were fabricated by chemical reaction and heat treatment process in this research. The starting powders was composed of B4C powders, H3BO3 and CO(NH 2)2. The mixture powders were reacted at 550°C for 15h and heat treated at 850°C for 6h. So the B4C/BN nanocomposite powders were prepared by above process. In this research, the B4C/BN nanocomposite powders were heat treated at 850°C, 1300°C, 1500°C, 1750°C. The phase composition and microstructure of the B4C/BN nanocomposite powders fabricated by heat treatment at high temperature were investigated by XRD and TEM. The XRD patterns results showed that there existed the B4C phase and amorphous BN phase after chemical reaction at 550°C and heat treatment at 850°C. Then the amorphous BN phase gradually transformed into the hexagonal BN (h-BN) phase with the increase of heat treatment temperature from 1300°C to 1750°C. The amorphous BN phase completely transformed into the h-BN phase after the hot-pressing process at 1850°C. The IR spectrum results showed that there existed the B4C phase and BN phase in the produced composite powders and sintered bulks. The microstructure of the synthesized B4C/BN composite powders showed that the B4C particles were surrounded with the amorphous BN coated layer after the heat treatment at 850°C, then the amorphous BN coated layer gradually transformed into the nano-sized h-BN particles with the increase of heat treatment temperature. So the B4C/BN nanocomposite powders were fabricated by chemical reaction and heat treatment process. © (2011) Trans Tech Publications. (10 refs)
Main heading: Heat treatment
Controlled terms: Fabrication - Hot pressing - Microstructure - Boron nitride - Nanocomposites - Boron carbide - Phase composition - Powders - Chemical reactions
Uncontrolled terms: Coated layers - Composite powders - Heat treatment process - Heat treatment temperature - High temperature - Hot-pressing process - IR spectrum - Nano-sized - Nanocomposite powder - Sintered bulk - Starting powders - XRD - XRD patterns
Classification Code: 537.1 Heat Treatment Processes - 641.1 Thermodynamics - 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

225. Investigation of fabrication and microstructure of the Fe 3Al/Al2O3 composites by plasma active sintering process

Jianga, Tao (1)
Source: *Advanced Materials Research*, v 160-162, p 1458-1463, 2011, *Materials Science and Engineering Applications*; **ISSN:** 10226680; **ISBN-13:** 9780878492169; **DOI:** 10.4028/www.scientific.net/AMR.160-162.1458;

Conference: 2011 International Conference on Materials Science and Engineering Applications, ICMSEA 2011, January 15, 2011 - January 16, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The Fe3Al/Al2O3 composites were fabricated by plasma active sintering process. The Fe3Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment. The Fe3Al intermetallics compounds powders and Al2O 3 powders were mixed together, so the Fe3Al/Al 2O3 composites were fabricated by plasma active sintering process at 1200°C for 5min under the pressure of 30MPa. The phase composition and microstructure of the Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition and microstructure of the Fe3Al/Al 2O3 composites produced by plasma active sintering process were investigated. The XRD patterns results showed that the Fe3Al intermetallics compounds powders were fabricated by mechanical alloying for 60h and heat treatment process. The XRD patterns results showed that there existed Fe3Al phase and Al2O3 phase in sintered composites. The microstructure showed that the mean particles size of the Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment was about 4-5μm. The Fe3Al/Al 2O3 composites exhibited the homogenous and compact microstructure. The mean particles size of Fe3Al was about 2-3μm and mean particles size of Al2O3 was about 2-3μm. The Fe3Al/Al2O3 composites exhibited homogenous and compact microstructure with the increase of Fe3Al content. The density and relative density of the Fe3Al/Al2O3 composites increased gradually with the increase of Fe3Al content. (15 refs)
Main heading: Sintering
Controlled terms: Alumina - Fabrication - Intermetallics - Mechanical alloying - Iron alloys - Powders - Binary alloys - Microstructure - Aluminum oxide - Phase composition
Uncontrolled terms: Al content - Compact microstructure - Fe3Al/Al2O3 composites - Heat treatment process - Intermetallics compounds - Particles sizes - Relative density - Sintering process - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

226. Comparison of fracture conductivities from field and lab

Zhou, Desheng (1); Zhang, Gang (2); Ruan, Min (1); He, Anwu (2); Wei, Dengfeng (2)
Source: *International Petroleum Technology Conference 2011, IPTC 2011*, 2011, *International Petroleum Technology Conference 2011, IPTC 2011*; **ISBN-13:** 9781613991480; **DOI:** 10.2523/iptc-14706-ms; **Conference:** International Petroleum Technology Conference 2011, IPTC 2011, November 15, 2011 - November 17, 2011; **Publisher:** International Petroleum Technology Conference (IPTC)
Author affiliation: (1) Xian Petroleum University, Australia (2) Shaanxi Yanchang Petroleum Corp. Inc., Australia
Abstract: American Petroleum Institute (API) and International Organization for Standardization (ISO) provide short-term and long-term proppant pack conductivity tests in lab. Those are the standard in testing proppant pack conductivity and are widely used in the industry during fracture design. However, the standard results are far from actual fracture conductivity as many factors are not included in the standard tests. By comparing the environment difference between the standard lab conductivity and actual fracture conductivity, the paper summaries the most possible factors impacting the actual fracture. Those impacting factors are categorized into four types in the paper: proppant filling reduction, Proppant filling reduction, Porosity reduction, and Fluid flowing reduction. Well testing and production data analysis are used in explaining fracture conductivity, but the accuracy is unsatisfied for reservoir, perforation and turtorasity, and geology uncertainties. In-situ measurement is needed to obtain actual fracture conductivity. © Copyright 2011, International Petroleum Technology Conference (5 refs)
Main heading: Proppants
Controlled terms: Fracture testing - Gasoline - Fracture - Uncertainty analysis - Well testing
Uncontrolled terms: American Petroleum Institute - Fracture conductivities - Fracture design - Impacting factor - In-situ measurement - International organization for standardizations - Porosity reduction - Production data analysis
Classification Code: 511.1 Oil Field Production Operations - 523 Liquid Fuels - 922.1 Probability Theory - 951 Materials Science
Funding Details: Number: 2011K08-13, Acronym: DG Interpretation, Sponsor: Directorate-General for Interpretation;
Funding text: This paper is funded by Shannxi Science and Technology Agency for the project of "Test and Interpretation Technology of Downhole Fracture Conductivity" (2011K08-13).
Database: Compendex
Data Provider: Engineering Village

227. The study of PSTN p2p protocol in distributed multi-database system in intelligent materials system

Song, Xinai (1); Liu, Tianshi (1); Zhang, Liumei (1)
Source: *Applied Mechanics and Materials*, v 63-64, p 299-304, 2011, *Advanced Research on Mechanical Engineering, Industry and Manufacturing Engineering*; **ISSN:** 16609336, **E-ISSN:** 16627482; **ISBN-13:** 9783037851371; **DOI:** 10.4028/www.scientific.net/AMM.63-64.299; **Conference:** 2011 International Conference on Mechanical Engineering, Industry and Manufacturing Engineering, MEIME2011, July 23, 2011 - July 24, 2011; **Sponsor:** International Science and Education Researcher Association (ISER); Gireida Education Research Center; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi Province, 710065, China
Abstract: In intelligence materials system, sensor nodes may typically scattered around the targeted surveillance area. Therefore, all nodes within such network are responsible for collect and route data from sensors to receivers. Along with the development of intelligent materials databases, communication speed and efficiency may strongly affect the performance of distributed multi-database system. This paper firstly introduces a p2p distributed multi-database system architecture and its characteristics, moreover explains the node communication mechanism. Secondly, it proposes a protocol with its 4-layer structure and respectively explains the layer design ideas and functionalities. Finally, by analyzing the transmission efficiency and speed, the paper proposes the practicability and validity of protocol. © (2011) Trans Tech Publications, Switzerland. (10 refs)
Main heading: Sensor nodes
Controlled terms: Distributed database systems - Distributed computer systems - Efficiency - Intelligent materials - Peer to peer networks
Uncontrolled terms: Cyclic redundancy check - Multidatabases - Peer-to-peer protocols - Sliding window - Transmission efficiency - Transmission speed
Classification Code: 716.3 Radio Systems and Equipment - 722 Computer Systems and Equipment - 722.4 Digital Computers and Systems - 723.3 Database Systems - 913.1 Production Engineering
Database: Compendex
Data Provider: Engineering Village

228. Investigation of phase composition and microstructure of the FeAl intermetallics compounds bulks fabricated by mechanical alloying process and hot-pressing process

Tao, Jiang (1)
Source: *Advanced Materials Research*, v 228-229, p 899-904, 2011, *Machinery, Materials Science and Engineering Applications, MMSE 2011*; **ISSN:** 10226680; **ISBN-13:** 9783037851111; **DOI:** 10.4028/www.scientific.net/AMR.228-229.899; **Conference:** 2011 International Academic Conference on Machinery, Materials Science and Engineering Applications, MMSE 2011, July 15, 2011 - July 16, 2011; **Sponsor:** Chinese Mechanical Engineering Society; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The FeAl intermetallics compounds bulks were fabricated by hot-pressing process. The FeAl intermetallics compounds powders were fabricated by mechanical alloying and heat treatment process. The phase composition and microstructure of the FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition and microstructure of the FeAl intermetallics compounds bulks fabricated by hot-pressing process were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were fabricated by mechanical alloying for 60h. The FeAl intermetallics compounds powders were fabricated by heat treatment process at 800°C, 900°C and 1000°C. The microstructure showed that the mean particles sizes of the Fe-Al intermetallics compounds powders produced by mechanical alloying decreased remarkably with the increase of milling time. The microstructure showed that the mean particles size of the Fe-Al intermetallics compounds powders produced by mechanical alloying and heat treatment was rather fine and about 4-5μm. The FeAl intermetallics compounds bulks were fabricated by hot-pressing process at 1100°C for 2h under the pressure of 35MPa. The XRD patterns results showed that there existed the FeAl intermetallics compounds phase in sintered bulks. The FeAl intermetallics compounds bulks exhibited the homogenous and compact microstructure. The mean particles size of the FeAl intermetallics compounds was about 2-3μm. The FeAl intermetallics compounds bulks exhibited the high relative density. The FeAl intermetallics compounds bulks with the high relative density were fabricated by hot-pressing process. © (2011) Trans Tech Publications. (20 refs)
Main heading: Microstructure
Controlled terms: Heat treatment - Intermetallics - Iron alloys - Hot pressing - Mechanical alloying - Iron compounds - Aluminum compounds - Phase composition - Aluminum alloys - Powders - Binary alloys - Fabrication
Uncontrolled terms: Compact microstructure - FeAl intermetallics - Heat treatment process - Hot-pressing process - Intermetallics compounds - Milling time - Particles sizes - Relative density - Sintered bulk - XRD patterns

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 537.1 Heat Treatment Processes - 541.2 Aluminum Alloys - 545.2 Iron Alloys - 641.1 Thermodynamics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

229. Influence of surface mechanical attrition treatment on low-temperature rapid pack aluminizing layer of oil casing steel N80

Huang, Min (1); Wang, Yu (1)
Source: *Gongneng Cailiao/Journal of Functional Materials*, v 42, n SUPPL. 4, p 628-631, August 2011; **Language:** Chinese; **ISSN:** 10019731; **Publisher:** Journal of Functional Materials
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Pack aluminizing processing was carried on oil casing steel N80 for 2h by surface mechanical attrition treatment (SMAT) with use of pack powder at a relatively low-temperature. The metallograph and microhardness of oil casing steel N80 after SMAT for 90min was analyzed by means of metallographic microscope and mircohardness test instrument. The microstructure and element distribution spectrum as well as microhardness of aluminizing N80 steel were also analyzed with SEM, EDS and microhardness test instrument. The study results show that a plastic deformed layer with a thickness around 50μm can be formed after SMAT, and the grain size whthin the layer reduces. The microhardess of oil casing steel N80 can be obviously improved in the thickness range of deformation layer after SMAT. Compared with original N80 steel, the aluminizing layer of oil casing steel N80 after SMAT shows a denser and more continuous microstructure, a bigger thickness as well as a higher microhardness. Consequently, SMAT can not only improve the thickness of aluminizing layer but also improve its structure and corrosion resistance ability. (14 refs)
Main heading: Microhardness
Controlled terms: Microstructure - Temperature - Corrosion resistance
Uncontrolled terms: Aluminizing layer - Deformation layer - Deformed layers - Element distribution - Grain size - Low temperatures - Metallographic microscope - Microhardness tests - N80 Steel - Oil casing steel N80 - Pack aluminizing - Surface mechanical attrition treatment (SMAT) - Surface mechanical attrition treatments - Test instruments
Classification Code: 539.1 Metals Corrosion - 641.1 Thermodynamics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

230. The solute redistribution during solidification of multi-component alloys

He, Zhi (1); Zhou, Haobin (1); Liu, Yanming (1); Li, Lanyun (1)
Source: *Advanced Materials Research*, v 311-313, p 752-757, 2011, *Advanced Materials and Processes*; **ISSN:** 10226680; **ISBN-13:** 9783037852149; **DOI:** 10.4028/www.scientific.net/AMR.311-313.752; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) College of Material Science and Engineering, Xi'an Shiyou University, 710065, Xi'an, China
Abstract: The solution redistribution was an important phenomenon during the solidification of multi-component alloys. The improvements of the solute redistribution were considered in this paper especial in the simulation processes. The models of Gibbs free energy were taken into three kinds such as pure materials, the substitutional solution and the sublattice. Calculating the Gibbs free energy of the system, the solute redistribution coefficients could be calculated. The simulated results of Al-Cu binary and Al-Si-Mg ternary alloys agree well with the experimental results. © (2011) Trans Tech Publications, Switzerland. (11 refs)
Main heading: Solidification
Controlled terms: Magnesium alloys - Binary alloys - Aluminum alloys - Gibbs free energy - Silicon alloys - Ternary alloys - Copper alloys - Free energy
Uncontrolled terms: Al-Si-Mg - Multi-component alloy - Pure materials - Simulated results - Simulation process - Solute redistribution - Sub-lattices - The solute redistribution - Thermodynamic calculation
Classification Code: 541.2 Aluminum Alloys - 542.2 Magnesium and Alloys - 544.2 Copper Alloys - 549.2 Alkaline Earth Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 641.1 Thermodynamics - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

231. An LSB-based blind fragile watermarking algorithm

Ma, Gang (1); Cheng, Guojian (1); Zhang, Liumei (1)
Source: *Advanced Materials Research*, v 204-210, p 846-851, 2011, *Advanced Research on Industry, Information System and Material Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037850275; **DOI:** 10.4028/www.scientific.net/AMR.204-210.846; **Conference:** 2011 International Conference on Industry, Information System and Material Engineering, IISME2011, April 16, 2011 - April 17, 2011; **Sponsor:** International Science and Education Researcher Association; Beijing Spon Research Institution; Beijing Gireida Education Co.Ltd.; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Computer Science, Xi'an Shiyou University, Xi'an, Shaanxi Province, 710065, China
Abstract: A blind fragile watermarking algorithm based on LSB is proposed in this paper. The watermark is made up of the CRC-32 value of an original image, a meaningful binary image and its CRC-32 value. By embedding the watermark into LSB of these specific pixels determined by m-sequence, some key problems such as information hiding, blind watermark extraction and tamper detection are solved efficiently. The experimental result indicates that this algorithm can meet the digital archives' copyright protection and tamper detection needs, and it is also practical. (7 refs)
Main heading: Binary images
Controlled terms: Digital watermarking - Copyrights
Uncontrolled terms: Blind watermark - Copyright protections - CRC - Digital archives - Fragile watermarking - Information hiding - Key problems - M sequence - Original images - Tamper detection
Classification Code: 723.2 Data Processing and Image Processing - 902.3 Legal Aspects
Database: Compendex
Data Provider: Engineering Village

232. Investigation of microstructure and property of Fe3Al/Al 2O3 composites

Jiang, Tao (1)
Source: *Advanced Materials Research*, v 150-151, p 1409-1412, 2011, *Advances in Composites*; **ISSN:** 10226680; **ISBN-13:** 9780878492022; **DOI:** 10.4028/www.scientific.net/AMR.150-151.1409; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC); **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The Fe3Al/Al2O3 composites were fabricated by pressureless sintering process. The Fe3Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment, then the Fe3Al powders and Al2O3 powders were mixed and the Fe3Al/Al2O3 composite powders were prepared, so the Fe3Al/Al2O3 composites were fabricated by sintering process at 1700°C for 2h. The phase composition and microstructure of Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition, microstructure and mechanical properties of the Fe 3Al/Al2O3 composites sintered bulks were investigated. The XRD patterns results showed that there existed Fe 3Al phase and Al2O3 phase in the sintered composites. The Fe3Al/Al2O3 composites sintered bulks exhibited the homogenous and compact microstructure, the Fe3Al particles were homogenously distributed in the Al2O3 matrix, the mean particles size of Fe3Al intermetallics was about 3-5μm. The Fe3Al/Al2O3 composites exhibited more homogenous and compact microstructure with the increase of Fe3Al content in the Al2O3 matrix. The density and relative density of the Fe3Al/Al2O3 composites increased gradually with the increase of Fe3Al content. The fracture strength and fracture toughness of the Fe3Al/Al2O3 composites increased gradually with the increase of Fe3Al content. The elastic modulus and hardness (HRA) of the Fe3Al/Al 2O3 composites decreased gradually with the increase of Fe3Al content. © (2011) Trans Tech Publications. (12 refs)
Main heading: Microstructure
Controlled terms: Binary alloys - Intermetallics - Mechanical alloying - Sintering - Phase composition - Powders - Alumina - Aluminum oxide - Fracture - Iron alloys - Fracture toughness
Uncontrolled terms: Al content - Al powder - Compact microstructure - Composite powders - Fe3Al/Al2O3 composites - Fracture strengths - Intermetallics compounds - matrix - Microstructure and mechanical properties - Microstructure and properties - Particles sizes - Pressureless sintering - Pressureless sintering process - Relative density - Sintered bulk - Sintering process - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

233. QSPR studies on the aqueous solubility of PCDD/Fs by using artificial neural network combined with genetic algorithm

Jiao, Long (1)
Source: *TEIN 2011 - 2011 2nd ETP/IITA Conference on Telecommunication and Information*, v 1, p 113-116, 2011; **ISBN-13:** 9789881824202; **Conference:** 2011 2nd ETP/IITA Conference on Telecommunication and Information, TEIN 2011, April 3, 2011 - April 4, 2011; **Sponsor:** Engineering Technology Press; Thammasat University; **Publisher:** Engineering Technology Press
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Abstract: A quantitative structure property relationship (QSPR) model for predicting the aqueous solubility, Sw, of 23 polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs) was developed. Linear artificial neural network (L-ANN) was used to develop the calibration model of Sw. The input variables of L-ANN were selected from the quantum structural descriptors of the 23 PCDD/Fs by using genetic algorithm (GA). Leave one out cross validation was conducted to assess the predictive ability of the developed model. The R2 between the predicted and experimental logSw is 0.9727 and the RMS%RE is 4.15 for all the compounds. It is demonstrated that L-ANN combined with GA is a practicable method for developing QSPR model for Sw of PCDD/Fs. GA is shown a practicable approach for selecting input variables of L-ANN when developing a QSPR model for PCDD/Fs with LANN. ©2011 ETP. (18 refs)
Main heading: Genetic algorithms
Controlled terms: Organic pollutants - Solubility - Neural networks - Statistical methods
Uncontrolled terms: Aqueous solubility - Leave-one-out cross validations - PCDD/Fs - Polychlorinated dibenzo- p - dioxins - Polychlorinated dibenzofurans - QSPR - Quantitative structure-property relationship models - Structural descriptors
Classification Code: 801.4 Physical Chemistry - 804.1 Organic Compounds - 922.2 Mathematical Statistics
Database: Compendex
Data Provider: Engineering Village

234. Prediction of the aqueous solubility partition coefficient of polychlorinated biphenyls by using artificial neural network combined with topological index

Jiao, Long (1)
Source: *TEIN 2011 - 2011 2nd ETP/IITA Conference on Telecommunication and Information*, v 1, p 117-119, 2011; **ISBN-13:** 9789881824202; **Conference:** 2011 2nd ETP/IITA Conference on Telecommunication and Information, TEIN 2011, April 3, 2011 - April 4, 2011; **Sponsor:** Engineering Technology Press; Thammasat University; **Publisher:** Engineering Technology Press
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an; 710065, China
Abstract: A quantitative structure property relationship (QSPR) model for predicting the aqueous solubility, Sw, of 25 polychlorinated biphenyls (PCBs) was developed. The structure of the investigated PCBs is mathematically characterized by using the molecular distance-edge vector (MDEV) index, a topological index which is developed based on the topological method. The calibration model of Sw was developed by using back propagation artificial neural network (BP-ANN). Leave one out cross validation was carried out to assess the predictive ability of the developed QSPR model. The R2 between the predicted and experimental logSw is 0.9175 and the RMS%RE is 5.09 for the investigated PCBs. It is demonstrated that there is a quantitative relationship between the MDEV index and the Sw of the 25 PCBs. BP-ANN is shown to be a practicable method for quantitatively modeling this relationship. ©2011 ETP. (17 refs)
Main heading: Neural networks
Controlled terms: Organic pollutants - Topology - Solubility - Backpropagation - Statistical methods - Polychlorinated biphenyls
Uncontrolled terms: Aqueous solubility - Back-propagation artificial neural network - Leave-one-out cross validations - Partition coefficient - Polychlorinated biphenyl (PCBs) - QSPR - Quantitative structure-property relationship models - Vector index
Classification Code: 723.4 Artificial Intelligence - 801.4 Physical Chemistry - 804.1 Organic Compounds - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 922.2 Mathematical Statistics
Database: Compendex
Data Provider: Engineering Village

235. Investigation of fabrication and microstructure of the Fe3Al intermetallics compounds bulks by hot-pressing process

Tao, Jiang (1)
Source: *Advanced Materials Research*, v 183-185, p 1707-1711, 2011, *Environmental Biotechnology and Materials Engineering*; **ISSN:** 10226680; **ISBN-13:** 9783037850220; **DOI:** 10.4028/www.scientific.net/AMR.183-185.1707; **Conference:** 2011 International Conference on Environmental Biotechnology and Materials Engineering, EBME 2011, March 26, 2011 - March 28, 2011; **Sponsor:** Harbin University of Commerce; Heilongjiang Province Institute of Food Science and Technology; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The Fe3Al intermetallics compounds bulks were fabricated by hot-pressing process in this research. The Fe3Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment process. The phase composition and microstructure of the Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition and microstructure of the Fe3Al intermetallics compounds bulks produced by hot-pressing process were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were fabricated by mechanical alloying for 60h. Then the Fe3Al intermetallics compounds powders were fabricated by heat treatment at 800°C and 1000°C. The microstructure showed that the mean particles sizes of the Fe-Al intermetallics compounds powders produced by mechanical alloying decreased remarkably with the increase of milling time. The microstructure showed that the mean particles size of the Fe3Al intermetallics compounds powders produced by mechanical alloying for 60h and heat treatment was rather fine and about 4-5μm. The Fe3Al intermetallics compounds bulks were fabricated by hot-pressing process at 1100°C for 2h under the pressure of 35MPa. The XRD patterns results showed that there existed only Fe3Al intermetallics compounds phase in the sintered bulks. The Fe3Al intermetallics compounds bulks exhibited the homogenous and compact microstructure. The mean particles size of the Fe3Al intermetallics compounds was rather fine and about 2-3μm. The relative density of the Fe3Al intermetallics compounds sintered bulks was about 99.2%. So the Fe3Al intermetallics compounds bulks with the high relative density were fabricated by hot-pressing process. © (2011) Trans Tech Publications. (15 refs)
Main heading: Intermetallics
Controlled terms: Binary alloys - Iron alloys - Iron compounds - Mechanical alloying - Aluminum alloys - Phase composition - Sintering - Microstructure - Fabrication - Hot pressing - Aluminum compounds - Powders
Uncontrolled terms: Al alloys - Compact microstructure - Heat treatment process - Hot-pressing process - Intermetallic compound - Intermetallics compounds - Milling time - Particles sizes - Relative density - Sintered bulk - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 541.2 Aluminum Alloys - 545.2 Iron Alloys - 641.1 Thermodynamics - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

236. Investigation of phase composition and microstructure of the B4C/BN nanocomposite powders and the B4C/BN nanocomposites sintered bulks

Tao, Jiang (1)
Source: *Advanced Materials Research*, v 328-330, p 1572-1575, 2011, *Mechatronics and Materials Processing I*; **ISSN:** 10226680; **ISBN-13:** 9783037852385; **DOI:** 10.4028/www.scientific.net/AMR.328-330.1572; **Conference:** 2011 International Conference on Mechatronics and Materials Processing, ICMMP 2011, November 18, 2011 - November 20, 2011; **Sponsor:** Guangzhou University; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In this research, the B4C/BN nanocomposite powders were fabricated by chemical reaction and heat treatment process, then the B 4C/BN nanocomposites bulks were fabricated by hot-pressing process. The B4C/BN nanocomposite powders were fabricated by chemical reaction at 550°C for 15h and heat treatment at 850°C for 6h. The B 4C/BN nanocomposites bulks were fabricated by hot-pressing process at 1850°C for 1h under the pressure of 30MPa. In this research, the phase composition and microstructure of the B4C/BN nanocomposite powders produced by chemical reaction and heat treatment process were investigated. The phase composition and microstructure of the B4C/BN nanocomposites produced by hot-pressing process were investigated. The XRD patterns results showed that there existed the B4C phase and amorphous BN phase in the composite powders produced by chemical reaction and heat treatment, and the amorphous BN phase completely transformed into the h-BN phase by hot-pressing process. The XRD patterns results showed that there existed the B4C phase and h-BN phase in the composites sintered bulks. The microstructure of the synthesized B4C/BN composite powders showed that the B4C particles were surrounded with the amorphous BN nano-sized particles, the thickness of amorphous BN coated layer was about 300-500nm. The B 4C/BN nanocomposites exhibited the homogenous and compact microstructure, and the nano-sized h-BN particles

were homogenously distributed in the B4C matrix. The mean particles size of B4C matrix was about 2-3μm, the length of nano-sized h-BN particles was about 1-2μm and width of nano-sized h-BN particles was about 100-200nm. The B 4C/BN nanocomposites bulks exhibited more homogenous and compact microstructure with the increase of h-BN content. © 2011 Trans Tech Publications. (10 refs)
Main heading: Nanocomposites
Controlled terms: Chemical reactions - Particle size - Powders - Boron nitride - Fabrication - Boron carbide - Microstructure - Sintering - Hot pressing - Phase composition
Uncontrolled terms: Coated layers - Compact microstructure - Composite powders - Heat treatment process - Hot-pressing process - matrix - Nano-sized - Nano-sized particles - Nanocomposite powder - Particles sizes - Sintered bulk - XRD patterns
Classification Code: 641.1 Thermodynamics - 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

237. Fabrication and microstructure of the Fe3Al/Al2O 3 composites by pressureless sintering

Tao, Jiang (1); Kewei, Pan (1)
Source: *Advanced Materials Research*, v 177, p 411-414, 2011, *Testing and Evaluation of Inorganic Materials I*; **ISSN:** 10226680; **ISBN-13:** 9783037850138; **DOI:** 10.4028/www.scientific.net/AMR.177.411; **Conference:** 1st Annual Meeting on Testing and Evaluation of Inorganic Materials, April 28, 2010 - April 30, 2010; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Fe3Al/Al2O3 composites were fabricated by pressureless sintering in this research. Fe3Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment. The Fe3Al powders and Al2O3 powders were mixed together, then the Fe3Al/Al2O3 composites were fabricated by pressureless sintering process at 1700°C for 2h. The phase composition and microstructure of the Fe3Al intermetallics compounds powders and the phase composition and microstructure of the sintered Fe 3Al/Al2O3 composites were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were prepared by mechanical alloying for 60h, and the Fe-Al intermetallics compounds powders transformed into Fe3Al intermetallics compounds powders after heat treatment at 800°C and 1000°C. The XRD patterns results showed that there existed Fe3Al phase and Al2O3 phase in the sintered composites. The microstructure showed that the mean particles size of the Fe3Al intermetallics compounds powders produced by mechanical alloying and heat treatment was rather fine and about 2-3μm. The sintered Fe3Al/Al2O3 composites exhibited homogenous and compact microstructure, the Fe3Al particles were homogenously distributed in the Al2O3 matrix. The mean particles size of Fe3Al was about 3-5μm. The sintered Fe 3Al/Al2O3 composites exhibited more homogenous and compact microstructure with the increase of Fe3Al content in the Al2O3 matrix. © (2011) Trans Tech Publications. (10 refs)
Main heading: Intermetallics
Controlled terms: Binary alloys - Iron compounds - Aluminum oxide - Iron alloys - Fabrication - Powders - Sintering - Mechanical alloying - Alumina - Microstructure - Phase composition
Uncontrolled terms: After-heat treatment - Al content - Al powder - Compact microstructure - Fe3Al/Al2O3 - Intermetallic compound - Intermetallics compounds - matrix - Particles sizes - Pressureless sintering - Pressureless sintering process - XRD patterns
Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.2 Iron Alloys - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

238. Sliding mode control as applied to drilling rotary system

Shi, Fubin (1); Rasol, Nurzat (1); Li, Lin (1)
Source: *Communications in Computer and Information Science*, v 86 CCIS, p 600-608, 2011, *Information and Automation - International Symposium, ISIA 2010, Revised Selected Papers*; **ISSN:** 18650929; **ISBN-13:** 9783642198526; **DOI:** 10.1007/978-3-642-19853-3_89; **Publisher:** Springer Verlag
Author affiliation: (1) Key Laboratory of Drilling Rigs Controlling Technique, Xi'An Shiyou University, Xi'an, China
Abstract: This paper, using torsional multi-DOF model of drilling rotary system, presents the double surface sliding mode PID controller with exponent reaching law in order to handle the system failure caused by stick-slip oscillation.

The sliding mode controller is applied two discontinuity surfaces as sliding surface, one of them is used to suppress the stick-slip oscillation at the drill bit, and the other surface makes the bit speed follow the rotary speed and achieves bit moving with a constant speed. The developed controller is a double surface sliding mode PID controller that can further improve dynamic and static characteristics of the drilling rotary system. The comparative analysis of simulation results show the control way not only has good robustness for the uncertainties of rock formation and drilling string, but also enhances the stability and reliability of the system. © 2011 Springer-Verlag Berlin Heidelberg. (15 refs)
Main heading: Three term control systems
Controlled terms: Proportional control systems - Stick-slip - Controllers - Sliding mode control - Electric control equipment - Uncertainty analysis - Reliability analysis - Slip forming - Systems engineering
Uncontrolled terms: Comparative analysis - Discontinuity surfaces - Exponent reaching law - Rotary systems - Sliding mode controller - Stability and reliabilities - Static characteristic - Stick-slip oscillation
Classification Code: 412 Concrete - 704.2 Electric Equipment - 731.1 Control Systems - 732.1 Control Equipment - 922.1 Probability Theory - 931.1 Mechanics - 961 Systems Science
Database: Compendex
Data Provider: Engineering Village

239. Investigation of phase composition and microstructure of the FeAl/Al 2O3 composites fabricated by mechanical alloying and hot-pressing process

Tao, Jiang (1)
Source: *Advanced Materials Research*, v 311-313, p 323-326, 2011, *Advanced Materials and Processes*; **ISSN:** 10226680; **ISBN-13:** 9783037852149; **DOI:** 10.4028/www.scientific.net/AMR.311-313.323; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The FeAl/Al2O3 composites were fabricated by hot-pressing process in this research. The Fe-Al intermetallics compounds powders were fabricated by mechanical alloying and heat treatment. The FeAl powders and Al2O3 powders were mixed and the FeAl/Al 2O3 composite powders were prepared. The FeAl/Al 2O3 composites bulks were fabricated by hot-pressing process at 1300°C for 2h under the pressure of 35MPa. The phase composition and microstructure of the FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment were investigated. The phase composition and microstructure of the FeAl/Al2O3 composites produced by hot-pressing process were investigated. The XRD patterns results showed that the Fe-Al intermetallics compounds powders were fabricated by mechanical alloying for 60h. The FeAl intermetallics compounds powders were fabricated by heat treatment at 800°C, 900°C and 1000°C. The microstructure showed that the mean particles size of the FeAl intermetallics compounds powders produced by mechanical alloying and heat treatment was rather fine and about 4-5μm. The XRD patterns results showed that there existed FeAl phase and Al2O3 phase in sintered composites. The FeAl/Al 2O3 composites bulks exhibited the homogenous and compact microstructure. The mean particles size of FeAl was about 4-5μm and the mean particles size of Al2O3 was about 4-5μm. The microstructure of the FeAl/Al2O3 composites became more homogenous and compact with the increase of FeAl content. © (2011) Trans Tech Publications, Switzerland. (12 refs)
Main heading: Microstructure
Controlled terms: Aluminum oxide - Phase composition - Mechanical alloying - Powders - Heat treatment - Alumina - Aluminum alloys - Iron alloys - Fabrication - Hot pressing - Binary alloys - Intermetallics - Iron compounds
Uncontrolled terms: Compact microstructure - Composite powders - FeAl intermetallics - FeAl powders - Hot-pressing process - Intermetallics compounds - 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 - 641.1 Thermodynamics - 804.2 Inorganic Compounds - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

240. Derivative and integral sliding mode control for rotary drilling system

Shi, Fubin (1); Li, Lin (1); Zhang, Qi-Zhi (1); Nurzat, Rasol (1)
Source: *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011*, v 1, p 855-858, 2011, *Proceedings - 3rd International Conference on Measuring Technology and*

Mechatronics Automation, ICMTMA 2011; **ISBN-13:** 9780769542966; **DOI:** 10.1109/ICMTMA.2011.214; **Article number:** 5720917; **Publisher:** IEEE Computer Society
Author affiliation: (1) Key Laboratory of Drilling Rig Controlling Technique, Xi'an Shiyou University, Xi'an, China
Abstract: This paper presents a derivative and integral sliding mode controller in order to handle the stick-slip oscillation of rotary drilling system. The control method has induced integral of tracking error and the derivatives of tracking error are replaced by state variables; the developed controller uses the nonlinear derivative control for suppressing system oscillation and increasing system damping as error approximates to zero. Lyapunov principles have been carried out to verify the stability and robustness of system. The simulation results show that the controller has faster dynamic response, can further increase accurate rate of the control system, and can suppress stick-slip oscillation of rotary drilling system. (15 refs)
Main heading: Stick-slip
Controlled terms: Controllers - Sliding mode control - Slip forming - Errors
Uncontrolled terms: Control methods - Integral sliding mode - Integral sliding mode control - Nonlinear derivative control - Rotary drilling system - Stability and robustness - Stick-slip oscillation - System oscillation
Classification Code: 412 Concrete - 731.1 Control Systems - 732.1 Control Equipment - 931.1 Mechanics
Database: Compendex
Data Provider: Engineering Village

241. The properties of coarse grain heat affect zone of pipeline steels with excellent deformability under different welding heat input

Yan, Kaijuan (1); Gao, Huilin (1); Zhang, Xiaoyong (1); Tian, Chenchao (1); Yan, Yang (1)
Source: *Advanced Materials Research*, v 284-286, p 585-588, 2011, *Materials and Design*; **ISSN:** 10226680; **ISBN-13:** 9783037851913; **DOI:** 10.4028/www.scientific.net/AMR.284-286.585; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The pipeline steels with excellent deformability becomes an important research direction of pipeline materials fields in recent years. In this study, the pipeline steels with excellent deformability was obtain by inter-critically accelerate cooling(ICAC) method, the influence of welding heat input on the microstructure and property of the coarse grain heat affect zone (CGHAZ) of X80 pipeline steels with excellent deformability is investigated using welding thermal simulation, mechanical testing and microstructure analysis. The result indicate that the strength and toughness of CGHAZ of X80 pipeline steels with excellent deformability decrease follow with welding heat input increase. © (2011) Trans Tech Publications, Switzerland. (7 refs)
Main heading: Mechanical testing
Controlled terms: Heat affected zone - Steel pipe - Pipelines - Deformation - Microstructure - Welding
Uncontrolled terms: Coarse grains - Heat affect - Microstructure analysis - Microstructure and properties - Pipeline materials - Pipeline steel - Properties - Research directions - Strength and toughness - Welding heat input - Welding thermal simulation - X-80 pipeline
Classification Code: 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 943.2 Mechanical Variables Measurements - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

242. Design and implementation of Square-Cabin Environmental Parameters Monitoring System based on the virtual instrument

Lai, Biao (1); Jia, Huiqin (2)
Source: *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*, v 3, p 1304-1307, 2011, *Proceedings of 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011*; **ISBN-13:** 9781612840857; **DOI:** 10.1109/EMEIT.2011.6023333; **Article number:** 6023333; **Conference:** 2011 International Conference on Electronic and Mechanical Engineering and Information Technology, EMEIT 2011, August 12, 2011 - August 14, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) 50 Unit of 91245 Army, Huludao, China (2) Xi'an Shiyou University, Xi'an, China
Abstract: In order to ensure device in the Square-Cabin works correctly, monitoring the Environmental parameters of it is needed. A novel Square-Cabin Environmental Parameters Monitoring System(SCEPMS) is developed, and design of it uses the virtual instrument software architecture. The test data can be obtained through the Test-Area

Internet Protocol network. All the sensors of this system has the RS-232 interface, so it can be easily connected to this monitoring system, furthermore the modules for converting the serial protocol to internet one is used to connect the sensors described above with Ethernet. The Virtual Instrument Software Architecture(VISA) is used to design the monitoring software under LabVIEW software platform. The Environmental parameters such as temperature, humility, wind force and direction can be obtained through the system. In addition, the system can realize the functions of display the dynamic curve of environment parameters, analysis the test result and generate report. © 2011 IEEE. (10 refs)
Main heading: Monitoring
Controlled terms: Network architecture - XML - Software architecture - Digital instruments - Computer programming languages - Internet protocols
Uncontrolled terms: Design and implementations - Environment Parameter - Environmental parameter - Internet protocol networks - Lab VIEW - Virtual instrument - Virtual instrument software architectures - VISA
Classification Code: 722.3 Data Communication, Equipment and Techniques - 723 Computer Software, Data Handling and Applications - 723.1 Computer Programming - 723.1.1 Computer Programming Languages - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

243. Study on short-term corrosion behavior of X80 pipeline steel in Huo'erguosi soil with saturated water

Xu, Cong-Min (1)
Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 3, p 78-81+86, March 2011; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)
Author affiliation: (1) The Key Laboratory of Materials Processing Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The short-term corrosion behavior of X80 pipeline steel was investigated in Huo'erguosi soil with saturated water using electrochemical measurement, scanning electron microscopy (SEM) and energy dispersive spectrum (EDS) analysis. The results showed that the corrosion rate of X80 steel presented the variational trend of rapid increase → sharp decrease → slow increase with the increase of corrosion time, and corrosion tendency increases, this is induced by change of corrosion morphology from uniform corrosion to localized corrosion. The corrosion product is basically iron oxides and iron sulfides. The corrosion resistance and corrosion morphology of X80 steel samples is dependent on the integrality and compactness of corrosion product films. (10 refs)
Main heading: Soils
Controlled terms: Corrosion rate - Corrosive effects - Iron oxides - Corrosion resistance - Localized corrosion - Pipeline corrosion - Scanning electron microscopy - Pipelines - Sulfur compounds - Underground corrosion - Steel pipe - Steel corrosion
Uncontrolled terms: Corrosion behavior - Corrosion morphology - Corrosion product film - Corrosion products - Electrochemical measurements - Energy dispersive spectrum (EDS) - Variational trends - X80 pipeline steels
Classification Code: 483.1 Soils and Soil Mechanics - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village

244. Treatment of the injected oil-produced water mixed with fresh water in low permeability oil field

Xie, Juan (1); Qu, Chengtun (1); Song, Shaofu (1); Wang, Xiaoquan (1)
Source: *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*, p 7995-7997, 2011, *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*; **Language:** Chinese; **ISBN-13:** 9781424491711; **DOI:** 10.1109/RSETE.2011.5966305; **Article number:** 5966305; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: In this paper, the oil-produced water (PW) mixed with fresh water (FW) was treated before it was injected into reservoirs. The effects of the factors such as pH value, variety and quantity of oxidants and inorganic flocculants, quantity and molecular of organic flocculants, the order and time of the reagents to be added on the water quality

including amount of scale buildup, iron content, oil content, transparency, turbidity, were studied. After being treated, the fresh-waste mixed water reached the quality criteria of the injected water. © 2011 IEEE. (5 refs)
Main heading: Produced Water
Controlled terms: Mechanical permeability - Petroleum reservoir engineering - Water quality - Water treatment - Flocculation
Uncontrolled terms: Fresh Water - Injected water - Inorganic flocculant - Iron content - Low permeability oil - Oil contents - pH value - Quality criteria
Classification Code: 445.1 Water Treatment Techniques - 445.2 Water Analysis - 452.3 Industrial Wastes - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

245. The consistent description of crack developing process based upon Cottrell' piling up of dislocations model

Yang, Aimin (1)
Source: *Advanced Materials Research*, v 146-147, p 1346-1349, 2011, *Advances in Superalloys*; **ISSN:** 10226680; **ISBN-13:** 9780878492008; **DOI:** 10.4028/www.scientific.net/AMR.146-147.1346; **Conference:** 2010 International Conference on Advances in Materials and Manufacturing Processes, ICAMMP 2010, November 6, 2010 - November 8, 2010; **Sponsor:** University of Wollongong (UOW); Northeastern University (NU); University of Science and Technology Beijing (USTB); Hebei Polytechnic University (HPU); Hong Kong Industrial Technology Research Centre (ITRC);
Publisher: Trans Tech Publications
Author affiliation: (1) Institute of Materials Science and Engineering, Xi'an Shiyou University, Xian, Shanxi, 710065, China
Abstract: The new concepts "crack nuclearation toughness" and "crack criterion number" given in this text were used for describing the different crack development steps and crack nuclearation critic condition and the fast developing critic condition of crack were suggested with them by means of Cottrell' piling up of dislocations model. The analysis pointed out that crack nuclearation toughness of brittle material is 1/2 of its fracture toughness and the criterion number of crack was a good parameter reflecting anti-crack toughness of material in crack developing process. (8 refs)
Main heading: Fracture toughness
Controlled terms: Cracks - Brittleness - Brittle fracture
Uncontrolled terms: Brittle materials - Cottrell - Crack criterion - Crack developing process - Crack development - Criterion number
Classification Code: 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

246. Analysis of coagulation behavior of oily wastewater containing high methanol

Xie, Juan (1); Qu, Chengtun (1)
Source: *ISWREP 2011 - Proceedings of 2011 International Symposium on Water Resource and Environmental Protection*, v 2, p 1565-1568, 2011, *ISWREP 2011 - Proceedings of 2011 International Symposium on Water Resource and Environmental Protection*; **ISBN-13:** 9781612843377; **DOI:** 10.1109/ISWREP.2011.5893328; **Article number:** 5893328; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: In this paper, the chemical oxidation-coagulation method was used to treat oily wastewater containing high methanol and the influence factors of coagulation were studied. When pH value of wastewater was adjusted to 8.5, the dosage of H2O2, PAC and cationic polyacrylamide was 175 mg·l-1, 40 mg·l-1, 1.0 mg·l -1 respectively, the quality parameters of coagulated water such as pH value, contents of oil and suspended solid (SS) could achieve the feed-in require of methanol rectifying tower. In coagulation test, the dependence of floc sedimentation velocity on methanol concentration and ratio of Oil/SS was studied, the results showed that the sedimentation velocity of floc decreased with increasing methanol concentration, and the velocity varied slowly and tended to keep stable when the methanol concentration was over 53.0%; While Oil/SS6, the floc floated upward due to higher condensate-oil concentration. © 2011 IEEE. (14 refs)
Main heading: Coagulation
Controlled terms: pH - Velocity - Methanol - Wastewater treatment - Sedimentation

Uncontrolled terms: Cationic polyacrylamides - Chemical oxidation - Coagulation tests - Methanol concentration - Oily wastewater - Quality parameters - Sedimentation velocities - Suspended solids
Classification Code: 452.4 Industrial Wastes Treatment and Disposal - 801.1 Chemistry, General - 802.3 Chemical Operations - 804.1 Organic Compounds
Database: Compendex
Data Provider: Engineering Village

247. Effects of high yield ratio on material properties of pipeline steel

Yao, Ting Zhen (1)
Source: *Advanced Materials Research*, v 317-319, p 154-157, 2011, *Equipment Manufacturing Technology and Automation*; **ISSN:** 10226680; **ISBN-13:** 9783037852163; **DOI:** 10.4028/www.scientific.net/AMR.317-319.154; **Conference:** 2011 International Conference on Advanced Design and Manufacturing Engineering, ADME 2011, September 16, 2011 - September 18, 2011; **Sponsor:** Guangdong University of Technology; Huazhong University of Science and Technology; Hong Kong University of Science and Technology; Hong Kong Polytechnic University; University of Nottingham; **Publisher:** Trans Tech Publications
Author affiliation: (1) Materials Processing Engineering, Key Subject of Xi'an Shiyou University Xi'an, Shanxi, 710065, China
Abstract: The nominal yield ratio, true yield ratio and static toughness of five materials X80, X65, X60, X46 and Q235 have been tested in this paper. The yield ratio of pipeline steel is rising with the increase of strength level, which is inevitable for the high strength pipeline steel. Based on the analysis of static toughness calculated by the true stress-strain curve, it is indicated that the deformation energy of X80 pipeline steel after the necking process in the course of static tension is high comparatively, and the deformation energy of X80 pipeline steel before the necking process is closed to that of the pipeline steel X46 and X60 with low yield ratio. It is showed that the increase of yield ratio did not lead to the decline of the static toughness. © (2011) Trans Tech Publications. (4 refs)
Main heading: Stress-strain curves
Controlled terms: Deformation - Steel pipe - High strength steel
Uncontrolled terms: Deformation energy - High yield - High-strength pipeline steel - Low-yield - Material property - Pipeline steel - Static tension - Static toughness - X-80 pipeline - Yield ratios
Classification Code: 545.3 Steel - 619.1 Pipe, Piping and Pipelines
Database: Compendex
Data Provider: Engineering Village

248. The effect on heterogeneous nucleation of solute segregation

Yang, Aimin (1)
Source: *Advanced Materials Research*, v 295-297, p 712-715, 2011, *Manufacturing Science and Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851944; **DOI:** 10.4028/www.scientific.net/AMR.295-297.712; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Institute of Materials Science and Engineering, Xi'an Shiyou University, Xian, Shanxi 710065, China
Abstract: The effect on heterogeneous nucleation of solute segregation was studied with segregating energy and segregating coefficient. The results showed that the segregating energy #G#segr of solute played a more vital role in the nucleating process, specially in the case that (1-k) is small. A critical criterion with the parameter $\eta=\Delta$# #segr/ RT(1-k) was suggusted for estimating the nucleating abilitiy of the external particles in binary alloy, which had the vital theoretical or practical significance for choicing refiner. © (2011) Trans Tech Publications. (12 refs)
Main heading: Binary alloys
Controlled terms: Segregation (metallography) - Nucleation
Uncontrolled terms: Heterogeneous nucleation - Homogeneous nucleation - Segregating coefficient - Segregating energy - Solute segregation
Classification Code: 531.2 Metallography - 933.1.2 Crystal Growth
Database: Compendex
Data Provider: Engineering Village

249. Welding thermo cycle and HAZ softening of CT80 butt weld joint

Li, Xiao (1); Shi, Kai (1); Peng, Tao (1); Liu, Yanming (1); Wang, Hongduo (1)

Source: *Advanced Materials Research*, v 295-297, p 1901-1904, 2011, *Manufacturing Science and Technology*; **ISSN:** 10226680; **ISBN-13:** 9783037851944; **DOI:** 10.4028/www.scientific.net/AMR.295-297.1901; **Conference:** 2011 International Conference on Advanced Engineering Materials and Technology, AEMT 2011, July 29, 2011 - July 31, 2011; **Publisher:** Trans Tech Publications
Author affiliation: (1) Key Research Lab for Material Forming, Xi'an Shiyou University, Xi'an, Shannxi, 710065, China
Abstract: The domestic manufactured CT80, $\phi 33\times 3.18$ coiled tubing is supplied as heat-treated low-alloy steel. The relationship between thermo cycle, microstructure, tensile properties and hardness were researched for butt welded joint. The results show that CT80 is very sensitive to welding heat input, and the thermo accumulation was obvious for small dimension coiled tubing, varying degrees of softening always exist in HAZ. The reasons include growing of block ferrite, decreasing and isolating of continuous directional bainite. in order to get good properties, the strength of consumable welding wire should be properly matched with base metal, keep uniform strength distribution along welded joint, and avoid the plastic strain concentrate in local area. © (2011) Trans Tech Publications. (7 refs)
Main heading: Microstructure
Controlled terms: Bainite - Thermal cycling - Welds - Alloy steel - Butt welding - Coiled tubing
Uncontrolled terms: Base metals - Butt welded joint - Butt welds - HAZ softening - Low alloy steels - Softening - Strength distribution - Thermo cycle - Weld joint - Welding heat input - Welding wires
Classification Code: 531.1 Metallurgy - 531.2 Metallography - 538.2 Welding - 538.2.1 Welding Processes - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science
Database: Compendex
Data Provider: Engineering Village

250. The quality analysis of the mixed waste water with fresh water in low permeability reservoirs

Xie, Juan (1); Song, Shaofu (1); Qu, Chengtun (1); Wang, Xiaoquan (1)
Source: *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*, p 7971-7973, 2011, *2011 International Conference on Remote Sensing, Environment and Transportation Engineering, RSETE 2011 - Proceedings*; **ISBN-13:** 9781424491711; **DOI:** 10.1109/RSETE.2011.5966299; **Article number:** 5966299; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: In the paper, the quality of the mixed waste water with fresh water in low permeability reservoirs is analyzed. It is found out that the sediment components of the mixed waste water with fresh water are mainly CaSo4. Except for the pH value, the oil, suspend-solids, total Fe content of the mixed fresh and waste water are beyond the standard requirement. The different proportions of the mixed waste water with fresh water form the different concentration of scale ions. © 2011 IEEE. (6 refs)
Main heading: Low permeability reservoirs
Controlled terms: Water - Mechanical permeability - Petroleum reservoir engineering
Uncontrolled terms: Different proportions - Fe content - Fresh Water - Mixed wastes - pH value - Standard requirements
Classification Code: 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations
Database: Compendex
Data Provider: Engineering Village

251. Research on the start-up of close-loop self-circulation evaporative cooling system of large electrical equipment

Jingming, Li (1); Fuchuan, Song (2); Guobiao, Gu (2)
Source: *2011 International Conference on Electrical Machines and Systems, ICEMS 2011*, 2011, *2011 International Conference on Electrical Machines and Systems, ICEMS 2011*; **ISBN-13:** 9781457710445; **DOI:** 10.1109/ICEMS.2011.6073706; **Article number:** 6073706; **Conference:** 2011 International Conference on Electrical Machines and Systems, ICEMS 2011, August 20, 2011 - August 23, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'an Shiyou University, Xi'an, China (2) Institute of Electrical Engineering, Chinese Academy of Science, China
Abstract: With the development of large electrical equipment, more and more cooling technologies are introduced to deal with the large amount of heat produced by the consumption. Close-loop self-circulation (CLSC) evaporative cooling technology is a newly developed technique for the cooling of the large electrical equipment. In certain circumstances, the air-cooling condenser is used as the secondary cooler in the evaporative cooling system of large

electrical equipments. This paper mainly deal with the start-up of the CLSC evaporative cooling system, experiments and numerical simulations are carried out separately, and the results show that the structure of the inlet has great affect on the start-up of the evaporative cooling system. A reasonable structure can do great help to the start-up and the restart of cooling system. © 2011 IEEE. (10 refs)
Main heading: Evaporative cooling systems
Controlled terms: Thermoelectric equipment - Cooling - Evaporation
Uncontrolled terms: Air-cooling condenser - Close loop Self circulations - Cooling technology - Electrical equipment - Evaporative cooling - Large amounts
Classification Code: 615.4 Thermoelectric Energy - 641.2 Heat Transfer - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

252. An equation involving the Fibonacci numbers and Smarandache primitive function

Yang, Hai (1); Fu, Ruiqin (2)
Source: *2011 International Conference on Multimedia Technology, ICMT 2011*, p 1969-1972, 2011, *2011 International Conference on Multimedia Technology, ICMT 2011*; **ISBN-13:** 9781612847740; **DOI:** 10.1109/ICMT.2011.6002510; **Article number:** 6002510; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'An Polytechnic University, School of Science, Xi'an, China (2) Xi'An Shiyou University, School of Science, Xi'an, China
Abstract: for any positive integer n, let S p (n)denotes the Smarandache primitive function, F n denotes the Fibonacci numbers. The main purpose of this paper is using the elementary methods to study the number of the solutions of the equation Sp(F1) + Sp(F 2) ++ Sp (Fn) = Sp (F n+2 -1), and give all positive integer solutions for this equation. © 2011 IEEE. (11 refs)
Main heading: Number theory
Uncontrolled terms: Elementary methods - Equation - Fibonacci numbers - Positive integers - Primitive function
Classification Code: 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

253. Control and optimization of the generator electromagnetic torque of rotary steering drilling tools

Jin, Jin (1); Cheng, Weibin (1); Guo, Yingna (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 32, n 6, p 1055-1060, November 2011; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Shaanxi Key Laboratory of Drilling Rig Control Technology, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Steering function of all-rotary steering drilling tools is achieved through adjusting electromagnetic torque of the downhole turbine generator. Through the control circuit model in a pulse-width-modulation (PWM) chop mode, the mathematical expression of electromagnetic torque of rotary steering drilling tools was deduced. A relationship between electromagnetic torque and control factors was established by means of numerical calculation and verified by bench test. The internal cause of ripple torque from a generator and its calculation were discussed in terms of magnetic energy storage and an active power factor calibration was introduced into the chopper control circuit. An optimized chopper control circuit was designed, which can improve power factors and circuit stability. The test result shows that the optimized chopper control circuit can eliminate harmonic ripple torque and enhance the stability of circuit while increasing the adjustment range of electromagnetic torque. (15 refs)
Main heading: Choppers (circuits)
Controlled terms: Magnetic storage - Torque - Electric energy storage - Electric power factor - Voltage control - Timing circuits - Turbogenerators - Pulse width modulation
Uncontrolled terms: Active power factors - Control and optimization - Electromagnetic torques - Magnetic energy storage - Mathematical expressions - Numerical calculation - Rotary steering drilling tools - Steering functions
Classification Code: 705.2 Electric Generators - 713.4 Pulse Circuits - 722.1 Data Storage, Equipment and Techniques - 731.3 Specific Variables Control - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village

254. An investigation on air cooling condenser of the close-loop self-circulation evaporative cooling large wind power generator

Li, Jingming (1); Song, Fuchuan (2); Gu, Guobiao (2)
Source: *2011 International Conference on Electrical Machines and Systems, ICEMS 2011*, 2011, *2011 International Conference on Electrical Machines and Systems, ICEMS 2011*; **ISBN-13:** 9781457710445; **DOI:** 10.1109/ICEMS.2011.6073705; **Article number:** 6073705; **Conference:** 2011 International Conference on Electrical Machines and Systems, ICEMS 2011, August 20, 2011 - August 23, 2011; **Publisher:** IEEE Computer Society
Author affiliation: (1) Xi'an Shiyou University, Xi'an, China (2) Institute of Electrical Engineering, Chinese Academy of Science, China
Abstract: As a widely used clean and renewable energy, the wind power has attracted the attention of all nations in the world. The application of evaporative cooling technology in the cooling method of large wind power generator is a new attempt in the discovery of wind power energy. This paper mainly discusses the air cooling condenser with frequency converted axial fan which is adopted in the natural temperature close-loop self-circulation evaporative cooling system of large wind power generator. Some key problems which puzzling the people in the designation and running of the evaporative cooling system is also introduced here. All these will do great help to the development of the evaporative cooling large wind power generator © 2011 IEEE. (7 refs)
Main heading: Evaporative cooling systems
Controlled terms: Cooling - Thermoelectric equipment - Wind power - Evaporation - Fans
Uncontrolled terms: Air cooling - Air-cooling condenser - Close loop Self circulations - Close-loop self-circulating - Cooling methods - Evaporative cooling - Power energy - Renewable energies
Classification Code: 615.4 Thermoelectric Energy - 615.8 Wind Power (Before 1993, use code 611) - 618.3 Blowers and Fans - 641.2 Heat Transfer - 802.3 Chemical Operations
Database: Compendex
Data Provider: Engineering Village

255. Bayesian regularization BP Neural Network model for predicting oil-gas drilling cost

Yue, Zhao (1); Songzheng, Zhao (1); Tianshi, Liu (2)
Source: *BMEI 2011 - Proceedings 2011 International Conference on Business Management and Electronic Information*, v 2, p 483-487, 2011, *BMEI 2011 - Proceedings 2011 International Conference on Business Management and Electronic Information*; **ISBN-13:** 9781612841069; **DOI:** 10.1109/ICBMEI.2011.5917952; **Article number:** 5917952; **Publisher:** IEEE Computer Society
Author affiliation: (1) Management School, Northwestern Polytechnical University, Xi'an, China (2) School of Computer Science, Xi'An Shiyou University, Xi'an, China
Abstract: Oil-gas drilling cost is an important indicator which reflects the economic benefit of oilfield enterprise. Following taking the characteristics of oil-gas drilling cost which belongs to subsidiary of CNPC (China National Petroleum Corporation) into account, determinants concerning oil-gas drilling cost are identified. Bayesian Regularization Back Propagation Neural Network (BRBPNN) is proposed to predict oil-gas drilling cost. Through comparing with Levenberg-Marquardt Back Propagation, Momentum Back Propagation, Variable Learning Rate Back Propagation models in terms of prediction precision, convergence rate and generalization ability, the results exhibit that BRBPNN has better comprehensive performances. Meanwhile, results also exhibit that BRBP model has the automated regularization parameter selection capability and may ensure the excellent adaptability and robustness. Thus, this study lays the foundation for the application of BRBPNN in the analysis of oil-gas drilling cost prediction. © 2011 IEEE. (10 refs)
Main heading: Backpropagation
Controlled terms: Barium compounds - Cost benefit analysis - Forecasting - Gases - Neural networks - Oil fields
Uncontrolled terms: Back propagation neural networks - Bayesian regularization - BP neural networks - China national petroleum corporations - Comprehensive performance - Momentum back propagation - Oil gas - Regularization parameters
Classification Code: 512.1.1 Oil Fields - 723.4 Artificial Intelligence - 911 Cost and Value Engineering; Industrial Economics - 912.2 Management
Database: Compendex
Data Provider: Engineering Village

256. Cutting path planning for surface impellers

Dong, Pengmin (1); Zhengrong, Guan (2); Wangtianqi (1)

Source: *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011*, v 1, p 804-807, 2011, *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2011*; **ISBN-13:** 9780769542966; **DOI:** 10.1109/ICMTMA.2011.202; **Article number:** 5720905; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, China (2) Xi'an University of Architecture and Technology, Xi'an, China
Abstract: 5-axis CNC machining is one kind not only may realize the ordinary machining, but may also complete from the rough cutting to the post processing entire flow new cutting way. This article develops special software to plan cutting path for ruled surface impellers. By fitting sampling data points of an impeller blade into a curve, a model of ruled surface blade of an impeller is built up. Furthermore, by calculating the points where the cutter axis vector intersects the free-form hub surface of an impeller, problems about. Finally, an integral impeller cutting path is planned by way of an integrated cutter location control algorithm. Simulation and machining tests with an impeller are performed on a 5-axis computer numerically controlled (CNC) mill machine. A cutting path is generated by using ruled surface impeller CAM software and put into test, of which the result shows the feasibility of the algorithm and its practical worth. (5 refs)
Main heading: Motion planning
Controlled terms: Curve fitting - Cutting - Impellers - Software testing
Uncontrolled terms: 5-Axis CNC machining - Cutter location - Cutting paths - Impeller blades - Integral impeller - Machining test - Post processing - Ruled surfaces
Classification Code: 601.2 Machine Components - 723.5 Computer Applications - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

257. Control study of rare earth permanent brushless DC motor in city rail

Min, Wei (1); Juan, Wei (2)
Source: *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*, v 4, p 1-3, 2011, *Proceedings - 2011 IEEE International Conference on Computer Science and Automation Engineering, CSAE 2011*; **ISBN-13:** 9781424487257; **DOI:** 10.1109/CSAE.2011.5952790; **Article number:** 5952790; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, China (2) School of Communication Engineering, Xidian University, Xi'an, China
Abstract: According to the requirement of urban rail vehicles, the rare earth permanent magnet brushless DC traction control system in city rail is designed based on TMS320F2812. The hardware block diagram and design methods are presented. The position feedback signal is adopted as motor commutation foundation. The PID control strategy of closed-loop electric current is used in the system. This system has some characteristic as follows: simple structure, high accurate controlling, Strong real time, etc. It is showed by the prototype testing that the system is reliability and reasonable. © 2011 IEEE. (4 refs)
Main heading: Permanent magnets
Controlled terms: Electric machine control - Traction motors - Traction control - Rare earths - Three term control systems - Brushless DC motors
Uncontrolled terms: Control strategies - Control studies - Position feedback - Prototype testing - Rail traffic - Rare earth permanent magnet - Simple structures - Urban rail vehicles
Classification Code: 704.1 Electric Components - 705.3.2 DC Motors - 731.1 Control Systems - 731.2 Control System Applications - 804.2 Inorganic Compounds
Database: Compendex
Data Provider: Engineering Village