

1. Reservoir dynamic control in block 6A+B of Chengdao Oilfield

Zhang, Kai (1); Yao, Jun (1); Liu, Shun (2); Duan, You-Zhi (1); Chen, Xiao-Fei (3); Zhao, Zheng-Quan (4)

Source: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*, v 33, n 6, p 71-76+86, December 2009; **Language:** Chinese; **ISSN:** 16735005; **Publisher:** University of Petroleum, China

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Abstract: Chengdao offshore oilfield is a multi-layers reservoir with strong heterogeneity of uneven physical properties on the vertical and horizontal direction. The technology of separated layer water-flooding was used for development. However, this technology couldn't control water flooding in the whole reservoir. To solve these issues such as a low production velocity and water cut increasing rapidly, a new optimal reservoir dynamic control method was proposed. It regarded reservoir as a complex dynamic system. The optimal objective was to maximize net present value of production. Through solving the optimization model of reservoir development and production, real-time control parameters of input and output for reservoir were determined and the optimal production schedule was obtained. Typical block 6A+B of Chengdao Oilfield was analyzed by the new method. The results show that the optimal production scheme agrees well with the demand of actual field. (11 refs)

Main heading: Reservoirs (water)

Controlled terms: Floods - Oil well flooding - Production control - Real time control

Uncontrolled terms: Complex dynamic systems - Optimal production schedule - Optimal schedule - Optimization modeling - Production optimization - Production velocity - Reservoir development - Strong heterogeneities

Classification Code: 441.2 Reservoirs - 511.1 Oil Field Production Operations - 731 Automatic Control Principles and Applications - 913.2 Production Control

Database: Compendex

Data Provider: Engineering Village

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2. Improved fatigue behavior of pipeline steel welded joint by surface mechanical attrition treatment (SMAT)

Wang, Yu (1, 2); Huang, Min (2); Zhou, Lei (3); Cong, Zhixin (2); Gao, Huilin (2)

Source: *Journal of Materials Science and Technology*, v 25, n 4, p 513-515, July 2009; **ISSN:** 10050302; **Publisher:** Chinese Society of Metals

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Abstract: A pipeline steel X80 with welded joint was subjected to surface mechanical attrition treatment (SMAT). After SMAT, a nanostructure surface layer with an average grain size of about 10 nm was formed in the treated sample, and the fatigue limit of the welded joint was elevated by about 13% relative to the untreated joints. In the low and the high amplitude stress regimes, both fatigue strength and fatigue life were enhanced. Formation of the nanostructured surface layer played more important role in the enhanced fatigue behavior than that of residual stress induced by the SMAT. Printed by Copyright ©. (14 refs)

Main heading: Welds

Controlled terms: Pipelines - Steel pipe - Welded steel structures - Welding - Nanostructures - Fatigue of materials - Nanostructured materials

Uncontrolled terms: Average grain size - Fatigue behavior - Fatigue strength - Nanostructure surface -

Nanostructured surface layer - Pipeline steel - Surface mechanical attrition treatments - Surface nanocrystallization

Classification Code: 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 761 Nanotechnology - 933 Solid State Physics - 933.1 Crystalline Solids - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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3. Characterisation of CO2 corrosion scale in simulated solution with Cl⁻ ion under turbulent flow conditions

Yin, Z.F. (1, 2); Zhao, W.Z. (1); Feng, Y.R. (2); Zhu, S.D. (3)

Source: *Corrosion Engineering Science and Technology*, v 44, n 6, p 453-461, December 2009; **ISSN:** 1478422X, **E-ISSN:** 17432782; **DOI:** 10.1179/174327808X303482; **Publisher:** Maney Publishing

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Tubular Goods Research Centre, Key Laboratory for Mechanical and Environmental Behaviour of Tubular Goods, CNPC, Dianzier Road, Xi'an 710065, China (3) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: In the present work, characterisations such as surface morphology, cross-section image and composition of corrosion scale formed on the P110 steel under turbulent flow conditions with various Cl⁻ concentrations have been studied by means of scanning electron microscopy, X-ray diffraction and X-ray photoelectron spectroscopy. The corrosion medium was the simulated solution of one oil/gas field, saturated with CO₂ at 100°C and 4 MPa. The tests were conducted corresponding to various Cl⁻ concentrations and varied flow velocities. It is concluded that Cl⁻ concentration and flow velocity have an important effect on the corrosion scales formed on the samples. In addition, the protective properties and adherence of the corrosion scales were characterised by the analysis of the scale formation and influence mechanisms associated with Cl⁻ concentration and flow velocity. Moreover, a lattice model is created to interpret and illuminate the corrosion process. © 2009 Institute of Materials, Minerals and Mining. (31 refs)

Main heading: X ray photoelectron spectroscopy

Controlled terms: Photons - Velocity measurement - Chlorine compounds - Corrosion protection - Flow velocity - Steel corrosion - Carbon dioxide - Photoelectrons - Turbulent flow - X ray diffraction - Scanning electron microscopy

Uncontrolled terms: Corrosion medium - Corrosion process - Corrosion scale - Cross-section images - Influence mechanism - Lattice modeling - Protective properties - Simulated solution

Classification Code: 539.1 Metals Corrosion - 539.2 Corrosion Protection - 545.3 Steel - 631 Fluid Flow - 631.1 Fluid Flow, General - 711 Electromagnetic Waves - 804.2 Inorganic Compounds - 931.3 Atomic and Molecular Physics - 943.2 Mechanical Variables Measurements - 943.3 Special Purpose Instruments

Database: Compendex

Data Provider: Engineering Village

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4. Characteristics and differences of hydrocarbon accumulations in marine carbonate rocks, northeast Sichuan Basin: A case study from Puguang and Maoba gas fields

Liu, Zhaoqian (1); Mei, Lianfu (1); Guo, Tonglou (2); Fan, Yuanfang (3); Tang, Jiguang (4); Shen, Chuanbo (1)

Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 36, n 5, p 552-561, October 2009;

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

Author affiliation: (1) Key Laboratory of Tectonics and Petroleum Resources of Ministry of Education, China University of Geosciences, Wuhan 430074, China (2) Southern Exploration and Development Division Co., Sinopec, Chengdu 610000, China (3) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (4) College of Geosciences, Yangtze University, Jingzhou 434023, China

Abstract: The comparison of the accumulation elements, natural gas and bitumen characteristics, gas sources, accumulation evolution and mechanisms between the Puguang and Maoba gas reservoirs indicates that the Feixianguan Formation and Changxing Formation gas reservoirs in Puguang and the Changxing Formation gas reservoir in Maoba are similar in hydrocarbon accumulation. But the Feixianguan Formation hydrocarbon accumulation in Maoba is obviously different in terms of time, space and gas composition. The gas reservoirs include gases generated by multilayer source rocks and by multi-transformation sources in northeast Sichuan Basin, and the gas reservoirs present different sources. Special reservoir beds controlled by special sedimentary facies are very important to hydrocarbon accumulations. The complex structural evolution of the polycyclic superimposed basin macroscopically controlled the hydrocarbon accumulation elements and restricted the regularity and mechanism of the hydrocarbon accumulations. It is the ultimate reason for the differences. (37 refs)

Main heading: Gases

Controlled terms: Gas industry - Sedimentary rocks - Natural gas fields - Hydrocarbons - Carbonates

Uncontrolled terms: Carbonate rock - Gas fields - Hydrocarbon accumulation - Northeast Sichuan - Puguang gas field

Classification Code: 482.2 Minerals - 512.2.1 Natural Gas Fields - 522 Gas Fuels - 804.1 Organic Compounds - 804.2 Inorganic Compounds

Database: Compendex

Data Provider: Engineering Village

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5. High efficiency of heavy metal removal in mine water by limestone

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

Source: *Chinese Journal of Geochemistry*, v 28, n 3, p 293-298, 2009; **ISSN:** 10009426; **DOI:** 10.1007/s11631-009-0293-5; **Publisher:** Science Press

Author affiliation: (1) Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan 430074, China (4) Chuankou Oilfield, Yanchang Oilfield Administration Bureau, Shaanxi, Yan'an 768001, China

Abstract: The removal of Cd, Cu, Ni and Zn from dilute mine water by using several geological materials including pure limestone, sand, carbonaceous limestone and brecciated limestone was performed on a laboratory scale. The results showed that to add geological materials in combination with sodium carbonate injection would notably enhance the efficiency of heavy metal removal to varying degrees. Pure limestone was found the best one among the four materials mentioned above for removing heavy metals from mine water. The removal efficiencies of pure limestone when it is ground as fine as 30-60 meshes are 58.6% for Cd, 100% for Cu, 47.8% for Ni, and 36.8% for Zn at 20C. The optimum pH is about 8.9 to 9.1. The mechanism of higher effective removal, perhaps, is primarily due to co-precipitation under the control of calcite-related pH value. According to this research, Na₂CO₃ injection manners, including slug dosing and drip-wise, seemed to have little impact on the efficiency of heavy metal removal. © Science Press, Institute of Geochemistry, CAS and Springer-Verlag GmbH 2009. (19 refs)

Main heading: Limestone

Controlled terms: Efficiency - Geology - Lime - Chemicals removal (water treatment) - Calcite - Groundwater - Heavy metals - Zinc - Sodium Carbonate

Uncontrolled terms: Effective removals - Geochemical methods - Geological materials - Heavy metal removal - High-efficiency - Mine waters - Optimum pH - Removal efficiencies

Classification Code: 444.2 Groundwater - 452.3 Industrial Wastes - 481.1 Geology - 482.2 Minerals - 531 Metallurgy and Metallography - 546.3 Zinc and Alloys - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 913.1 Production Engineering

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Database: Compendex

Data Provider: Engineering Village

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6. B integral properties of ultra-short pulse in optical medium

Shao, Min (1); Fu, Haiwei (1); Lin, Zunqi (2); Qiao, Xueguang (1)

Source: *Qiangjiguang Yu Lizishu/High Power Laser and Particle Beams*, v 21, n 12, p 1776-1780, December 2009;

Language: Chinese; **ISSN:** 10014322; **Publisher:** Editorial Office of High Power Laser and Particle Beams

Author affiliation: (1) Key Laboratory of Photoelectric Gas-Oil Logging and Detecting of the Ministry of Education, School of Science, Xi'an Shiyou University, Xi'an 710065, China (2) National Laboratory on High Power Lasers and Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, P. O. Box 800-211, Shanghai 201800, China

Abstract: The nonlinear Schrodinger equation is solved by slit-step Fourier numerical method. The variation of B integral in several propagation media in the ultra-short pulse laser system is numerically simulated and briefly analyzed. The results show that B integral increases with input intensity and gain coefficient increasing. The shape of the input pulse has some effect on B integral, and the B integral of picosecond chirp pulse is smaller than that of femtosecond Gaussian pulse. It is also found that proper group-velocity and high-order dispersions can reduce B integral for the selected calculation model. The approach can be reference resources to the design of the ultra-short pulse laser system. (18 refs)

Main heading: Ultrashort pulses

Controlled terms: Nonlinear optics - Integral equations - Optical materials - Nonlinear equations - Numerical methods

Uncontrolled terms: B-integral - Calculation models - Chirp pulse - Dinger equation - Femtoseconds - Fourier - Gain coefficients - Gaussian pulse - Group velocities - High-order dispersion - Input pulse - Numerical simulation - Optical medium - Picoseconds - Propagation media - Ultra-short pulse laser

Classification Code: 741.1.1 Nonlinear Optics - 741.3 Optical Devices and Systems - 921.2 Calculus - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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7. First-principles study of palladium atom adsorption on the boron- or nitrogen-doped carbon nanotubes

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

Source: *Physica B: Condensed Matter*, v 404, n 21, p 4173-4177, 2009; **ISSN:** 09214526; **DOI:** 10.1016/j.physb.2009.07.182; **Publisher:** Elsevier

Author affiliation: (1) College of Physics and Information Technology, Shaanxi Normal University, Xi'an, 710062 Shaanxi, China (2) School of Science, Xi'an Shiyou University, Xi'an, 710065 Shaanxi, China (3) The Institute of Telecommunication Engineering, the Air Force Engineering University (AFEU1), Xi'an, 710077 Shaanxi, China (4) State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an, 710049 Shaanxi, China

Abstract: We have performed first-principles calculation to investigate the adsorption of a single palladium atom on the surface of the pristine and boron- or nitrogen-doped carbon nanotubes (CNTs). The results show that for the adsorption of a single palladium atom on the pristine CNT surface, the most stable site is Bridge1 site above the axial carbon-carbon bond. Either boron- or nitrogen-doped CNTs can assist palladium surface adsorption, but the detailed mechanisms are different. The enhanced palladium adsorption on boron-doped CNT is attributed to the palladium d orbital strongly hybridized with both boron p orbital and carbon p orbital. The enhancement in palladium adsorption on nitrogen-doped CNT results from activating the nitrogen-neighboring carbon atoms due to the large electron affinity of nitrogen. Furthermore, the axial bond is preferred over the zigzag bond for a palladium atom adsorbed on the surface of all three types of CNTs. The most energetically favorable site for a palladium atom adsorbed on three types of CNTs is above the axial boron-carbon bond in boron-doped CNT. The enhancement in palladium adsorption is more significant for the boron-doped CNT than it is for nitrogen-doped CNT with a similar configuration. So we conclude that accordingly, the preferred adsorption site is determined by the competition between the electron affinity of doped and adsorbed atoms and preferred degree of the axial bond over the zigzag bond. © 2009 Elsevier B.V. All rights reserved. (29 refs)

Main heading: Carbon nanotubes

Controlled terms: Doping (additives) - Calculations - Gas adsorption - Atoms - Yarn - Electron affinity - Nitrogen - Boron - Palladium - Density functional theory

Uncontrolled terms: Adsorption site - Atom adsorption - Boron-carbon bonds - Carbon-carbon bond - First-principles calculation - First-principles study - Nitrogen doped carbon nanotubes - Surface adsorption

Classification Code: 547.1 Precious Metals - 549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals - 761 Nanotechnology - 801 Chemistry - 802.3 Chemical Operations - 804 Chemical Products Generally - 819.4 Fiber Products - 921 Mathematics - 922.1 Probability Theory - 931.3 Atomic and Molecular Physics - 931.4 Quantum Theory; Quantum Mechanics - 933.1 Crystalline Solids

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Database: Compendex

Data Provider: Engineering Village

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8. Microwave assisted heterogeneous catalysis: Effects of varying oxygen concentrations on the oxidative coupling of methane (Open Access)

Ni, Binghua (1); Lee, Colleen (2); Sun, Run-Cang (3); Zhang, Xunli (4)

Source: *Reaction Kinetics and Catalysis Letters*, v 98, n 2, p 287-302, January 2009; **ISSN:** 01331736; **DOI:** 10.1007/s11144-009-0089-y; **Publisher:** Springer Netherlands

Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Chemistry, Imperial College of Science, Technology and Medicine, South Kensington, London SW7 2AY, United Kingdom (3) College of Material Science and Engineering, Beijing Forestry University, Beijing 100083, China (4) School of Engineering Sciences, University of Southampton, Southampton SO17 1BJ, United Kingdom

Abstract: The oxidative coupling of methane was investigated over alumina supported La₂O₃/CeO₂ catalysts under microwave dielectric heating conditions at different oxygen concentrations. It was observed that, at a given temperature using microwave heating, selectivities for both ethane and ethylene were notably higher when oxygen was absent than that in oxygen/methane mixtures. The differences were attributed to the localised heating of microwave radiation resulting in temperature inhomogeneity in the catalyst bed. A simplified model was used to estimate the temperature inhomogeneity; the temperature at the centre of the catalyst bed was 85 °C greater than that at the periphery when the catalyst was heated by microwaves in a gas mixture with an oxygen concentration of 12.5% (v/v), and the temperature difference was estimated to be 168 °C in the absence of oxygen. © 2009 Akadémiai Kiadó, Budapest, Hungary. (28 refs)

Main heading: Oxygen

Controlled terms: Aluminum oxide - Microwaves - Ethylene - Alumina - Catalysts - Methane - Catalysis - Microwave heating

Uncontrolled terms: Alumina-supported - Microwave assisted - Microwave dielectric heating - Oxidative coupling of methane - Oxidative couplings - Oxygen concentrations - Temperature differences - Temperature inhomogeneity

Classification Code: 642.1 Process Heating - 711 Electromagnetic Waves - 711.1 Electromagnetic Waves in Different Media - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds

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

Database: Compendex

Data Provider: Engineering Village

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9. Comparative studies on methods of evaluation of reservoir pore structure by using NMR (nuclear magnetic resonance) well logging data

Liu, Wei (1); Xiao, Zhong-Xiang (2); Yang, Si-Yu (3); Wang, You-Jing (3)

Source: *Shiyou Diqu Wuli Kantan/Oil Geophysical Prospecting*, v 44, n 6, p 773-778, December 2009; **Language:** Chinese; **ISSN:** 10007210; **Publisher:** Science Press

Author affiliation: (1) College of Earth Resource and Information, China University of Petroleum, Dongying 257061, China (2) College of Oil and Gas Resources, Xi'an Petroleum University, Xi'an 710065, China (3) Research Institute of Petroleum Exploration and Development, PetroChina, Beijing 100083, China

Abstract: Four methods which are used to quantitatively evaluate reservoir pore structure by using nuclear magnetic resonance (NMR) T2 distribution were introduced in this paper, by integrating actual data processing for well A in Shengli oilfield, the applicability of the methods was compared and analyzed. The results show that the three porosity component percentage method, similarity comparative method and average saturation error minimum value method didn't consider the affects which was applied by hydrocarbon existing in reservoir pore space to the shape feature of T2 spectrum. The three porosity component percentage method was feasible to evaluate reservoir pore structure for the reservoir and water zone with good pore structure and bad structure, but not feasible for reservoir with moderate pore structure. The similarity comparative method and average saturation error minimum value method can only be used in water zones to construct NMR capillary pressure curves for evaluating reservoir pore structure. The NMR capillary pressure curves constructing method which is based on Swanson parameter utilized the real NMR well logging data and feasible to evaluate reservoir pore structure for different types of reservoir. After comparing with core data the reliability of the results was verified, as a result the method is worth to be promoted in the oil-filed for extensive use and application. (15 refs)

Main heading: Nuclear magnetic resonance

Controlled terms: Hydrocarbons - Data handling - Nuclear magnetic logging - Porosity - Pore structure - Capillary tubes - Oil well logging - Petroleum reservoirs - Capillarity - Magnetism - Petroleum reservoir evaluation

Uncontrolled terms: Applicability - Capillary pressure curves - Comparative analysis - Comparative methods - Comparative studies - Different types of reservoirs - Nuclear magnetic resonance logs - Nuclear magnetic resonance(NMR)

Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 701.2 Magnetism: Basic Concepts and Phenomena - 723.2 Data Processing and Image Processing - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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10. Determination of trace nickel in hydrogenated cottonseed oil by pressurized bomb acid digestion and graphite furnace atomic absorption spectrometry detection

Liu, Jianbo (1); Zhang, Gai (2); Meng, Zuchao (3); Qiao, Bo (4)

Source: *JAOCs, Journal of the American Oil Chemists' Society*, v 86, n 10, p 967-970, October 2009; **ISSN:** 0003021X; **DOI:** 10.1007/s11746-009-1424-1; **Publisher:** Springer Verlag

Author affiliation: (1) Department of Chemistry, Xianyang Normal University, 712000 Xianyang, Shannxi Province, China (2) School of Materials and Chemical Engineering, Xi'an Technological University, 710032 Xi'an, China (3) College of Chemistry and Chemical Engineering, Xi'an Petroleum University, 710065 Xi'an, China (4) Institute for Hygiene of Ordnance Industry, No.12 Zhangba East Road, 710065 Xi'an, China

Abstract: A pressurized polytetrafluoroethylene (PTFE) bomb method for the digestion of trace nickel in hydrogenated cottonseed oil prior to its determination by graphite furnace atomic absorption spectrometry (GFAAS) has been

developed. Currently, the methods outlined in United States Pharmacopeial 28 (USP28) and British Pharmacopeial (BP2003) methods are recommended as the official methods for analyzing nickel in hydrogenated cottonseed oil. However, when using these methods, the samples were easily tarnished during sample pretreatment when using a silica crucible. In contrast, when using a platinum crucible, hydrogenated cottonseed oil acting as a reducing material may react with the platinum and destroy the crucible. In order to avoid the tarnish with a silica crucible and the risk when using platinum, the technology of a pressurized PTFE bomb method was applied in the digestion of nickel in hydrogenated cottonseed oil. The results showed that hydrogenated cottonseed oil can be digested completely by the optimal combinations of HCl (0.1 mL) and HNO₃ (0.5 mL). The digested solution was investigated using graphite furnace atomic absorption spectrometry. © 2009 AOCS. (14 refs)

Main heading: Absorption spectroscopy

Controlled terms: Platinum - Oilseeds - Furnaces - Graphite - Nickel - Alumina - Multiwalled carbon nanotubes (MWCN) - Silica - Atomic absorption spectrometry - Atoms - Trace analysis - Aluminum oxide - Hydrogenation

Uncontrolled terms: Acid digestion - GFAAS - Graphite furnace atomic absorption spectrometry - Optimal combination - Platinum crucibles - Polytetrafluoroethylene (PTFE) - Sample pretreatment - Silica crucible

Classification Code: 547.1 Precious Metals - 548.1 Nickel - 741.3 Optical Devices and Systems - 761 Nanotechnology - 801 Chemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 821.4 Agricultural Products - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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11. A study on the computer-aided dynamic test and analysis of the rotating accuracy of a spindle

Wang, Jiangping (1); Bao, Zefu (1)

Source: 2009 4th International Conference on Innovative Computing, Information and Control, ICICIC 2009, p 465-468, 2009, 2009 4th International Conference on Innovative Computing, Information and Control, ICICIC 2009; **ISBN-13:** 9780769538730; **DOI:** 10.1109/ICICIC.2009.58; **Article number:** 5412333; **Conference:** 2009 4th International Conference on Innovative Computing, Information and Control, ICICIC 2009, December 7, 2009 - December 9, 2009; **Sponsor:** et al.; IEEE Tainain Section; Kaohsiung City Government; Ministry of Education; National Applied Research Laboratories; National Science Council; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Mechanical Engineering, Xian Shiyou University, Xian, Shaanxi 710065, China

Abstract: This article presents a computer-aided dynamic test method to measure the rotation error of a spindle in the running condition, and analyzes the influencing factors of the measurement precision by use of the Fourier transform analysis. It is concluded that the setting eccentricity of the measuring element and its shape error are the main factors that influence the measurement precision. Filtering technology is developed to exclude the influences of the setting eccentricity and the shape error of the measuring element, so as to improve the measurement precision of the rotation error of the spindle. © 2009 IEEE. (5 refs)

Main heading: Errors

Controlled terms: Rotation - Computer aided analysis

Uncontrolled terms: Computer aided - Computer aided tests - Dynamic test methods - Dynamic tests - Fourier transform analysis - Measurement precision - Rotating accuracy - Running conditions

Classification Code: 723.5 Computer Applications - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

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12. Experiment and analysis on near-dry cutting system in titanium alloy deep-hole drilling

Peng, H. (1); Wang, J.P. (1); Bao, Z.F. (1)

Source: *Key Engineering Materials*, v 392-394, p 229-233, 2009; **ISSN:** 10139826, **E-ISSN:** 16629795; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) School of Mechanical Engineering, Xian Shiyou University, Xian, Shaanxi, 710065, China

Abstract: This paper depicts a boring and trepanning association (BTA) deep-hole drilling system with near-dry cutting technique. The cutting tests are carried out in view of the machining performances under the condition of applying the compressed air and atomized cutting fluid for drilling deep holes on titanium alloy which is difficult to cut. Several cutter materials have been utilized in the tests. The reasonable material of the deep-hole drilling cutter has been determined by analyzing the cutting force, the cutter wear and the surface finish. Environmental pollution decreases owing to little cutting fluid consumption in near-dry cutting system. (3 refs)

Main heading: Titanium alloys

Controlled terms: Drilling fluids - Cutting tools - Cutting - Cutting fluids - Compressed air

Uncontrolled terms: Boring and trepanning associations - Cutter materials - Deep hole drilling - Environmental pollutions - Experiment and analysis - Machining performance - Near-dry cutting - Surface finishes

Classification Code: 542.3 Titanium and Alloys - 603.2 Machine Tool Accessories

Database: Compendex

Data Provider: Engineering Village

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13. The study on energy saving and output enhancement of pumping well based on the theory of QFD/TRIZ

Peng, Yong (1); Yan, Wenhui (2); Wu, Heng (2)

Source: 2009 International Conference on Energy and Environment Technology, ICEET 2009, v 1, p 449-453, 2009, 2009 International Conference on Energy and Environment Technology, ICEET 2009; **ISBN-13:** 9780769538198;

DOI: 10.1109/ICEET.2009.115; **Article number:** 5364642; **Conference:** 2009 International Conference on Energy and Environment Technology, ICEET 2009, October 16, 2009 - October 18, 2009; **Sponsor:** Changsha University of Science and Technology; Hunan Institute of Engineering; IEEE Power and Energy Society(PES); **Publisher:** IEEE Computer Society

Author affiliation: (1) Xi'an Jiaotong University, Mechanical Engineering School, Xi'an Shiyou University, Xi'an, China (2) Mechanical Engineering School, Xi'an Shiyou University, Xi'an, China

Abstract: For the shortage of the traditional analysis approach for saving energy and improving output of pumping well, applying the theory of QFD/TRIZ for the first time, the efficiency of the pumping system, output enhancement and related parameters have been analysed systematically for improving the operating efficiency of the pumping well and achieving saving energy and increasing output. The relationship of the factors that effect the operating efficiency of the pumping well has been obtained, including 50 parameters that be classified to 6 groups; the relationship of the factors effect the output enhancement of the pumping well has been obtained, which includes mainly 30 parameters that can be classified to 13 groups; the quality house for improving the operating efficiency and increasing the oil output of the pumping well and mainly 18 technological measures and weighings have been gained; the technical measurements of improving the efficiency and the output of the pumping well based on TRIZ theory have also been obtained. © 2009 IEEE. (12 refs)

Main heading: Pumps

Controlled terms: Energy efficiency - Pumping plants

Uncontrolled terms: Analysis approach - Operating efficiency - Pumping systems - Pumping well - Saving energy - Technical measurements - TRIZ - TRIZ theories

Classification Code: 446 Waterworks - 525.2 Energy Conservation - 618.2 Pumps

Database: Compendex

Data Provider: Engineering Village

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14. Stability criterion and parameter perturbation chaos control in boost circuit

Yingna, Guo (1, 2); Weibin, Cheng (1, 2); Simin, Kang (1); Nan, Tang (1, 2)

Source: 2009 4th IEEE Conference on Industrial Electronics and Applications, ICIEA 2009, p 2886-2890, 2009, 2009 4th IEEE Conference on Industrial Electronics and Applications, ICIEA 2009; **ISBN-13:** 9781424428007; **DOI:** 10.1109/

ICIEA.2009.5138737; **Article number:** 5138737; **Conference:** 2009 4th IEEE Conference on Industrial Electronics and Applications, ICIEA 2009, May 25, 2009 - May 27, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, China (2) Shaanxi Key Laboratory of Oil-Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: There are more chaos phenomena in Boost circuit, which make the system working in the unsteady state frequently. As the final control signal, the change of duty cycle reflects the stable operating characteristics of Boost circuit. Based on the continuous conduction mode (CCM) of Boost circuit, the duty cycle criterion of circuit stability is deduced, and the change characteristics of duty cycle are studied, the basic principle of resonant parameter perturbation control is analyzed in this paper. With the mathematical model of Boost circuit, the characteristics of resonant linear parameter perturbation modulation and sinusoidal parameter perturbation modulation are analyzed while the stability criterion is satisfied and dissatisfied, and it provides the feasible strategy and the method for Boost circuit stability design and control. © 2009 IEEE. (10 refs)

Main heading: Stability criteria

Controlled terms: Electric network analysis - Chaos control - Modulation - Timing circuits

Uncontrolled terms: Boost circuits - Chaos control - Continuous conduction mode - Duty-cycle - Linear parameters - Operating characteristics - Parameter perturbation - Sinusoidal parameters

Classification Code: 703.1.1 Electric Network Analysis - 713.4 Pulse Circuits - 731.4 System Stability - 922 Statistical Methods - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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15. Drilling risk management system based on knowledge integration

Li, Qi (1); Chang, Du (1); Xu, Yingzhuo (2); Tang, Jiping (3); Liang, Hongjun (3)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 5, p 755-759, September 2009; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Institute of Computer, Xi'an Shiyou University, Xi'an 710065, China (3) Exploration Department, Tarim Oilfield Company, PetroChina, Kuerle 841000, China

Abstract: In order to evaluate and control drilling risk, a drilling risk management system was established on the basis of the knowledge integration theory. The connotations of risk management and knowledge integration were discussed. The objects of knowledge integration in drilling risk management were analyzed. The framework of the management system and the drilling risk-factor analysis methods were designed, and the workflow of the management system was presented. A model for comprehensively evaluating drilling risk was proposed. Taking the Tarim piedmont tectonic belt as an example, the software system was designed for drilling risk assessment and risk control under the NET platform. (8 refs)

Main heading: Risk assessment

Controlled terms: Landforms - Integration - Tectonics - Computer software - Risk analysis - Risk management

Uncontrolled terms: Comprehensive evaluation model - Drilling risk managements - Knowledge integration - Software systems - Tectonic belts

Classification Code: 481.1 Geology - 723 Computer Software, Data Handling and Applications - 914.1 Accidents and Accident Prevention - 921.2 Calculus - 922 Statistical Methods

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

16. Optimal planning of reactive power compensators for oil field distribution networks

Xiaomeng, Wu (1); Suli, Yan (1)

Source: *Proceedings of the 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009*, p 184-186, 2009, *Proceedings of the 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009*; **ISBN-13:** 9780769536149; **DOI:** 10.1109/PACCS.2009.195; **Article number:** 5232317; **Conference:** 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009, May 16, 2009 - May 17, 2009;

Sponsor: Application Research Association; Information Technology Applications; Intelligent Information Technology; International Journal of Intelligent; Wuhan Institute of Technology; **Publisher:** IEEE Computer Society

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

Abstract: The characteristic behavior of the loads of oil pumps is analyzed. An approach for low-voltage side reactive power compensators of oil field distribution networks is put forward. Based on the supplied loads of transformers, the index of maximum reduction of active power losses is taken as the objective function. The total number and the total capacity of capacitors which will be devoted by user are considered as the restricted conditions. The index of the highest benefitinvestment- ratio is also used as the objective function. The load varying is also considered in the proposed method. Three cases are detailed, such as knowing total capacity of capacitors, knowing the total number of capacitors and knowing the investment. The feasibility of the proposed method is showed by the results of an example. (9 refs)

Main heading: Genetic algorithms

Controlled terms: Oil well flooding - Electric power distribution - Reactive power

Uncontrolled terms: Active power loss - Low voltages - Objective functions - Oil pump - Optimal planning - Reactive power compensation - Reactive power compensator

Classification Code: 511.1 Oil Field Production Operations - 706.1.2 Electric Power Distribution

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

17. Comparison of extreme learning machine with support vector regression for reservoir permeability prediction

Cheng, Guo-Jian (1); Cai, Lei (1); Pan, Hua-Xian (1)

Source: *CIS 2009 - 2009 International Conference on Computational Intelligence and Security*, v 2, p 173-176, 2009, *CIS 2009 - 2009 International Conference on Computational Intelligence and Security*; **ISBN-13:** 9780769539317; **DOI:** 10.1109/CIS.2009.124; **Article number:** 5376002; **Conference:** 2009 International Conference on Computational Intelligence and Security, CIS 2009, December 11, 2009 - December 14, 2009; **Sponsor:** Beijing Institute of Technology; Guangdong University of Technology; IEEE Computer Society Press; Xidian University; **Publisher:** IEEE Computer Society

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

Abstract: Extreme Learning Machine (ELM) is an easy-to use and effective learning algorithm of single-hidden layer feed-forward neural networks (SLFNs). The classical learning algorithm in neural network, e.g. Back Propagation, requires setting several user-defined parameters and may get into local minimum. However, ELM only requires setting the number of hidden neurons and the activation function. It does not require adjusting the input weights and hidden layer biases during the implementation of the algorithm, and it produces only one optimal solution. Therefore, ELM has the advantages of fast learning speed and good generalization performance. In this paper, ELM is introduced in predicting reservoir permeability. By comparing to SVM, we analyze its feasibility and advantages in reservoir permeability prediction. The experimental results show that ELM has similar accuracy compared to SVR, but it has obvious advantages in parameter selection and learning speed. © 2009 IEEE. (18 refs)

Main heading: Learning algorithms

Controlled terms: Mechanical permeability - Petroleum reservoir engineering - Knowledge acquisition - Forecasting - Learning systems

Uncontrolled terms: Activation functions - Extreme learning machine - Generalization performance - Number of hidden neurons - Parameter selection - Reservoir permeability - Single-hidden layer feed-forward neural network - User-defined parameters

Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 723.4 Artificial Intelligence - 723.4.2 Machine Learning

Database: Compendex

Data Provider: Engineering Village

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18. Experimental research on deep hole honing of difficult-to-cut materials based on mixture-abrasive honing stones

Zhu, Lin (1); Peng, Hai (1); Xiao, Deming (1)

Source: *Key Engineering Materials*, v 416, p 461-466, 2009; **ISSN:** 10139826, **E-ISSN:** 16629795; **DOI:** 10.4028/www.scientific.net/KEM.416.461; **Publisher:** Trans Tech Publications Ltd

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

Abstract: The deep hole honing is an effective and precise method in deep hole processing. It can remove the machining allowance to ensure the hole size and the shape accuracy, and have better surface quality of a hole. The difficult-to-cut materials such as precipitation-hardening stainless steel, stainless steel (1Cr18Ni9Ti) and titanium alloy have the properties of high hardness, wear resistance, heat resistance, and corrosion resistance. The conventional single-abrasive honing stones can not handle the difficult-to-cut materials effectively because of their single-abrasive property. For higher efficiency, more than ten of mixture-abrasive honing stones with different proportion of different abrasives have been designed and the contrast experiments have been done for different mixture-abrasive honing stones to grind precipitation-hardening stainless steel, stainless steel (1Cr18Ni9Ti) and titanium alloy. According to several comprehensive evaluation factors of the grinding ratio, the specific grinding energy and the area that the honed chips stick the oilstones surface, the optimum proportion of different abrasives have been found for honing difficult-to-cut materials. It can be observed that the mixture-abrasive honing stones have better performance than that of single-abrasive stones when honing certain kind of difficult-to-cut materials. © (2009) Trans Tech Publications, Switzerland. (4 refs)

Main heading: Abrasives

Controlled terms: Sintering - Ternary alloys - Age hardening - Mixtures - Hardness - Stainless steel - Steel corrosion - Grinding (machining) - Wear resistance - Heat resistance - Precipitation (chemical) - Corrosion resistance - Corrosion resistant alloys - Titanium alloys - Chromium alloys

Uncontrolled terms: Comprehensive evaluation - Contrast experiment - Deep hole processing - Different proportions - Difficult-to-cut materials - Experimental research - Precipitation-hardening stainless steel - Specific grinding energy

Classification Code: 531 Metallurgy and Metallography - 539.1 Metals Corrosion - 542.3 Titanium and Alloys - 543.1 Chromium and Alloys - 545.3 Steel - 604.2 Machining Operations - 606.1 Abrasive Materials - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

19. Improved ant algorithm combined with ecological theory for urban power system planning

Gao, Weixin (1); Luo, Xianjue (1); Tang, Nan (1); Mu, Xiangyang (1)

Source: 2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009, v 2, p 229-233, 2009, 2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009;

ISBN-13: 9780769538167; **DOI:** 10.1109/AICI.2009.52; **Article number:** 5375962; **Conference:** 2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009, November 7, 2009 - November 8, 2009; **Sponsor:** Shanghai University of Electric Power; **Publisher:** IEEE Computer Society

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

Abstract: We presents a new algorithm for urban power system planning. The new algorithm combines an improved ant algorithm with ecological theory and transforms the urban power system-planning problem into an ecosystem optimization problem. The substation is regarded as an ant nest and the load point is regarded as food in the algorithm presented in this paper. It can simultaneously optimize the substation's size, position, service region and the structure of power network by imitating ecosystem evolvement. The result of calculation shows that the structure of power network is radial, and needs no inspection. Therefore it is easier to be programmed. An example shows that the algorithm is efficient. © 2009 IEEE. (13 refs)

Main heading: Ecosystems

Controlled terms: Electric power system planning - Electric power transmission networks - Electric network analysis

Uncontrolled terms: Ant algorithms - Ecological theory - Load points - Optimization problems - Power networks - Urban power systems

Classification Code: 454.3 Ecology and Ecosystems - 703.1.1 Electric Network Analysis - 706.1 Electric Power Systems - 706.1.1 Electric Power Transmission - 912.2 Management

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

20. A comparative analysis to traditional pid and fuzzy adaptive PI-variable damping controlling system of MRST stabilized platform

Yong, Duan Zheng (1); Yong, Peng (1)

Source: 2009 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2009, v 1, p 745-748, 2009, 2009 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2009;

ISBN-13: 9780769535838; **DOI:** 10.1109/ICMTMA.2009.273; **Article number:** 5203079; **Conference:** 2009 International Conference on Measuring Technology and Mechatronics Automation, ICMTMA 2009, April 11, 2009 - April 12, 2009; **Sponsor:** Carnegie Mellon University; Central South University; Changsha University of Science and Technology; Nantes University; **Publisher:** IEEE Computer Society

Author affiliation: (1) Mechanical Engineering College, Xi'an Shiyou University, Shaanxi Xi'an, China

Abstract: Based on analysis to the performance requirements of the modulation rotary steerable drilling tool (MRST) stabilized platform controlling system, traditional PID and fuzzy adaptive PI-variable damping control schemes are studied contradistinctively to better solve the control problem. The simulation results show that the traditional PID control method only caters to one working condition of the controlling system, but the other, using fuzzy control algorithm, can adjust controller's parameters onlinely in terms of system's responses to eliminate the interferences of diverse drilling conditions, adapts to the nonlinearity and time-varying uncertainty, has perfect control effect: the adjusting time is only about 0.3s, the overshooting is less than 0.5% and the steady-state error is not more than 0.05%, exhibiting good quick-responsibility, stability, adaptability, noise immunity and robustness. © 2009 IEEE. (11 refs)

Main heading: Modulation

Controlled terms: Adaptive control systems - Three term control systems - Fuzzy control - Damping

Uncontrolled terms: Comparative analysis - Fuzzy adaptive - Fuzzy variable - Performance requirements - Rotary-steerable drilling - Stabilized platform - Steady state errors - Time varying uncertainties

Classification Code: 731 Automatic Control Principles and Applications - 731.1 Control Systems - 931.1 Mechanics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

21. Notice of Retraction: The research and application of optimal operation in oil field power network

Wu, Xiaomeng (1); Suli, Yan (1)

Source: *Proceedings - 2009 Asia-Pacific Conference on Information Processing, APCIP 2009*, v 2, p 430-433, 2009, *Proceedings - 2009 Asia-Pacific Conference on Information Processing, APCIP 2009*; **ISBN-13:** 9780769536996; **DOI:** 10.1109/APCIP.2009.242; **Article number:** 5197229; **Conference:** 2009 Asia-Pacific Conference on Information Processing, APCIP 2009, July 18, 2009 - July 19, 2009; **Sponsor:** Application Research Association; Information Technology Application; Intelligent Information Technology; International Journal of Intelligent; Shenzhen University; **Publisher:** IEEE Computer Society

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

Abstract: Based on the investigation of the status in the power network, the optimal operation and energy-saving technological transformation of Tu-ha oil field distribution network is the use of optimal operation oil field power system and the best energy saving results of the computer utility software, using electronic computer analysis, computation in a strict theoretical basis, discovering the best energy-saving measures and the largest energy-saving effect of distribution network, in connection with reality, to find the most suitable optimization program. This project is discussed the choice and control theory of the dispersed concentrated compensation scheme, and evaluated the effect of the transformation. At the same time, network theory configuration is applied so that dedicated network has a special grant ways, the power factor of its oil region reached above 0.9, and it has made significant energy efficiency and social benefits. The decision support system have further improved and it provides a theoretical and practical preparation for optimization and comprehensive benefits of Xin-jiang oilfield network. © 2009 IEEE.

Main heading: Energy efficiency

Controlled terms: Electric network analysis - Electric power transmission networks - Artificial intelligence - Computation theory - Decision support systems - Oil well flooding

Uncontrolled terms: Compensation scheme - Comprehensive benefit - Electronic computers - Energy-saving effect - Energy-saving measures - Optimal operation - Optimization programs - Research and application

Classification Code: 511.1 Oil Field Production Operations - 525.2 Energy Conservation - 703.1.1 Electric Network Analysis - 706.1.1 Electric Power Transmission - 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 723 Computer Software, Data Handling and Applications - 723.4 Artificial Intelligence - 912.2 Management

Database: Compendex

Data Provider: Engineering Village

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22. Study on a network communication optimization algorithm of P2P mode

Liu, Tian-Shi (1); Li, Jiao (1); Cao, Qing-Nian (1)

Source: *2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009*, v 2, p 212-217, 2009, *2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009*; **ISBN-13:** 9780769538167; **DOI:** 10.1109/AICI.2009.290; **Article number:** 5375967; **Conference:** 2009 International Conference on Artificial Intelligence and Computational Intelligence, AICI 2009, November 7, 2009 - November 8, 2009; **Sponsor:** Shanghai University of Electric Power; **Publisher:** IEEE Computer Society

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

Abstract: Based on P2P communication mode, a practical communication optimization algorithm called Branch First (BFI) communication tree algorithm is proposed. The basic idea of the algorithm is to introduce a concurrent communication mechanism, and to assign proper communication task to all nodes according to the communication weight between nodes in order to shorten communication time. In addition, the algorithm to construct the communication tree is presented and the communication time is evaluated. Simulation results indicate that BFI communication tree algorithm is superior to Kruskal communication tree algorithm in communication efficiency. © 2009 IEEE. (11 refs)

Main heading: Trees (mathematics)

Controlled terms: Peer to peer networks - Forestry - Optimization

Uncontrolled terms: Communication efficiency - Communication mechanisms - Communication optimization - Communication task - Communication time - Network communications - P2p communications - Tree algorithms

Classification Code: 722 Computer Systems and Equipment - 821 Agricultural Equipment and Methods; Vegetation and Pest Control - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.5 Optimization Techniques

Database: Compendex

Data Provider: Engineering Village

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23. Geophysical characters for archaeology in the ancient city of JinYang, China

Shen, Hong-Yan (1); Yuan, Bing-Qiang (1)

Source: 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, v 2, p 292-297, 2009, 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009; **ISBN-13:** 9780769538761; **DOI:** 10.1109/ICIII.2009.228; **Article number:** 5369863; **Conference:** 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, December 26, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an, China

Abstract: The ancient city relics in Jinyang have a long history, and Jinyang is a very important burial region of ancient culture. It has abundant relics with unique burial forms under the ground. Due to the wide measured range of the target layers and target articles which is from centimeters to meters, and the different requests of the resolution, we take the method combining with the High Density Resistivity Technique(HDRT) and Geophysical Prospecting Radar(GPR) to carry through geophysical testing exploration on several ancient culture layers and target areas of relics in Jinyang. In this paper, we have gotten rich knowledge of the geophysical characters, which has laid a solid foundation of geophysical exploration for archaeological study on the ancient city relics in Jinyang. © 2009 IEEE. (29 refs)

Main heading: Geophysical prospecting

Controlled terms: Geological surveys - Ground penetrating radar systems - Radar measurement - Geophysics - History

Uncontrolled terms: Ancient cultures - Archaeological studies - Archaeology - Geophysical exploration - High density resistivity technique

Classification Code: 481.1 Geology - 481.3 Geophysics - 481.4 Geophysical Prospecting - 716.2 Radar Systems and Equipment - 971 Social Sciences

Database: Compendex

Data Provider: Engineering Village

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24. Dynamic reactive power planning of oil field distribution networks based on genetic algorithm

Xiaomeng, Wu (1); Haiyan, Hu (1)

Source: Proceedings of the 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009, p 752-754, 2009, Proceedings of the 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009; **ISBN-13:** 9780769536149; **DOI:** 10.1109/PACCS.2009.197; **Article number:** 5232434; **Conference:** 2009 Pacific-Asia Conference on Circuits, Communications and System, PACCS 2009, May 16, 2009 - May 17, 2009;

Sponsor: Application Research Association; Information Technology Applications; Intelligent Information Technology; International Journal of Intelligent; Wuhan Institute of Technology; **Publisher:** IEEE Computer Society

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

Abstract: An approach for low-voltage side reactive power compensators of oil field distribution networks is put forward. The highest investment benefit, which is discounted back to present, is taken as objective function. The restriction of total investment is considered in the form of punishment functions. On the basis of which, an augmented index is established. Every possible installing location of the automatic reactive compensation equipments is regarded as a gene. The value of each gene is the installing time of the corresponding compensation equipment while zero means no compensation equipment needing to install. A genetic algorithm is adopted to determine the optimal dynamic planning results of the compensation equipments on the low voltage side of distribution transformers. The load varying is also considered in the proposed method. Three cases are detailed, such as without limiting total investment, limiting total investment and limiting the investment of every phase showing that the proposed method is feasible. (11 refs)

Main heading: Genetic algorithms

Controlled terms: Genes - Planning - Electric transformers - Oil well flooding - Electric power distribution - Reactive power - Investments

Uncontrolled terms: Distribution transformer - Dynamic planning - Installing location - Objective functions - Reactive compensation - Reactive power compensation - Reactive power compensator - Reactive power planning

Classification Code: 461.2 Biological Materials and Tissue Engineering - 511.1 Oil Field Production Operations - 706.1.2 Electric Power Distribution - 912.2 Management

Database: Compendex

Data Provider: Engineering Village

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25. Application of improved adding-weight one-rank local-region method in electric power system short-term load forecasting

Kang, Si-Min (1); Guo, Ying-Na (1); Cheng, Wei-Bin (1)

Source: 1st International Conference on Sustainable Power Generation and Supply, SUPERGEN '09, 2009, 1st International Conference on Sustainable Power Generation and Supply, SUPERGEN '09; **ISBN-13:** 9781424449347; **DOI:** 10.1109/SUPERGEN.2009.5347941; **Article number:** 5347941; **Conference:** 1st International Conference on Sustainable Power Generation and Supply, SUPERGEN '09, April 6, 2009 - April 7, 2009; **Publisher:** IEEE Computer Society

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

Abstract: Adding-weight one-rank local-region method makes too many computations and cumulative errors while carrying out multi-step predictions, an improved adding-weight one-rank local-region forecasting model is presented in this paper. According to the prediction effectiveness of Euclid distance between two points away from prediction point in phase space, and synthetically taking into account the effect of distance and degree of incidence between nearest neighbor points and prediction point, an improved prediction is made with weighted evolution of the neighbor points historically and the evolution of the center reference point to forecast next point directly. The results show that the improved model for short-term load not only reduce forecasting error, but also improve calculation speed. It is a novel prediction method for chaotic time series, and worth to be studied deeply. (9 refs)

Main heading: Time series

Controlled terms: Lyapunov methods - Phase space methods - Electric power plant loads - Electric load forecasting

Uncontrolled terms: Adding weight one-rank local region method - C method - Chaotic time series - Largest Lyapunov exponent - Load forecasting - Power system - Reconstruction of phase spaces

Classification Code: 706.1 Electric Power Systems - 921 Mathematics - 922.2 Mathematical Statistics - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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26. Conceptual space and reasoning method of intelligent system

Han, Jiaxin (1)

Source: 6th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2009, v 6, p 153-156, 2009, 6th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2009; **ISBN-13:** 9780769537351; **DOI:** 10.1109/FSKD.2009.212; **Article number:** 5359815; **Conference:** 6th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2009, August 14, 2009 - August 16, 2009; **Sponsor:** Tianjin University of Technology; **Publisher:** IEEE Computer Society

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

Abstract: The uncertain knowledge expression and reasoning are the hotspot and core of artificial intelligence research. In the paper two concepts, concept space and abstract concept degree are presented based on fuzzy set. Abstract concept degree describe the conceptual hierarchic in its space. Three reasoning forms and their changeable membership grade are discussed. In a intelligent system the membership grade depends on evaluation function to reach steady state. © 2009 IEEE. (11 refs)

Main heading: Intelligent systems

Uncontrolled terms: Abstract concept - Artificial intelligence research - Concept space - Conceptual spaces - Evaluation function - Membership grade - Reasoning methods - Uncertain knowledge

Classification Code: 723.4 Artificial Intelligence

Database: Compendex

Data Provider: Engineering Village

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27. Cobalt(II) and nickel(II) complexes bearing mono(imino)pyridyl and bis(imino)pyridyl ligands: Preparation, structure and ethylene polymerization/oligomerization behaviors

Su, Biyun (1); Zhao, Jianshe (2); Zhang, Qunzheng (1); Qin, Wenlong (3)

Source: *Polymer International*, v 58, n 9, p 1051-1057, 2009; **ISSN:** 09598103, **E-ISSN:** 10970126; **DOI:** 10.1002/pi.2631; **Publisher:** John Wiley and Sons Ltd

Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Chemistry, Northwest University, Xi'an 710069, China (3) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Background: Ethylene oligomerization is the major industrial process to produce linear α -olefins. Recently much work has been devoted to late transition metal catalysts used in this process, especially those with 2,6-bis(imino)pyridyl dihalide ligands. Considering that most work has focused on simple modification to the substituents in imino-aryl rings based on the symmetric bis(imino)pyridyl framework, here we expand this work to the asymmetric mono(imino)pyridyl ligands. Results: The preparation, structure and ethylene polymerization/oligomerization behavior

of series of mono(imino) pyridyl-MCl₂ and bis(imino)pyridyl-MX_n complexes are presented. The systematic studies were focused on the relationship between the catalytic behavior of these complexes for ethylene polymerization/oligomerization and reaction conditions, ligand structures, metal centers and counter-anions. The influence of the coordination environment on catalyst behavior is also discussed. Conclusion: For mono(imino)pyridyl-Co(II) and -Ni(II) catalysts bearing the Cl⁻ counter-anion, good activities ranging from 0.513 × 10⁵ to 1.58 × 10⁵ g polyethylene (mol metal)⁻¹ h⁻¹ atm⁻¹ are afforded, and the most active catalysts are those with methyl in both ortho- and para-positions of the imine N-aryl ring. For bis(imino)pyridyl-Co(II) and -Ni(II) catalysts bearing the SO₄²⁻ and NO₃⁻ counter-anions, the low activities for ethylene oligomerization are in sharp contrast to those of their chloride analogues. © 2009 Society of Chemical Industry. (29 refs)

Main heading: Oligomerization

Controlled terms: Chlorine compounds - Crystal structure - Negative ions - Nickel compounds - Oligomers - Ethylene - Cobalt compounds - Polymerization - Transition metals - Catalyst activity - Ligands

Uncontrolled terms: Bis(imino)pyridyl ligands - Coordination environment - Counter anions - Ethylene oligomerizations - Ethylene polymerization - Late-transition metal catalysts - Ni catalysts - Pyridyl

Classification Code: 531 Metallurgy and Metallography - 801.4 Physical Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 815.1.1 Organic Polymers - 815.2 Polymerization - 933.1.1 Crystal Lattice

Database: Compendex

Data Provider: Engineering Village

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28. Nano-chemical micro-reaction mechanism of metalation process in synthesis of magnesium salt as lubricating oil detergent

Ding, Li-Qin (1); Zhang, Jing-He (1); He, Li (1); Liang, Sheng-Rong (1); Zhang, Jun-Tao (1)

Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 25, n 1, p 96-101, February 2009; **Language:** Chinese; **ISSN:** 10018719; **Publisher:** Science Press

Author affiliation: (1) Petroleum Refining Engineering Research Center, Xi'an Shiyou University, Xi'an 710065, China

Abstract: Due to the weaker metallicity of Mg than that of Ca and different physico-chemical properties of compounds of both, the metalation process in manufacture of super and high basic Mg salts of various organic acids is much more complicated and difficult than that of the corresponding Ca salts. Through years of research on synthesis of various Mg salts as lubricating oil detergents, the authors of this paper discovered that the metalation process of Mg salt, being different from that of Ca salt, needs not only addition of auxiliary promoters, such as NH₃, NH₄ salts and amines, to boost the promoting function of CH₃OH, but also adoption of new measures, such as reforming the mode of addition of H₂O and controlling strictly the flow rate of CO₂ gas within definite limits (so called "critical carbonation rate"), to guarantee the success of synthesis. On basis of these researches, in accordance with the recent advances of nano-chemistry, which proposed the new concept of micro-reactor in microemulsions, the micro-reaction mechanism involved in the above-mentioned measures was revealed and demonstrated, thus the rules governing metalation process was clarified in synthesis of various Mg salts as lubricating oil detergents. (9 refs)

Main heading: Lubricating oils

Controlled terms: Salts - Lubrication - Magnesium - Calcium - Soaps (detergents) - Microemulsions

Uncontrolled terms: CO₂ gas - Magnesium salts - Metalations - Metallicities - Micro reactor - Nano chemistry - Reaction mechanism

Classification Code: 542.2 Magnesium and Alloys - 549.2 Alkaline Earth Metals - 607.1 Lubricants - 607.2 Lubrication - 804 Chemical Products Generally - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

29. The application of fuzzy analytical hierarchy process to the carbonization industry's environmental protection and technique creation

Qin, Yi (1)

Source: *Beijing Gongye Daxue Xuebao / Journal of Beijing University of Technology*, v 35, n 12, p 1722-1728, December 2009; **Language:** Chinese; **ISSN:** 02540037; **Publisher:** Beijing University of Technology

Author affiliation: (1) School of Economics and Management, Xi'an Shiyou University, Xi'an 710065, China

Abstract: First, this article articulated the method of fuzzy analytical hierarchy process, and then constructed the evaluation index system. We could decide the weight of the index according to the importance of the index. And we contributed the fuzzy judging matrix by the fuzzy evaluation method which related with the index function. At last, we estimated the project's comprehensive performance. (12 refs)

Main heading: Carbonization

Uncontrolled terms: Analytical Hierarchy Process - Comprehensive evaluation - Comprehensive performance - Evaluation index system - Fuzzy analytical hierarchy process - Fuzzy comprehensive evaluation method - Fuzzy evaluation method - Index systems

Classification Code: 802.2 Chemical Reactions

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

30. The honing technical research of the difficult-to-cut materials

Peng, Hai (1); Bao, Zefu (1)

Source: *Key Engineering Materials*, v 416, p 426-431, 2009; **ISSN:** 10139826, **E-ISSN:** 16629795; **DOI:** 10.4028/www.scientific.net/KEM.416.426; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an, Shanxi, 710065, China

Abstract: The problems occurring in deep hole honing are investigated for the difficult-to-cut materials such as Titanium alloy, high-temperature alloy and stainless steel? and carried out experiments and analyses to select the optimal abrasive honing stone, to improve the honing efficiency and to select rational honing process. The best honing stone types and technological process to those metallic materials have been obtained finally. © (2009) Trans Tech Publications, Switzerland. (5 refs)

Main heading: Honing

Controlled terms: Titanium alloys

Uncontrolled terms: Deep hole processing - Deep holes - Difficult-to-cut materials - Metallic material - Technical research - Technological process

Classification Code: 542.3 Titanium and Alloys

Database: Compendex

Data Provider: Engineering Village

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31. Motivation and training program on robotics education

Han, Jiaxin (1); Gao, Rongfang (1)

Source: *Proceedings - 2009 International Conference on Computational Intelligence and Software Engineering, CiSE 2009*, 2009, *Proceedings - 2009 International Conference on Computational Intelligence and Software Engineering, CiSE 2009*; **ISBN-13:** 9781424445073; **DOI:** 10.1109/CISE.2009.5363272; **Article number:** 5363272; **Conference:**

2009 International Conference on Computational Intelligence and Software Engineering, CiSE 2009, December 11, 2009 - December 13, 2009; **Sponsor:** IEEE Wuhan Section; James Madison University; Microsoft Research Asia; University of Wisconsin at La Crosse; Wuhan University; **Publisher:** IEEE Computer Society

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

Abstract: Robotics is a compelling topic for students of all ages, and it is an excellent tool for teaching science and engineering. The paper has considered what makes robotics motivating to students, and it has shown how context, need, and the desire to 'make it work' draw them to that learning so naturally that they hardly notice the intellectual strides they are making. The potential of robotics to educate must best be realized through more formal education. Based on analysis of current courses, combining with the knowledge and experience acquired from real operation, a robotic training program is put forward. ©2009 IEEE. (13 refs)

Main heading: Students

Controlled terms: Robotics - Curricula - Motivation - Teaching

Uncontrolled terms: Formal education - Knowledge and experience - Multidisciplinary - Robotics education - Science and engineering - Training program

Classification Code: 731.5 Robotics - 901.2 Education - 912.4 Personnel

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

32. Application of schema theory in the course of foundations of computers

Wengou, Jing (1); Rongfang, Gao (1)

Source: *Proceedings of 2009 4th International Conference on Computer Science and Education, ICCSE 2009*, p 1473-1475, 2009, *Proceedings of 2009 4th International Conference on Computer Science and Education, ICCSE 2009*; **ISBN-13:** 9781424435210; **DOI:** 10.1109/ICCSE.2009.5228567; **Article number:** 5228567; **Conference:**

2009 4th International Conference on Computer Science and Education, ICCSE 2009, July 25, 2009 - July 28, 2009;

Publisher: IEEE Computer Society

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

Abstract: In the paper, combined with the course of foundations of computers, applications of schema theory in the teaching of the course are introduced. Further, guided by the theory, the concrete methods how to activate original schemas and keep helping students building up new schemas in students' brain are probed. ©2009 IEEE. (3 refs)

Main heading: Teaching

Uncontrolled terms: Cognitive psychology - Concrete method - Schema theory

Classification Code: 405 Construction Equipment and Methods; Surveying - 483.2 Foundations - 721 Computer Circuits and Logic Elements - 722 Computer Systems and Equipment - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 901.2 Education - 912.4 Personnel

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

33. Corrosion behavior of low Cr steel at the simulated H₂S/CO₂ environments

Lu, Xiang-Hong (1); Zhao, Guo-Xian (1); Zhang, Jian-Bing (2); Han, Yong (3); Xu, Wen-Yan (4)

Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 10, p 20-25+31, October 2009; **Language:** Chinese;

ISSN: 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

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

(2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Xi'an Maurer Petroleum

Engineering Laboratory, Xi'an 710065, China (4) Tianjin Pipe Corporation, Tianjin 300301, China

Abstract: H₂S/CO₂ corrosion behavior of low Cr casing and tubing steel at the simulated environments of Tarim oilfield was studied with mass loss and electrochemical impedance spectroscopy (EIS) and polarization curves. The results show that low Cr steel has the superior CO₂ uniform and local corrosion resistance because Cr-rich in corrosion scale which improve the protection of corrosion scale. At the simulated CO₂/H₂S environment, H₂S electrochemical corrosion dominates the corrosion course, and the uniform corrosion rate of low Cr steel is much less than that in CO₂ environment. The passivation zone of low Cr steel appears obviously on anodic polarization curve in H₂S corrosion environment, and the fitted EIS showed that the polarization resistance of H₂S corrosion is much larger than that of CO₂ corrosion. (8 refs)

Main heading: Carbon dioxide

Controlled terms: Polarization - Corrosion rate - Corrosion resistance - Passivation - Steel corrosion - Corrosion protection - Electrochemical corrosion - Oil fields - Corrosive effects - Electrochemical impedance spectroscopy - Localized corrosion

Uncontrolled terms: Casing and tubings - Local corrosion - Polarization curves - Polarization resistances - Uniform corrosion

Classification Code: 512.1.1 Oil Fields - 539.1 Metals Corrosion - 539.2 Corrosion Protection - 539.2.1 Protection Methods - 545.3 Steel - 801 Chemistry - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

34. Study on mechanical property and solder ability of SnAgCu system lead-free solder alloy

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

Source: *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering*, v 38, n 8, p 1462-1466, August

2009; **Language:** Chinese; **ISSN:** 1002185X; **Publisher:** Rare Metals Materials and Engineering Press

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

Abstract: The mechanical property and solder ability of SnAgCu system lead-free solder alloys were studied by means of optical microscopy, scanning electron microscopy (SEM), energy dispersive X-ray (EDX) and Instron electrohydraulic servo fatigue tensile tester. The results indicate that proper quantities of Ce can remarkably prolong the creep-rupture life of the Sn₃Ag_{2.8}Cu brazing joint at room temperature, and the creep-rupture life of the Sn₃Ag_{2.8}Cu-0.1Ce brazing joint is 9 times or more than that of the Sn₃Ag_{2.8}Cu; meanwhile, the elongation of the Sn_{3.0}Ag_{2.8}Cu-0.1Ce solder alloy is also obviously improved even up to 15.7%; the intermetallic layers of the Sn₃Ag_{2.8}Cu-0.1Ce with copper plate are thicker than that of Sn₃₇Pb, but thinner than that of Sn₃Ag_{2.8}Cu. (17 refs)

Main heading: Ternary alloys

Controlled terms: Cerium alloys - Lead-free solders - Scanning electron microscopy - Binary alloys - Copper alloys - Creep - Brazing - Silver alloys - Lead alloys - Tin alloys

Uncontrolled terms: Brazing joints - Creep rupture life - Electrohydraulic servos - Energy dispersive x-ray - Intermetallic layer - Lead-free solder alloy - SnAgCu system - Tensile testers

Classification Code: 538.1.1 Soldering - 544.2 Copper Alloys - 546.1 Lead and Alloys - 546.2 Tin and Alloys - 547.1 Precious Metals - 547.2 Rare Earth Metals - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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35. Analysis and design of harmonic suppression circuit with quasi-square wave compensation

Guo, Ying-Na (1); Cheng, Wei-Bin (1); Kang, Si-Min (1); Lu, Ye (1)

Source: 2009 IEEE 6th International Power Electronics and Motion Control Conference, IPEMC '09, p 1689-1692, 2009, 2009 IEEE 6th International Power Electronics and Motion Control Conference, IPEMC '09; **ISBN-13:**

9781424435562; **DOI:** 10.1109/IPEMC.2009.5157663; **Article number:** 5157663; **Conference:** 2009 IEEE 6th International Power Electronics and Motion Control Conference, IPEMC '09, May 17, 2009 - May 20, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) Shaanxi Key Laboratory of Drilling Rigs Control Technique, Xi'an Shiyou University, China

Abstract: The circuit principle and harmonic characteristics of peak current mode Boost converter are analyzed, the voltage loop and the current loop are adopted to keep the input current in the same phase with the input voltage. A novel harmonic suppression technology with quasi-square wave compensation is presented in this paper, The input current harmonic components and harmonic contents are reduced by compensating the input reference current to quasi-square wave, Quasi-square wave compensation circuit is designed, and circuit simulation is carried on with Saber software, and harmonic spectrums of the input current are analyzed also. The result indicates that harmonic components of the input current in the compensated circuit are within the harmonic components limitation for IEC 61000-3-2, and the ideal harmonic suppression effect is achieved. The compensation circuit is easy to be realized, it have the advantages of high performance and low cost and is suitable for small-wattage switching power supply. ©2009 IEEE. (8 refs)

Main heading: Circuit simulation

Controlled terms: Harmonic analysis - Boost converter - Optical resonators - Computer software - Electric power systems

Uncontrolled terms: BOOST converter - Compensation circuits - Harmonic characteristics - Harmonic suppression - Input current harmonics - Peak current mode - Quasi-square waves - Switching power supplies

Classification Code: 703.1.1 Electric Network Analysis - 704.1 Electric Components - 706.1 Electric Power Systems - 723 Computer Software, Data Handling and Applications - 741.3 Optical Devices and Systems - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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36. Effects of hydrogen on the fracture toughness of a X70 pipeline steel

Wang, Rong (1)

Source: *Corrosion Science*, v 51, n 12, p 2803-2810, December 2009; **ISSN:** 0010938X; **DOI:** 10.1016/j.corsci.2009.07.013; **Publisher:** Elsevier Ltd

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

Abstract: Effects of hydrogen on the fracture toughness of a X70 pipeline steel were investigated in the cases of hydrogen pre-charging and dynamic hydrogen charging in 0.5 mol/L H₂SO₄ solution under slow strain rate tensile testing. Under the hydrogen pre-charging, the fracture toughness decreased in a linear relationship with the hydrogen concentration as the hydrogen concentration was more than 1 ppm in weight. The fracture surfaces were characteristic of dimples. Under the dynamic hydrogen charging, the fracture toughness for hydrogen-induced cracking decreased linearly with logarithm of the hydrogen concentration without stress. The hydrogen-induced fracture had the appearance of cleavage facets. © 2009 Elsevier Ltd. All rights reserved. (36 refs)

Main heading: Fracture toughness

Controlled terms: Steel pipe - Hydrogen embrittlement - Pipelines - Steel testing - Strain rate - Tensile testing - Fracture testing

Uncontrolled terms: Fracture surfaces - Hydrogen absorption - Hydrogen charging - Hydrogen concentration - Hydrogen induced cracking - Linear relationships - Slow strain rate tensile - X70 pipeline steel

Classification Code: 531.1 Metallurgy - 545.3 Steel - 619.1 Pipe, Piping and Pipelines

Database: Compendex

Data Provider: Engineering Village

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37. 2D conditional simulation of channels on wells using a random walk approach

Wang, Jiahua (1); Wang, Xiangbo (1); Ren, Changlin (1)

Source: *Computers and Geosciences*, v 35, n 3, p 429-437, March 2009; **ISSN:** 00983004; **DOI:** 10.1016/j.cageo.2008.07.001; **Publisher:** Elsevier Ltd

Author affiliation: (1) Computer Science School, Xi'an Shiyou University, No. 18 Dianzierlu Street, Xi'an, 710065, China

Abstract: Channel modeling is one of the popular topics in the application of geostatistics to fluvial reservoir modeling. This paper presents an approach to designing channels which have a general flow direction through sand well locations and which avoid shale well locations. This approach is named the random walk on graphs of well locations, and is applied to model channel reservoirs. This modeling process consists of two parts: one direction walk modeling and two direction walk modeling. The first model aims to determine each channel location by the use of a transition probability with a random walk essentially in the main flow direction, say the north-south direction, while the second model simulates different channels that can be oriented in both directions, either from north to south or from south to north. In both parts of the model, the transition probability is estimated based on two coefficients: one is the correlation coefficient of channel observations; the other is the obstacle coefficient of non-channel observations. A case study with a dense array of 332 wells is presented using the proposed random walk model. For the purpose of model verification, channel maps created by the random walk are compared to the hand-drawn channel maps made by geologists. The results show a good agreement in both types of maps, but in contrast to the single map supplied by geologists, the random walk model is capable of generating many realizations of channel configuration, hence allowing for uncertainty evaluation. A limitation of this approach, related to the influence of the number of wells, is discussed. © 2008 Elsevier Ltd. All rights reserved. (19 refs)

Main heading: Random processes

Controlled terms: Location

Uncontrolled terms: Channel model - Correlation coefficient - Obstacle coefficient - Random Walk - Transition probabilities - Two directions

Classification Code: 922.1 Probability Theory

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

Funding text: This paper is one of the results of the project "Study of Method of Random Walk for Fluvial Reservoir Modeling" (the project approval No.: 50474042) supported and financed by the National Natural Science Foundation of China. The good management and suggestions of the Foundation are thanked. The authors are grateful to Prof. Zhao, Hanqing, Dr. Lv, Xiaoguang, and Senior Engineer Zhang, Yongqing, as well as Dr. Zhang, Tuanfeng for their useful help and discussions.

Database: Compendex

Data Provider: Engineering Village

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38. Research on stability-control technique for Boost torque controller

Cheng, Weibin (1); Guo, Yingna (1); Kang, Simin (1); Tang, Nan (1); Wang, Yuelong (1); Huo, Aiqing (1)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 6, p 942-946+950, November 2009; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

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

Abstract: The steering control of modulated rotary steering drilling tool can be realized by regulating the output torque of the turbo motor. There were much more current harmonics in the chopping torque controller, which resulted in larger torque ripples and electromagnetic interferences and lowered the power factor and the conversion efficiency. A kind of Boost torque controller was proposed to solve above problems. The working principle of Boost torque controller was introduced, and the mathematical model for the control circuit of controller was built up. The stability of the control system and chaotic characteristics of the unsteady section were analyzed. The chaotic control methods were discussed. The control characteristics and effects in the circuit control while using parameter sinusoidal perturbation resonance and parameter linear ramp perturbation resonance were investigated. The test of simulation tool indicated that the parameter linear ramp perturbation resonance method could make the torque controller being steady and reliable operation, suppress torque ripple and improve the power factor and conversion efficiency. (15 refs)

Main heading: Conversion efficiency

Controlled terms: Perturbation techniques - Controllers - Timing circuits - Torque control - Resonance - Torque
Uncontrolled terms: Chaotic characteristics - Chaotic control - Control characteristics - Control circuits - Reliable operation - Rotary steering drilling tools - Sinusoidal perturbations - Torque controllers
Classification Code: 525.5 Energy Conversion Issues - 713.4 Pulse Circuits - 731.3 Specific Variables Control - 732.1 Control Equipment - 921 Mathematics - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

39. Study and implement of downward communication function in rotary steerable drilling system

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

Source: *2nd International Workshop on Computer Science and Engineering, WCSE 2009*, v 2, p 494-497, 2009, *2nd International Workshop on Computer Science and Engineering, WCSE 2009*; **ISBN-13:** 9780769538815; **DOI:** 10.1109/WCSE.2009.860; **Article number:** 5403235; **Conference:** 2nd International Workshop on Computer Science and Engineering, WCSE 2009, October 28, 2009 - October 30, 2009; **Sponsor:** 'Peoples' Friendship University of Russia'; et al.; Hunan Agricultural University; Nanchang HangKong University; National Chung Hsing University; Qingdao University of Science and Technology; **Publisher:** IEEE Computer Society
Author affiliation: (1) Shaanxi Key Laboratory of Oil-Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: In Rotary steerable drilling system, there should be a downward communication channel to send the guided control command from ground monitor to downhole steeling tool. The downward command word has been transmitted by negative pulse of mud drilling fluid and encoded by a characteristic of three-descending and three-ascending. Downward communication receiving function in downhole tool detects the change of underground mud flow; then gets the guided control command rightly by processing and interpretation software. Several different measures are used in receiving device for improve reliability and anti-interference performance of downward transmitting. Experimental results show the feasibility of this downward transmission scheme. © 2009 IEEE. (12 refs)

Main heading: Drilling fluids

Controlled terms: Transmissions

Uncontrolled terms: Anti-interference - Communication functions - Control command - Drilling fluid pulse - Interpretation software - Receiving device - Rotary-steerable drilling - Transmission schemes

Classification Code: 602.2 Mechanical Transmissions

Database: Compendex

Data Provider: Engineering Village

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40. Transport properties of an (8, 0) carbon/silicon carbide nanotube heterojunction

Liu, HongXia (1); Zhang, HeMing (1); Song, Jiuxu (2)

Source: *2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009*, p 136-139, 2009, *2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009*; **ISBN-13:** 9781424442980; **DOI:** 10.1109/EDSSC.2009.5394170; **Article number:** 5394170; **Conference:** 2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009, December 25, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society

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

Abstract: Nanotube heterojunction has a good application prospect in nanoelectronic devices. The transport properties of the heterojunction are the foundation of its simulation and design. In this paper, the transport properties of an (8, 0) carbon/silicon carbide nanotube heterojunction were investigated and negative differential resistance (NDR) property was discovered. The origin of the NDR is the fluctuation of the transmission coefficient caused by the variation of the applied bias voltage. ©2009 IEEE. (14 refs)

Main heading: Transport properties

Controlled terms: Nanotubes - Yarn - Carbides - Heterojunctions

Uncontrolled terms: Application prospect - Applied bias voltage - Nanoelectronic devices - Negative differential resistances - Non-equilibrium Green's function - Transmission coefficients

Classification Code: 714.2 Semiconductor Devices and Integrated Circuits - 761 Nanotechnology - 804.2 Inorganic Compounds - 812.1 Ceramics - 819.4 Fiber Products - 931.2 Physical Properties of Gases, Liquids and Solids - 933.1 Crystalline Solids

Database: Compendex

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

41. Electronic structures and optical properties of nitrogen-doped SiC nanotube

Song, Jiuxu (1); Yang, Yintang (2); Liu, Hongxia (2)

Source: 2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009, p 509-512, 2009, 2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009; **ISBN-13:** 9781424442980; **DOI:** 10.1109/EDSSC.2009.5394203; **Article number:** 5394203; **Conference:** 2009 IEEE International Conference on Electron Devices and Solid-State Circuits, EDSSC 2009, December 25, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society

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

Abstract: The electronic structures and optical properties of the nitrogen doped silicon carbide nanotube (SiCNT) are studied with first principle calculation. A depression is formed near the doped nitrogen atom and the band gap of the SiCNT is narrowed by the doping. The optical properties of the SiCNT are also changed obviously. ©2009 IEEE. (9 refs)

Main heading: Optical properties

Controlled terms: Nanotubes - Optoelectronic devices - Yarn - Electronic structure - Silicon carbide - Doping (additives) - Energy gap

Uncontrolled terms: Doped nitrogen - First principle calculations - Nitrogen doped silicons - Nitrogen-doped - SiC nanotubes

Classification Code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 761 Nanotechnology - 804.2 Inorganic Compounds - 819.4 Fiber Products - 933.1 Crystalline Solids

Database: Compendex

Data Provider: Engineering Village

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42. Experimental study on corrosion behaviors of H₂S and CO₂ to 0.5 Cr steel used in gathering pipeline at simulated environment of Tarim Oilfield

Lü, Xianghong (1); Zhao, Guoxian (1); Zhang, Jianbing (2); Han, Yong (3); Chang, Zeliang (4)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 5, p 782-787, September 2009; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Xi'an Maurer Petroleum Engineering Laboratory, Xi'an 710065, China (4) Exploration and Production Research Institute, Tarim Oilfield Company, PetroChina, Kuerle 841000, China

Abstract: According to the NACE 0177-2005 standard, the corrosion behaviors of H₂S and CO₂ to 0.5Cr steel used in gathering pipeline at the simulated environment of Tarim Oilfield were studied with the mass loss and four-point bent test. The results showed that the 0.5Cr steel had very high uniform corrosion rate at CO₂ corrosion environment, and the occurrence of H₂S reduced the corrosion rate of 0.5Cr steel. The corrosion rate of 0.5Cr steel was only 0.1523 mm per year, when the partial pressure of CO₂ was 2 MPa and partial pressure of H₂S was 0.5 MPa. Under those conditions, 0.5Cr steel presented the superior uniform and local corrosion resistance. At the simulated CO₂ and H₂S coexistence environment, the corrosion product was FeS, and H₂S electrochemical corrosion dominated the corrosion course of 0.5Cr steel. The test showed that 0.5Cr steel had the favorable resistance to H₂S stress corrosion cracking at the simulated environment. (11 refs)

Main heading: Stress corrosion cracking

Controlled terms: Corrosive effects - Cracks - Oil well flooding - Pipeline corrosion - Steel corrosion - Carbon dioxide - Localized corrosion - Corrosion resistance - Corrosion rate - Electrochemical corrosion - Pipelines - Residual stresses - Iron compounds

Uncontrolled terms: CO₂ corrosion - Corrosion behavior - Corrosion products - Gathering pipelines - Local corrosion - Simulated environment - Tarim oilfields - Uniform corrosion

Classification Code: 511.1 Oil Field Production Operations - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds

Database: Compendex

Data Provider: Engineering Village

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43. Study on dynamic characteristics of controlled objects in stabilized platform of rotary steerable drilling system

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

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 4, p 598-602, July 2009; **Language:** Chinese; **ISSN:** 02532697;

Publisher: Science Press

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

Abstract: The structure and working mode of the stabilized platform for the modulated rotary steering drilling tool are quite different from the normal process control objects. The control method is special for the angular position of a circle rotation object without any fixed support point in the drill collar. Both the dynamic data obtained from the control experiments and the least square method were used to identify the object parameter model for the stabilized platform. The dynamic model can be expressed by the secondary order and type I with some pure delay. The identification results obtained by using different data groups showed a good consistency with the different parameter estimation methods. The relevant solving measures were proposed for the non-linearity of objects. (8 refs)

Main heading: Least squares approximations

Uncontrolled terms: Control experiments - Dynamic characteristics - Least square methods - Mathematic model - Parameter estimation method - Rotary steering drilling tools - Rotary-steerable drilling - Stabilized platform

Classification Code: 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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44. New recursive identification algorithm for time-varying systems

Sun, Lianming (1); Li, Lin (2)

Source: *ICCAS-SICE 2009 - ICROS-SICE International Joint Conference 2009*, p 4917-4922, 2009, *ICCAS-SICE 2009 - ICROS-SICE International Joint Conference 2009*; **ISBN-13:** 9784907764296; **Conference:** ICCAS-SICE 2009 - ICROS-SICE International Joint Conference 2009, August 18, 2009 - August 21, 2009; **Publisher:** Society of Instrument and Control Engineers (SICE)

Author affiliation: (1) Department of Information and Media Engineering, University of Kitakyushu, Kitakyushu, Japan (2) Xi'an Shiyou University, Xi'an, China

Abstract: A new recursive identification algorithm for time-varying systems is developed in this paper. It is demonstrated that the parameters of the time-varying model can be expressed by an explicit approximation using cosine series. By using the orthogonal characteristics of basis functions, efficient updating of matrices and recursion of parameters are implemented in the algorithm. In contrast with the conventional basis function based methods, RLS and LMS algorithms, the proposed algorithm has less sensitivity to selection of basis functions and data window, and has higher tracking performance even in rapid varying processes. © 2009 SICE. (12 refs)

Main heading: Time varying systems

Controlled terms: Orthogonal functions - Identification (control systems)

Uncontrolled terms: Basis functions - Cosine-series - LMS algorithms - Recursive algorithms - Recursive identification algorithms - Time varying - Time-varying models - Tracking performance

Classification Code: 731.1 Control Systems - 921 Mathematics - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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45. Seismic wave field separation and noise attenuation in linear domain via SVD

Shen, Hongyan (1); Li, Qingchun (2)

Source: *79th Society of Exploration Geophysicists International Exposition and Annual Meeting 2009, SEG 2009*, p 3386-3389, 2009, *79th Society of Exploration Geophysicists International Exposition and Annual Meeting 2009, SEG 2009*; **ISBN-13:** 9781615675661; **DOI:** 10.1190/1.3255564; **Conference:** 79th Society of Exploration Geophysicists International Exposition and Annual Meeting 2009, SEG 2009, October 25, 2009 - October 30, 2009; **Publisher:** Society of Exploration Geophysicists

Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, China (2) College of Geology Engineering and Geometrics, Chang'An University, China

Abstract: Singular value decomposition(SVD)Filtering is one seismic data processing technique using the lateral coherence difference of the seismic wave to achieve wavefield separation and eliminate noises. As the differences of propagation characteristics, apparent velocity and coherence in seismic signals, transformation of the valid signals may be transformed into those with better coherence by some mathematic transformations. In this paper,

based on apparent velocities, we can align target signals into those of best horizontal coherence by linear transform methods (such as NMO, linear moveout correction). By means of the singular value decomposition(SVD), we may reconstruct signal with extracting the singular value of target signals. Then inverse linear transforming, we might accomplish seismic wave field separation as well as noise attenuation afterwards. © 1996-2018 Society of Exploration Geophysicists All Rights Reserved. (9 refs)

Main heading: Seismic waves

Controlled terms: Data handling - Mathematical transformations - Polarization - Separation - Singular value decomposition - Geophysical prospecting - Signal processing - Seismology

Uncontrolled terms: Apparent velocity - Linear transform - Noise attenuation - Propagation characteristics - Seismic data processing - Seismic signals - Singular values - Wave field separation

Classification Code: 481.4 Geophysical Prospecting - 484 Seismology - 484.1 Earthquake Measurements and Analysis - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 802.3 Chemical Operations - 921 Mathematics - 921.3 Mathematical Transformations

Funding Details:

Funding text: The Project Supported by Natural Science Basic Research

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

46. New recursive identification algorithm for time-varying systems

Sun, Lianming (1); Li, Lin (2)

Source: ICCAS-SICE 2009 - ICROS-SICE International Joint Conference 2009, Proceedings, p 4917-4922, 2009, ICCAS-SICE 2009 - ICROS-SICE International Joint Conference 2009, Proceedings; **ISBN-13:** 9784907764333;

Article number: 5334660; **Conference:** ICROS-SICE International Joint Conference 2009, ICCAS-SICE 2009, August 18, 2009 - August 21, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) Department of Information and Media Engineering, University of Kitakyushu, Kitakyushu, Japan (2) Xi'an Shiyou University, Xi'an, China

Abstract: A new recursive identification algorithm for time-varying systems is developed in this paper. It is demonstrated that the parameters of the time-varying model can be expressed by an explicit approximation using cosine series. By using the orthogonal characteristics of basis functions, efficient updating of matrices and recursion of parameters are implemented in the algorithm. In contrast with the conventional basis function based methods, RLS and LMS algorithms, the proposed algorithm has less sensitivity to selection of basis functions and data window, and has higher tracking performance even in rapid varying processes. © 2009 SICE. (12 refs)

Main heading: Time varying systems

Controlled terms: Orthogonal functions - Identification (control systems)

Uncontrolled terms: Basis functions - Cosine-series - LMS algorithms - Recursive algorithms - Recursive identification algorithms - Time varying - Time-varying models - Tracking performance

Classification Code: 731.1 Control Systems - 921 Mathematics - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

47. A novel minimax probability machine (Open Access)

Xiangyang, Mu (1, 2); Taiyi, Zhang (1)

Source: *Information Technology Journal*, v 8, n 4, p 615-618, 2009; **ISSN:** 18125638, **E-ISSN:** 18125646; **DOI:** 10.3923/itj.2009.615.618; **Publisher:** Asian Network for Scientific Information

Author affiliation: (1) School of Information and Communication Engineering, Xi'an Jiaotong University, China (2) School of Electronical Engineering, Xi'an Shiyou University, China

Abstract: This study presents an empirical study for Minimax Probability Machines (MPM) for prediction. Considering that the Euclidean distance has a natural generalization in form of the Minkovsky's distance, a novel MPM using Minkovsky's norm in Gaussian kernel function is proposed. The performance of proposed method is evaluated with the prediction for Ethernet traffic data. Result shown that the novel MPM here in using Gaussian kernels with Minkovsky's distance ($\# = 1$) and ($\# = 5$) can achieve better prediction accuracy than the Euclidean distance. © 2009 Asian Network for Scientific Information. (9 refs)

Main heading: Forecasting

Controlled terms: Gaussian distribution - Support vector machines

Uncontrolled terms: Empirical studies - Euclidean distance - Gaussian kernel functions - Gaussian kernels - Minimax probability machine - Minkovsky's norm - Natural generalization - Prediction accuracy

Classification Code: 723 Computer Software, Data Handling and Applications - 922.1 Probability Theory - 922.2 Mathematical Statistics

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

Database: Compendex

Data Provider: Engineering Village

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48. A study of a low-frequency downhole hydraulic pulsing cementing device and its field application

CuiPing, Nie (1); Towler, Brian F. (2); Deng Sheng, Ye (3)

Source: *Proceedings - SPE Annual Technical Conference and Exhibition*, v 4, p 2358-2366, 2009, *Society of Petroleum Engineers - SPE Annual Technical Conference and Exhibition 2009, ATCE 2009*; **ISBN-13:**

9781615675753; **Conference:** SPE Annual Technical Conference and Exhibition 2009, ATCE 2009, October 4, 2009 - October 7, 2009; **Publisher:** Society of Petroleum Engineers (SPE)

Author affiliation: (1) SPE, Xi'an ShiYou University, China (2) SPE, University of Wyoming, United States (3) Sichuan-Changqing Drilling, Exploration Engineering Company, China

Abstract: A down-hole pulsed pressure device to improve the quality of cement bonds during primary cementing has been developed. The prime purpose was to control gas and water channeling and enhance the cement slurry displacement efficiency, especially in holes with a small annular space, and in holes with large washed out spaces occupied by mud-cake and in gas wells that are susceptible to gas channeling. These problems are difficult to treat with chemical cement agents. It is shown that pulsing the curing cement can improve the cement slurry hydration, shortening the time between the initial and final cement gelation and abating the slurry weight loss effect. Our experiments show the pulsing frequency is best between 10-30 Hz and the pressure amplitude should be less than 5 MPa. The device is highly innovative, is easy to engage to the casing string (under the float collar) and has no effect on the casing design. It does not cause failure during cementing, and does not alter the traditional cementing technology. It has been applied to gas wells in several fields in Sichuan province in China. The pilot well had 11 gas layers and is 4180m (13,714 ft) in depth, and the hole was prone to lost circulation (1.09g/cm³ mud) and cave in. The cemented well interval was drilled with a 152.4mm (6") bit and cased with a 127mm (5") liner. There are troublesome formations in the interval that caused difficulties in logging and while running the liner. The down-hole pulsing generator worked well with the 1.50g/cm³ cement slurry, but due to the complicated hole conditions the displacement was not finished when the liner became plugged with cement. But after drilling out the cement plug, the CBL and other logs showed the cement quality had been enhanced 50% compared to the offset wells. Then in application to another three wells we also achieved significantly improved cement bonds. So it has been verified that this device can significantly improve cementing, and is easy to apply in the field. We intend to continue to apply it to wells with troublesome formations and to all gas and oil wells with cementing problems. Copyright 2009, Society of Petroleum Engineers. (6 refs)

Main heading: Cements

Controlled terms: Oil well drilling - Natural gas well production - Gelation - Natural gas wells - Hydration - Oil wells - Gases - Petroleum engineering

Uncontrolled terms: Cementing technology - Displacement efficiency - Field application - Pressure amplitudes - Pressure devices - Primary cementing - Pulsing frequencies - Water channelings

Classification Code: 412.1 Cement - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 802.3 Chemical Operations

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

49. Mathematical simulation of calculation chart for oil pumping rod load

Wu, Xiaomeng (1); Wang, Xiaorong (2)

Source: *Proceedings - 2009 Asia-Pacific Conference on Information Processing, APCIP 2009*, v 2, p 407-409, 2009, *Proceedings - 2009 Asia-Pacific Conference on Information Processing, APCIP 2009*; **ISBN-13:** 9780769536996;

DOI: 10.1109/APCIP.2009.236; **Article number:** 5197223; **Conference:** 2009 Asia-Pacific Conference on Information Processing, APCIP 2009, July 18, 2009 - July 19, 2009; **Sponsor:** Application Research Association; Information Technology Application; Intelligent Information Technology; International Journal of Intelligent; Shenzhen University;

Publisher: IEEE Computer Society

Author affiliation: (1) School of Electric Engineering, Xi'an Shiyou University, Xi'an, China (2) SULIGE gas field research institute, ChangQing Oil Field, Xi'an, China

Abstract: API RP 11L is one of usual formulas to calculate the polished rod load. There are two non-dimensional parameters to be determined by chart in the formula. This paper acquired some numbers in chart curve by image recognition techniques to simulate so that it can be used in engineering calculation. © 2009 IEEE. (6 refs)

Main heading: Image recognition

Controlled terms: Pumping plants

Uncontrolled terms: Beam pumping unit - Engineering calculation - Mathematical simulations - Non-dimensional parameters - Oil pumping

Classification Code: 446 Waterworks

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

50. Corrosion resistance of X80 pipeline steel in simulated solution of Geermu soil

Xu, Congmin (1); Shi, Kai (1)

Source: *Huagong Xuebao/CIESC Journal*, v 60, n 6, p 1513-1518, June 2009; **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, China

Abstract: The corrosion resistance of X80 pipeline steel was investigated in simulated solution of Geermu soil in Qinghai province, by using mass loss method, electrochemical measurement, scanning electron microscopy and X-ray diffraction. The results showed that the average corrosion rate of X80 steel decreased obviously, but corrosion tendency increased. This was induced by the change of corrosion morphology from uniform corrosion to pitting corrosion. Cathodic reaction was dominated by oxygen depolarization reaction. The corrosion product was basically FeOOH (surface layer) and Fe₃O₄ (inner layer). The corrosion resistance and corrosion morphology of X80 steel samples was dependent on the integrity and compactness of corrosion product films. The content of Cl⁻ dominated the corrosion severity. © All Rights Reserved. (15 refs)

Main heading: Corrosion resistance

Controlled terms: Corrosion rate - Pitting - Soils - Steel corrosion - Underground corrosion - Magnetite - Pipelines - X ray diffraction - Steel pipe - Pipeline corrosion - Scanning electron microscopy

Uncontrolled terms: Average corrosion rates - Cathodic reactions - Corrosion morphology - Corrosion product film - Corrosion products - Electrochemical measurements - Simulated solution - X80 pipeline steels

Classification Code: 483.1 Soils and Soil Mechanics - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

51. Design of high power and ultra-low frequency signal source

Zhang, Jiatian (1); Wu, Yinchuan (1); Yan, Zhengguo (1)

Source: *3rd International Symposium on Intelligent Information Technology Application, IITA 2009*, v 1, p 295-298, 2009, *3rd International Symposium on Intelligent Information Technology Application, IITA 2009*; **ISBN-13:**

9780769538594; **DOI:** 10.1109/IITA.2009.102; **Article number:** 5369649; **Conference:** 3rd International Symposium

on Intelligent Information Technology Application, IITA 2009, November 21, 2009 - November 22, 2009; **Sponsor:** Application Research Association; IEEE Circuits and Systems Society; Institute of Electrical and Electronics Engineers; Intelligent Information Technology; Nanchang University; **Publisher:** IEEE Computer Society

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

Abstract: The cased hole resistivity logging technique requires high power, ultra-low frequency signal sources. Based on the characteristics of the signal, the direct digital synthesis technique was applied to produce the sine logging exciting signal, series devices of low power and low voltage were also used to produce the signals of high power and high voltage, and power tracing technique was used to lower the dissipation of power devices, and to improve the circuit working efficiency. The results show that the output frequency of signal source is 0.01#15Hz, frequency resolution 0.004Hz, frequency stability $\pm 2.5 \times 10^{-5}$ per half hour, output voltage scale $\pm 300V$, output current #6A, output power 900W. And the signal source parameters meet the logging experiment demands of 3,000m cable. © 2009 IEEE. (6 refs)

Main heading: Digital devices

Controlled terms: Low power electronics

Uncontrolled terms: Cased hole - Direct digital synthesis - Frequency resolutions - Logging techniques - Output frequency - Power amplification - Ultra low frequencies - Working efficiency

Classification Code: 525.3 Energy Utilization - 731.1 Control Systems

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

52. Research on an environment-friendly automated equipment applied to hot-phosphating for drill collar coupling screw thread

Zhang, Limin (1, 2); Duan, Zhengyong (1); Peng, Yong (1)

Source: *2nd International Symposium on Information Science and Engineering, ISISE 2009*, p 557-560, 2009, *2nd International Symposium on Information Science and Engineering, ISISE 2009*; **ISBN-13:** 9780769539911; **DOI:** 10.1109/ISISE.2009.22; **Article number:** 5447315; **Conference:** 2009 2nd International Symposium on Information Science and Engineering, ISISE 2009, December 26, 2009 - December 28, 2009; **Sponsor:** 'Peoples' Friendship University of Russia'; et al.; Fudan University; National Chung Hsing University; Shanghai Institute of Electronics; Shanghai Jiaotong University; **Publisher:** IEEE Computer Society

Author affiliation: (1) Mechanical Engineering Institute, Xi'an Shiyou University, Shaanxi Xi'an, China (2) Tanrong-Hilong Drilling Tool Co., Ltd., Shanxi Houma, China

Abstract: Based on the present situations and requirements of the hot-phosphating for the oil drill collar coupling screw thread, one type of environment-friendly automated equipment has been studied, the corresponding hot-phosphating process has been consummated and one new implementation scheme has been designed in which some key technologies such as total-closed circuit and autocontrol have been accomplished. Comparing with the open-type phosphating trough instrument, this equipment has total-closed structure in which all function solutions such as degreasing and descaling, surface conditioning, phosphating, passivation and cleaning can circulate continuously which means phosphating solution is easy to maintain and there is no pollution to it and its service life is prolonged accordingly, all that avoid the glaring drawbacks in open-style one. In addition, this device has low processing and operating cost, efficiency is high and the quality of the phosphating coat is reliable. Specially, there is no harm to environment and operators. And the control system is based on PLC which is applied usually in industrial control, it is easy to build and has reliable performance. The whole installation needs a low capital investment relatively and is operated and maintained simply and conveniently which implies a widespread application in drill collar coupling screw thread hot-phosphating. © 2009 IEEE. (15 refs)

Main heading: Screw threads

Controlled terms: Metal cleaning - Investments - Drills

Uncontrolled terms: Automated equipment - Environment friendly - Implementation scheme - Industrial controls - Phosphating - Phosphating process - Reliable performance - Surface conditioning

Classification Code: 601.2 Machine Components - 603.2 Machine Tool Accessories

Database: Compendex

Data Provider: Engineering Village

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53. A practical fiber grating fluid level sensor

Wang, Hong-Liang (1); Wang, Lin (1); Jia, Zhen-An (1); Wu, Hai-Feng (1); Yong, Zhen (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 10, p 1275-1277, October 2009; **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, Xi'an 710065, China

Abstract: A fiber Bragg grating (FBG) liquid level sensing head with a accordion pipe substrate was designed, and the reference grating was used to compensate for FBG pressure measurement. We tested the sensor's characteristics at the liquid level range of 3~30 cm. The temperature compensated experimental curve of the wavelength shift caused by the liquid level change was acquired. The results show that the sensitivity of this liquid level sensor is -0.0553 nm/cm. The sensing head uses nickel-based alloy as packaging materials, and it can possess the merits of anti-corrosion, fatigue-resistant as so on. It can be used in poor conditions such as the oil storage tanks. (7 refs)

Main heading: Fiber optic sensors

Controlled terms: Fiber Bragg gratings - Oil tanks - Packaging materials - Liquids - Nickel alloys

Uncontrolled terms: Experimental curves - Fatigue resistant - Liquid level - Liquid level change - Liquid level sensors - Nickel based alloy - Reference grating - Temperature compensated

Classification Code: 523 Liquid Fuels - 548.2 Nickel Alloys - 619.2 Tanks - 694.2 Packaging Materials - 741.1.2 Fiber Optics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

54. Meandering channel reservoir modeling with self-avoiding random walk

Wang, Jiahua (1); Hu, Guangyi (2); Wang, Wei (2); Huang, Jixin (3)

Source: *IAMG 2009 - Computational Methods for the Earth, Energy and Environmental Sciences*, 2009, *IAMG 2009 - Computational Methods for the Earth, Energy and Environmental Sciences*; **ISBN-13:** 9780615334493; **Conference:** International Congress for Mathematical Geology: Computational Methods for the Earth, Energy and Environmental Sciences, IAMG 2009, August 23, 2009 - August 28, 2009; **Sponsor:** Exxon; Schlumberger; **Publisher:** Stanford, School of Earth Sciences

Author affiliation: (1) Xi'an Shiyou University, China (2) China National Ocean Oil Corporation (CNOOC), China (3) Research Institute of Petroleum Exploration and Development (CNPC), China

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

55. Design and realization of programmable power signal source based on DDS technique

Wu, Yinchuan (1); Zhang, Jiatian (1); Yan, Zhengguo (1)

Source: *2009 1st International Conference on Information Science and Engineering, ICISE 2009*, p 532-534, 2009, *2009 1st International Conference on Information Science and Engineering, ICISE 2009*; **ISBN-13:** 9780769538877; **DOI:** 10.1109/ICISE.2009.473; **Article number:** 5455757; **Conference:** 1st International Conference on Information Science and Engineering, ICISE2009, December 26, 2009 - December 28, 2009; **Sponsor:** City University of Hong Kong; Computer Society of Jiangsu province; et al.; Georgia State University; Howard University; University of Kentucky; **Publisher:** IEEE Computer Society

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

Abstract: Based on the characteristics of the petroleum logging signal, the direct digital synthesis technique was applied to produce the logging exciting signal, to realize accuracy control of output signal frequency and phase. The integrated power amplification technique was used to produce the signals of high power, and power tracing technique was also used to lower the dissipation of power devices, and to improve the circuit working efficiency. With USB bus technologies the signal can be real-time controlled, the signal parameters can be real-time monitored. The results show that the output frequency of signal source is 0.01Hz ~250 kHz, frequency resolution 0.004Hz, phase resolution 0.002rad, frequency stability $\pm 5 \times 10^{-6}$ per hour, output voltage scale $\pm 75V$, output current #6A, output power 400W. And the signal source was successfully applied in the study of the cased hole resistivity logging technique and the three-component induction logging technique. ©2009 IEEE. (5 refs)

Main heading: Induction logging

Uncontrolled terms: DDS techniques - Direct digital synthesis - Frequency resolutions - Logging techniques - Power amplification - Programmable power - Signal parameters - Working efficiency

Classification Code: 512.1.2 Petroleum Deposits : Development Operations

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

56. Practical fiber Bragg grating pressure sensor

Wang, Hong-Liang (1); Wang, Lin (1); Jia, Zhen-An (1); Zhou, Xiao-Bo (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 4, p 425-428, April 2009; **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, Xi'an 710065, China

Abstract: A fiber Bragg grating (FBG) pressure sensor using a elastic cylinder as the substrate is designed. The properties of the proposed sensor are tested in the temperature range of 20-100°C and the pressure range of 0-20 MPa. The curve of wave-length shift caused by pressure for the revised temperature is given. Results show that the pressure sensitivity of the proposed sensor is -0.0127 nm/MPa, which is 4 times of that of the bare FBG. And sealing design has been adopted to avoid fluid or gas leakage. By selecting the different inner diameter and thickness, the measuring range and sensitivity of the proposed sensor can be adjusted. (7 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Fiber optic sensors - Pressure sensors

Uncontrolled terms: Elastic cylinders - Gas leakages - Inner diameters - Measuring ranges - Pressure ranges - Pressure sensitivities - Sealing design - Temperature range

Classification Code: 741.1.2 Fiber Optics - 944.3 Pressure Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

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57. Deformation behavior prediction of X80 steel line pipe and implication on high strain pipe specification

Chen, Hongyuan (1); Ji, Lingkang (1, 2); Gong, Shaotao (1); Gao, Huilin (3)

Source: *Proceedings of the Biennial International Pipeline Conference, IPC*, v 3, p 763-768, 2009, *2008 Proceedings of the ASME International Pipeline Conference, IPC 2008*; **ISBN-13:** 9780791848593; **DOI:** 10.1115/IPC2008-64575;

Conference: 2008 ASME International Pipeline Conference, IPC 2008, September 29, 2008 - October 3, 2008;

Sponsor: ASME; ASME Institute; IPTI; **Publisher:** American Society of Mechanical Engineers (ASME)

Author affiliation: (1) Tubular Goods Research Center, CNPC, Xi'an, Shaanxi, 710065, China (2) Xi'an Jiaotong University, Xi'an, Shaanxi, 710049, China (3) Xi'an Shiyu University, Xi'an, Shaanxi, 710065, China

Abstract: The use of strain based design in pipeline technology has been widely discussed during the last decade for pipelines in harsh environment. In such cases pipelines should be designed based on strain criterion. Strain based design poses a number of challenges, particularly on pipe size and material properties. This paper presents preliminary studies on prediction of buckling strain and buckling mode for X80 high-strain line pipe by finite element methods based on full-scale test. The effects of several parameters such as internal pressure, material properties pipe size and geometric imperfection, were investigated to predict the critical strain for 48" diameter line pipe under compression and pure bending with 12MPa internal pressure. Material parameters of a specification for high strain line pipe were analyzed to promote its application in the 2nd West-East pipeline of China National Petroleum Corporation. Copyright © 2008 by ASME. (15 refs)

Main heading: Finite element method

Controlled terms: Specifications - Forecasting - Pipelines

Uncontrolled terms: China national petroleum corporations - Deformation behavior - Geometric imperfection - Harsh environment - Material parameter - Pipe specifications - Pipeline technology - Strain-based design

Classification Code: 619.1 Pipe, Piping and Pipelines - 902.2 Codes and Standards - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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58. Electrochemical corrosion behavior of X80 pipeline steel in simulated medium of saline-alkali soil

Xu, Cong-Min (1)

Source: *Cailliao Gongcheng/Journal of Materials Engineering*, n 9, p 66-70, September 2009; **Language:** Chinese;

ISSN: 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

Author affiliation: (1) The Key Laboratory of Materials Processing Engineering, School of Materials Science and Engineering, Xi'an Shiyu University, Xi'an 710065, China

Abstract: The corrosion behavior and mechanism of X80 pipeline steel was investigated in simulated solution of saline-alkali soil using electrochemical measurement, scanning electron microscopy (SEM), energy dispersive spectrum (EDS) and X-ray diffraction (XRD). Effects of heat treatment and corrosion time on the polarization curves were analyzed. The results show that the change of microstructure by anneal treatment accelerated the corrosion of X80 steel. The corrosion rates and pitting sensitivity increase both original and anneal treatment state. The cathodic processes are dominated by the oxygen activation control. The corrosion product is basically FeOOH (surface layer) and Fe₃O₄ (inner layer). The integrality and compactness of corrosion product films influenced the corrosion behavior and process, increased the corrosion damage of X80 steel surface. The content of Cl⁻ dominated the corrosion severity. (12 refs)

Main heading: Corrosion rate

Controlled terms: Pipeline corrosion - Steel corrosion - Steel pipe - Magnetite - Scanning electron microscopy - Pipelines - Electrochemical corrosion - Underground corrosion - X ray diffraction - Soils - Corrosive effects

Uncontrolled terms: Anneal treatments - Corrosion products - Electrochemical corrosion behavior - Saline-alkali soils - Simulated medium - X80 pipeline steels

Classification Code: 483.1 Soils and Soil Mechanics - 539.1 Metals Corrosion - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 801.4.1 Electrochemistry - 802.2 Chemical Reactions

Database: Compendex

Data Provider: Engineering Village
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59. Key issues in the specification of high strain line pipe used in strain-based designed districts of the 2nd west to east pipeline

Ji, Linggang (1, 2); Chen, Hongyuan (2); Huo, Chunyong (2); Li, Helin (2); Zhuang, Chuanjing (2); Gong, Shaotao (2); Zhao, Wenzhen (1); Gao, Huilin (3)

Source: *Proceedings of the Biennial International Pipeline Conference, IPC*, v 3, p 695-703, 2009, *2008 Proceedings of the ASME International Pipeline Conference, IPC 2008*; **ISBN-13:** 9780791848593; **DOI:** 10.1115/IPC2008-64504;

Conference: 2008 ASME International Pipeline Conference, IPC 2008, September 29, 2008 - October 3, 2008;

Sponsor: ASME; ASME Institute; IPTI; **Publisher:** American Society of Mechanical Engineers (ASME)

Author affiliation: (1) Xi'an Jiaotong University, Xi'an, Shaanxi, 710049, China (2) Tubular Goods Research Center, CNPC, Xi'an, Shaanxi, 710065, China (3) Xi'an Shiyu University, Xi'an, Shaanxi, 710065, China

Abstract: The 2nd West-East Pipeline Project which are building now is the longest of X80 gas pipeline in China even in the world. The geological conditions along it are very complicate. Both stress-base and Strain-based design are all used in the pipeline design. Strain-based design are considered when the pipeline shall via seismic activities, fault crossing and other geological disaster area where ground moving may happen. The pipe which will be used in this kind of special area shall have some special properties besides the properties requirement of the ordinary line pipe. So Tubular Goods Research Center of China National Petroleum Corporation drafted "the Supplementary Technical Specification of High Strain LSAW Line Pipe for the 2nd West-East Pipeline Project". In this specification, the strain capacity of current X80 line pipe and the testing methods for the mechanical properties are considered. In the mean time, the risk of aging when the pipes are coated is also be noted, and the coating temperature is specified in the specification. Certainly, besides the deformability of the pipe, strain-based design also needs more measures from pipeline construction, girth welding, etc. to ensure the pipeline can endure certain deformation. This paper introduced the general situation of the 2nd West-East Pipeline Project, and several key issues in the specification of high strain line pipe used in strain-based designed districts. At the end of the paper, the mechanical properties and the deformability of X80 pipe which are possible to be manufactured and used in this gas line are be presented. Copyright © 2008 by ASME. (15 refs)

Main heading: Specifications

Controlled terms: Disasters - Geology - Pipelines - Seismic design - Strain - Deformation

Uncontrolled terms: China national petroleum corporations - Coating temperature - Geological conditions - Geological disaster - Pipeline construction - Strain-based design - Technical specifications - West east pipeline projects

Classification Code: 408 Structural Design - 481.1 Geology - 484.3 Earthquake Resistance - 619.1 Pipe, Piping and Pipelines - 902.2 Codes and Standards - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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60. Design and realization of universal power distribution network load flow program frame

Dong, Zhang-Zhuo (1); Liu, Xue (2)

Source: *Dianli Xitong Baohu yu Kongzhi/Power System Protection and Control*, v 37, n 8, p 38-41+78, April 16, 2009;

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

Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyu University, Xi'an 710065, China (2) Xi'an University of Science and Technology, Xi'an 710054, China

Abstract: The program power of distribution network load flow that are developed by process model has bad extensibility and maintenance. The mechanism of object-oriented technology's virtual inherit and Unified Modeling Language are used to develop the power distribution network power flow program. The object-oriented model and dynamic model are designed. The program is compiled by VC++ 6.0. In program the Backward/Forward and Newton arithmetic are implemented. The topology uses the associate matrix and multi-tree. The program is verified by real examples, results show the program speed is equal than tradition program, has better extensibility and maintenance. (7 refs)

Main heading: Unified Modeling Language

Controlled terms: Electric power distribution - Object oriented programming - Electric load flow - Electric network analysis

Uncontrolled terms: Object oriented model - Object oriented technologies - Power distribution network - Process Modeling - Real example - VC++ 6.0 - Virtual inherit

Classification Code: 703.1.1 Electric Network Analysis - 706.1 Electric Power Systems - 706.1.2 Electric Power Distribution - 723.1 Computer Programming - 723.1.1 Computer Programming Languages

Database: Compendex
Data Provider: Engineering Village
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61. Casing magnetization and through casing medium identification

Ren, Zhiping (1); Dang, Ruirong (1)

Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 30, n 9, p 1813-1817, September 2009;

Language: Chinese; **ISSN:** 02543087; **Publisher:** Science Press

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: This paper studies casing magnetization method and through casing medium identification technology. An electromagnetic response model is established for multi-cylindrical-layer; and the necessity of casing magnetization is theoretically demonstrated by analyzing the received signal characteristics influenced by magnetic permeability. In order to make electromagnetic signal penetrate a casing and identify different mediums, a casing of 5 1/2 inch diameter is magnetized in longitudinal direction by adopting a magnetic yoke. Test result shows that the received signals corresponding air, water and salt water are different in amplitude and delay time, which demonstrates the feasibility of through casing logging by magnetizing the casing; and it also provides a good method for residual oil detection in production well. (8 refs)

Main heading: Magnetization

Controlled terms: Electromagnetic logging - Magnetic permeability

Uncontrolled terms: Casing logging - Cylindrical layered media - Electromagnetic measurement - Electromagnetic response - Electromagnetic signals - Identification technology - Longitudinal direction - Magnetization methods

Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 701 Electricity and Magnetism - 701.2 Magnetism: Basic Concepts and Phenomena

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

62. Curcumin multi-wall carbon nanotubes modified glassy carbon electrode and its electrocatalytic activity towards oxidation of hydrazine

Zheng, Li (1, 2); Song, Jun-feng (1)

Source: *Sensors and Actuators, B: Chemical*, v 135, n 2, p 650-655, January 15, 2009; **ISSN:** 09254005; **DOI:** 10.1016/j.snb.2008.09.035; **Publisher:** Elsevier

Author affiliation: (1) Institute of Analytical Science, Northwest University, Xi'an, 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, 710065, China

Abstract: A CM-MWCNT-GCE modified electrode has been fabricated by electrodepositing curcumin (CM) at the surface of multi-wall carbon nanotubes (MWCNT) modified glassy carbon electrode (GCE). The CM-MWCNT-GCE shows a well-defined two-electron and two-proton redox couple with the formal potential of 0.14 V (vs. SCE) that results from the electrochemical oxidation product of CM, a CM derivative in quinone form. It also shows good electrocatalytic activity towards the oxidation of hydrazine at a reduced overpotential as well as an increased peak current compared with those at a CM modified GCE, a MWCNT modified GCE or an activated GCE. The catalytic rate constant k_{cat} is determined to be $6.26 \times 10^3 \text{ M}^{-1} \text{ s}^{-1}$ by chronoamperometry. The calibration curve for hydrazine determination is linear in the range of 2-44 μM in pH 8.0 phosphate buffer by amperometry. The detection limit and the sensitivity are 1.4 μM and 22.9 nA μM^{-1} , respectively. The modified electrode is simple in preparation, and is of character of fast response, high sensitivity and good reproducibility for hydrazine determination. © 2008 Elsevier B.V. All rights reserved. (38 refs)

Main heading: Electrocatalysis

Controlled terms: Glass membrane electrodes - Chronoamperometry - Rate constants - Electrochemical oxidation - Multiwalled carbon nanotubes (MWCN) - Hydrazine - Yarn - Glass

Uncontrolled terms: Calibration curves - Curcumin - Electrocatalytic activity - Modified electrodes - Modified glassy carbon electrode - Multi wall carbon nanotube(MWCNT) - Phosphate buffers - Reproducibilities

Classification Code: 704.1 Electric Components - 761 Nanotechnology - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 812.3 Glass - 819.4 Fiber Products - 933.1 Crystalline Solids

Funding Details: Number: 20475043, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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Database: Compendex

Data Provider: Engineering Village

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63. Nonlinear analysis of friction torque of steady platform control system for rotary steering drilling

Huo, Ai-Qing (1); He, Yu-Yao (1); Wang, Yue-Long (2); Tang, Nan (2); Cheng, Wei-Bin (2)

Source: *Proceedings - 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2009*, v 2, p 577-580, 2009, *Proceedings - 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2009*; **ISBN-13:** 9781424447541; **DOI:** 10.1109/ICICISYS.2009.5358319; **Article number:** 5358319;

Conference: 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems, ICIS 2009, November 20, 2009 - November 22, 2009; **Sponsor:** City University of Hong Kong; IEEE Beijing Section; Iwate Prefectural University; Shanghai Jiaotong University; Xiamen University; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, China (2) Shaanxi Key Laboratories of Oil-Drilling Rigs Controlling Technique, Xi'an Shiyou University, Xi'an, China

Abstract: The existence of non-linear characteristic of friction torque to the control axis can not be ignored in rotary steering drilling steady platform control. The causes producing friction torque in steady platform control system were analyzed step by step based on the structure of the system. The theoretical derivation and numerical analysis were performed on bearing friction torque, viscous friction torque, and pulsating friction torque in the system. The impacts of the friction torques to system were studied through experiments and simulations. Approaches to reduce non-linear effects of the friction torques were recommended. These provide a theoretical basis for control and decision-making of the steady platform. ©2009 IEEE. (9 refs)

Main heading: Nonlinear analysis

Controlled terms: Control systems - Tribology - Torque - Decision making - Friction

Uncontrolled terms: Bearing friction torque - Friction torque - Nonlinear characteristics - Nonlinear effect - Platform control - Rotary steering - Theoretical derivations - Viscous friction

Classification Code: 731.1 Control Systems - 912.2 Management - 931 Classical Physics; Quantum Theory; Relativity - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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64. Simulating and design of the irregular cutting edge with BP neural network

Jia, Jianjun (1); Li, Jian (2)

Source: *2009 International Conference on Web Information Systems and Mining, WISM 2009*, p 261-264, 2009, *2009 International Conference on Web Information Systems and Mining, WISM 2009*; **ISBN-13:** 9780769538174; **DOI:** 10.1109/WISM.2009.61; **Article number:** 5368209; **Conference:** 2009 International Conference on Web Information Systems and Mining, WISM 2009, November 7, 2009 - November 8, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) Xi'An Technological University, School of Mechanical and Electrical Engineering, Xi'An, China (2) Xi'An Shiyou University, School of Material Science and Engineering, Xi'An, China

Abstract: Aiming at the design of irregular cutting edge of cutting tool, the method of simulating the cutting edge with the aid of BP neural network was presented. Due to the profile of the cutting edge could not be expressed with definite mathematics formulas, the nonlinear mapped characteristics of BP neural network were used to simulate the cutting edge in the method. The results indicated that this method not only accurately simulated the discrete coordinates to fulfill the task of accurate irregular cutting edge design, furthermore, the design of cutting edge was optimized, the accurate design of complicated irregular cutting edge with the aid of computer was fully achieved. Compare with the traditional methods of drawing and fitting of a polynomial, the method of BP neural network simulating can improve both the design precision and the working efficiency. © 2009 IEEE. (11 refs)

Main heading: Cutting tools

Controlled terms: Neural networks

Uncontrolled terms: Accurate design - BP neural networks - Cutting edges - Cutting-edge designs - Discrete coordinates - Working efficiency

Classification Code: 603.2 Machine Tool Accessories

Database: Compendex

Data Provider: Engineering Village

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65. Effect of welding thermal cycle on the microstructure and properties of weld in X80 grade welded pipe

Zhang, Xiao-Yong (1); Gao, Hui-Lin (1); Bi, Zong-Yue (2); Xu, Xue-Li (1); Zhang, Li-Li (1)

Source: *Cailiao Kexue yu Gongyi/Material Science and Technology*, v 17, n SUPPL. 2, p 159-163, December 2009;

Language: Chinese; **ISSN:** 10050299; **Publisher:** Harbin Institute of Technology

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Baoji Petroleum Steel Pipe Co., Baoji 721008, China

Abstract: Based on the welding sequence features of both side welding in spiral submerged arc welded pipes, the effect of welding thermal cycle on the toughness distribution and microstructure characterization of heat-affected zone of inside weld (WHAZ) in a X80 grade welded pipe was investigated by means of thermal simulation technique, microscopic analysis method and mechanical property testing. The results show that the toughness of X80 WHAZ decreases because of thermal cycle of outside welding. When peak temperature of welding thermal cycle is at 850°C, the toughness of WHAZ is the lowest and weld-Inter-critical HAZ(WICHAZ) local brittle can be found. The formation of coarse-grain, polygonal ferrite and martensite-austenite constituent (MA) is main reason of WICHAZ local brittle. (7 refs)

Main heading: Seam welding

Controlled terms: Microstructure - Thermal cycling - Submerged arc welding - Heat affected zone - Toughness

Uncontrolled terms: Martensite-austenite constituents - Mechanical property testing - Microscopic analysis -

Microstructure and properties - Microstructure characterization - Submerged arc welded - Thermal simulations - Welding thermal cycles

Classification Code: 538.2 Welding - 538.2.1 Welding Processes - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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66. Maximum torque control strategy in field-weakening region of induction motors for electric vehicles

Long, Bo (1); Cao, Binggang (1); Hu, Qinghua (1, 2); Li, Fei (1, 2)

Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 43, n 4, p 62-65+100, April 2009;

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

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

Abstract: Aiming at the drawbacks of insufficient torque output of field-weakening control strategy in traditional direct torque control method, a maximum torque operation scheme is proposed by establishing voltage limit equation and current limit equation. Voltage limit area is combined with current limit area for maximum torque output consideration. The reference current vector and torque expression are calculated in field-weakening region one. Then voltage limit equation is combined with torque expression to get the maximum torque output in field-weakening region two. Theoretical analysis demonstrates that the new method can replace the traditional direct torque control scheme on speed regulation range in the whole field-weakening region. Compared with traditional direct torque control scheme in field-weakening region, the proposed method can improve torque margin by 21% under the same condition, and the new strategy is verified to be powerful for induction motor drive electric vehicles with lower energy from battery. (8 refs)

Main heading: Torque

Controlled terms: Electric vehicles - Induction motors - Electric machine control - Torque control - Electric drives - Traction motors

Uncontrolled terms: Direct torque control - Direct torque control methods - Direct torque control schemes - Field weakening control - Field weakening region - Induction motor drive - Maximum torque controls - Reference currents

Classification Code: 705.3.1 AC Motors - 731.2 Control System Applications - 731.3 Specific Variables Control - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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67. Transmission characteristics of photonic crystal cross waveguide containing defect structures

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

Source: *Guangxue Xuebao/Acta Optica Sinica*, v 29, n 4, p 1070-1074, April 2009; **Language:** Chinese; **ISSN:**

02532239; **DOI:** 10.3788/AOS20092904.1070; **Publisher:** Chinese Optical Society

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

Abstract: A new kind of photonic crystal cross waveguides with defect structure is proposed. The transmission characteristics are simulated by finite difference time domain method (FDTD). The obtained results show that the spectrum line-width of transmitted light through the photonic crystal waveguide containing defect structure is much narrower than that in the prototype waveguide without defect structure. This waveguide possesses narrow band filtering function. When the defect medium refractive index is increased, the center frequency of the transmitted spectrum decreases linearly. When the diameter of defect medium center pillar is increased, the center frequency of the transmitted spectrum is reduced. It is expected that this type of defect photonic crystal waveguides may serve as new narrow band filter, light splitter and tunable frequency selector. (11 refs)

Main heading: Photonic crystals

Controlled terms: Refractive index - Crystal defects - Crystal structure - Waveguide filters - Optical waveguides - Crystal filters - Finite difference time domain method - Light transmission

Uncontrolled terms: Filtering functions - Frequency selector - Narrow band filter - Narrow bands - Photonic crystal waveguide - Transmission characteristics - Transmitted spectra - Tunable frequency

Classification Code: 703.2 Electric Filters - 714.3 Waveguides - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 921 Mathematics - 933.1.1 Crystal Lattice

Database: Compendex

Data Provider: Engineering Village

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68. X ray image enhancement technology for steel pipe welding based on hopfield neural network

Weixin, Gao (1); Lianmin, Sun (2, 2); Xiangyang, Mu (1); Nan, Tang (1); Xiaomeng, Wu (1)

Source: *ISCID 2009 - 2009 International Symposium on Computational Intelligence and Design*, v 2, p 107-110, 2009, *ISCID 2009 - 2009 International Symposium on Computational Intelligence and Design*; **ISBN-13:** 9780769538655;

DOI: 10.1109/ISCID.2009.175; **Article number:** 5368893; **Conference:** 2009 International Symposium on Computational Intelligence and Design, ISCID 2009, December 12, 2009 - December 14, 2009; **Sponsor:** Bristol University; IEEE (Hong Kong) Computational Intelligence Chapter; Tsinghua University; Zhejiang University;

Publisher: IEEE Computer Society

Author affiliation: (1) School of Electrical Engineering, Xi'an Shiyou University, Xi'an, China (2) Department of Information and Media Engineering, University of Kitakyushu, Kitakyushu, Japan

Abstract: Hopfield neural network is utilized to enhance x-ray image of thick steel pipe welding, and a gray mapping matrix is constructed to replace traditional gray transformation curves and functions in this paper. The maximum dimension of the gray mapping matrix is 256x256, so the calculation time has little relation with the size of the image. The criterion function of image quality is used to evaluate the quality of the transformed image. In proposed approach, the problem of image enhancement is transformed to an optimization problem, so the normalization of gray values for each pixel is not necessary. The energy function that improves the performance of image enhancement is also given for Hopfield neural network. © 2009 IEEE. (9 refs)

Main heading: Image enhancement

Controlled terms: Steel pipe - X ray analysis - Mapping - Linear transformations - Hopfield neural networks - Welding

Uncontrolled terms: Calculation time - Criterion functions - Energy functions - Gray mappings - Gray transformation - Image hencing - Optimization problems - Steel pipe welding

Classification Code: 405.3 Surveying - 538.2 Welding - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

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69. Identification of time-varying system based on Fourier series

Zhang, Qizhi (1); Lin, Li (2)

Source: *Proceedings of the 2009 WRI Global Congress on Intelligent Systems, GCIS 2009*, v 2, p 44-47, 2009, *Proceedings of the 2009 WRI Global Congress on Intelligent Systems, GCIS 2009*; **ISBN-13:** 9780769535715; **DOI:**

10.1109/GCIS.2009.374; **Article number:** 5209197; **Conference:** 2009 WRI Global Congress on Intelligent Systems, GCIS 2009, May 19, 2009 - May 21, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) College of Marine, Northwestern Polytechnical University, Xi'an, Shaanxi 710072, China (2) Xi'an Shiyou University, College of Electronic Engineering, Xi'an, Shaanxi 710065, China

Abstract: The identification problem of time-varying systems is considered in this paper. It is demonstrated that the parameters of the time-varying model can be approximated by Fourier series in the continuous range, but the Gibbs phenomenon occurs at discontinuous points. The identification algorithms with compensation of the estimation error

caused by Gibbs phenomenon are investigated and the method is proposed to reduce computational complexity. Furthermore, the recursive identification algorithms are developed for on-line estimation. In contrast to RLS or LMS, the proposed approaches converge quickly to the varying parameters and show good tracking performance. © 2009 IEEE. (8 refs)

Main heading: Fourier series

Controlled terms: Religious buildings - Error compensation - Identification (control systems) - Time varying systems

Uncontrolled terms: Basis functions - Identification algorithms - Identification problem - Recursive identification - Recursive identification algorithms - Time-varying models - Tracking performance - Varying parameters

Classification Code: 402.2 Public Buildings - 731.1 Control Systems - 921.3 Mathematical Transformations - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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70. Ni(II)-baicalein complex modified multi-wall carbon nanotube paste electrode toward electrocatalytic oxidation of hydrazine

Zheng, Li (1, 2); Song, Jun-feng (1)

Source: *Talanta*, v 79, n 2, p 319-326, July 15, 2009; **ISSN:** 00399140; **DOI:** 10.1016/j.talanta.2009.03.056;

Publisher: Elsevier

Author affiliation: (1) Institute of Analytical Science, Northwest University, Xi'an, 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, 710065, China

Abstract: A modified electrode Ni(II)-BA-MWCNT-PE has been fabricated by electrodepositing nickel(II)-baicalein [Ni(II)-BA] complex on the surface of multi-wall carbon nanotube paste electrode (MWCNT-PE) in alkaline solution. The Ni(II)-BA-MWCNT-PE exhibits the characteristic of improved reversibility and enhanced current responses of the Ni(III)/Ni(II) couple compared with Ni(II)-BA-CPE. It also shows good electrocatalytic activity toward the oxidation of hydrazine. Kinetic parameters such as the electron transfer coefficient α , rate constant k_s of the electrode reaction, the diffusion coefficient D of hydrazine and the catalytic rate constant k_{cat} of the catalytic reaction are determined. Moreover, the catalytic currents present linear dependence on the concentration of hydrazine from 2.5 μM to 0.2 mM by amperometry. The detection limit and sensitivity are 0.8 μM and 69.9 $\mu\text{A mM}^{-1}$, respectively. The modified electrode for hydrazine determination is of the property of simple preparation, good stability, fast response and high sensitivity. © 2009 Elsevier B.V. All rights reserved. (36 refs)

Main heading: Hydrazine

Controlled terms: Multiwalled carbon nanotubes (MWCN) - Rate constants - Yarn - Electrocatalysis - Nickel compounds - Electrodes

Uncontrolled terms: Baicalein - Carbon nanotube paste electrodes - Chemically modified electrode - Electro-catalytic oxidation - Electrocatalytic activity - Electrode reactions - Electron transfer coefficient - Modified electrodes

Classification Code: 761 Nanotechnology - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 819.4 Fiber Products - 933.1 Crystalline Solids

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Funding text: The authors would like to acknowledge financial support from the National Natural Science Foundation of China (Grant No. 20475043).

Database: Compendex

Data Provider: Engineering Village

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71. The study of microwave nondestructive examination system for fiber glass-reinforced plastic sucker rods

Yan, Wenhui (1); Peng, Yong (2)

Source: *Proceedings - 2009 3rd IEEE International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications, MAPE 2009*, p 1027-1032, 2009, *Proceedings - 2009 3rd IEEE International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications, MAPE 2009*; **ISBN-13:** 9781424440740; **DOI:** 10.1109/MAPE.2009.5355860; **Article number:** 5355860; **Conference:** 2009 3rd IEEE International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications, MAPE 2009, October 27, 2009 - October 29, 2009; **Sponsor:** IEEE Beijing Section; **Publisher:** IEEE Computer Society

Author affiliation: (1) Mechanical Engineering School, Xi'an Shiyou University, Xi'an, China (2) State Key Laboratory for Manufacturing Systems Engineering, Xi'an Jiaotong University, Mechanical Engineering School, Xi'an, China

Abstract: When the defect existed in the glass-reinforced plastic sucker rods, some insecurity accident would happen in use of the sucker rods in the oil field. The microwave signal source with a wavelength of 8 mm has been adopted for examining it. The experimental result shows that the optimum defect reflection signal wave and penetration signal wave of fiber glass-reinforced plastic sucker rod can be obtained by adopting 36.75 GHz microwave signal. The sensitivity taper probe which is suit for examining defects of fiber glass-reinforced plastic sucker rods using microwave nondestructive examination system has been designed, in which, the width of H side is 58.1 mm, the width of E side is 17 mm, the length of axis is 138 mm, the range of frequency is between 26.5 GHz to 40 GHz. When the distance between penetrating receiving transducer and test piece is 80-140 mm, the defects can be identified exactly. Since the problem that the direction of the test piece is 90°, the glass-reinforced plastic sucker rods have been examined nondestructively in all directions by means of single signal generator and magic tee multichannel testing system technology. The microwave nondestructive examination detector has been successfully developed, which can meet the project requirement for microwave nondestructive examination system for glass-reinforced plastic sucker rods in oil fields. ©2009 IEEE. (15 refs)

Main heading: Microwaves

Controlled terms: Defects - Nondestructive examination - Glass fiber reinforced plastics - Glass fibers

Uncontrolled terms: Fiber glass - Glass reinforced plastics - Length of axis - Microwave signal source - Microwave signals - Study - Sucker rod - Testing systems

Classification Code: 711 Electromagnetic Waves - 812.3 Glass - 817.1 Polymer Products - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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72. Nickel(II)-baicalein complex modified multiwall carbon nanotube paste electrode and its electrocatalytic oxidation toward glycine

Zheng, Li (1, 2); Song, Jun-Feng (1)

Source: *Analytical Biochemistry*, v 391, n 1, p 56-63, August 1, 2009; **ISSN:** 00032697, **E-ISSN:** 10960309; **DOI:** 10.1016/j.ab.2009.05.002; **Publisher:** Academic Press Inc.

Author affiliation: (1) Institute of Analytical Science, Northwest University, Xi'an, 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, 710065, China

Abstract: A modified electrode, nickel(II)-baicalein complex modified multiwall carbon nanotube paste electrode (Ni(II)-BA-MWCNT-PE), has been fabricated by electrodepositing Ni(II)-BA complex on the surface of MWCNT-PE in alkaline solution. The Ni(II)-BA-MWCNT-PE exhibits the characteristic of improved reversibility and enhanced current responses of the Ni(III)/Ni(II) couple compared with Ni(II)-BA-carbon paste electrode (CPE). It also shows better electrocatalytic activity toward the oxidation of glycine than Ni(II)-MWCNT-PE. Kinetic parameters such as the electron transfer coefficient α , rate constant k_s of the electrode reaction, the diffusion coefficient D of glycine, and the catalytic rate constant k_{cat} of the catalytic reaction are determined. Moreover, the catalytic currents present linear dependence on the concentration of glycine from 20 μ M to 1.0 mM by amperometry. The detection limit and sensitivity are 9.2 μ M and 3.92 μ A mM⁻¹, respectively. The modified electrode for glycine determination is of the property of simple preparation, fast response, and good stability. © 2009 Elsevier Inc. All rights reserved. (43 refs)

Main heading: Amino acids

Controlled terms: Yarn - Electrocatalysis - Rate constants - Nickel compounds - Electrodes - Multiwalled carbon nanotubes (MWCN)

Uncontrolled terms: Baicalein - Carbon paste electrode - Chemically modified electrode - Electro-catalytic oxidation - Electrocatalytic activity - Electron transfer coefficient - Modified multiwall carbon nanotubes - Oxidation of glycine

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

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73. Preparation of the novel colloidal liquid aphrons (CLAs) and its application on recovery of crude oils from oily sludge

Zhang, Ke-Liang (1, 2); Zhang, Ning-Sheng (3); Qu, Cheng-Tun (2)

Source: *Gao Xiao Hua Xue Gong Cheng Xue Bao/Journal of Chemical Engineering of Chinese Universities*, v 23, n 2, p 297-302, April 2009; **Language:** Chinese; **ISSN:** 10039015; **Publisher:** Zhejiang University

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Shanxi Province

Key Lab. of Pollution Control Technology and Reservoir Damage Control of Oilfield, School of Petroleum Engineering, Xi'an Shiyou University, Xi'an 71006, China

Abstract: The anionic surfactant-sodium dinonyl-dibenzo-18-crown-6-sulfonate (SDDBCS) was prepared through a two-step method. Firstly, the intermediate 4 (5), 4 (5')-dinonyl-dibenzo-18-crown-6 was prepared through alkylation of dibenzo-18-crown-6 with nonylene and using polyphosphoric acid (PPA) as catalyst and solvent. Secondly, a novel Gemini surfactant was acquired by sulfonation of the prepared 4 (5), 4 (5')-dinonyl-dibenzo-18-crown-6 with chlorosulfonic acid and neutralizing by sodium hydroxide. The structure of the prepared SDDBCS was confirmed by IR, elemental analysis and ¹H-NMR. Moreover, the colloidal liquid aphrons (CLAs) composed of polyoxyethylene-3 dodecyl ether (AEO-3)/xylene/SDDBCS/water were constructed and investigated by the conductivity technique and microscopic observation. It shows that the particle size and viscosity of the CLAs prepared are mainly affected by the phase volume ratio (PVR). Finally, the study of using the prepared CLAs to recover the crude oil from oily sludge was conducted, and it was found that the CLAs prepared with the novel Gemini surfactant shows a good extraction ability, and the stable CLAs system could remove the crude oil from oily sludge sufficiently. The orthogonal experiments indicate that the main factors effecting the crude oil removal are the treating temperature and treating amount of the oily sludge, and the suitable conditions found for using the prepared CLAs to remove the crude oil from oily sludge are as follows: The treating time of 20 min, treating temperature of 45C, oily sludge treating amount of 0.6 g and the dilution ratio of the CLAs with water is 10:1 (V/V). Under above suitable conditions, the remove ratio of the crude oil from the oily sludge can reach 99.65%. Besides, the mechanism of the oily sludge resources regeneration with CLAs was probed briefly by microscopic observation. (11 refs)

Main heading: Crude oil

Controlled terms: Anionic surfactants - Particle size - Sodium hydroxide - Liquids - Polyethylene oxides

Uncontrolled terms: Colloidal liquid aphrons - Gemini surfactant - Microscopic observations - Oil sludge - Orthogonal experiment - Polyphosphoric acids - Preparation - Treating temperature

Classification Code: 512.1 Petroleum Deposits - 803 Chemical Agents and Basic Industrial Chemicals - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers

Database: Compendex

Data Provider: Engineering Village

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74. A novel Gaussian kernel function for minimax probability machine

Mu, Xiangyang (1); Zhou, Yatong (2)

Source: *Proceedings of the 2009 WRI Global Congress on Intelligent Systems, GCIS 2009*, v 3, p 491-494, 2009, *Proceedings of the 2009 WRI Global Congress on Intelligent Systems, GCIS 2009*; **ISBN-13:** 9780769535715; **DOI:** 10.1109/GCIS.2009.385; **Article number:** 5209098; **Conference:** 2009 WRI Global Congress on Intelligent Systems, GCIS 2009, May 19, 2009 - May 21, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Information Engineering, Hebei University of Technology, Tianjin 300401, China

Abstract: In recent years there is a growing interest around minimax probability machine (MPM) whose performance depends on its kernel function. Considering that the Euclidean distance has a natural generalization in form of the Minkovsky's distance, we replace the Euclidean distance in the Gaussian kernel with a more generalized Minkovsky's distance. This paper presents an empirical study for MPM prediction on Minkovsky's norm. The performance of this method is evaluated with the prediction of network traffic data for MPEG4, at the same timescale. Experimental results demonstrate that the best prediction accuracy is provided by kernels with Minkovsky's distance $\alpha = 1$ and $\alpha = 6$. The MPM using Gaussian kernels with Minkovsky's distance can achieve better prediction accuracy than the Euclidean distance. © 2009 Crown Copyright. (11 refs)

Main heading: Forecasting

Controlled terms: Gaussian distribution

Uncontrolled terms: Empirical studies - Euclidean distance - Gaussian kernel functions - Gaussian kernels - Minimax probability machine - Natural generalization - Network traffic - Prediction accuracy

Classification Code: 922.1 Probability Theory - 922.2 Mathematical Statistics

Database: Compendex

Data Provider: Engineering Village

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75. Finite-difference method for thin plate bending

Xie, Wenhao (1, 2); Qu, Xiaogang (2)

Source: *Jisuan Wuli/Chinese Journal of Computational Physics*, v 26, n 1, p 135-140, January 2009; **Language:** Chinese; **ISSN:** 1001246X; **Publisher:** Editorial Board of Chinese Journal of Computational

Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an 710065, China (2) School of Science, Xi'an University of Architecture and Technology, Xi'an 710055, China

Abstract: According to the principle of minimum potential energy, finite difference schemes for small deflection bending of thin elastic plates with edge beams are obtained with FDM based on the principle of variation. The schemes depend only on mesh points in plates. They avoid problems with fictitious mesh points. Difference equations are programmed with MATLAB and numerical simulations are shown. (5 refs)

Main heading: Finite difference method

Controlled terms: Potential energy - Numerical methods - Bending (forming) - MATLAB - Difference equations - Mesh generation - Numerical models

Uncontrolled terms: Beam - Bending problems - Finite difference scheme - Principle of minimum potential energy - Small deflection - Thin elastic plates - Thin plate - Thin-plate bending

Classification Code: 535.2 Metal Forming - 723.5 Computer Applications - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods

Database: Compendex

Data Provider: Engineering Village

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76. Modelling fatigue crack propagation of a cracked metallic member reinforced by composite patches [\(Open Access\)](#)

Wang, Rong (1); Nussbaumer, A. (2)

Source: *Engineering Fracture Mechanics*, v 76, n 9, p 1277-1287, June 2009; **ISSN:** 00137944; **DOI:** 10.1016/j.engfracmech.2009.02.004; **Publisher:** Elsevier BV

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyou University, 710065 Xi'an, China (2) Swiss Federal Institute of Technology, EPFL, 1015 Lausanne, Switzerland

Abstract: The concept of fracture for material elements at front of a crack for fatigue crack propagation was extended to the fatigue crack propagation of a cracked metallic member reinforced with a composite patch in this paper. From static mechanics and linear elastic fracture mechanics, force transfer on a cracked member through a composite patch was analyzed and a formula connecting the stress intensity factor with crack length was obtained. Thereafter, a fracture model for fatigue crack propagation of a repaired cracked metallic member was proposed. A new expression for the fatigue crack propagation rate has thus been derived. The expression was verified objectively by the test data. It is in good agreement with the test results. Crown Copyright © 2009. (26 refs)

Main heading: Fatigue crack propagation

Controlled terms: Metals - Brittle fracture - Reinforcement

Uncontrolled terms: Composite patches - Fatigue crack propagation rate - Force transfer - Fracture model - Linear elastic fracture mechanics - Material elements - Metallic members - Static mechanics

Classification Code: 951 Materials Science

Funding Details: Number: -, Acronym: EPFL, Sponsor: École Polytechnique Fédérale de Lausanne; Number: -, Acronym: CSC, Sponsor: China Scholarship Council;

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

Database: Compendex

Data Provider: Engineering Village

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77. Application of high efficiency catalyst in downhole upgrading heavy oil

Qin, Wen-Long (1); Su, Bi-Yun (2); Pu, Chun-Sheng (1)

Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 25, n 6, p 772-776, December 2009; **Language:** Chinese; **ISSN:** 10018719; **Publisher:** Science Press

Author affiliation: (1) Provincial Key Laboratory of Unusual Well Stimulation, Xi'an Petroleum University, Xi'an 710065, China (2) College of Chemistry and Chemical Engineering, Xi'an Petroleum University, Xi'an 710065, China

Abstract: The changes of viscosity, hydrocarbon composition and average relative molecular mass of Shengli heavy oil in catalytic upgrading by oil-soluble catalyst XAGD-2 were investigated. The catalyst XAGD-2 had become oil-soluble due to that the transition metal ions were on the framework of organic acid in its molecule. The upgrading reaction of heavy oil could happen under the homogeneous phase with XAGD-2 as catalyst, showing high stability, high catalytic effect and wide range of temperature. The preparation of XAGD-2 was simple and with low cost. The experimental results indicated that the viscosity-reduction rate of Shengli heavy oil was over 80% when upgrading

catalyzed by 0.3% XAGD-2 and 0.1% methylbenzene at 200°C, 24 h. After this catalytic upgrading, the amount of saturates and aromatics in heavy oil increased, while resins and asphaltenes decreased, which led to average relative molecular mass and viscosity of heavy oil decreased. The field application of XAGD-2 in Shengli oilfield demonstrated that the XAGD-2 could downhole upgrade the heavy oil and raise the production. (9 refs)

Main heading: Crude oil

Controlled terms: Metal ions - Molecular mass - Viscosity - Transition metal compounds - Transition metals - Catalysts - Heavy oil production

Uncontrolled terms: Aquathermolysis - Catalytic upgrading - Downholes - High-efficiency catalysts - Hydrocarbon compositions - Oil soluble - Relative molecular mass - Viscosity reduction

Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 531 Metallurgy and Metallography - 531.1 Metallurgy - 631.1 Fluid Flow, General - 801 Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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78. Low-dimensional multi-spectral space for color reproduction based on nonnegative constrained principal component analysis

Wang, Ying (1); Zeng, Ping (1, 2); Luo, Xuemei (1); Xie, Kun (1)

Source: *Journal of Southeast University (English Edition)*, v 25, n 4, p 486-490, December 2009; **ISSN:** 10037985;

Publisher: Southeast University

Author affiliation: (1) School of Computer Science and Technology, Xidian University, Xi'an 710071, China (2) School of Computer Science, Xi'an Shiyou University, Xi'an 710065, China

Abstract: In order to overcome the shortcomings that the reconstructed spectral reflectance may be negative when using the classic principal component analysis (PCA) to reduce the dimensions of the multi-spectral data, a nonnegative constrained principal component analysis method is proposed to construct a low-dimensional multi-spectral space and accomplish the conversion between the new constructed space and the multi-spectral space. First, the reason behind the negative data is analyzed and a nonnegative constraint is imposed on the classic PCA. Then a set of nonnegative linear independence weight vectors of principal components is obtained, by which a low-dimensional space is constructed. Finally, a nonlinear optimization technique is used to determine the projection vectors of the high-dimensional multi-spectral data in the constructed space. Experimental results show that the proposed method can keep the reconstructed spectral data in [0, 1]. The precision of the space created by the proposed method is equivalent to or even higher than that by the PCA. Copyright. (11 refs)

Main heading: Principal component analysis

Controlled terms: Reflection - Constrained optimization - Nonlinear programming - Spectroscopy - Vector spaces

Uncontrolled terms: Constrained principal component analysis - Multispectral images - Non-linear optimization - Spectral color - Spectral reflectances - Spectral spaces

Classification Code: 921 Mathematics - 922.2 Mathematical Statistics - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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79. Research on intensive land-use evaluation model for districts and counties based on AHP and ENTROPY

Luo, Mei (1); Zhao, Songzheng (1); Jiang, Jianhong (1); Xu, Wei (2, 3)

Source: *2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009*, v 3, p 153-157, 2009, *2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009*; **ISBN-13:** 9780769538761; **DOI:** 10.1109/ICIII.2009.347; **Article number:** 5369816; **Conference:** 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, December 26, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Management, Northwestern Polytechnical University, Xi'an, China (2) School of Economics and Management Xi'an Shiyou University, Xi'an, China (3) Xi'an High-tech Industrial Development Zone Administration, Xi'an, China

Abstract: The purpose of this paper is to promote the intensive land-use of districts and countries, and provide the theoretical basis for intensive land-use evaluation on other province of China. Method of AHP and ENTROPY were employed. The result gives the intensive land-use evaluation system for districts and counties, and the AHP-ENTROPY evaluation method is provided. In accordance with the location of districts and counties, the function of different area, the data of different years, this method can provides the domain-value of different evaluation level. This method can

also calculate the variable weights by the combination of variable ENTROPY objective weights and AHP subjective weights. It can make a more objective evaluation about the intensive land-use level on some districts in a particular year, and enhance the comparability between districts and counties which have the same or similar economic, function and environmental. (9 refs)

Main heading: Entropy

Controlled terms: Function evaluation - Hierarchical systems - Land use

Uncontrolled terms: Combined weights - Evaluation modeling - Intensive land use - Objective evaluation - Objective weight - Subjective weights - Variable weight

Classification Code: 403 Urban and Regional Planning and Development - 641.1 Thermodynamics - 921.6 Numerical Methods - 961 Systems Science

Database: Compendex

Data Provider: Engineering Village

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80. Study on a demodulation circuit of the fiber sensing signal

Qiao, Xue-Guang (1, 2); Feng, Hong-Fei (1); Jia, Zhen-An (1); Wei, Ting (1); Gao, Hong (1); Han, Peng (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 11, p 1426-1429, November 2009; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

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

Abstract: Fiber Bragg grating(FBG) sensor is demodulated based on linear filter demodulation method. A high-speed processor S3C2440 (ARM9) and a 24 Σ -#A/DC conversion are used to improve the signal to noise ratio and simplify the system structure. The system resolution after demarcating can reach 1 pm, dynamic state's measuring scope can reach 50 nm. (12 refs)

Main heading: Demodulation

Controlled terms: Signal to noise ratio - Fiber Bragg gratings - Bandpass filters - Fabry-Perot interferometers - Optical variables measurement

Uncontrolled terms: Demodulation method - Dynamic state - Fiber Bragg grating sensor - Fiber Fabry-Perot filter - Fiber sensing - High-speed - Linear filters - Signal demodulation - System resolution - System structures

Classification Code: 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 941.3 Optical Instruments - 941.4 Optical Variables Measurements

Database: Compendex

Data Provider: Engineering Village

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81. The monitoring and analysis on the state of deep hole drilling based on multi-sensor combined detection technology

Zhu, L. (1); Xiao, D.M. (1)

Source: *Key Engineering Materials*, v 392-394, p 645-649, 2009; **ISSN:** 10139826, **E-ISSN:** 16629795; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) Dept. of Mechanical Engineering, Xi'an Petroleum Institute, Xi'an, China

Abstract: A kind of multi-sensor detection device was designed by using multi-sensor combined detection technology. The signal of axial force, torque and vibration in vertical and horizontal direction in deep hole drilling were collected respectively, and delivered to computer for processing by using data collection device. And then the feature parameters that can reflect the cutting tool wear were abstracted by means of the method of time-domain analysis and frequency-domain analysis. Finally, the state was classified by mode identification method and the judgment samples are also obtained. (4 refs)

Main heading: Frequency domain analysis

Controlled terms: Cutting tools - Cutting - Data handling - Time domain analysis - Signal analysis

Uncontrolled terms: Axial forces - Combined detections - Data collection - Deep hole drilling - Feature parameters - Mode identification - Monitoring and analysis - Multi-sensor detection

Classification Code: 603.2 Machine Tool Accessories - 716.1 Information Theory and Signal Processing - 723.2 Data Processing and Image Processing - 921 Mathematics - 921.3 Mathematical Transformations

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

82. The optimal path algorithm for emergency rescue for drilling accidents

Ma, Wenjing (1); Xu, Yingzhuo (1); Xie, Hui (2)

Source: *Proceedings of 2009 IEEE International Conference on Network Infrastructure and Digital Content, IEEE IC-NIDC2009*, p 866-870, 2009, *Proceedings of 2009 IEEE International Conference on Network Infrastructure and Digital Content, IEEE IC-NIDC2009*; **ISBN-13:** 9781424448982; **DOI:** 10.1109/ICNIDC.2009.5360824; **Article number:** 5360824; **Conference:** 2009 IEEE International Conference on Network Infrastructure and Digital Content, IEEE IC-NIDC2009, November 6, 2009 - November 8, 2009; **Sponsor:** Advanced Intelligence and Network Service; Beijing University of Posts and Telecommunications (BUPT); Chinese University of Hong Kong (CUHK); et al.; IEEE Beijing Section; Tohoku University; **Publisher:** IEEE Computer Society

Author affiliation: (1) Institute of Computer Technology, Xi'an Shiyou University, Xi'an, Shannxi 710065, China (2) CNPC Greatwall Drilling Company, 101 Anli Road, Chaoyang District, Beijing 100101, China

Abstract: Addressing flaws in the traditional Dijkstra Algorithm, this paper proposes an improved optimal path algorithm applicable to the GIS drilling accident emergency rescue system. To begin, the paper uses the modified Comprehensive Analytic Hierarchy Process to analyze various factors of road conditions, considers the element of urgency, then sets up the digraph with weights of the running time of the traffic network. On this basis, we use the improved Dijkstra Algorithm based on quad-heap and inverse adjacency list to the optimal path search. Finally, application to real traffic networks substantiates the effectiveness of our developed method. ©2009 IEEE. (8 refs)

Main heading: Accidents

Controlled terms: Inverse problems

Uncontrolled terms: Adjacency lists - Dijkstra - Dijkstra algorithms - Emergency rescue - Optimal path searches - Optimal paths - Road condition - Traffic networks

Classification Code: 914.1 Accidents and Accident Prevention

Database: Compendex

Data Provider: Engineering Village

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83. Si-Al-Ir oxidation resistant coating for carbon/carbon composites by slurry dipping

Huang, Min (1, 2); Li, Kezhi (1); Li, Hejun (1); Fu, Qiangang (1); Wang, Yu (2)

Source: *Journal of Materials Science and Technology*, v 25, n 3, p 344-346, May 2009; **ISSN:** 10050302; **Publisher:** Chinese Society of Metals

Author affiliation: (1) C/C Composites Technology Research Center, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: A Si-Al-Ir oxidation resistant coating was prepared for SiC coated carbon/carbon composites by slurry dipping. The phase composition, microstructure and oxidation resistance of the as-prepared Si-Al-Ir coating were studied by XRD (X-ray diffraction), SEM (scanning electron microscopy), and isothermal oxidation test at 1773 K in air, respectively. The surface of the as-prepared Si-Al-Ir coating was dense and the thickness was approximately 100 µm. Its anti-oxidation property was superior to that of the inner SiC coating. The weight loss of SiC/Si-Al-Ir coated carbon/carbon composites was less than 5 wt. pct after oxidation at 1773 K in air for 79 h. The local oxidation defects in the coating may result in the failure of the SiC/Si-Al-Ir coating. Printed by Copyright ©. (11 refs)

Main heading: Oxidation

Controlled terms: X ray diffraction - Scanning electron microscopy - Carbon carbon composites - Aluminum coatings - Aluminum compounds - Silicon carbide - Oxidation resistance - Ablation - Carbon

Uncontrolled terms: Anti-oxidation properties - Isothermal oxidations - Local oxidation - Oxidation resistant coating - SiC coatings - Slurry dipping - Weight loss - Xrd (x ray diffraction)

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 Chemical Products Generally - 804.2 Inorganic Compounds - 813.2 Coating Materials

Database: Compendex

Data Provider: Engineering Village

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84. Delay time model based on imperfect maintenance

Hu, Haijun (1); Cheng, Guangxu (1); Duan, Quan (1); Wu, Wei (1); Xu, Congmin (2)

Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 43, n 6, p 103-107, June 2009;

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

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The influence of imperfect maintenance on failure process has not been considered in the delay time model(DTM). Introducing the concept of proportional age reduction model, an improved DTM is proposed. It is

assumed that the inspection maintenance is imperfect while the failure maintenance is perfect. Imperfect maintenance affects the instantaneous rates of defect and failure. The long-run average cost per unit time is derived from the assumptions. The numerical examples show that the imperfect maintenance heightens the long-run average cost per unit time, and an optimal inspection interval of cost minimization exists if the inspection maintenance is near to perfect maintenance, while the optimal interval disappears if the improvement factor decreases enough. (11 refs)

Main heading: Maintenance

Controlled terms: Inspection - Costs

Uncontrolled terms: Cost minimization - Delay time models - Imperfect maintenance - Improvement factors - Inspection maintenance - Long-run average cost - Optimal inspection - Perfect maintenance

Classification Code: 911 Cost and Value Engineering; Industrial Economics - 913.5 Maintenance

Database: Compendex

Data Provider: Engineering Village

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85. Fast training of SVDD by extracting boundary targets

Liang, J. (1); Liu, S. (2); Wu, D. (3)

Source: *Iranian Journal of Electrical and Computer Engineering*, v 8, n 2, p 133-137, Summer-Fall 2009; **ISSN:** 16820053; **Publisher:** Jahad Daneshgahi

Author affiliation: (1) Department of Mathematical Sciences, Xi'an Shiyu University, Shaanxi Xi'an, China (2) Department of Mathematical Sciences, Xidian University, Shaanxi Xi'an, China (3) School of Computer Science and Technology, Xidian University, Shaanxi Xi'an, China

Abstract: Training support vector domain description (SVDD) involves solving a constrained convex quadratic programming, which requires large memory and enormous amounts of training time for large-scale data, an extraction strategy is proposed to extract boundary targets, based on the observation that the description boundary is determined by a small subset of training data called support vectors. Namely, the number of samples that scatter around each training target is calculated and taken as the measure of nearness to boundary targets, according to which the training samples are ranked in ascending order. Those former ranked samples are extracted as the boundary targets and are used for SVDD training. We compare the effectiveness of the proposed SVDD using extraction strategy with SVDD in terms of training accuracy, training scale and training time on artificial and benchmark data. Numerical experiments show that: the training scales and the training times are reduced without any loss of accuracy, which therefore can be used for largescale data. © 2009 ACECR. (10 refs)

Main heading: Extraction

Controlled terms: Information use - Quadratic programming - Data mining - Information systems

Uncontrolled terms: Boundary targets - Convex quadratic programming - Description boundary - Largescale - Number of samples - Numerical experiments - Support vector domain description - SVDD

Classification Code: 723.2 Data Processing and Image Processing - 802.3 Chemical Operations - 903.2 Information Dissemination - 903.3 Information Retrieval and Use

Database: Compendex

Data Provider: Engineering Village

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86. Stability mechanism of mono-glycerol ester foams

Hu, Yaoqiang (1); Yan, Yongli (1, 2); Qu, Chengtun (2); Zhang, Ningsheng (2)

Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 43, n 8, p 130-134, August 2009;

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

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Chemistry and Chemical Engineering, Xi'an Shiyu University, Xi'an 710065, China

Abstract: Abstract: Glycerol monostearate (GMS) and glycerol monolaurate (GML) were investigated by viscometer and microscope. The results show that foams of GMS gets more steady than GML at the same concentration, the survival time of GMS/4% (mass fraction) foams persists over 20 days. The concentration of surfactant is the main factor for the survival time. Once the concentration exceeds the critical micelle concentration (CMC), a great deal of lamellar liquid crystal (LLC) displaying the cross figure is discovered in the GMS solution, conversely, the extremely small amount in the GML, so the LLC may increase the foams stability. Furthermore, the same experiment was conducted to exhibit the identical conclusion by sodium dodecyl benzene sulfonate (SDBS) and α -olefin sulfonate (AOS). Three important factors enhance the stability of foams via slowing down the drainage speed of liquid films, increasing the Gibbs-Marangoni mechanism, and equalizing the bubble size. (15 refs)

Main heading: Glycerol

Controlled terms: Liquid films - Critical micelle concentration - Liquid crystals - Stability

Uncontrolled terms: Alpha olefin sulfonates - Critical micelle concentration (cmc) - Foam stability - Glycerol monostearate - Lamellar liquid crystal - Monolaurate - Sodium dodecylbenzene sulfonate - Stability mechanisms

Classification Code: 801.3 Colloid Chemistry - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

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87. Damage evolution in 3D SiCf/SiC composites in fatigue-oxidation environment

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

Source: *Fuhe Cailiao Xuebao/Acta Materiae Compositae Sinica*, v 26, n 5, p 120-126, October 2009; **Language:** Chinese; **ISSN:** 10003851; **Publisher:** Beijing University of Aeronautics and Astronautics (BUAA)

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

Abstract: The damage evolution in 3D SiCf/SiC composites in the fatigue-oxidation environment was investigated, and the failure mechanism of SiCf/SiC in such environments was also discussed. The results indicate that the main damages in SiCf/SiC composites in fatigue-oxidation environments include: cracking of SiC matrix; debonding, oxidation and ordering of pyrolytic carbon (PyC) interphase; fracture, oxidation and change in microstructure of the fiber. The composite interior is oxidized by the oxidizing atmosphere infiltrating the composites through the cracking matrix. The fibers are pulled out more easily due to the debonding and ordering of PyC interphase. The strength of the fibers is decreased because of the oxidation of the fibers, the increase of the amorphous carbon and the growth of the SiC grain in the SiC fiber. (19 refs)

Main heading: Silicon carbide

Controlled terms: Fibers - Debonding - Fatigue damage - Grain growth - Oxidation - Amorphous carbon - Cracks

Uncontrolled terms: Damage - Damage evolution - Failure mechanism - Oxidation environment - Oxidizing atmosphere - Pyrolytic carbon - SiC grains - SiC matrixes

Classification Code: 802.2 Chemical Reactions - 804.2 Inorganic Compounds - 933.1.2 Crystal Growth - 933.2 Amorphous Solids - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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88. Effect of fatigue damage on distribution of cracks in 3D C/SiC composites

Zhang, Jun (1, 2); Luan, Xin-Gang (1); Zhang, Li-Tong (1)

Source: *Hangkong Cailiao Xuebao/Journal of Aeronautical Materials*, v 29, n 5, p 94-98, October 2009; **Language:** Chinese; **ISSN:** 10055053; **Publisher:** Chinese Journal of Aeronautics

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

Abstract: X2 goodness-of-fit test was introduced to investigate the distribution of the cracks on the matrix and the coating of 3D C/SiC composites before and after fatigue testing. The results show that the crack spacing of the matrix and the coating in the as-received composites obey the normal distribution $N(143.75, 56.782)$ and $N(562.59, 100.092)$, respectively. After fatigue testing, the crack spacing of the matrix and the coating obey the normal distribution $N(105.48, 29.162)$ and $N(227.89, 25.232)$, respectively. The distribution regularities are determined by the three dimensional braided structure of the composites. More cracks are brought in the matrix and the coating due to the fatigue stress, but the character of normal distribution is unchanged. (14 refs)

Main heading: Cracks

Controlled terms: Fatigue damage - Fatigue testing - Coatings - Normal distribution

Uncontrolled terms: 3D C/SiC composites - C/SiC composites - Crack spacing - Distribution regularities - Fatigue stress - Goodness-of-fit test - Three-dimensional braided

Classification Code: 813.2 Coating Materials - 922.1 Probability Theory - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

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89. Research on magneto-rheological fluids torsional damper and control system applied to controlling carbon fiber strain

Yong, Peng (1, 2); Zhuangde, Jiang (1); Zhengyong, Duan (2)

Source: *Materials Science Forum*, v 620 622, p 282-286, 2009, *10th International Symposium on Eco-Materials Processing and Design, ISEPD 2009*; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-10:** 0878493271, **ISBN-13:** 9780878493272; **DOI:** 10.4028/www.scientific.net/MSF.620-622.283; **Conference:** 10th International Symposium on Eco-Materials Processing and Design, ISEPD 2009, January 13, 2009 - January 15, 2009; **Publisher:** Trans Tech Publications Ltd

Author affiliation: (1) Xi'an Jiaotong University, No. 28, Xianning West Road, Xi'an, Shaanxi, 710049, China (2) Xi'an Shiyou University, No. 18, Second Dian Zi Road, Xi'an, Shaanxi 710065, China

Abstract: One fiber strain measure and control system has been designed to meet the problem that the magnitude and uniformity of the fiber strain directly determine the properties and longevity of the carbon fiber continuous sucker rod during the pultrusion process. In this system, there are 2 key technologies. The first one is the sensor that is used to measure the micro bend strain of the carbon fiber during the pultrusion process, designed base on fiber micro-bend principle, using silicon film as sensitive element and fabricated by silicon integrated circuit technology and three dimensional processes. Another is the executive unit of the system: Magneto-rheological Fluids torsional damper, which is designed base on one type of intelligent material named Magneto Rheological Fluids which can change its viscosity in millisecond according to the magnetic strength around it. So this paper provides a technical means to ensure the quality of the pultrusion process applied in fabricating the carbon fiber continuous sucker rod. © (2009) Trans Tech Publications, Switzerland. (14 refs)

Main heading: Control systems

Controlled terms: Carbon fibers - Magnetorheological fluids - Pultrusion - Intelligent materials - Microsensors

Uncontrolled terms: Fiber strain - Magneto-rheological fluid - Measure and controls - Pultrusion process - Sensitive elements - Silicon integrated circuits - Three-dimensional process - Torsional damper

Classification Code: 708.4 Magnetic Materials - 731.1 Control Systems - 804 Chemical Products Generally - 816.1 Processing of Plastics and Other Polymers

Database: Compendex

Data Provider: Engineering Village

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90. Implementation of helicoid machining with BP neural network

Jia, Jianjun (1); Li, Jian (2)

Source: *ICACTE 2009 - Proceedings of the 2nd International Conference on Advanced Computer Theory and Engineering*, v 1, p 221-227, 2009, *ICACTE 2009 - Proceedings of the 2nd International Conference on Advanced Computer Theory and Engineering*; **ISBN-13:** 9780791802977; **Publisher:** American Society of Mechanical Engineers (ASME)

Author affiliation: (1) School of Mechanical and Electrical Engineering, Xi'an Technological University, Xi'an, Shanxi 710032, China (2) School of Material Science and Engineering, Xi'an Shiyou University, Xi'an, Shanxi 710065, China

Abstract: On account of the interferential problem of milling the helicoid, the helical groove's profile are different from the milling cutter's cutting edge that result in difficulty in tool edge design; and the chip flutes of cutting tools have crucial effect in cutting capability and the machining quality, It need improve design precision of milling cutter so that meet the machining precision demand of spiral flute, especially under the different cutting parameters circumstances. Using BP neural network's nonlinear mapped characteristic to simulate discrete coordinates of cutting edge so that obtain the purpose of high precision designing cutting tools' profile. Therefore, a nonlinear model, which is established between the reamer's spiral flute and the milling cutter's profile by BP neural network. According to spiral flute profile, BP neural network simulate the cutting edge of under different helicoid parameter with the Levenberg-Marquardt back-propagation algorithm, the simulating experimental result has proved that using neural network to design milling cutter's profile can satisfy the actual need and can simulate the tool edge under different machining parameter. (12 refs)

Main heading: Reamers

Controlled terms: Milling (machining) - Turning - Cutting - Neural networks - Milling cutters

Uncontrolled terms: BP neural networks - Chip flute - Cutting edges - Cutting parameters - Discrete coordinates - Levenberg Marquardt back propagation algorithms - Machining parameters - Machining precision

Classification Code: 603.1 Machine Tools, General - 604.2 Machining Operations

Database: Compendex

Data Provider: Engineering Village

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91. Characteristics of micro-pore throat in ultra-low permeability sandstone reservoir

Wang, Ruifei (1); Shen, Pingping (2); Song, Ziqi (1); Yang, Hua (3)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 4, p 560-563+569, July 2009; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) PetroChina Exploration and Development Research Institute, Beijing 100083, China (3) PetroChina Changqing Oilfield Company, Xi'an 710021, China

Abstract: The features of micro-pore throat in the ultra-low permeability sandstone reservoir were analyzed by using the constant-rate mercury injection technology. The effective throat radius, the effective throat volume, the effective pore radius, the effective pore volume and the pore-to-throat ratio are correlative with the porosity and permeability of reservoirs. For the rock samples with higher porosity and permeability, the effective throat and pores are better, while the pore-to-throat ratio is lower. The ultra-low permeability sandstone reservoirs are characterized by medium pore, fine throat, poor connectivity of pore with throat as well as great difference in properties of pore and throat. There will be the Jamin effect in the development of the ultra-low permeability reservoir. The quality of this kind of reservoir is mainly controlled by throat, and the radius of throat has the obvious classification features. When the permeability of reservoir gets lower, the correlation of throat radius with permeability gets better. The throat controls the permeability of reservoir and also determines the development effectiveness. (11 refs)

Main heading: Porosity

Controlled terms: Petroleum reservoir engineering - Sandstone - Quality control - Low permeability reservoirs

Uncontrolled terms: Characteristic parameter - Pore textures - Pore throat - Pore-to-throat ratio - Reservoir property - Ultra-low permeability sandstone reservoir

Classification Code: 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 913.3 Quality Assurance and Control - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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92. A novel high-sensitivity fiber Bragg grating pressure sensor

Li, Ming (1, 2); Wu, Hai-Feng (2); Qiao, Xue-Guang (2, 3); Wang, Hong-Liang (2); Yong, Zhen (2)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 10, p 1307-1309, October 2009; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Weinan Vocational and Technical College, Weinan 714000, China (2) Xi'an Shiyou University, Shanxi Key Laboratory of Photoelectric Sensing Logging, Xi'an 710065, China (3) Northwest University, Xi'an 710069, China

Abstract: A high-sensitivity fiber Bragg grating (FBG) pressure sensor is proposed, which is sealed with the daul bellows. And the sensing mechanism of the proposed sensor is theoretically analyzed. The experimental results show that the pressure range is 0~1.2 kPa, the sensitivity is 688.2 pm/kPa, the linearity-fitted is 0.9973. So it can be used as the liquid omerter with high-precision. (4 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Pressure sensors

Uncontrolled terms: High sensitivity - High-precision - Pressure ranges - Sensing mechanism - Sensitivity

Classification Code: 944.3 Pressure Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

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93. The segmentation and conversion model of employee type

Jiang, Wei-Yang (1); Zhao, Song-Zheng (1); Xu, Wei (2, 3)

Source: *2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009*, v 2, p 548-552, 2009, *2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009*; **ISBN-13:** 9780769538761; **DOI:** 10.1109/ICIII.2009.290; **Article number:** 5370442; **Conference:** 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, December 26, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society

Author affiliation: (1) School of Management, Northwestern Polytechnical University, Xi'an, China (2) School of Economic and Management, Xi'an Shiyou University, Xi'an, China (3) Post-doctoral Scientific Research Workstation, Management Committee of Xi'an XHTZ, Xi'an, China

Abstract: This study chooses employees' ability, behavior and performance as the segmentation dimensionalities of employee segmentation criteria from the perspective of organization acquire sustainable high performance under dynamic environment contexts. With segmentation model, employees in an organization are divided into eight types which are: Startype, Melancholic-type, Relationship-type, Cattle-type, Potential Rookie, Accidie-type, Autoeciousness-

type, and Clumsy Bird-type. Based on above segmentation, this paper proposes three conversion models to describe conversions occurred among those employee types when organization faced positive situation, negative situation as well as usual situation respectively. Results of the analysis indicate that the incentive mechanism, assessment mechanism and training mechanism for employees are the crucial elements of employee management. © 2009 IEEE. (8 refs)

Main heading: Human resource management

Controlled terms: Personnel training - Vehicle performance

Uncontrolled terms: Ability - Assessment mechanism - Behavior - Dynamic environments - Employee segmentation - Incentive mechanism - Performance - Segmentation models

Classification Code: 662.1 Automobiles - 663.1 Heavy Duty Motor Vehicles - 912.2 Management - 912.4 Personnel

Database: Compendex

Data Provider: Engineering Village

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94. Analysis and implement of development zone intensive land use evaluation system

Xu, Wei (1, 2); Luo, Mei (3); Jiang, Jianhong (3)

Source: 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, v 3, p 344-348, 2009, 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009; **ISBN-13:** 9780769538761; **DOI:** 10.1109/ICIII.2009.392; **Article number:** 5369180; **Conference:** 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII 2009, December 26, 2009 - December 27, 2009; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Economic and Management, Xi'an Shiyu University, Xi'an, China (2) Post-doctoral Scientific Research Workstation, Management Committee of Xi'an XHTZ, Xi'an, China (3) School of Management, Northwestern Polytechnical University, Xi'an, China

Abstract: In order to resolve problems existed in development zone land use and management, and provide decision support to the regulators and policy makers, this paper proposed development zone intensive land use evaluation indicator system based on current status of intensive use of land. Then base on making full use of AHP in the advantages of multi-criteria decision analysis method, we adopt the UML modeling thinking and modeling function in evaluation of intensive land use. This paper also makes an analysis of modeling via the system requirements, logical structure, dynamic structure and process respectively. At last we provide an implement to prove that the method is feasibility and versatility in the industry. © 2009 IEEE. (7 refs)

Main heading: Decision support systems

Controlled terms: Decision making - Land use - Information management

Uncontrolled terms: Evaluation indicator system - Evaluation modeling - Indicators systems - Intensive land use - Intensive use of lands - Land use and managements - Multi-criteria decision analysis - System requirements

Classification Code: 403 Urban and Regional Planning and Development - 723 Computer Software, Data Handling and Applications - 912.2 Management

Database: Compendex

Data Provider: Engineering Village

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95. Microstructure and mechanical properties of a high Nb-microalloyed X80 pipeline steel

Zhang, Li-Li (1); Zhang, Xiao-Yong (1); Gao, Hui-Lin (1); Wang, Feng (2)

Source: *Cailliao Gongcheng/Journal of Materials Engineering*, n 5, p 1-5, May 2009; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

Author affiliation: (1) School of Materials Science and Engineering, Xi'an Shiyu University, Xi'an 710065, China (2) The Heavy Section Mill of Wuhan Iron and Steel Company Limited, Wuhan 430080, China

Abstract: Mechanical property testing and microscope analysis were applied to evaluate the microstructure and mechanical properties of a high niobium-microalloyed X80 pipeline steel. The results show that the high niobium-microalloyed pipeline steel possesses higher strength-toughness and lower ductile-brittle transition temperature, and was already successfully applied to the Second West-east Gas Pipeline Project in China. The effects of niobium-microalloyed element on grain refinement, microstructure strengthening and precipitation hardening of pipeline steel were analyzed. (15 refs)

Main heading: Microstructure

Controlled terms: Alloy steel - Steel pipe - Pipelines - Microalloying - Age hardening - Steel testing - Grain refinement

Uncontrolled terms: Acicular ferrite - Ductile-brittle transition temperature - Mechanical property testing - Microalloyed elements - Microstructure and mechanical properties - Nb-microalloyed x80 pipeline steels - Pipeline projects - X80 pipeline steels

Classification Code: 531 Metallurgy and Metallography - 531.1 Metallurgy - 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

96. Investigation of microstructure and machinability of the B₄C/BN composites

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

Source: *Materials Science Forum*, v 620 622, p 489-492, 2009, 10th International Symposium on Eco-Materials

Processing and Design, ISEPD 2009; **ISSN:** 02555476, **E-ISSN:** 16629752; **ISBN-10:** 0878493271, **ISBN-13:**

9780878493272; **DOI:** 10.4028/www.scientific.net/MSF.620-622.489; **Conference:** 10th International Symposium on Eco-Materials Processing and Design, ISEPD 2009, January 13, 2009 - January 15, 2009; **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 for Mechanical Behavior of Materials, Xi'an Jiaotong University, Xi'an 710049, China

Abstract: In this article, the microstructure, mechanical properties and machinability of the B₄C/BN microcomposites and the B₄C/BN nanocomposites were investigated. Homogenous distribution of the h-BN particles in the B₄C ceramics appeared. The mechanical properties decreased gradually with the increasing content of h-BN for the both composites, while the nanocomposites demonstrated high performance. Machinability increased gradually with the increasing content of h-BN, and excellent machinability exhibited for both composites with more than 20wt% h-BN. The weak interface between the B₄C matrix grains and the h-BN particles as well as the cleavage behavior of the laminate structured h-BN particles significantly attributed to the machinability of the B₄C/BN composites. © (2009) Trans Tech Publications, Switzerland. (6 refs)

Main heading: Microstructure

Controlled terms: Laminated composites - Boron nitride - Ceramic materials - Boron carbide - III-V semiconductors - Nanocomposites

Uncontrolled terms: Matrix grains - Micro-composites - Weak interface

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

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

97. Migration imaging for tunnel reflected-wave seismic prediction ahead

Shen, Hong-Yan (1, 2); Li, Qing-Chun (2); Feng, Hong (2, 3)

Source: *Meitan Xuebao/Journal of the China Coal Society*, v 34, n 3, p 298-304, March 2009; **Language:** Chinese;

ISSN: 02539993; **Publisher:** China Coal Society

Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (2) College of Geology Engineering and Geomatics, Chang'an University, Xi'an 710054, China (3) Xi'an Research Institute, China Coal Research Institute, Xi'an 710054, China

Abstract: Based on TRSP geometry system and according to the theory of geometric seismology, studied mainly on the time travel curve under the condition of tunnel. With the diffraction stacking technique, realized the depth migration imaging from time domain to space domain, analyzed the affecting factors of the imaging calculation, and adopted different accuracy division technique and interpolation technique for velocity analysis and depth migration imaging. According to the tests of the synthetic model and real data, it costs shorter calculation time with keeping the same precision, and obtains good effect. (17 refs)

Main heading: Diffraction

Controlled terms: Seismology - Time domain analysis

Uncontrolled terms: Affecting factors - Calculation time - Interpolation techniques - Migration imaging - Seismic predictions - Seismic reflection method - Synthetic models - Velocity analysis

Classification Code: 484.1 Earthquake Measurements and Analysis - 921 Mathematics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

98. Study on pressure sensing technology of a compensable fiber grating

Qiao, Xue-Guang (1); Feng, Fei (1, 2); Jia, Zhen-An (1); Wang, Xiang-Yu (1); Wu, Hai-Feng (1); Han, Peng (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 1, p 9-11, January 2009; **Language:** Chinese;

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

Author affiliation: (1) Key Laboratory of Photoelectricity Oil and Gas Logging and Detecting, Xi'an Shiyou University, Xi'an 710065, China (2) Oil and Gas Technology Research Institute, Changqing Oil Field Company, Xi'an 710021, China

Abstract: A fiber Bragg grating (FBG) high pressure sensor based on thin-wall elastic cylinder is designed. The relationship between the pressure and the central wavelength of FBG is derived. The encapsulation experiments between stainless steel and metal alloy are studied. The temperature sensitivity of the sensor is 0.027 nm/°C and 0.013 nm/°C, respectively, and the pressure sensitivity is 0.004 nm/MPa and 0.013 nm/MPa, respectively. The linearity of the sensor is good. And the whole measuring range can reach 40 MPa at least. This kind of sensor has potential applications in the sensing measurement at high-pressure. (10 refs)

Main heading: Pressure sensors

Controlled terms: Fiber Bragg gratings

Uncontrolled terms: Central wavelength - Elastic cylinders - High pressure sensors - Measuring ranges - Pressure resistance - Pressure sensing - Pressure sensitivities - Temperature sensitivity

Classification Code: 944.3 Pressure Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

99. Numerical study of the intensified heat transfer of an internally longitudinal ridged finned tube under pulsating flow

Wu, Feng (1); Wang, Qiu-Wang (2)

Source: *Heat Transfer - Asian Research*, v 38, n 4, p 207-215, June 2009; **ISSN:** 10992871, **E-ISSN:** 15231496; **DOI:** 10.1002/htj.20253; **Publisher:** John Wiley and Sons Inc.

Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, Shaanxi Province, China (2) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, Shaanxi Province, China

Abstract: The turbulent pulsating flow and heat transfer in an internally longitudinal protuberant finned tube was numerically investigated by solving unsteady three-dimensional elliptical Navier-Stokes equations. The realized $k-\epsilon$ turbulent model was adopted. The dynamic behaviors of velocity field, average Nusselt number, and friction number of the internally longitudinal protuberant finned tube were numerically analyzed in a pulsating period, and it was further investigated by changing the frequency of the pulsating flow. It was found that the intensity of heat transfer enhancement increases with an increase of pulsating frequency, while the pressure drop will be increased simultaneously, the intensification of heat transfer in internally longitudinal protuberant finned tubes are gradually better than the pressure drop with an increase of pulsating frequency. © 2009 Wiley Periodicals, Inc. (20 refs)

Main heading: Pressure drop

Controlled terms: Navier Stokes equations - Tubes (components) - Velocity - Drops - Heat transfer coefficients - Fins (heat exchange)

Uncontrolled terms: Dynamic behaviors - Finned tube - Friction number - Heat Transfer enhancement - Intensified heat transfer - Pulsating flow - Pulsating frequencies - Turbulent models

Classification Code: 616.1 Heat Exchange Equipment and Components - 619.1 Pipe, Piping and Pipelines - 641.2 Heat Transfer - 921.2 Calculus

Database: Compendex

Data Provider: Engineering Village

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100. Research on FBG sensors applied in measuring liquid level

Wang, Hong-Liang (1); Wu, Hua-Chun (1); Feng, De-Quan (1); Song, Juan (1); Fan, Wei (1); Ding, Feng (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 12, p 1573-1575, December 2009; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Shanxi Key Laboratory of Photoelectric Sensing Logging, Xi'an Petroleum University, Xi'an Shanxi 710065, China

Abstract: Based on the combination of E type diaphragm and cantilever beam, a new fiber Bragg grating (FBG) sensor is proposed to measure the liquid level. A mathematical model about the central reflection wavelength of fiber grating changing with the height of liquid is established. The experiments indicate that within the range of 0-100 cm, the largest central wavelength drifting is 1.316 nm, and the linearity is more than 0.999. Besides, the sensor sensitivity is 13.1 pm/cm which has a 5.1% relative error compared with the theoretical value. After analysing the theoretical model, by

changing related parameters of the E type diaphragm and the cantilever beam, the sensor's sensitivity and the range can be adjusted. (11 refs)

Main heading: Diaphragms

Controlled terms: Liquids - Nanocantilevers - Cantilever beams - Fiber Bragg gratings

Uncontrolled terms: Central wavelength - FBG sensor - Fiber Bragg grating (fbg) - Fiber Bragg grating sensor - Fiber gratings - Liquid level - Liquid level sensor - Liquid level sensors - Relative errors - Sensor sensitivity - Theoretical models - Theoretical values

Classification Code: 408.2 Structural Members and Shapes - 601.2 Machine Components - 761 Nanotechnology - 933 Solid State Physics

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

101. Research on simultaneous discriminating measurement of temperature and pressure using fiber grating sensing technology

Qiao, Xue-Guang (1); Han, Peng (1); Jia, Zhen-An (1); Feng, Fei (1, 2); Feng, Hong-Fei (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 9, p 1186-1188, September 2009; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Key Laboratory of Photoelectricity Oil and Gas Logging and Detecting Ministry of Education, Xi'an Shiyou University, Xi'an 710065, China (2) Oil and Gas Technology Research Institute ChangQing OilField Company, Xi'an 710021, China

Abstract: A double-fiber Bragg grating sensor for simultaneous discriminating measurement of temperature and pressure is proposed based on thin-wall flexible metal alloy cylinder. FBG1 and FBG2 are stuck to the hollow and solid sections of cylinder along the axis direction by strong pastern. The changes of temperature and pressure result in the wavelength shift of FBG1. Only the change of temperature in the cylinder causes the wavelength shift of FBG2, the pressure's influence can be neglected. The external pressure and temperature can be simultaneously and discriminatingly measured by testing the reflective wavelength shift of FBG1 and FBG2. In the range 0~10 MPa, -20~100°C, the experimental pressure sensitivity coefficient is 0.012 nm/MPa and the temperature sensitivity coefficient is 0.012 nm/°C. (9 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Cylinders (shapes) - Fiber optic sensors

Uncontrolled terms: Change of temperatures - Fiber Bragg Grating Sensors - Fiber grating sensing - High temperature and high pressure - Measurement of temperature - Pressure sensitivities - Temperature and pressures - Temperature sensitivity

Classification Code: 741.1.2 Fiber Optics

Database: Compendex

Data Provider: Engineering Village

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102. Formation condition for immature to low-mature oil in Xiangcheng Depression

Yao, Yaming (1); Chen, Jianjun (2); Qiao, Guilin (3); Yan, Yongxin (3); He, Mingxi (3); Ma, Wanyi (3)

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 30, n 3, p 354-360+366, May 2009; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) Department of Environment and Technology, Henan Technology Institute, Zhengzhou 451191, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) Research Institute of Geology, Henan Petroleum Exploration Bureau, Nanyang 473132, China

Abstract: There exist extensively oil and gas dispaly in Eogene of Xiangcheng Depression. The crude oil is characterized by high density, high viscosity, high bearing-sulphur and high bearing-wax, which indicates that it is immature to low-mature. Based on the main geologic conditions of regional tectonic setting, organic geochemistry characteristics of source rocks and crude oil, sediment environment and the abundance and type of organic matters in source rocks were analyzed using the organic maceral analysis, biomarkers and organic petrography in Xiangcheng Depression. The main geological conditions for forming immature to low-mature oil in Hetaoyuan Group of Xiangcheng Depression were discussed. The result showed that sedimentary environment of Hetaoyuan Group were brackish to saline water lake facies belonging to deoxidize to strong deoxidize, and the main hydrocarbon-generating material was alga, cortical tissue and cutinite of organic matter from continent and some kinds of bacterium. The result also showed that Eh2 was the main target sequences, and oil and gas reservoirs with the features of short oil-migration and handy accumulation, self-generating and self-preserving were the main explored target. (16 refs)

Main heading: Crude oil

Controlled terms: Saline water - Petrography - Organic compounds - Biogeochemistry - Biological materials - Petroleum reservoir engineering

Uncontrolled terms: Macerals - Mature oil - Organic geochemistry features - Source rocks - Xiangcheng Depression

Classification Code: 444 Water Resources - 461.2 Biological Materials and Tissue Engineering - 481.1.2 Petrology (Before 1993, use code 482) - 481.2 Geochemistry - 512.1 Petroleum Deposits - 512.1.2 Petroleum Deposits : Development Operations - 801.2 Biochemistry - 804.1 Organic Compounds

Database: Compendex

Data Provider: Engineering Village

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103. Ni(II)-quercetin complex modified multiwall carbon nanotube ionic liquid paste electrode and its electrocatalytic activity toward the oxidation of glucose

Zheng, Li (1, 2); Zhang, Jiao-qiang (3); Song, Jun-feng (1)

Source: *Electrochimica Acta*, v 54, n 19, p 4559-4565, July 30, 2009; **ISSN:** 00134686; **DOI:** 10.1016/j.electacta.2009.03.047; **Publisher:** Elsevier Ltd

Author affiliation: (1) Institute of Analytical Science, Northwest University, Xi'an, 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an, 710065, China (3) Department of Applied Chemistry, School of Science, Northwestern Polytechnical University, Xi'an, 710072, China

Abstract: A modified electrode Ni(II)-Qu-MWCNT-IL-PE has been fabricated by electrodepositing Ni(II)-quercetin [Ni(II)-Qu] complex on the surface of multi-wall carbon nanotube ionic liquid paste electrode (MWCNT-IL-PE) in alkaline solution. The Ni(II)-Qu-MWCNT-IL-PE exhibits the characteristic of improved reversibility and enhanced current responses of the Ni(III)/Ni(II) couple compared with Ni(II)-Qu-MWCNT-PE. It also shows good electrocatalytic activity toward the oxidation of glucose. Kinetic parameters such as the electron transfer coefficient α , rate constant k_s of the electrode reaction and the catalytic rate constant k_{cat} of the catalytic reaction are determined. Moreover, the catalytic current presents linear dependence on the concentration of glucose from 5.0 μM to 2.8 mM, with a detection limit of 1.0 μM by amperometry. The modified electrode for glucose determination is of the property of simple preparation, good stability, fast response and high sensitivity. © 2009 Elsevier Ltd. All rights reserved. (41 refs)

Main heading: Glucose

Controlled terms: Electrocatalysis - Electrodes - Ionic liquids - Phenols - Multiwalled carbon nanotubes (MWCN) - Yarn - Flavonoids - Rate constants - Catalyst activity - Nickel compounds

Uncontrolled terms: Chemically modified electrode - Electrocatalytic activity - Electrode reactions - Electron transfer coefficient - Glucose determination - Modified electrodes - Modified multiwall carbon nanotubes - Quercetin

Classification Code: 761 Nanotechnology - 801.4.1 Electrochemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 819.4 Fiber Products - 933.1 Crystalline Solids

Funding Details: Number: 20475043, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

Funding text: The authors would like to acknowledge financial support from the National Natural Science Foundation of China (Grant no. 20475043).

Database: Compendex

Data Provider: Engineering Village

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104. Evolution of diagenesis and pore in sandstone reservoirs in zhidan area

Yang, Ke-Wen (1, 2); Pang, Jun-Gang (3); Li, Wen-Hou (1)

Source: *Jilin Daxue Xuebao (Diqiu Kexue Ban)/Journal of Jilin University (Earth Science Edition)*, v 39, n 4, p 662-668, July 2009; **Language:** Chinese; **ISSN:** 16715888; **Publisher:** Jilin University Press

Author affiliation: (1) Department of Geology, State Key Laboratory of Continental Dynamics, Northwest University, Xi'an 710069, China (2) Changqing Oil Field Branch Company of China Petroleum, Xi'an 710021, China (3) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China

Abstract: To ascertain sandstone diagenesis of the Yanchang Formation and its effects on physical properties, multiple analysis methods were adopted, including general slice and casting slice identification of sandstone, scan electron microscope, X-ray diffraction, etc. The result shows that feldspar sandstone is the main sandstone type, with low composition maturation and high fabric maturation, and compaction is one of the main causes for porosity losses, and the primary porosity loses further under cementation which is also the main cause of this compact sandstone, especially, carbonate, secondly, quartz increasing margin and kaolinite, but cementation of chlorite film can restrain compaction and is beneficial to preserve primary porosity. Physical properties of sandstone reservoirs can be improved by dissolution, especially, of feldspar during the later period of diagenesis. Diagenesis reaches A-period of later

diagenesis stage, secondary porosity developed by dissolution is one of the main porosity-type of this period, where it is developed well is the favourable reservoirs area. (18 refs)

Main heading: Sandstone

Controlled terms: Cementing (shafts) - Dissolution - Sedimentology - Kaolinite - Porosity - Feldspar - Compaction - X ray diffraction

Uncontrolled terms: Diagenesis - Ordos Basin - Porosity evolutions - Yanchang Formation - Zhidan area

Classification Code: 481.1 Geology - 482.2 Minerals - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids

Database: Compendex

Data Provider: Engineering Village

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105. Research on flatten Er³⁺ doped superfluorescence fiber source used in sense

Jia, Zhen-An (1); Zhou, Xiao-Bo (1); Qiao, Xue-Guang (1); Liu, Ying-Gang (1); Bai, Yan (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 12, p 1569-1572, December 2009; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Key Laboratory of Photoelectric Gas-oil Logging and Detecting Ministry of Education, Xi'an Petroleum University, Xi'an 710065, China

Abstract: A broadband flatten Er-doped superfluorescent fiber source is designed and implemented, in which the double-pass backward pump is adopted. The dual pumps are obtained by using a 980 nm 1×2 coupler and a 980 nm laser diode(LD). This configuration improves the characters such as power, bandwidth and flatness of the source without using any external spectral filters. The highest power of the source is up to 41.48 mW(16.18 dBm), the 3 dB band width is 40 nm, and flatness is ±1.5 dB, and the structure is simple. This source can be applied in multipoints distribution fiber Bragg grating sensor system and can realize the peak power in the multi-FBG sensor signals. (12 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Pumping (laser) - Electric sensing devices - Fiber optic sensors

Uncontrolled terms: Amplified spontaneous emissions - Backward pumps - Double pass - Er-doped - External spectral filters - FBG sensor - Fiber Bragg Grating Sensors - Fiber loop mirrors - Fiber sources - Laser diodes - Multipoints - Peak power - Superfluorescence - Superfluorescent fiber sources

Classification Code: 732 Control Devices - 741.1.2 Fiber Optics - 744.1 Lasers, General

Database: Compendex

Data Provider: Engineering Village

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106. Universal graphic platform of electric power system and the production of static topology

Dong, Zhang-Zhuo (1); Duan, Xin (2); Li, Qian (3)

Source: *Dianli Xitong Baohu yu Kongzhi/Power System Protection and Control*, v 37, n 18, p 89-92, September 16, 2009; **Language:** Chinese; **ISSN:** 16743415; **Publisher:** Power System Protection and Control Press

Author affiliation: (1) Xi'an Petroleum University, Xi'an 710054, China (2) PetroChina Changqing Oilfield Company, Xi'an 710021, China (3) Xi'an University of Science and Technology, Xi'an 710054, China

Abstract: For the conversion of data of topology between the universal graphic platform of the electric power system and other analytical software, realizes the topology expression on the topology model of CIM in the universal graphic platform. Builds the OO model of maps between topology packet objects and graphic objects. Finally, compiled the programs the auto production static in universal graphic platforms. Test the design's validity. (5 refs)

Main heading: Topology

Controlled terms: Data handling - Electric power systems

Uncontrolled terms: Analytical software - Cim (common information model) - Graph element - Graphic objects - Graphic platform - Object orients

Classification Code: 706.1 Electric Power Systems - 723.2 Data Processing and Image Processing - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

Database: Compendex

Data Provider: Engineering Village

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107. Study on pressure sensing characteristics of a compound FBG high pressure sensor

Li, Ming (1); Wu, Hai-Feng (1); Qiao, Xue-Guang (2); Wang, Hong-Liang (1); Wang, Lin (1)

Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 20, n 6, p 730-732, June 2009; **Language:** Chinese;

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

Author affiliation: (1) Key Laboratory of Photoelectric Sensing Logging of Shanxi Province, Xi'an Petroleum University, Xi'an 710065, China (2) Northwest University, Xi'an 710069, China

Abstract: A fiber Bragg grating (FBG) pressure sensor is proposed based on alloy material packaging technology, and its sensing mechanism is analyzed. The pressure range of 0-20 MPa is tested. The experiment indicates that its linearity is 0.9996 and pressure sensitivity is about 12.1 pm/Mpa, Hysteresis error is only 0.185%, and the repeated error is only 0.020%. This sensor can achieve temperature compensation and simultaneous discriminating measurement of temperature and pressure. (6 refs)

Main heading: Fiber Bragg gratings

Controlled terms: Product design - Pressure sensors

Uncontrolled terms: High pressure sensors - Hysteresis errors - Measurement of temperature - Pressure sensitivities - Pressure-sensing-characteristics - Sensing head - Sensitivity - Temperature compensation

Classification Code: 913.1 Production Engineering - 944.3 Pressure Measuring Instruments

Database: Compendex

Data Provider: Engineering Village

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108. A statistical approach for determining the environment impact of surface sediments from the Dongting Lake area, central China

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

Source: *Chinese Journal of Geochemistry*, v 28, n 1, p 97-104, 2009; **ISSN:** 10009426; **DOI:** 10.1007/s11631-009-0097-7; **Publisher:** Science Press

Author affiliation: (1) Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an 710069, China (2) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (3) State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan 430074, China

Abstract: The Dongting Lake, the second biggest freshwater lake in China, consists of three wetlands of national importance, namely the East Dongting Lake, the South Dongting Lake, and the West Dongting Lake. Surface sediments were sampled from 57 locations across the lake. Nutrient concentrations [total organic carbon (TOC), total N (TN) and total P (TP)] and 16 element concentrations (Al, As, B, Ca, Cd, Cr, Cu, K, Fe, Hg, Mn, Ni, Pb, Si, Ti and Zn) in the sediments were measured to investigate the impact of industrialization along the lake's coastline and several tributaries on the profiles of nutrients and heavy metals in the lake's surface sediments. R-mode cluster analysis (CA) was used to integrate geochemical data. The result showed that eutrophication of the Dongting Lake resulted mainly from TN and TOC. The main polluting trace metals are Hg, As, Cd, Zn, Pb and Mn, which are largely adsorbed on clay minerals or Fe/Mn oxides, or deposited as carbonates. Principal component analysis (PCA) revealed the source of micropollutants. The worst affected district by heavy metals is the East Dongting Lake, the pollution sources may originate mainly from the Xiangjiang drainage area. The results demonstrated that multivariate methods are the potentially great tools for the interpretation of the environmental data on lake sediments. © Science Press, Institute of Geochemistry, CAS and Springer-Verlag GmbH 2009. (34 refs)

Main heading: Lakes

Controlled terms: Iron oxides - Trace elements - Organic carbon - Multivariate analysis - Surficial sediments - Cluster analysis - Nutrients - Principal component analysis - Heavy metals - Metal analysis - Lake pollution

Uncontrolled terms: Dongting Lake - Dongting Lake area - Element concentrations - Multi variate analysis - Multivariate methods - Nutrient concentrations - Statistical approach - Total Organic Carbon

Classification Code: 453 Water Pollution - 483 Soil Mechanics and Foundations - 531 Metallurgy and Metallography - 723 Computer Software, Data Handling and Applications - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 922 Statistical Methods - 922.2 Mathematical Statistics

Funding Details: Number: 20070420214, Acronym: -, Sponsor: -; Number: 200314200021, Acronym: CGS, Sponsor: China Geological Survey;

Funding text: Acknowledgements This research project is supported jointly by Postdoctor Science Foundation of China (No. 20070420214) and China Geological Survey (Grant No. 200314200021). The analytical experiments were performed at the State Key Laboratory of Geological Process and Mineral Resources and the Institute of Geochemistry, China University of Geosciences.

Database: Compendex

Data Provider: Engineering Village

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109. Main controlling factors and quantitative model of oil-bearing of complex structural trap in west sag of Liaohe depression

Zhang, Feng-Qi (1, 2); Pang, Xiong-Qi (3); Wang, Zhen-Liang (1); Li, Yong-Xin (4)

Source: *Jilin Daxue Xuebao (Dijiu Kexue Ban)/Journal of Jilin University (Earth Science Edition)*, v 39, n 6, p 991-997, November 2009; **Language:** Chinese; **ISSN:** 16715888; **Publisher:** Jilin University Press

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Abstract: In order to understand main controlling factors and quantitative characterization of oil-bearing of complex structural trap in west sag of Liaohe depression, the 103 complex structural traps were researched on the base of statistical analysis of geology and R-factor analysis. The results showed that the oil fullness degree of complex structural trap was controlled by the distances between the center of expulsion hydrocarbon and trap, the fluid potential energy, the thickness of caprock and sand body and the numbers of faults cutting the reservoir. The geological analysis showed that the oil fullness degree of the complex structural traps will benefit from the close distance from the center of expulsion hydrocarbon, the relatively low fluid potential energy and the thickness of sandrock in reservoir is less than fault throw and the fault throw is less than the thickness of mudstone in caprock. The comprehensive quantitative connection models between the oil fullness degree and the controlling factors of complex structural traps are established by using the methods of correlation analysis and multiple regression analysis. The 21 complex structural traps are predicted and the validation results of the forecast model indicate that the value of 80% forecast oil fullness degree of the trap is consistent to the real value. (19 refs)

Main heading: Hydrocarbons

Controlled terms: Regression analysis - Molecular physics - Correlation methods - Faulting - Factor analysis - Oil bearing formations - Potential energy - Structural analysis

Uncontrolled terms: Main controlling factors - Oil bearings - Petroleum gas - Quantitative modeling - Structural traps - West sag of Liaohe depression

Classification Code: 408.1 Structural Design, General - 484.1 Earthquake Measurements and Analysis - 512.1.1 Oil Fields - 804.1 Organic Compounds - 922.2 Mathematical Statistics - 931.3 Atomic and Molecular Physics

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110. Study on demodulation technique for fiber grating vibration sensor

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Abstract: A method for filter demodulation based on erbium-doped superfluorescent fiber source(EDSFS) is studied, and the power spectrum shape of source is analyzed. Utilizing linear relation between the light power density and wavelength in the spectra, dynamic demodulation of fiber grating sensing signal is realized. The vibration measurement system is built by using high-precision differential transformer displacement sensors as a reference, the time-domain waveform and spectrum by two sensors output are compared and discussed. The results show that the dynamic response of two sensors have a very good consistency under the same conditions. Because the source and demodulation are combined into one part, there is no mechanical tuning elements, So the method is suitable for high-speed dynamic measurements. (12 refs)

Main heading: Demodulation

Controlled terms: Time domain analysis - Optical variables measurement - Vibration analysis - Vibration measurement - Fibers

Uncontrolled terms: Demodulation techniques - Differential transformers - Erbium doped superfluorescent fiber sources - Fiber gratings - Fiber sensing - Signal demodulation - Time-domain waveforms - Vibration sensors

Classification Code: 921 Mathematics - 941.4 Optical Variables Measurements - 943.2 Mechanical Variables Measurements

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