1. Novel plate diaphragm based in-fiber Bragg grating sensor for simultaneous measurement of temperature and pressure

Fu, Hai-Wei (1, 2); Fu, Jun-Mei (1); Qiao, Xue-Guang (2); Zhao, Da-Zhuang (2); Wang, Hong-Liang (2); Jia, Zhen-An (2)
Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 32, n 1, p 151-155, February 2005; **Language:** Chinese; **ISSN:** 10012400; **Publisher:** Science Press
Author affiliation: (1) Inst. of Microwave, Sch. of Electron. and Info. Eng., Xi'an Jiaotong Univ., Xi'an 710049, China (2) Lab. of Optical Fiber Sensing, Sch. of Sci., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: A novel plate diaphragm based FBG sensor is proposed to measure temperature and pressure simultaneously. Two FBGs are attached radially and circumferentially to a metal diaphragm respectively, and when temperature and pressure change, the peak wavelength of the FBGs will shift. The peak wavelength shifts of the two FBGs induced by temperature are approximately the same when the different pressures are exerted on the sensor. The peak wavelength difference depends only on the exerted pressure. So the simultaneous measurement of the temperature and pressure can be carried out. The linearity of the sensor is good. The measurement ranges of temperature and pressure are 40°C-110°C and 0-6 MPa, and the temperature and pressure measurement errors are less than 1°C and 0.2 MPa respectively. (7 refs)
Main heading: Fiber optic sensors
Controlled terms: Fiber Bragg gratings - Measurement errors - Pressure measurement - Sensitivity analysis - Strain - Temperature measurement
Uncontrolled terms: Guided wave - Optical fiber sensing - Plate diaphragm
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 741.1.2 Fiber Optics - 921 Mathematics - 922 Statistical Methods - 944.4 Pressure Measurements - 944.6 Temperature Measurements
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

2. Comprehensive analysis of pressure build-up test of finite-conductivity vertical fractures by the direct synthesis technique

Han, Fengrui (1); Lin, Jia'en (1); Feng, Mingqiang (2)
Source: *Well Testing*, v 14, n 4, p 14-15, 2005; **Language:** Chinese; **ISSN:** 10044388; **Publisher:** Well Testing
Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Petroleum University (2) Offshore Petroleum Development Company, Shengli Oilfield
Abstract: The comprehensive characteristic analyzed method is a kind of new accurate and rapid interpretation method of unsteady pressure test data, which can resolve the problems of test time is short and early test data is not exiting and overcome the drawbacks of the semi-log interpretation way and the curve matching techniques. The paper presents the formula of computing formation parameter by the direct synthesis technique. And by the oilfield test data to interpret with the semi-log interpretation technique and the presented method on the paper, the answer is same basically. (5 refs)
Main heading: Fracturing (oil wells)
Controlled terms: Data acquisition - Oil fields - Oil well testing - Synthesis (chemical)
Uncontrolled terms: Comprehensive characteristic analysis - Finite-conductivity - Vertical fracture
Classification Code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 723.2 Data Processing and Image Processing - 802.2 Chemical Reactions
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

3. Influence of contaminations on dehydration and foaming performance for TEG

Jin, Xiangzhe (1, 2); Zhang, Ningsheng (1); Wu, Xinming (1); Chen, Zaijun (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 10, p 97-98+105+14-15, October 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Chemical Engineering College, Xi'an Petroleum University (2) Engineering Technology Institute, Changqing Petroleum Exploration Bureau
Abstract: The gaseous water carried by natural gas from underground will condense into liquid water under high pressure and cold conditions) and harm the dehydration units and the gas pipelines. So the water carried by natural gas must be removed by tri-ethylene glycol (TEG). The article discusses the problem happened in the First Gas

Recovery Factory of Changqing Oil Field, i. e. TEG solution is contaminated by gas hydrates, retard corrosive agents, and products from corroding and degrading in the gas dehydration process) which makes the foaming) degrading and dehydrating performance of TEG deteriorating. The influence of different contaminations on dehydration and foaming performance of TEG is studied in the laboratory. It is thought water is the main reason to make the dehydration performance of TEG deteriorating. The TEG solution must be replaced when the water content reaches 3%. The oil condensate in natural gas influences the foaming performance of the solution mostly; the distillation residual liquid by pressure relief secondly; and the retard corrosive agent least. The influence of different contaminations on the foam stability of TEG solution is complicated, and the influence degree changes with the different concentrations. The influence degree of oil condensate is bigger than the other contaminations when the concentration is no more than 0.2%. The influence of the distillation residual liquid by pressure relief and the retard corrosive agent obviously increases, and the influence of oil condensate goes smoothly when the concentration is more than 0.2%. (8 refs)
Main heading: Natural gas
Controlled terms: Contamination - Corrosive effects - Dehydration - Distillation - Gas hydrates - High pressure effects
Uncontrolled terms: Foaming - Influence - Study - Tri-ethylene glycol (TEG)
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 802.3 Chemical Operations - 802.2 Chemical Reactions - 539.1 Metals Corrosion - 522 Gas Fuels - 512.2 Natural Gas Deposits - 454.2 Environmental Impact and Protection
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

4. Computer simulation of effects of pouring temperatures on cast grain structures of superalloy K4169

Yan, Wei-Dong (1); Liu, Lin (2); Chen, Qun-Zhi (1); Xiong, Yu-Hua (3); Yang, Ai-Min (4)
Source: *Hangkong Cailiao Xuebao/Journal of Aeronautical Materials*, v 25, n 1, p 19-24, February 2005; **Language:** Chinese; **ISSN:** 10055053; **Publisher:** Chinese Journal of Aeronautics
Author affiliation: (1) Beijing Aero. Technol. Res. Ctr., Beijing 100076, China (2) Northwestern Polytech. Univ., Xi'an 710072, China (3) Gen. Res. Inst. for Nonferrous Metal, Beijing 100088, China (4) Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: Using FDM Fortran program, the temperature evolution on a cross section of superalloy K4169 cylinder ingots was simulated through solving the heat diffusion equation with enthalpy formulation. It reflected temperature evolution on the cross section of castings under various founding processes correctly. Using the fraction of solid, the simulation of temperature fields, the continuous nucleation model and growth kinetics model of the dendritic tip were coupled to calculate grain structure features of superalloy K4169 cylinder ingots during solidification at different pouring temperatures. Based on a two-dimensional Cellular Automaton technique and the grain structure features of superalloy K4169 cylinder ingots, the grains nucleation and growth of these castings were displayed on computer screen dynamically. The calculated effect of the pouring temperature on the resultant grain structure agrees well with experimental observations. (12 refs)
Main heading: Superalloys
Controlled terms: Computer simulation - Crystal microstructure - Finite difference method - Grain growth - Metal castings - Nucleation - Solidification - Thermal diffusion in solids
Uncontrolled terms: Cast grain structures - Pouring temperature - Superalloy K4169 cylinder ingots
Classification Code: 531 Metallurgy and Metallography - 534.2 Foundry Practice - 723.5 Computer Applications - 921.6 Numerical Methods - 933.1.2 Crystal Growth
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

5. A study on the kinetics of liquid drainage from colloidal gas aphrons (CGAs)

Yan, Yong-Li (1); Qu, Cheng-Tun (2); Zhang, Ning-Sheng (2); Yang, Zhi-Gang (1); Liu, Li (3)
Source: *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, v 259, n 1-3, p 167-172, May 31, 2005; **ISSN:** 09277757; **DOI:** 10.1016/j.colsurfa.2005.02.028; **Publisher:** Elsevier
Author affiliation: (1) Sch. of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Xi'an Shiyou University, Xi'an 710065, China (3) Res. Inst. of Engineering Technology, Changqing Petrol. Exploration Bureau, Xi'an 710021, China

Abstract: A kinetic model was proposed to describe the liquid drainage profiles of colloidal gas aphrons (CGAs). The liquid drainage profiles themselves were determined by reading the volume of the liquid drained as a function of time in the presence of various concentrations of sodium dodecyl sulphate (SDS), hexadecyltrimethyl ammonium bromide (HTAB), and Tween 80 under the conditions of different temperatures. Effect of the surfactant concentration and system temperature on the kinetic stability of CGAs was discussed. Drainage behavior was fitted by the empirical equation Vt= Vmaxtn/(Kn+ tn), where Vtrefers to the volume of drained liquid at time t, Vmaxrefers to the maximum volume of drained liquid, n describes the sigmoidal character of the curve and K is equal to the half-life (t1/2) of drainage. Rate constants (kd) and the half-life (t1/2) of liquid drainage could be calculated from parameters Vmax, K, and n. This kinetic model was tested successfully with the use of the Arrhenius equation, which relates in its logarithmic form the logarithm of the kinetic constant (ln kd) linearly to the reciprocal of the absolute temperature (1/T). Two distinct stages of CGAs drainage determined by two independent mechanisms were identified from analysis of the rate of liquid drainage as a function of time. © 2005 Elsevier B.V. All rights reserved. (13 refs)
Main heading: Colloids
Controlled terms: Drainage - Gases - Reaction kinetics - Surface active agents - Thermal effects
Uncontrolled terms: Colloidal gas aphrons (CGA) - Kinetic model - Kinetic stability - Sodium dodecyl sulfate
Classification Code: 801.3 Colloid Chemistry - 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 931.2 Physical Properties of Gases, Liquids and Solids
Funding Details: Number: -, Acronym: XJTU, Sponsor: Xi’an Jiaotong University;
Funding text: This article was supported by the doctorate foundation of Xi’an Jiaotong University.
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

6. Microstructure of colloidal liquid aphrons (CLAs) by freeze fracture transmission electron microscopy (FF-TEM)

Yan, Yong-Li (1); Zhang, Ning-Sheng (2); Qu, Cheng-Tun (2); Liu, Li (3)
Source: *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, v 264, n 1-3, p 139-146, August 15, 2005; **ISSN:** 09277757; **DOI:** 10.1016/j.colsurfa.2005.04.025; **Publisher:** Elsevier
Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) Xi'an Shiyou University, Xi'an 710065, China (3) Research Institute of Engineering Technology, Changqing Petroleum Exploration Bureau, Xi'an 710021, China
Abstract: Colloidal liquid aphrons (CLAs) composed of triethylene glycol monododecyl ether (C12E3)/n-decane/sodium dodecyl sulphate (SDS) or Tween 80/water have been visualized by freeze fracture transmission electron microscopy (FF-TEM) and confirmed by small angle X-ray scattering (SAXS) and polarizing microscopy. The resolution achieved allows detailed inspection of the size, shape of individual micelles, as well as core-shell structure of CLAs. The microstructure of CLAs was compared with that conventional emulsions presented, particularly high internal phase ratio emulsions (HIPREs), from the viewpoint of morphology. The combined results indicate that the CLAs consist of spherical, oil droplets (oil-rich phase) of micron size separated by an aqueous "soapy shell" (water-rich phase) and there exist supramolecular structures such as reversed micelles and O/W micelles or microemulsions in oil-rich and water-rich phases, respectively. The total interfacial area of stable CLAs is consistent with that of colloidal gas aphrons (CGAs) reported previously, with an approximate thickness of 0.3-0.4 μm. It has been shown throughout this work that the overall microstructure CLAs presented here is somewhat analogous to that of HIPREs, with biphasic structure and presence of the supramolecular aggregates in these phases, which seems to support the Princen's opinion. © 2005 Elsevier B.V. All rights reserved. (35 refs)
Main heading: Colloids
Controlled terms: Emulsions - Micelles - Microstructure - Supramolecular chemistry - Transmission electron microscopy - X ray scattering
Uncontrolled terms: Colloidal liquid aphrons (CLAs) - Freeze fracture transmission electron microscopy (FF-TEM) - High internal phase ratio emulsions (HIPREs) - Supramolecular structures
Classification Code: 531.2 Metallography - 741.3 Optical Devices and Systems - 801.3 Colloid Chemistry - 804 Chemical Products Generally - 932.1 High Energy Physics
Funding Details: Number: 2004BA61010, Acronym: -, Sponsor: -;
Funding text: This project has been financially supported by the National "Shiwu" Key Technologies R&D Programme of China (No.2004BA61010).
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

7. Reservoir sensitivity and its preventing measures for waterflooding in baozhong block of Baolang Oilfield

Yang, Ling ; Huang, Qing-Song ; Ren, Xiao-Juan
Source: *Jianghan Shiyou Xueyuan Xuebao/Journal of Jianghan Petroleum Institute*, v 27, n 1, p 110-111+vii-viii, February 2005; **Language:** Chinese; **ISSN:** 10009752; **Publisher:** Jianghan Petroleum Institute
Author affiliation: (1) Xi'an Petroleum University, Xi'an 710065, China (2) Henan Oilfield Branch Company, SINOPEC, Nanyang 474708, China
Abstract: Baolang Oilield belongs to a clastic rock reservoir with low porosity, low permeability and low porosity, ultra-low permeability, where the overall physical property of the reservoir is poor and some of the wells had the phenomenon that more water injection was conducted, more difficulty was created in the process of waterflooding. In consideration of the problem, water sensitivity of the reservoir rock is evaluated in laboratory experiments, the causes of poor water absorting in the injectors of the block are systematically analyzed, for the purpose of solving the problem, pretreatment techniques are developed for improving the water absorpting ability in strong water sensitivity reservoirs, by which the damage of injected water to the reservoirs can be reduced, the absorption ability to the injectors can be raised for ensuring the stable water injection in the oilfield. (6 refs)
Database: Compendex
Data Provider: Engineering Village

8. Study on foaming reasons of MDEA desulfuration solution in second gas purification plant of Changqing gas field (2) - Foaming reason and counter-measures

Wu, Jinqiao (1, 3); Zhang, Nirigsnehg (2); Wu, Xinmin (2); Wang, Xinqiang (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 171-174+26, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Jiaotong University (2) Xi'an Petroleum University (3) Xi'an Jiaotong University, P. O. Box 1397, Xi'an, Shaanxi (710049), China
Abstract: Based on the analysis of various impurities in WDEA-solution the influence of the operating conditions and the various impurities on the foaming performance is investigated with foaming experiments. As the MDEA concentration and the temperature of MDEA solution decrease gradually, the foaming heights and foam-breaking time increase. Also, as the flow rate of the feed gas and the CO2 load of the solution increase, the foaming heights and foam-breaking time of MDEA solution increase gradually too. The effects of the inorganic salts such as NaCl, CaCl2 and FeSO4 etc. on the foaming performance of WDEA solution are investigated. The organic impurities in WDEA solution such as methanol, triglycol, and heavy hydrocarbon have some foam-breaking function. The corrosion inhibitor of gas wells is strong foamgenerating agent. The foam-generating ability is largely increased when the residual liquid of the inhibitor enters into WDEA solution. It is demonstrated the major reason of foam generating in the solution is that WDEA solution is polluted. At last, the countermeasures and suggestions are proposed to control foaming in WDEA solution. (7 refs)
Main heading: Gas fuel purification
Controlled terms: Blowing agents - Confined flow - Desulfurization - Hydrocarbons - Industrial plants - Natural gas - Purification - Solutions - Temperature measurement
Uncontrolled terms: Changing gas fields - Coefficient measure - Foaming - Influence - Reason
Classification Code: 944.6 Temperature Measurements - 912.1 Industrial Engineering - 818.3.1 Processing Agents - 816.1 Processing of Plastics and Other Polymers - 804.1 Organic Compounds - 803 Chemical Agents and Basic Industrial Chemicals - 802.3 Chemical Operations - 802.2 Chemical Reactions - 801 Chemistry - 631.1 Fluid Flow, General - 522 Gas Fuels
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

9. Cleaning and corrosion and scale inhibiting techniques of gas heating furnace (1) - Cleaning and passivation

Yang, Zhigang (1, 3); Zhang, Ningsheng (2); Wu, Xinmin (2); Wang, Xinqiang (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 160-163+24-25, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency

Author affiliation: (1) Xi'an Jiaotong University (2) Xi'an Petroleum University (3) Xi'an Jiaotong University, P. O. Box 1396, Xi'an, Shaanxi (710049), China
Abstract: Gas should be heated and throttled for the purpose of purification and transmission in Changqing gas field. The safety and the heat-transferring efficiency of the heating furnaces affect the safe and smooth production of natural gas directly. Since no measures of anticorrosion and anti-scaling are made in the gas gathering stations now, the corrosion and scaling of the heating furnaces are severe, which makes the heat-transferring efficiency dropping and the energy greatly wasting. In order to solve the above-mentioned problem, prolong the operation life of the heating furnaces, and guarantee the safe and smooth production of natural gas, it is necessary to make the corrosion and scale inhibiting treatment for the heating furnaces. So, the study is conducted on the cleaning, passivation and reagent formula for the heating furnaces, and the operational program. The study results show the cleaning solution that consists of cleaning agent WT-325 (30%-40%) and inhibitor WT-907 (3%-5%) has good cleaning effects for the scale of the heating furnaces in Changqing gas field. The corrosion rate of the cleaning solution is less than 3.27g/m2. h. (The state standard is 8.0). The corrosion resistance of the passivating film produced by passivant WT-405 is good. With liquid nitrogen to adjust PH value, the cleaning and passivation treatment can be completed in one step, which operation is simple.
Main heading: Gas heating
Controlled terms: Cleaning - Corrosion - Heat transfer - Heating furnaces - Natural gas - Passivation - pH - Solutions
Uncontrolled terms: Changqing gas fields - Cleaning effects - Cleaning solution - Scale
Classification Code: 801.1 Chemistry, General - 801 Chemistry - 641.2 Heat Transfer - 802.3 Chemical Operations - 539.2.1 Protection Methods - 532 Metallurgical Furnaces - 522 Gas Fuels - 539.1 Metals Corrosion
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

10. Cleaning and corrosion and scale inhibiting techniques of gas heattng furnace (2) - Preformed film and corrosion and scale inhibition

Yang, Zhigang (1, 3); Zhang, Ningsheng (2); Wu, Xinmin (2); Wang, Xinqiang (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 164-167+25, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Jiaotong University (2) Xi'an Petroleum University (3) Xi'an Jiaotong University, P. O. Box 1396, Xi'an, Shaanxi (710049), China
Abstract: Based on the study for the cleaning and passivation of heating furnaces, it is discussed for the heating furnaces to pre-form the film and conduct the corrosion and scale inhibition during the normal running period. The results show that under the conditions of the pH value 6. 5-7.0, the concentration 200 mg/L for the anti-scale dispersing agent WT-618, and the concentration 800-1200 mg/L for the preformed film agent WT-206, the quality of the preformed film is good and the film is thin and effective. The corrosion and scale inhibitor WT-275 has excellent efficiency of corrosion and scale inhibition, can inhibit the sediments adhering to the metal surface well, and has powerful ability of dispersion. When the concentration of corrosion and scale inhibitor WT-275 is 800-1200 mg/L, the corrosion rate of carbon steel is 0.010 mm/a (the state standard is less than 0.125 mm/a), the heat resistance of scale is 0.37 × 10-4 m2 &middot h &middot °C/kcal (the state standard is less than 5.0 × 10-4 m2 &middot h &middot °C /kcal) and the fouling adherence is 2.33mcm.
Main heading: Gas heating
Controlled terms: Concentration (process) - Corrosion inhibitors - Heat resistance - Heating furnaces - Natural gas - pH - Thin films
Uncontrolled terms: Changqing gas fields - Coat - Film agents - Scale-removing agent
Classification Code: 803 Chemical Agents and Basic Industrial Chemicals - 802.3 Chemical Operations - 801.1 Chemistry, General - 931.2 Physical Properties of Gases, Liquids and Solids - 714.2 Semiconductor Devices and Integrated Circuits - 532 Metallurgical Furnaces - 522 Gas Fuels - 539.2.1 Protection Methods
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

11. Calculation of the physical parameters of the water and steam in supercritical zone

Chen, Jing ; Chen, Hang ; Liang, Fa-Chun
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 31-34, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Coll. of Petroleum Eng., Xi'an Shiyou Univ., Xi'an 710065, China (2) Pipeline Eng. Co., China Natl. Petroleum Corp., Langfang 065000, China (3) Lab. of Multi-Phase Flow, Xi'an Jiaotong Univ., Xi'an 710049, China
Abstract: The exact calculation of the properties of the water and steam in supercritical zone is of importance to the safe running of supercritical and ultra-supercritical pressure boilers. Because the formulas for computing the physical parameters of water and steam in the standard of IFC-67 has the shortcomings of low computing speed and accuracy, IAPWS formulates the new standard of IAPWS-IF97. Based on the formulas for computing the physical parameters of water and steam in the new standard, the thermodynamic parameters and transported parameters of water and steam in supercritical zone are computed by means of objected-oriented programming technique. It is found that the parameters of water and steam greatly change in supercritical pressure region. The exact prediction of the parameters can provide the basis for the design of the supercritical and ultra-supercritical pressure boilers and prevent the accidents occurring. (8 refs)
Database: Compendex
Data Provider: Engineering Village

12. A novel in-fiber Bragg grating sensor for temperature and pressure simultaneous measurement

Fu, Haiwei ; Qiao, Xueguang ; Jia, Zhen'an ; Wang, Hongliang ; Zhao, Dazhuang ; Fu, Junmei
Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 26, n 11, p 1149-1154, November 2005; **Language:** Chinese; **ISSN:** 02543087; **Publisher:** Science Press
Author affiliation: (1) Laboratory of Optical Fiber Sensing, School of Science, Xi'an Shiyou University, Xi'an 710065, China (2) Institute of Microwave and Optical Communication, School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: A novel in-fiber Bragg grating (FBG) sensor for temperature and pressure simultaneous measurement by bonding a single FBG radially on a plat small displacement diaphragm is proposed. The temperature sensitivity of central wavelength is equal to that of peak wavelength and has no relation with the applied pressure, but the pressure sensitivity of central wavelength is different from that of peak wavelength because of the nonuniform strains of the diaphragm when exerts pressure on it, and it has no relation with the temperature as well. So temperature and pressure can be measured simultaneously by measuring the central and peak wavelength of the FBG. The theoretical and experimental expressions of temperature and pressure with the peak and central wavelengths are given by a matrix equation. The differences of the temperature and pressure measured by the sensor compare with that measured by conventional thermometer and pressure gauge are less than 2°C and 0.2 MPa respectively, within the range of 30~120°C and 0~6 MPa. The differences are roughly equal to the minimum division of the thermometer and the pressure gauge used in experiment. It indicates that the FBG sensor has good temperature and pressure response characteristics. (7 refs)
Database: Compendex
Data Provider: Engineering Village

13. Study on anaerobic treatment of hybrid explosive wastewater

Xie, Juan ; He, Yan-Ling ; Huangpu, Hao
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 70-73, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Energy and Power Engineering, Xi'an 710049, China (3) College of Environmental Science and Engineering, Chang'an University, Xi'an 710054, China
Abstract: Based on the analysis of the characteristics of hybrid explosive wastewater, the anaerobic biodegradability of the wastewater is tested using a new bioassay technique. The test is carried out in an upflow anaerobic sludge bed (UASB), which is a continuous anaerobic treatment reactor. The test results show that, the wastewater is lack of alkalinity and nutrients such as nitrogen and phosphorus, nitrogen and phosphorus elements should be added according to the proportion of CODED: N: P=(300-500):5:1 when the wastewater is treated; the anaerobic biodegradation degree of the wastewater is 90%; the removal rate of RDX in the wastewater which is hard to degraded is 88%, the concentration of RDX in the treated wastewater is less than 5.0 mg/L; the removal rate of COD is about 70%; the concentration of volatile fatty acid should be monitored in the anaerobic treatment of the wastewater. (8 refs)
Database: Compendex
Data Provider: Engineering Village

14. Experimental study on drilling fluid formulation for preventing the water-lock and water-sensitivity of the gas reservoir in Yingnan-2 well

Li, Tian-Tai ; Xu, Zi-Qiang ; Kang, You-Xin ; Zhang, Xi-Feng ; Zhang, Bin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 46-49, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Petroleum and Nature Gas Engineering, China University of Petroleum, Beijing 102249, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Exploration Department, Talimu Oilfield Company, Kuerle 841000, China
Abstract: The reservoir of Yingnan-2 well is seriously damaged by water lock and water sensitivity during drilling and completing. Based on the study of the geological characteristics, damage characteristics and damage degree of the gas reservoir, a low-density potassium base sulphonated polymer drilling fluid formulation is designed for preventing the water lock and water sensitivity damage. The static performance of the cores damaged by the drilling fluid is measured in laboratory. The experimental results show that the permeability restoration rates of the cores are all higher than 86% when the irreducible water saturation of the cores is 63% and when the original water saturation of the cores is 43%. So the drilling fluid system can well control the expansion of the clay mineral in the pore throat of the gas reservoir, which relatively increases the sizes of pore and throat, reduces the degree of the water lock damage, and enhances gas phase permeability of the reservoir. The drilling fluid system well meets the requirement of the drilling engineering of Yingnan-2 well. (7 refs)
Database: Compendex
Data Provider: Engineering Village

15. Self-organization evolution of supply networks: System modeling and simulation based on multi-agent

Li, Gang (1, 2); Sun, Linyan (1); Ji, Ping (2); Li, Haiquan (3)
Source: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, v 3801 LNAI, p 405-409, 2005, *Computational Intelligence and Security - International Conference, CIS 2005, Proceedings*; **ISSN:** 03029743, **E-ISSN:** 16113349; **ISBN-10:** 3540308180, **ISBN-13:** 9783540308188; **DOI:** 10.1007/11596448_59; **Conference:** International Conference on Computational Intelligence and Security, CIS 2005, December 15, 2005 - December 19, 2005; **Sponsor:** Guangdong University of Technol.; Hong Kong Baptist University, Hong Kong; IEEE Hong Kong Comput. Intelligence Chapter; Nat. Natural Science Foundation of China; Xidian University, China; **Publisher:** Springer Verlag
Author affiliation: (1) School of Management, Xi'an Jiaotong University, Xi'an 710049, China (2) Department of Industrial and Systems Engineering, Hong Kong Polytechnic University, Hung Horn, Kowloon, Hong Kong (3) School of Computer, Xi'an Shiyou University, Xi'an 710065, China
Abstract: This paper demonstrates the self-organization evolution of distributed Supply Networks (SNs) based on fitness landscape theory. The environment and the internal mechanism are the origin of SN evolution. The SN emerges from the local interaction of the firms to fulfill the stochastic demands. The collaboration among firms is path dependence. The evolution of a SN is self-reinforcement and sensitive to initial conditions, which may lead to multiple equilibrium state and chaos. The evolution result is non-deterministic and can not be predicted precisely. The long-term strategy is better than short-term strategy for a firm in SN collaboration to adapt to the environment. © Springer-Verlag Berlin Heidelberg 2005. (5 refs)
Main heading: Multi agent systems
Controlled terms: Chaos theory - Computer simulation - Systems analysis
Uncontrolled terms: Internal mechanism - Stochastic demands - Supply networks (SN)
Classification Code: 723.5 Computer Applications - 731.1 Control Systems - 921 Mathematics - 922 Statistical Methods
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

16. Calculation of probabilistic reserves of reservoir with stochastic modeling method

Zhang, Ming-Lu ; Wang, Jia-Hua ; Lu, Tao
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 1, p 65-68+73, January 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press

Author affiliation: (1) Res. Inst. of Exploration, Changqing Oilfield Co., Xi'an 710021, China (2) Xi'an Petroleum Univ., Xi'an 710065, China
Abstract: The uncertainties of a gas reservoir located in the north part of Shaanxi Province were studied with stochastic modeling. The responding gas reserves of the reservoir were calculated with three groups of data obtained from two hundreds and fifty four wells, one hundred and forty six wells, thirty wells by using fifty, one hundred and two hundreds of random seeds, respectively. Probabilistic distributions of these reserves were analyzed. Three probabilistic reserves (P90, P50, P10) for the three groups of data were obtained respectively by using one hundred of random seeds. The probabilities of three probabilistic reserves larger than the real reserves are 90 percent, 50 percent and 10 percent respectively. The calculated results illustrate that as the number of wells increase, the mean values of gas reserves continuously increase, and their mean variances decrease, which results in the reduction of the uncertainties of reservoir. The top strata surface and net thickness were obtained by Kriging method. The spatial distributions of porosity, permeability and gas saturation were obtained by simulation of Gaussian field. (16 refs)
Database: Compendex
Data Provider: Engineering Village

17. Study on foaming reasons of MDEA desulfuration solution in Second gas purification plant of Changqing gas field (1) - Liquid-blocking causes in desulfuration unit

Wu, Jinqiao (1, 4); Zhang, Ningsheng (2); Wu, Xinmin (2); Wang, Xinqiang (2); Li, Shuhua (3)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 168-170+25-26, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Jiaotong University (2) Xi'an Petroleum University (3) Changqing Gas Field (4) Xi'an Jiaotong University, P.O. Box 1397, Xi'an, Shaanxi (710049), China
Abstract: Changqing Gas Field is the base to deliver gas to the areas of Beijing and Tianjing. It is very important for purification plants running normally. The liquid-blocking incidents of MDEA desulfuration unit occur frequently in the second gas purification plant of Changqing gas field, which influence efficient and smooth operation of the unit seriously. Also, the solution foaming will induce fog carrying and result in excessive amine solution losing, which will lead serious economic loss. By the verification of load performance parameters and the composition analysis of the desulfuration solution and the feed gas, it is found the real reason of liquid blocking by desulfuration unit is the desulfuration solution seriously foaming. The preliminary study shows the fiercely foaming is contributed mainly by the following factors: The desulfuration solution is polluted, the desulfuration solution has heavy CO 2 loading; the flow rate of feed gas increases suddenly. According to the field situation, the preliminary countermeasures are proposed when liquid blocking happens in the desulfuration unit. (7 refs)
Main heading: Gas fuel purification
Controlled terms: Blowing agents - Composition - Desulfurization - Industrial plants - Natural gas - Purification - Solutions
Uncontrolled terms: Changing gas fields - Desulfuration unit - Foaming - Liquid blocking - Reason
Classification Code: 818.3.1 Processing Agents - 816.1 Processing of Plastics and Other Polymers - 803 Chemical Agents and Basic Industrial Chemicals - 912.1 Industrial Engineering - 802.3 Chemical Operations - 801 Chemistry - 522 Gas Fuels - 802.2 Chemical Reactions
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

18. Determination of the reasonable well pattern density for low permeability reservoirs

Shao, Yun-Tang ; Li, Liu-Ren ; Zhao, Yan-Yan ; Shi, Jie ; Yu, Yan-Hong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 41-44+48, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Linpan Production Plant, Shengli Oilfield Ltd. Co., Linyi 251507, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Faculty of Petroleum and Gas Engineering, China University of Petroleum, Beijing 102249, China
Abstract: The determination of the reasonable well pattern density is very important to the development of low permeability reservoirs. The relationships between recoverable reserves of single-well, the benefit of single-well and the benefit of unit area in recoverable period and well pattern density are derived by means of the relationship between recovery factor and well pattern density. The reasonable well pattern density and the corresponding recovery factor, recoverable reserves of single-well, benefit of single-well and the maximum benefit of unit area in recoverable period under the maximum benefit of unit area are obtained. Economical limited well pattern is also gained. The effects of oil

price on reasonable well pattern density and the corresponding recoverable reserves of single-well, benefit of single-well and the maximum benefit of unit area in recoverable period are discussed. A case shows that this method can guide the formulation and adjustment of the development plan of low permeability reservoirs. (6 refs)
Database: Compendex
Data Provider: Engineering Village

19. Hydrophilic modification of poly(ether sulfone) ultrafiltration membrane surface by self-assembly of TiO2 nanoparticles

Luo, Ming-Liang (1); Zhao, Jian-Qing (1); Tang, Wu (2); Pu, Chun-Sheng (3)
Source: *Applied Surface Science*, v 249, n 1-4, p 76-84, August 15, 2005; **ISSN:** 01694332; **DOI:** 10.1016/j.apsusc.2004.11.054; **Publisher:** Elsevier
Author affiliation: (1) College of Materials Science and Engineering, South China University of Technology, Guangzhou 510640, China (2) LASMIS, University de Technologie de Troyes, Troyes Cedex 10010, France (3) College of Petroleum Engineering, Xi'An Shiyou University, Xi'an 710065, China
Abstract: Membrane fouling is one of the major obstacles for reaching the ultimate goal, which realizes high flux over a prolonged period of ultrafiltration (UF) operation. In this paper, TiO2 nanoparticles of a quantum size (40 nm or less) in anatase crystal structure were prepared from the controlled hydrolysis of titanium tetraisopropoxide and characterized by X-ray diffraction (XRD) analysis and transmission electron microscopy (TEM). The hydrophilic modification of poly(ether sulfone) UF membrane was performed by self-assembly of the hydroxyl group of TiO2 nanoparticle surface and the sulfone group and ether bond in poly(ether sulfone) structure through coordination and hydrogen bond interaction, which was ascertained by X-ray photoelectron spectroscopy (XPS). The morphology and hydrophilicity were characterized by scanning electron microscopy (SEM) and contact angle test, respectively. The composite UF membrane was also characterized in terms of separation behavior for polyethylene glycol-5000 solute. The experimental results show that the composite UF membrane has good separation performance and offers a strong potential for possible use as a new type of anti-fouling UF membrane. © 2004 Elsevier B.V. All rights reserved. (26 refs)
Main heading: Surface treatment
Controlled terms: Hydrogen bonds - Hydrophilicity - Ketones - Membranes - Nanostructured materials - Polyethers - Polyethylene glycols - Scanning electron microscopy - Self assembly - Separation - Sulfur compounds - Titanium dioxide - Transmission electron microscopy - Ultrafiltration - X ray diffraction - X ray photoelectron spectroscopy
Uncontrolled terms: Anti-fouling membranes - Poly(ether sulfone) - TiO2 nanoparticles - Ultrafiltration membranes
Classification Code: 801.4 Physical Chemistry - 802 Chemical Apparatus and Plants; Unit Operations; Unit Processes - 802.3 Chemical Operations - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 933.1 Crystalline Solids - 933.1.1 Crystal Lattice
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

20. Study on three-region extending model of gas-liquid phase change in condensate gas reservoirs

Wang, Zhi-Wei ; Li, Xiang-Fang ; Tong, Min
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 25-27, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Petroleum and Gas Engineering, China University of Petroleum, Beijing 102249, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) Research Institute of Petroleum Exploration and Development, CNPC, Beijing 100083, China
Abstract: Retrograde condensate will accumulate near well-bore and plug the percolation flow passages of condensate gas when production pressure is lower than dew-point pressure in the depletion development process of condensate gas reservoirs, which will decrease the effective permeability of condensate gas and therefore reduce the productivity of condensate gas wells. At present, the flow of condensate and gas in condensate gas reservoirs caused by retrograde condensation are divided into three regions for studying the flow and plugging of the condensate and condensate gas. In this paper, the variation laws of three regions in the depletion development process of condensate gas reservoirs are closely derived, and the models of the three regions are obtained. A case shows the models can accurately predict the extending laws of three regions. The extending laws can be used for correctly evaluating the productivity of condensate gas wells. (8 refs)

Database: Compendex
Data Provider: Engineering Village

21. Study on fault tree of long gas transmission pipelines

Huo, Chunyong (1, 4); Dong, Yuhua (2); Gao, Huilin (3)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 10, p 99-102+15, October 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Jiaotong University (2) China Petroleum University (3) Xi'an Petroleum University (4) China Petroleum Pipe Material Institute, Xi'an, Shaanxi (710065), China
Abstract: Fault tree analysis is an important technique that is widely used for complex systems to make safety and reliability evaluation. It has bright future of application in the fields of failure prediction and prevention for long gas transmission pipelines. On the data acquisition and analysis, by the 2 major failure modes of leakage and rupture, the fault tree is set up for a long gas transmission pipeline. With qualitative analysis of the fault tree, all the minimal cut sets of the fault tree are obtained. With quantitative analysis, the probability, the probability importance and the criticality importance of the basic events of the fault tree are calculated, and the failure probability of top events is determined for the pipeline. The study results show the steel pipe quality, weld quality, installation quality, material selection, mechanical damage and operator quality etc. are the major factors to affect the safety and reliability of gas pipelines. And the computer software is developed for the fault tree analysis of long gas transmission pipelines. (5 refs)
Main heading: Fault tree analysis
Controlled terms: Computer software - Data acquisition - Evaluation - Gas pipelines - Installation - Leakage (fluid) - Probability - Reliability - Trees (mathematics)
Uncontrolled terms: Failure prediction - Gas transmission pipelines - Long distances - Reliability evaluation
Classification Code: 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921 Mathematics - 913.3 Quality Assurance and Control - 723.2 Data Processing and Image Processing - 922.1 Probability Theory - 723 Computer Software, Data Handling and Applications - 522 Gas Fuels - 452.1 Sewage - 421 Strength of Building Materials; Mechanical Properties - 619.1 Pipe, Piping and Pipelines
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

22. Driving and controlling techniques of CompactPCI bus in VxWorks real-time operating system

Li, An-Zong ; Ju, Xiao-Dong ; Qiao, Wen-Xiao
Source: *Hedianzixue Yu Tance Jishu/Nuclear Electronics and Detection Technology*, v 25, n 2, p 119-123+118, March 2005; **Language:** Chinese; **ISSN:** 02580934; **Publisher:** Atomic Energy Press
Author affiliation: (1) Sch. of Resources and Info., Univ. of Petroleum, Beijing 102249, China (2) Xi'an Petroleum Instrum. Complex, Xi'an 710061, China
Abstract: CompactPCI bus and interface featuring, the content and function of PCI configuration register are introduced herein. The driving and controlling techniques of CompactPCI bus in VxWorks real-time operating system are detailed. Hardware interrupt handling is one of key significance in real-time systems, because it is usually through interrupts that the system is informed of external events. VxWorks allows C functions to be connected to any interrupt. A routine connected to an interrupt in this way is called an interrupt service routine (ISR). For response of interrupt, interrupt control/status register of PCI 9054 interface chip needs to be set. The general-purpose binary semaphore used in ISR is capable of addressing the requirements of both forms of task coordination: mutual exclusion and synchronization. Therefore, the system runs stably and reliably. (3 refs)
Database: Compendex
Data Provider: Engineering Village

23. Analysis of two-phase flow pressure buildup data from well in an infinite multiwell reservoir

Lin, Jia-En (1, 2); Yang, Hui-Zhu (1)
Source: *Journal of Hydrodynamics*, v 17, n 4, p 489-497, August 2005; **ISSN:** 10016058; **Publisher:** China Ocean Press

Author affiliation: (1) Department of Engineering Mechanics, Tsinghua University, Beijing 100084, China (2) Petroleum Engineering Institute, Xi'an Petroleum University, Xi'an 710065, China
Abstract: A general method has been developed for analyzing two-phase flow pressure buildup data from a well located in a system of both production and injection wells completed in an infinite multiwell reservoir. The analysis technique assumes that the tested well has established its own drainage area before shut-in and a linear reservoir pressure trend dominates the well pressure behavior at the instant of shut-in. And for the two-phase flow problems the horizontal saturation gradients are assumed to be negligible. The entire pressure response, whether or not conventional semilog straight lines exist, can be analyzed and the Injection-Production Ratio (IPR), the total fluid (oil/water) mobility, the average drainage-area pressure, and also the skin factor can be calculated much easily. The validity and applicability of the method are demonstrated by a field example. The technique by using the type curves for analyzing the pressure-buildup data is also presented here. (13 refs)
Main heading: Two phase flow
Controlled terms: Calculations - Drainage - Injection (oil wells) - Oil well flooding - Oil well production - Oil wells - Petroleum reservoirs - Pressure - Saturation (materials composition) - Water - Well pressure
Uncontrolled terms: Infinite multiwell reservoir - Pressure buildup - Type curve analysis - Well test analysis
Classification Code: 921 Mathematics - 804.2 Inorganic Compounds - 801.4 Physical Chemistry - 631.1 Fluid Flow, General - 512.1.1 Oil Fields - 511.1 Oil Field Production Operations - 401 Bridges and Tunnels
Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

24. A study for calculating influenced radius of gas well

Gou, Honggang (1); Hao, Yuhong (1); Wang, Dongxu (2); Zkou, Lihui (3)
Source: *Well Testing*, v 14, n 3, p 5-7+75, 2005; **Language:** Chinese; **ISSN:** 10044388; **Publisher:** Well Testing
Author affiliation: (1) Xi'an Petroleum University (2) Changqing Oilfield Exploration and Development Research Institute (3) Changqing Oilfield Oil and Gas Tech Research Institute
Abstract: To obtain reliable influenced radius of gas well and based on percolation hydraulic theory, the concept of flow ratio is presented and calculating formula of new influenced radius on considering flow ratio is derived. It is found that the flow ratio is 0.368 in traditional calculation formula for influenced radius that means its reliability is much worse and error ia much bigger undoubtedly. By actual examples to calculate, compare and analyze, when the flow ratio is 0.1 that the corresponding calculation formula is reliable and the result is suitable to actual gas reservoir. This researched achievement is also gets over the drawback of determining calculation formula for influenced radius only by pressure falling down.
Main heading: Natural gas wells
Controlled terms: Calculations - Hydraulics - Percolation (fluids) - Petroleum reservoirs - Well pressure
Uncontrolled terms: Calculation method - Flow ratios - Gas wells - Influenced radius - Pressure falling down
Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 631.1 Fluid Flow, General - 632.1 Hydraulics - 921 Mathematics
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

25. Experimental research on attenuation coefficient model of low-frequency wave in oil layer

Wang, Rui-Fei ; Sun, Wei ; Yue, Xiang-An ; Zhang, Rong-Jun
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 6, p 90-92, November 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Key Laboratory for Continental Dynamics in Ministry of Education, North-west University, Xi'an 710069, China (2) College of Petroleum Engineering, China University of Petroleum, Beijing 102200, China (3) Faculty of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The transmission laws for the amplitude of low-frequency hydraulic vibration in the core were qualitatively analyzed by means of the time-domain analysis, frequency-domain analysis, variation of amplitude and related experimental data. A fundamental model for describing the amplitude decay rate varying in x transmission orientation was established, and a functional equation for expressing the attenuation coefficient and amplitude of vibration was obtained. Another functional expression of relative parameters was presented by the use of the unit analysis and the law of similarity. The functional equations of A and B were induced by processing and analyzing the data, and a

forecasting model for the attenuation coefficient of the low-frequency wave in oil layer was deduced. The mathematical models were used to calculate the effective functioning distance of the low-frequency hydraulic pulse wave under the condition of fluid flow in oil layer. The simulation results agree well with the actual data of oil field. (8 refs)
Database: Compendex
Data Provider: Engineering Village

26. Pressure buildup analysis for a well in a closed, bounded multiwell reservoir

Lin, Jia'en (1, 2); Yang, Huizhu (1)
Source: *Chinese Journal of Chemical Engineering*, v 13, n 4, p 441-450, August 2005; **ISSN:** 10049541; **Publisher:** Chemical Industry Press
Author affiliation: (1) Department of Engineering Mechanics, Tsinghua University, Beijing 100084, China (2) Petroleum Engineering Institute, Xi'an Petroleum University, Xi'an 710065, China
Abstract: A general method has been developed for analyzing pressure buildup data from a well located in a system with both production and injection wells in a closed, bounded two-phase flow reservoir. The proposed method enables one to calculate the total mobility or permeability-thickness product, the skin factor, the average drainage-area pressure and the injection-production ratio (at the instant of shut-in) with accuracy from pressure buildup (or falloff) data dominated by a linear trend of reservoir pressure. Out of thousands of well tests, several typical field examples have been presented to illustrate the application of the proposed method for analyzing pressure transient data from a well located in a water-injection multiwell reservoir. And the possible application of this method to heterogeneous systems such as naturally fractured reservoirs is also discussed. Approaches to aid practicing engineers in verifying the buildup interpretation (or recognizing the interference of offset wells) are presented. Extension of the presented method to a gas well located in a multiwell gas reservoir is also suggested. (16 refs)
Main heading: Petroleum reservoirs
Controlled terms: Natural gas wells - Oil wells - Petroleum reservoir engineering - Two phase flow - Well pressure - Well testing
Uncontrolled terms: Closed system - Injection production ratio - Multiwell reservoir - Pressure buildup - Pressure transient data - Well test analysis
Classification Code: 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.2.1 Natural Gas Fields - 631.1 Fluid Flow, General
Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

27. On robust and precision measuring an eddy acceleration geophone

Fu, Xiao-Ning (1); Qin, Yi (2)
Source: *Journal of Test and Measurement Technology*, v 19, n 3, p 254-257, 2005; **Language:** Chinese; **ISSN:** 16717449; **Publisher:** Publ. Dept. of NCIT (North China Inst. of Technology)
Author affiliation: (1) School of Electromechanical Engineering, Xidian University, Xi'an 710071, China (2) School of Electronical Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: Eddy acceleration geophones have been widely used in higher resolution seismic exploration owing to its better performance in high frequency together with other virtues, the accuracy measurement of geophone becomes more and more urgent. In this paper, the principle of the eddy acceleration geophone is summarized, the parameters systems responding to the working principle is introduced. The current measurement methods could be divided into two class, one is the robust measurement based on 4-parameter model identification, the other is the precision measurement based on 7-parameter model identification. Combined the theoretic analysis with experiment research. The relationship between 4-parameter model and 7-parameter model is set up, each virtue is integrated, a new measurement scheme is proposed, with which a robust and precision measurement for an eddy acceleration geophone is achieved. It is illustrated by simulation experiment that an even better result can obtain with our method. (6 refs)
Main heading: Seismology
Controlled terms: Computer simulation - Precision engineering
Uncontrolled terms: Acceleration geophone parameter - Eddy acceleration geophone - Precision measurement - Robust measurement
Classification Code: 484.1 Earthquake Measurements and Analysis - 723.5 Computer Applications
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

28. Particle swarm optimization for bipartite subgraph problem: A case study (*Open Access*)

Zhang, Dan (1); Li, Zeng-Zhi (1); Song, Hong (2); Zhan, Tao (3)
Source: *Lecture Notes in Computer Science*, v 3612, n PART III, p 602-611, 2005, *Advances in Natural Computation: First International Conference, ICNC 2005. Proceedings*; **ISSN:** 03029743; **DOI:** 10.1007/11539902_73; **Conference:** First International Conference on Natural Computation, ICNC 2005, August 27, 2005 - August 29, 2005; **Sponsor:** Ziangtan University; **Publisher:** Springer Verlag
Author affiliation: (1) School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an Shaanxi 710049, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an Shaanxi 710065, China (3) Dept. of Computer Science and Engineering, Northwest Polytechnical University, Xi'an Shaanxi 710072, China
Abstract: The goal of bipartite subgraph problem is to partition the vertex set of an undirected graph into two parts in order to maximize the cardinality of the set of edges cut by the partition. This paper proposes a modified particle swarm optimization (PSO), called MPPSO (Mutated Personalized PSO), for this NP-hard problem. The proposed MPPSO algorithm contains a key improvement by introducing a personality factor from a psychological standpoint and a mutation operator for global best. Additionally the symmetry issue of solution space of bipartite subgraph problem is coped well with too. A large number of instances have been simulated to verify the proposed algorithm. The results show that the personality factor and mutation operator are efficient and the quality of our algorithm is superior to those of the existing algorithms. © Springer-Verlag Berlin Heidelberg 2005. (13 refs)
Main heading: Problem solving
Controlled terms: Algorithms - Graphic methods - Mathematical operators - Optimization
Uncontrolled terms: Mutated personalized PSO (MPSSO) - Outdated information - Particle swarm optimization (PSO) - Subgraph problems
Classification Code: 723.4 Artificial Intelligence - 723.5 Computer Applications - 921.5 Optimization Techniques
Treatment: Theoretical (THR)
Open Access type(s): All Open Access, Green
Database: Compendex
Data Provider: Engineering Village

29. Mathematical model to remove condensate blockage by electromagnetic heating (Mathematical model to remove condensate blockage by electromagnetic heating)

Feng, Jinde (1, 5); Pu, Chunsheng (2, 3); Feng, Jincheng (4)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 11, p 85-87+12, November 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) China University of Petroleum, Beiijng (2) China University of Petroleum, Dongying (3) Xi'an Petroleum University (4) Oil Recovery Technology Institute, Xinjiang Petroleum Administration (5) China University of Petroleum, Changping District, Beijing (102249), China
Abstract: Aiming at the problem of condensats gas well productivity influenced by condensate oil blockage severely, the method to remove the condensate oil blockage in the zones near the borehole by down-hole heating techniques of electromagnetic induction is proposed. And the corresponding mathematical model is developed. The non-isothermal percolation of condensate gas is a complicated process of phase state changing. It is difficult for the component model to solve and obtain the parameters needed by calculation. The finite component model is used as the percolation model in the article. It can not only simulate the phase state features of condensate gas and avoid the complicated calculation of phase state, but also easily obtain the parameters needed by calculation. The influence of non-Darcy flow of condensate gas with high flow rate is considered in the model, With numerical method, the mathematical model is solved. And the simulation software is developed. (12 refs)
Main heading: Gas industry
Controlled terms: Computer simulation - Electromagnetic fields - Electromagnetism - Heating - Mathematical models - Petroleum reservoirs
Uncontrolled terms: Blockage - Condensate oils - Gas wells - Reservoir heating
Classification Code: 921 Mathematics - 911.2 Industrial Economics - 723.5 Computer Applications - 701 Electricity and Magnetism - 642.1 Process Heating - 522 Gas Fuels - 512.1.1 Oil Fields
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

30. Study and application of techniques for gas recovery by liquid drainage in Banqiao condensate oil/gas field

Nie, Cuiping (1, 3); Pu, Chunsheng (1); Zhang, Rongjun (1); Zhou, Junjie (2); Ren, Limin (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 6, p 83-86+12-13, June 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Petroleum University (2) E and D Research Center of Dagang Oil-field (3) No. 18, Second Dianzi Rd., Xi'an, Shaanxi (710065), China
Abstract: The geological structure is complicated, which consists of single well structures with small blocks mostly, and the wells are mainly deep deviated wells in Banqiao condensate oil/gas field. The field has entered the late exploitation stage. The reservoir pressure drops greatly. The retrograde condensate plugging exists commonly in the field and the severe water lock of the reservoir appears because the edge and bottom water advances in the water-drive gas reservoir. Serious liquid accumulation in borehole has become the major reason resulting in the gas reservoir abandoned ahead of schedule and caused the lower final recovery factor. The techniques of gas recovery by liquid drainage existing in Banqiao condensate oil/gas field are evaluated systemically. The technique of gas recovery by liquid drainage by deep rod pump with small cylinder is selected, which is suitable for Banqiao condensate oil/gas field. Also it is highly discussed the reliability of the rod string assembly in the matching technique of super-deep pump setting and the working system of the matching down-hole tools and the matching pumping unit that are used to improve the pumping efficiency under the working conditions with high gas/liquid ratio. According to the real situation of Banqiao condensate oil/gas field, the design method and operation process are discussed. Meanwhile, the field application is evaluated and analyzed. (5 refs)
Main heading: Petroleum reservoirs
Controlled terms: Boreholes - Drainage - Natural gas fields - Oil fields - Pressure drop - Pumps - Recovery - Well pressure
Uncontrolled terms: Banqiao condensate oil/gas fields - Exploitation - Liquid drainage - Pump efficiency - Water-lock effect
Classification Code: 931.1 Mechanics - 618.2 Pumps - 512.2.2 Natural Gas Deposits: Development Operations - 512.2.1 Natural Gas Fields - 512.1.2 Petroleum Deposits : Development Operations - 512.1.1 Oil Fields - 511.1 Oil Field Production Operations
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

31. Research progress of H2S/CO2 corrosion in oil and gas development

Wang, Cheng-Da ; Yan, Mi-Lin ; Zhao, Xin-Wei ; Li, Ping-Quan ; Wang, Hui
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 66-70, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Department of Material Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Tubular Goods Research Center, CNPC, Xi'an 710065, China (3) Key Laboratory of CNPC for Mechanical and Environmental Behavior of Tubular Goods, Xi'an 710065, China (4) Special Vehicle Company, Baoji Oilfield Machinery Co. Ltd., Baoji 721002, China
Abstract: First, the mechanisms of H2S corrosion and CO2 corrosion and the influencing factors of them are discussed, and then the corrosion mechanism under the condition of H2S and CO2coexistence and its influencing factors are discussed. The present situation and development trend of the study on H2S/CO2 corrosion at home and abroad are analyzed, and the protection measures to the H2SCO2 corrosion of oil-well tubular goods are presented. The concerned problems and the development tend about corrosion research of high-sour oil and gas fields are also discussed. (19 refs)
Database: Compendex
Data Provider: Engineering Village

32. Genesis and exploitation of relative rich aquifer regions in mawu 1+2 gas reservoir of Jingbian gas field

Li, Jianqi (1, 4, 5); Li, Anqi (3); Zhang, Zhenwen (2, 4); Yang, Zhilun (4); Zhang, Zonglin (1, 4); Zhao, Zhenjun (4)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 9, p 89-91+13, September 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency

Author affiliation: (1) Xi'an Petroleum University (2) Southwest Petroleum Institute (3) Changqing Oilfield Com., PCL (4) First Gas Recovery Factory, Changqing Oilfield Com., PCL (5) First Gas Recovery Factory, Changqing Oilfield Com., PCL, Jingbian, Shaanxi (718500), China
Abstract: Mawu1+2 gas reservoir is the pillar reservoir of Jingbian gas field. But there are big or small relative rich aquifer regions in the reservoir. The biggest aquifer region reaches more than 100 km2 and the smallest aquifer region is only a few km2. They differ' from either edge water or bottom water, They are moveable pool-forming resident water with high water saturation. They have to be exploited with special method because of the special type of the formation water. As the production well pattern is completed, the number of relative rich aquifer regions increases correspondingly. With analyzing the genesis of relative rich aquifer regions and the law of gas/water migration, the exploitation techniques of relative rich aquifer regions are studied. The exploitation technology of "Pressure downing inside an pressure keeping outside, Taking drainage as key measure is proposed. As for big rich aquifer regions, various liquid draining measures should be taken to reduce the formation pressure inside the aquifer regions, and the production of gas wells in the pure gas regions outside the relative rich aquifer regions should be controlled to keep high formation pressure outside the relative rich aquifer regions. As for the separated lenticular small aquifer regions, strong drainage should be conducted to reduce their formation pressure, avoid water flowing out, and improve the recovery factor of the gas reservoir.
Main heading: Natural gas
Controlled terms: Aquifers - Drainage - Natural gas fields - Pressure effects
Uncontrolled terms: Early Paleozoic - Formation pressure - Recovery factor
Classification Code: 401 Bridges and Tunnels - 444.2 Groundwater - 512.2.1 Natural Gas Fields - 522 Gas Fuels
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

33. Adaptive multi-level image fuzzy enhancement algorithm based on fuzzy entropy

Wang, Bao-Ping (1, 2); Liu, Sheng-Hu (1); Fan, Jiu-Lun (3); Xie, Wei-Xin (4)
Source: *Tien Tzu Hsueh Pao/Acta Electronica Sinica*, v 33, n 4, p 730-734, April 2005; **Language:** Chinese; **ISSN:** 03722112; **Publisher:** Chinese Institute of Electronics
Author affiliation: (1) School of Electronics Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) School of Electronics Engineering, Xidian University, Xi'an 710071, China (3) Department of Information and Control, Xi'an Institute of Post and Telecommunications, Xi'an 710061, China (4) Institute of Information Engineering, Shenzhen University, Shenzhen 518060, China
Abstract: The no-linearity transform in image enhancement was researched deeply, its drawbacks were found. Then, an image fuzzy enhancement arithmetic operator was proposed, the arithmetic operator not only overcomes the drawbacks of the old no-linearity transform, but also have close-character, adjusting-character and transplantable-character to other enhancement arithmetic. In addition, through quoting fuzzy entropy, make the select of threshold value in image enhancement have a certainty purpose. We use the algorithm to extract image edges, with better result than that of now-available image fuzzy enhancement method. (11 refs)
Main heading: Image enhancement
Controlled terms: Adaptive systems - Algorithms - Edge detection - Entropy - Fuzzy sets - Mathematical operators - Membership functions
Uncontrolled terms: Adjusting character - Close character - Fuzzy entropy - Multi level image fuzzy enhancement algorithm - Threshold value - Transplantable character
Classification Code: 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 723.5 Computer Applications - 921.6 Numerical Methods
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

34. Hydrate predicting model of gas gathering pipelines in sulige gas field

Tiantai, Li (1, 3); Jinsheng, Zhao (1); Xiaojing, Liu (1); Yi, Liu (2); Hu, Zhang (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 146-149+23, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Petroleum Engineering College, Xi'an Petroleum University (2) Third Gas Recovery Factory, Changqing Oilfield Branch, PCL (3) No. 18, E. Sect. Second Dianzi Rd., Xi'an, Shaanxi (710065), China

Abstract: Since the environment is extreme and the atmospheric temperature changes rapidly in Sulige gas field, it is easy to generate hydrate in gas gathering pipelines and plug the pipelines. It is very important for the development of Sulige gas field to predict the location where hydrate generates in the pipelines accurately by the temperature variation, optimize the gas gathering pipelines and prevent hydrate generating. According to the law of temperature and pressure drop along the gas gathering pipelines in Sulige gas field, the predicting model of gas hydrate generating is set up and the computer software to predict hydrate generating is developed. With the real operation data, the predicting model is verified, which proves the model and the software correct and reliable. It has major significance to popularize the model for optimizing the gas recovery and gathering techniques and improving the development benefit in Sulige gas field. (5 refs)
Main heading: Natural gas pipelines
Controlled terms: Computer software - Data reduction - Gas hydrates - Mathematical models - Natural gas fields - Optimization - Thermal effects
Uncontrolled terms: Application - Gas gathering pipeline - Generation - Model - Prediction - Sulige gas field
Classification Code: 512.2.1 Natural Gas Fields - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 723 Computer Software, Data Handling and Applications - 723.2 Data Processing and Image Processing - 921.5 Optimization Techniques
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

35. Preparation and characterization of core-shell polyacrylate emulsion modified with γ-glycidoxy propyl trimethoxy silane

Liu, Xiang ; Fan, Xiao-Dong ; Tang, Min-Feng
Source: *Xiandai Huagong/Modern Chemical Industry*, v 25, n 7, p 34-36+38, July 2005; **Language:** Chinese; **ISSN:** 02534320; **Publisher:** China National Chemical Information Center
Author affiliation: (1) Department of Applied Chemistry, School of Science, Northwestern Polytechnical University, Xi'an 710072, China (2) School of Chemistry and Chemical Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: Polyacrylate latexes (SACR) modified with y-glycidoxy propyl trimethoxy silane (A-187) was prepared with methyl methacrylate, butyl acrylate, 2-ethylhexyl acrylate, A-187 as monomers and ammonium persulfate as initiator by the seeded emulsion polymerization. Its size distribution and morphology were characterized, and the glass transition temperature, the tensile strength and the absorption rate were measured. The SACR latex particles prepared have a core-shell morphology with a narrow size distribution. Besides, the glass transition temperature, the mechanical property, and the water resistant property are improved with the concentration of A-187 increased. (5 refs)
Database: Compendex
Data Provider: Engineering Village

36. Exploitation techniques of gas wells producing water in qingbian gas field of changqing

Zhao, Fenxia (1, 4); Wu, Zheng (2); Qiu, Tongshe (3)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 2, p 116-118+16, Febrary 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Petroleum University (2) First Gas Recovery Factory, Changqing Branch, PCL (3) Training Center of Changqing, Petroleum Exploration Bureau (4) Xinlunyuan Quarter of Changqing, Xi'an, Shaanxi (710021), China
Abstract: Aiming to the problem of gas wells producing water in the exploitation process of Qingbian gas field, which effects the exploitation benefit severely, according to the present status of gas wells producing water, the water-producing law of gas wells is summed up. With the variation of water-gas ratio, the gas wells producing water are divided into 3 types: i. e. water-gas ratio decreasing, water-gas ratio stabilizing, and water-gas ratio increasing. Based on that, by integrated analysis and study, the concrete measures are proposed for the gas wells producing water of different types to be exploited effectively. As for the wells lying in the zone with relative rich water, the countermeasures are to improve the production well pattern; As for the wells with water-gas ratio decreasing, to avoid well shut-in as much as possible and keep continuous running with normal and reasonable production to carry the formation water out by itself energy and maintain the stable production. As for the wells with water-gas ratio stabilizing, to maintain the normal production of gas wells. As for the wells with water-gas ratio increasing, to seriously control the production pressure difference and the water-invaded rate to decrease the water influx and improve the recovery

factor. Applying the study fruits to the exploitation of gas wells producing water in Qingbian gas field, the obvious economic benefit has been achieved.
Main heading: Natural gas wells
Controlled terms: Economic and social effects - Natural gas fields - Production control - Water
Uncontrolled terms: Economic benefits - Exploitation - Producing water - Qingbian gas fields
Classification Code: 444 Water Resources - 512.2.1 Natural Gas Fields - 901.4 Impact of Technology on Society - 913.2 Production Control
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

37. Development and application of optimized design system for city gas pipe-line network

Xin, Zheng (1, 4); Wei, Liu (1); Junqi, Wang (2); Ying, Yan (3)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 4, p 143-145+22-23, April 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Changqing Technical Engineering Ltd. (2) Graduate School, Xi'an Petroleum Institute (3) Computer College, Xi'an Electronic Science and Technology University (4) Xinlongyuan Quarter of Changqing Oilfield, Xi'an, Shaanxi (710021), China
Abstract: Based on the mathematic model of optimized design with multi-objective function for the network structure of gas pipeline system, using the powerful VC + + graphical function, the optimized design system of city gas pipeline network with high-efficient inter-function and high calculation accuracy is developed. The software adapts to the optimized design calculation of gas pipeline system with different situations such as various pressure levels, various pipe materials, and various network shapes (e.g. branches, rings and mixing the both). Also, the corresponding hydraulic calculation drawings and 12 types of process calculation lists are made. Comparing with the field real calculations, it is proved the system is feasible and reliable. The system provides the design programs and the operation programs for the units to design the gas network with high, medium and low pressure, and the units to maintain and operate the gas network.
Main heading: Natural gas pipelines
Controlled terms: C (programming language) - Computer software - Mixing - Optimization - Pressure effects - Product design - Urban planning
Uncontrolled terms: City - Gas network - Pipeline design - Pipeline network
Classification Code: 921.5 Optimization Techniques - 913.1 Production Engineering - 802.3 Chemical Operations - 723.1.1 Computer Programming Languages - 619.1 Pipe, Piping and Pipelines - 522 Gas Fuels - 403.1 Urban Planning and Development
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

38. Wellbore temperature distribution in condensate gas well by electromagnetic heating (Wellbore temperature distribution in condensate gas well by electromagnetic heating)

Su, Guohui (1, 2); Pu, Chunsheng (1)
Source: *Drilling and Production Technology*, v 28, n 6, p 52-54+4+5, November 2005; **Language:** Chinese; **ISSN:** 1006768X; **Publisher:** Drilling and Production Technology (Zuancai Gongyi)
Author affiliation: (1) Xi'an Petroleum University, Key Laboratory of Special Well Stimulation Technology of Oil and Gas Field, Shanxi (2) 8 # 17, Electron No. 2 Road, Xi'an 710065, Shanxi, China
Abstract: Electromagnetic heating in the bottom of a well can make the condensate evaporate or flow. In the retrograde condensation zone, if the temperature is increased, the condensate will be evaporated, even to a single - phase flowing. So increase the temperature of the near well bore zone by heating, then the condensate can be evaporated. The well bore temperature distribution in condensate gas well is dispensable for the node analysis and performance analysis for gas well. Based on the heating transfer principle, the formula for calculating well bore temperature distribution in condensate gas well is presented, the method acquiring the basic data for the temperature calculation is discussed and the effect law of gas out put, water output in well depth and tubing diameter on well head temperature is analyzed. The temperature in a certain condensate gas well with a depth of 3390m has been calculated. The gas oil ratio of this well is 3000. The formation temperature is 114°C. The result of the calculation shows that the temperature of gas well presents nonlinear distribution with the depth of well. The temperature of wellhead of gas well increases with the increasing temperature of the reservoir. (2 refs)

Main heading: Boreholes
Controlled terms: Condensation - Evaporation - Gas oils - Magnetoelectric effects - Nonlinear control systems - Petroleum reservoir evaluation - Thermal effects
Uncontrolled terms: Condensate gas well - Electromagnetic heating - Vertical conduit flow - Well bore temperature distribution
Classification Code: 802.3 Chemical Operations - 731.1 Control Systems - 701.1 Electricity: Basic Concepts and Phenomena - 531 Metallurgy and Metallography - 523 Liquid Fuels - 512.1.2 Petroleum Deposits : Development Operations - 501.1 Exploration and Prospecting Methods
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

39. Effect of pre-deformation on the fatigue crack initiation life of X60 pipeline steel

Zheng, M. (1); Luo, J.H. (1, 2); Zhao, X.W. (1, 2); Bai, Z.Q. (1, 2); Wang, R. (3)
Source: *International Journal of Pressure Vessels and Piping*, v 82, n 7, p 546-552, July 2005; **ISSN:** 03080161; **DOI:** 10.1016/j.ijpvp.2005.01.006; **Publisher:** Elsevier Ltd
Author affiliation: (1) School of Materials Science/Eng., Xi'an Jiaotong University, Xi'an 710049, China (2) Tubular Goods Research Center, CNPC, Xi'an 710065, China (3) School of Mechanical Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: It is impossible to keep petroleum and natural gas transmission pipelines free from defects in the manufacturing, installation and servicing processes. The damage might endanger the safety of pipelines and even shorten their service life; gas or petroleum release due to defects may jeopardise the surrounding ecological environments with associated economic and life costs. Pre-tensile deformation of X60 steel is employed to experimentally simulate the influence of dents on the fatigue crack initiation life. The investigation indicates that the fatigue crack initiation life of pre-deformed X60 pipeline steel can be assessed by a previously proposed energetic approach. The threshold for crack initiation increases with the pre-deformation due to a strain hardening effect, while the fatigue resistant factor exhibits a maximum with pre-deformation owing to its special dependence on fracture strain and fracture strength. The result is expected to be beneficial to the understanding of the effect of damage on the safety of pipelines and fatigue life prediction. © 2005 Elsevier Ltd. All rights reserved. (29 refs)
Main heading: Cracks
Controlled terms: Fatigue of materials - Fracture toughness - Gas pipelines - Installation - Manufacture - Natural gas - Strain hardening
Uncontrolled terms: Fatigue crack initiation - Fatigue resistant factor - Pre-deformation - X60 pipeline steel
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 522 Gas Fuels - 537.1 Heat Treatment Processes - 619.1 Pipe, Piping and Pipelines - 913.4 Manufacturing
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

40. Measurement, fitting and evaluation of profile curve of cams with CMM

Yu, Xiao ; Wang, Jia-Li ; Guo, Jun-Jie
Source: *Jiliang Xuebao/Acta Metrologica Sinica*, v 26, n 4, p 316-319, October 2005; **Language:** Chinese; **ISSN:** 10001158; **Publisher:** Chinese Society for Measurement
Author affiliation: (1) College of Mechanics and Electronics, Xi'dian University, Xi'an 710071, China (2) College of Computer, Xi'an Petroleum University, Xi'an 710065, China (3) College of Mechanics, Xi'an Jiaotong University, Xi'an 710056, China
Abstract: It is difficult to establish the work piece coordinate system precisely in measuring cam with CMM. A method is described with which the operator can start to test a cam at any position. The cam profile is scanned only once and all sampling data is used to determine the work piece coordinate system, which make the error objective function minimum. A method to revise the radius of switch probes is also put forward. (3 refs)
Database: Compendex
Data Provider: Engineering Village

41. Experimental study on particle motion law under the condition of pressure wave

Jiang, Huayi (1); Zhao, Shong (1); He, Ming (2); Pu, Rongrong (3)

Source: *Drilling and Production Technology*, v 28, n 4, p 70-73, July 2005; **Language:** Chinese; **ISSN:** 1006768X; **Publisher:** Drilling and Production Technology (Zuancai Gongyi)
Author affiliation: (1) Xi'an Petroleum Institute, Xi'an 610500, Shanxi, China (2) Middle Sichuan Gas Field, Southwest Oil and Gas Co. (3) Gas Production Research Institute, Southwest Oil and Gas Co. of China, Guanghan 618300, Sichuan, China
Abstract: Using standard three-dimensional real drill core microscopic model and wideband electrical servo wave motion pressure generating system which developed by ourselves, all courses about wave motion pressure forcing solid particles intrude into stratum hole are researched by microscopic model visible technique. Under different vibration frequency and amplitude, observing the motion of the suspension system in the holes of reservoir bed, which consisted by particles of different density and diameter, the regularity of particles motion under the wave motion pressure is analyzed. Particularly, under certain wave motion frequency, "cavity Effect" can be observed clearly in the experiments, which play a very important role in disposing block and removing scale.
Main heading: Waves
Controlled terms: Mathematical models - Oil well drills - Petroleum reservoirs - Pressure effects - Three dimensional
Uncontrolled terms: Cavity effect - Microscopic model - Particle motion - Pressure waves motion disposing blocks
Classification Code: 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 711 Electromagnetic Waves - 921 Mathematics
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

42. Mechanical properties of fine grained superalloy K4169 with addition of refiners

Huang, Tai-Wen (1); Liu, Lin (2); Yang, Ai-Min (2); Xiong, Yu-Hua (3); Zhang, Rong (1)
Source: *Transactions of Nonferrous Metals Society of China (English Edition)*, v 15, n 2, p 280-285, April 2005; **ISSN:** 10036326; **Publisher:** Nonferrous Metals Society of China
Author affiliation: (1) State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China (2) Department of Mechanical Engineering, Xi'an Petroleum Institute, Xi'an 710065, China (3) Beijing General Research Institute for Non-ferrous Metals, Beijing 100088, China
Abstract: Grain refinement of superalloy K4169 was achieved by adding refiners into the alloy melt and their effects on the mechanical properties were investigated. The tensile properties at room temperature and 700°C and low cycle fatigue properties at room temperature were compared for both conventional and fine grained test bars. The results indicate that the rupture strength, yield strength, elongation and reduction of area for refined grains are all much superior to those for coarse ones. Whereas the elongation and reduction of area of fine grained samples decrease at 700°C. Low cycle fatigue properties of samples with refined grains at room temperature are improved significantly. In addition, the degree of dispersion of low cycle fatigue data of samples with refined grains is diminished. (17 refs)
Main heading: Superalloys
Controlled terms: Fatigue of materials - Fracture toughness - Grain size and shape - Mechanical properties - Tensile properties - Yield stress
Uncontrolled terms: Grain refinement - Low cycle fatigue properties - Refiners - Rupture strength - Superalloy K4169 - Yield strength
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 422 Strength of Building Materials; Test Equipment and Methods - 531 Metallurgy and Metallography - 933.1.1 Crystal Lattice
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

43. Grain refinement of superalloy K4169 by addition of refiners: Cast structure and refinement mechanisms

Liu, Lin (1); Huang, Taiwen (1); Xiong, Yuhua (2); Yang, Aimin (3); Zhao, Zhilong (1); Zhang, Rong (1); Li, Jinshan (1)
Source: *Materials Science and Engineering A*, v 394, n 1-2, p 1-8, March 15, 2005; **ISSN:** 09215093; **DOI:** 10.1016/j.msea.2004.10.005; **Publisher:** Elsevier Ltd
Author affiliation: (1) State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China (2) Beijing General Research Institute for Non-Ferrous Metals, Beijing 100088, China (3) Department of Mechanical Engineering, Xi'an Petroleum Institute, Xi'an 710065, China
Abstract: Grain size and microstructural features of cast superalloy K4169 were investigated under various melting and casting conditions with and without the addition of grain refiners. It is found that lowering pouring temperature and adding refiners to the melt can lead to grain refinement of γ matrix and improve the proportion of equiaxed grains.

At a conventional pouring temperature of 1400 °C, the average size of equiaxed grains could be refined to the order of ASTM 3.2, the proportion of equiaxed grains at transverse cross-section could be improved from 56 to 99%. The results also indicate that the average length of primary dendrite axis is shortened with the addition of refiners, but the secondary dendrite arm spacing keeps almost unchanged because local solidification time remained constant. In addition, the microsegregation of main elements such as Fe, Cr, Nb, Mo and Ti is alleviated with the decrease in grain size, and the grain morphology have transformed from dendrite in coarse- to granulate in fine-grained castings. At higher melt pouring temperature, the amount of microporosity in samples with the addition of refiners can be greatly reduced. The mechanisms of grain refinement and increase in equiaxed grain proportion were proposed. (30 refs)
Main heading: Superalloys
Controlled terms: Casting - Grain size and shape - Melting - Microporosity - Microstructure - Morphology - Solidification - Temperature distribution
Uncontrolled terms: Grain morphology - Grain refinement - Grain refiners - Pouring temperature
Classification Code: 531 Metallurgy and Metallography - 531.2 Metallography - 534.2 Foundry Practice - 641.1 Thermodynamics - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Funding Details: Number: G2000067202, Acronym: -, Sponsor: -;
Funding text: This work was supported by State Key Fundamental Research Plan of China under grant no. G2000067202. The authors would like to thank Dr. Yipng Guo, Dr. Wei Liu and Dr. Jinagbang Zheng for participating in partial experimental and theoretical work.
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

44. Domestic and overseas developments in blend alternate fuels

Zhang, Jun-Tao ; Liang, Sheng-Rong ; Chen, Zhi-Dong ; Feng, Xiao
Source: *Xiandai Huagong/Modern Chemical Industry*, v 25, n 7, p 14-17+19, July 2005; **Language:** Chinese; **ISSN:** 02534320; **Publisher:** China National Chemical Information Center
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 Petroleum University, Xi'an 710065, China (3) Management and Project Division, Liaohe Petroleum Exploration Bureau, Panjin 124010, China
Abstract: The methods of production, mechanism of saving energy and reducing pollution, and characteristics of emission of blend alternate fuels for car-use, such as mineral oil with water, alcohols or vegetable oils, are introduced. At present, development research of the 'diesel oil-alcohols-biodiesel' blend fuel is one of the effective ways for China to relieve the energy sources shortage, minimize environmental pollution, realize beneficial ecological cycle and continuable development of economics under conditions of the existing structure of engine unchanged. (29 refs)
Database: Compendex
Data Provider: Engineering Village

45. Exploring the underground palace of the emperor Qinshihuang mausoleum with high precision gravity survey

Yuan, Bing-Qiang (1); Yang, Ming-Sheng (2); Liu, Shi-Yi (1); Duan, Qing-Bo (3); Yuan, Shou-Cheng (1, 4); He, Xian-Ming (1); Xu, Guo-Zhong (1); Yu, Guo-Ming (1)
Source: *Diqiu Kexue - Zhongguo Dizhi Daxue Xuebao/Earth Science - Journal of China University of Geosciences*, v 30, n 4, p 498-502, July 2005; **Language:** Chinese; **ISSN:** 10002383; **Publisher:** China University of Geosciences
Author affiliation: (1) Department of Resource and Engineering, Xi'an Petroleum University, Xi'an 710065, China (2) Center of Method and Technology for Regional Gravity Survey, Xi'an 710016, China (3) Shaanxi Archaeology Institute, Xi'an 710054, China (4) School of Geophysics and Geoinformation Systems, China University of Geosciences, Beijing 100083, China
Abstract: Emperor Qinshihuang mausoleum is the first emperor mausoleum in Chinese history. Although archaeologists have made many great discoveries in the mausoleum archaeology, whether the underground palace of Emperor Qinshihuang mausoleum lied under the burial tamped mound and other problems remain not really clear by now. Therefore, it is of great significance to explore the underground palace using advanced technologies in order to protect such an important cultural relic resources in science. It has been explored that digging area of the underground palace in the EW and SN directions is about 170 m × 145 m and the western grave path has been discovered by high precision gravity survey. There would be a coffin chamber in the underground palace which is about 50 m long from the east to the west and about 40 m wide from the south to the north, the height of the coffin chamber is about 10 m

and the buried depth is about 43 m; also there would be stone-made palace-wall in the surrounding of the underground palace, the central area of the palace-wall would be 145 m × 125 m, the width of the palace-wall is about 8 m, the height of the palace-wall is about 14 m; and there is a thin tamped soil wall whose width is about 15 m, height is about 30 m on the top of stone-made palace-wall inferred from gravity anomaly definite quantity modelling. We thus consider that there exist complete set underground paleotomb architecture groups containing the coffin chamber, palace-walls, grave paths, etc. after large scale excavation under the burial tamped mound of Emperor Qinshihuang mausoleum, which provides the proof, from another side, that the underground palace lies beneath the burial tamped mound existing now. (6 refs)
Main heading: Underground structures
Controlled terms: Excavation - Soil structure interactions - Walls (structural partitions)
Uncontrolled terms: Buried depth - Coffin chamber - Emperor Qinshihuang mausoleum - Grave paths - High precision gravity survey - Mausoleum archaeology - Palace wall - Underground palace
Classification Code: 408 Structural Design - 483.2 Foundations - 502.2 Mine and Quarry Equipment
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

46. Pt catalyst supported on carbon nanotubes for selective hydrogenation of citral and differential heats of CO adsorption

Zhang, Yao-Jun ; Li, Ju-Yuan ; Li, Wen-Zhen ; Xin, Qin
Source: *Gaodeng Xuexiao Huaxue Xuebao/Chemical Journal of Chinese Universities*, v 26, n 7, p 1345-1347, July 2005; **Language:** Chinese; **ISSN:** 02510790; **Publisher:** Higher Education Press
Author affiliation: (1) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Chemistry and Chemical Engineering, Xi'an Petroleum University, Xi'an 710065, China (3) State Key Laboratory of Catalysis Basis, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China
Abstract: Carbon nanotube is found to be a novel support for the selective hydrogenation of citral in this paper. Selective hydrogenation of citral was carried out in an autoclave at 5 MPa and 323 K. The results indicate that the selectivity of the products, unsaturated alcohols, is about 86% over Pt/CNTs catalyst and 48% over Pt/XC-72 catalyst, respectively. The differential heat of CO adsorption measured by microcalorimetry is firstly used to probe surface adsorption sites of platinum catalyst supported on carbon nanotubes. The experimental results indicate that the Pt/CNTs catalyst shows a higher initial differential heat of CO adsorption (126 kJ/mol) than the Pt/XC-72 catalyst (106 kJ/mol). (10 refs)
Database: Compendex
Data Provider: Engineering Village

47. Building a long-range education management system based on Web using Velocity and J2EE

Ren, Chang-Lin ; Song, Xin-Ke ; Qiang, Xin-Jian
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 74-76, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Ctr. of Info., Xi'an Shiyou Univ., Xi'an 710065, China (2) Coll. of Comp., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The design of a long-range education management system based on Web and its implementation are described. The technique of data warehouse is used in the base of the system, which can allow teachers to conduct complicated educational administration and lead different students to different learning processes. In this paper, the decision-making system of the long-range education management system base on the data warehouse and the implementing method and techniques of the long-range education management system are discussed in detail. (3 refs)
Database: Compendex
Data Provider: Engineering Village

48. Analysis of sanding mechanism of low-permeability oilfields

Xiao, Wei ; Xu, Yuan-Gang ; Liu, Shun

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 43-45+49, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Teaching Affairs Office, Xi'an Shiyou University, Xi'an 710065, China
Abstract: It is generally considered that formation sand production does not happen in low-permeability oilfields. However, serious sand production affects oil production a lot in Fanxue tract of Yanchang Oilfield. Based on field investigation, mineralogical composition, particle diameter of the sand, displacement experiment, sanding index, produced water, critical flowing bottomhole pressure and critical oil production, it is held that the sand comes from formation but is not frac sand. According to the geologic situation, it is also held that the cause of sand production is the slabbing of formation rock cementing matter--clay. And an integrated sand control project is drawn out. That is to make sure a certain liquid yield to carry the sand out of wellbore, and at the same time, to use clay stabilizer, paraffin remover and sand screen. (7 refs)
Database: Compendex
Data Provider: Engineering Village

49. Study on inflow performance of oil wells in low-permeability reservoirs

Xu, Yuan-Gang ; Liu, Shun
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 4, p 77-80, July 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China
Abstract: The inflow performance relationships (IPR) for the single-phase and two-phase flow in vertical wells of low-permeability reservoirs are established. The concept of effective formation pressure is presented. The flow efficiency is defined as the ratio of actual rates of non-perfect wells to the rates of ideal wells, in consideration of the effect of non-perfection on well rates. This definition is easily described by mathematics, and its physical meaning is clear. The calculating methods of IPR for oil-gas-water flow are discussed. The analysis shows that Darcy flow in steady fluid flow is only a special case of non-Darcy flow. The application of field data from 53 wells to validate the models shows that the average calculation error is within 10%. The established IPR are suitable for different cases and can be widely used in practice. (14 refs)
Database: Compendex
Data Provider: Engineering Village

50. Discussion on the division of coalbed methane-enriched units in China

Zhao, Jingzhou (1, 1); Shi, Baohong (1)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 1, p 22-25+3, January 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Department of Resource Engineering, Xi'an Shiyou University
Abstract: The division of coalbed methane-enriched units is the basis of probing coalbed methane reservoir formation law, carrying out coalbed methane resource and area-selection evaluation, making up scientific coalbed methane exploration program and raising coalbed methane exploration success ratio. The formation conditions and distribution environments of coalbed methane in China are very complicated, so that it is very important for the coalbed methane exploration evaluation to investigate its enrichment units. According to the particularity, complexity and distribution law of coalbed methane in China, its enrichment units were di vided into five grades, i.e. methane-bearing province, methane-bearing basin, methane-rich region, methane-rich zone and methane reservoir (field). (14 refs)
Main heading: Methane
Controlled terms: Coal - Coal mines - Natural resources exploration
Uncontrolled terms: Coalbed methane - Division - Enrichment units - Probing - Sequences
Classification Code: 503.1 Coal Mines - 524 Solid Fuels - 804.1 Organic Compounds
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

51. Multi-class classifier based on support vector machine and decision tree

Song, Xinke
Source: *Jisuanji Gongcheng/Computer Engineering*, v 31, n 14, p 174-175, Jul 20 2005; **Language:** Chinese; **ISSN:** 10003428; **Publisher:** Shanghai Computer Society

Author affiliation: (1) Information Center, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Classifier based on SVM theory has been developed as a general-purpose two-class classifier, but it is not suitable for multi-class classification. Two basic classification algorithms are analyzed and combined into one multi-class classifier. The experimental results show that it is good as 'one against one' algorithm in classification preciseness and it has much higher test speed. (5 refs)
Database: Compendex
Data Provider: Engineering Village

52. Effect of stress birefringence on characteristics of FBG pressure sensing

Wang, Hong-Liang (1); Qiao, Xue-Guang (1); Zhou, Hong (1); Zhao, Da-Zhuang (1); Wei, Ting (1); Liu, Ying-Gang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 16, n 4, p 395-398, April 2005; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) School of Sciences, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The sensing and the testing on the pressure in a state of the fiber Bragg grating (FBG's) bend strain were realized, and the effect of using overall affix and two-spot affix between the FBG and underlay on the characteristics of the pressure sensing was compared both experimentally and theoretically. Our analysis found that the bigger nonlinearity effect caused by overall affix on the characteristics of output to input of the sensor can be produced, and the nonlinearity effect caused by the spectral width is expanded due to the stress birefringence and the stress grads etc. The experimental results show that the spectral width caused by using overall affix is 0.28 nm, and the linearity of using two-spot affix increases by 1.89%. (5 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Birefringence - Pressure gages - Pressure measurement - Strain - Stresses
Uncontrolled terms: Nonlinearity effect - Overall affix - Pressure sensing - Stress birefringence - Two-spot affix - Underlay materials
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 714.1 Electron Tubes - 741.3 Optical Devices and Systems - 944.3 Pressure Measuring Instruments - 944.4 Pressure Measurements
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

53. A general algorithm for the distributing and dispatching of web database system

Lian, Shi-You
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 78-80, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Computer, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Distributing and dispatching is a kind of difficult problem and some are even NPC problems. Therefore, it is more difficult to solve this kind of problems and generally the technology of AND-OR graph search is used to solve them. This results in some difficulties in programming the distributing and dispatching program in web database systems. In the paper, with the distribution of student graduation design tasks being taken as an example, a general algorithm is given which can solve a kind of distributing and dispatching problem with the restraining condition of each other choosing. This algorithm does not involve complex data structures and searching process, it is only described by the table operations of relation database, and it can be realized through programming in any language which supports Web database. (4 refs)
Database: Compendex
Data Provider: Engineering Village

54. Characterization of regular cone in ordered Banach space

Li, Fu-Min
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 82-83, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The concept of ordered closed interval sheaths is introduced in ordered Banach spaces, and two sufficient and necessary conditions for closed convex cones being regular are obtained. (2 refs)
Database: Compendex
Data Provider: Engineering Village

55. Method of the discretization of continuous probability distribution for risk analysis

Wang, Jia-Hua ; Liu, Bing
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 83-85, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Abstract: For Monte-Carlo simulation frequently used in risk analysis, a great deal of sampling has to be done to get the reliable continuous distributions of risk variables. Converting the continuous distributions into discrete distributions will decrease a large amount of computation in Monte-Carlo simulation. A method of converting a continuous distribution into a discrete distribution is put forward, and its basis is making the area encircled by the cumulative probability curve of the continuous distribution equal the area encircled by the cumulative probability curve of the discrete distribution. The main steps of applying this method in risk analysis are presented. (5 refs)
Database: Compendex
Data Provider: Engineering Village

56. Implementation of document management system based on web services

Wang, Kui-Sheng ; Yan, Zhi-Qiang ; Qu, Zhan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 68-71, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Computer, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The traditional document management systems only meet the requirements of the users in an enterprise, but the document information in the management system cannot be shared between the enterprise and its cooperators and consumers. With the development of E-Business, it is necessary to develop a document management application system oriented to the users in different enterprises. It is discussed how to implement the system with Web Services technology in detail. At first, four-layer structure of the system based on B/S is described, and then the characteristics, the establishment and the use of Web Services technology are introduced. Lastly, the implementation of Web Services technology in the system is discussed in detail. (7 refs)
Database: Compendex
Data Provider: Engineering Village

57. Product compositing model based on data warehouse

Zhang, Zhen-Qing ; Qu, Zhan ; Fang, Ming
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 80-82, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Comp., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The problems that exist in current product composition management are analyzed, and a product compositing model is proposed. Data warehouse is used as the base support of the product composition in the model, and the structure of the product compositing system and the product compositing design system are presented. The fast product composition met the demand of users based, on the normalized product resource can greatly shorten product developing cycle, reduce product developing cost and improve product developing quality. The fast product design met the demand of users will become the key to enterprises winning long-term competitive superiority. (4 refs)
Database: Compendex
Data Provider: Engineering Village

58. Well log distinguishability visual stochastic modeling for carbonate reservoir

Li, Yuan-Jue
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 32, n 1, p 70-71+86, February 2005; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) Faculty of Sci., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The statistical indicators of well log can be used to predict the distribution of reservoir parameters. The statistical indicators of reservoir parameters and alternate frequency of reservoir bed via interbed have been extracted from well log. Combining the statistical indicators of vertical heterogeneity with stochastic reservoir modeling and making vertical data interval of model corresponds to well log interval, a realization of reservoir model in well log distinguishability could be achieved. In the project of a carbonate reservoir description, based on well logging

and 3D visualization calculating language, the characteristics of the reservoir is subtly rendered by the well log distinguishability stochastic modeling for carbonate reservoir. (5 refs)
Database: Compendex
Data Provider: Engineering Village

59. Design of constant speed digital controller based on electro-hydraulic proportion technique

Cheng, Weibin (1)
Source: *Jixie Gongcheng Xuebao/Chinese Journal of Mechanical Engineering*, v 41, n 7, p 231-233, July 2005; **Language:** Chinese; **ISSN:** 05776686; **DOI:** 10.3901/jme.2005.07.231; **Publisher:** Editorial Office of Chinese Journal of Mechanical Engineering
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The electro-hydraulic proportion valve is used in the novel hoist for well logging to regulate the angular speed of the roller. The rolling radius is changing during well logging, and the line speed is also changing continuously. In order to keep the line speed constant, the angular speed should be regulated manually which is a heavy work, and also the output consistency is not satisfactory. Analyzing the characteristic of the hoist, a kind of digital controller of constant speed is designed using Dahlin arithmetic, the model and formulas are presented. The stability of line speed in the designed digital control system keeps in good accord with the requirements of local well logging, the workload is decreased also, and it is a good application with higher quality and lower cost. (9 refs)
Main heading: Digital control systems
Controlled terms: Electrohydraulic forming - Hoists - Proportional control systems - Speed control - Transfer functions - Well logging
Uncontrolled terms: Angular speed - Dahlin arithmetic - Electro-hydaraulic proportion - Speed digital controller
Classification Code: 631.1.1 Liquid Dynamics - 703.1 Electric Networks - 731.1 Control Systems - 731.3 Specific Variables Control - 741.1 Light/Optics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

60. Temperature and pressure responsive characteristics of polymer packaged fiber Bragg grating with large dynamic range

Sun, An (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Guo, Tuan (1); Chen, Chang-Yong (1)
Source: *Zhongguo Jiguang/Chinese Journal of Lasers*, v 32, n 2, p 224-227, February 2005; **Language:** Chinese; **ISSN:** 02587025; **Publisher:** Science Press
Author affiliation: (1) Optical Fiber Sensing Lab., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The pressure and temperature response characteristics of polymer packaged fiber Bragg grating (FBG) sensor are analyzed. The experimental results show that the pressure sensitivity is not a constant but a variable because of the effect of temperature on elastic modulus of polymer when the change range of temperature is large. The pressure sensitivity is 0.036 nm/MPa at 30°C and 0.175 nm/MPa at 180°C and the change of sensitivity is piecewise linear at different temperature range. So elastic modulus should be treated as the function of temperature when using polymer to packaged FBG, the pressure coefficient in the coefficient matrix of FBG should also be the function of temperature in order to eliminate the error induced by the change of elastic modulus caused by large range temperature change. (10 refs)
Main heading: Fiber optic sensors
Controlled terms: Fiber Bragg gratings - Pressure measurement - Sensitivity analysis - Temperature measurement
Uncontrolled terms: Polymer package - Pressure response - Temperature response
Classification Code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 921 Mathematics - 944.4 Pressure Measurements - 944.6 Temperature Measurements
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

61. High power, high flattening C + L band erbium-doped fiber source based on fiber loop mirror

Qiao, Xue-Guang (1); Guo, Xiao-Dong (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Zhao, Da-Zhuang (1); Zhou, Hong (1); Wang, Xiao-Feng (1); Liu, Ying-Gang (1)
Source: *Guangxue Jingmi Gongcheng/Optics and Precision Engineering*, v 13, n 2, p 205-210, April 2005; **Language:** Chinese; **ISSN:** 1004924X; **Publisher:** Chinese Academy of Sciences
Author affiliation: (1) Optical Fiber Sensing Lab., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: A fiber loop mirror that is made from 3 dB coupler is employed in dual-stage double-pass one pumping LD configuration, in order to realized high flattening C + L band ASE with high output power. By using two 980 nm LDS, ratio of two stage is acquired, Through optimization of parameter of fiber of the two stage, output ASE of C+L band with power of 15.28 mW (11.84 dB/m) is achieved, and mean wavelength is 1559.31 nm, without any external spectral filter, power ripple of 3 dB is 66.72 nm (from 1533.12 to 1599.84 nm). Fiber loop mirror was used as reflector in the configuration, to enhance the efficiency of LD and improve flatness of spectrum, From the experiment, the best ultra bandwidth ASE source with high output power of 30.11 mW is acquired by adjusting the bi-directional pump power of LDs, besides low demands for flatness. (15 refs)
Main heading: Optical fibers
Controlled terms: Doping (additives) - Erbium - Light sources - Mirrors - Optimization
Uncontrolled terms: Amplified spontaneous emission(ASE) - C band - Erbium doped fiber - Fiber loop mirror - L band - Ultra broadband light source
Classification Code: 547.2 Rare Earth Metals - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 801 Chemistry - 921.5 Optimization Techniques
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

62. Measurement method of velocity without computational error

Cheng, Wei-Bin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 74-77, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel computational method for velocity measurement is described. A quadruplicated frequency pulse circuit, phase detection and synchronous trigger technique and changeable gate time for different encoders are applied in the measurement system according to the characteristics of encoders. This method transforms complicated multiplications and divisions into simple multiplications, which reduces the workload of computation, absolutely eliminates the computational errors and shortens the measuring time, so the measuring precision and resolution of velocity are improved. This method is successfully applied in the closed-loop velocity control system of the mobile machinery shop for well logging. (8 refs)
Database: Compendex
Data Provider: Engineering Village

63. Demodulation system for fiber Bragg grating sensors based on a real-time calibration technique

Chen, Chang-Yong (1); Qiao, Xue-Guang (1); Wang, Xiao-Feng (1); Jia, Zhen-An (1); Dang, Rui-Rong (1)
Source: *Zhongguo Jiguang/Chinese Journal of Lasers*, v 32, n 6, p 825-828, June 2005; **Language:** Chinese; **ISSN:** 02587025; **Publisher:** Science Press
Author affiliation: (1) Optical Fiber Sensing Laboratory, Xi'an Shiyou University, Xi'an 710065, China
Abstract: This paper reports a digital demodulation scheme for interrogating fiber Bragg grating (FBG) sensors based on a real-time calibration technique. The system controls a tunable fiber Fabry-Perot filter (TFFP) with sawtooth wave voltage and synchronous signal of its digital phase to interrogate FBG sensors in a single fiber. Meantime, a reference FBG and a digital thermometer provide an accurate reference wavelength, which is used to calibrate the wavelength readout of the TFFP in real-time by a digital signal processor (DSP). This method eliminates the measurement error induced by temperature drift, nonlinearity and creepage of TFFP. The result demonstrates that this experimental system has scanning range of 1520-1570 nm, scanning frequency of 100 Hz, measured wavelength resolution of 5 pm, and measured strain resolution of 4.13 μE. (10 refs)
Main heading: Fiber optic sensors
Controlled terms: Calibration - Demodulation - Fabry-Perot interferometers - Fiber Bragg gratings - Measurement errors - Optical filters - Thermometers

Uncontrolled terms: Digital demodulation scheme - Digital signal processor (DSP) - Fiber Bragg grating sensors - Tunable fiber Fabry-Perot filter (TFFP)
Classification Code: 732.2 Control Instrumentation - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 922 Statistical Methods - 941.3 Optical Instruments - 944.5 Temperature Measuring Instruments
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

64. Study on the continuity of the extra-low permeability reservoir of Chang6 in the east of North Shaanxi Slope and its application

Song, Zi-Qi ; Kang, Li-Ming ; Li, Ya-Ling ; Yang, Jin-Lin ; Pan, Ling-Li ; Wang, Jing ; Lu, Xiang-Wei
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 28-30, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Abstract: The continuity of the Chang6 extra-low permeability sand-body in the three wellblocks of Xinghe, Houshi and Wangyao in Ansai Oilfield is studied according to the statistical data of 240 exploration wells and development wells. The well number, the total thickness, the average thickness and the apparent continuity ratio of sand layer, permeable sand layer, oil-bearing aquifer and oil-bearing formation of Chang611-1, Chang611-2, Chang611-3, Chang612, Chang622 and Chang63 are presented in one statistical table. The major reservoir of Chang611-2 in the studied area has good continuity, the apparent continuity ratios of its sand layer and oil-bearing formation are 88.3% and 63.3% separately. The drilling-encounter ratios of oil-bearing aquifer and oil-bearing formation of them based on well number, stratum number and stratum thickness separately are also presented in the other statistical table. The drilling-encounter ratios of Chang611-2 all reach to 60%-70%. The results in this paper can provide reliable geological basis for the development decision-making in the studied area. (4 refs)
Database: Compendex
Data Provider: Engineering Village

65. Method of computing the mechanical parameters of formation and its application in Sulige area of Changqing Oilfield

Li, Tian-Tai ; Zhang, Yi ; Zhang, Ning-Sheng ; Li, Xiao-Hui ; Wei, Ke-Ying
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 22-24, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Continuous Education, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) No.1 Production Plant, Changqing Oilfield Company, Wushenqi 017300, China
Abstract: A set of models for calculating three formation pressure profiles (formation pore pressure, caving pressure and fracture pressure) and other formation mechanical parameters are established based on the study of borehole wall destabilization, logging data and ordinary empirical formulas. The calculated mechanical parameters can help us design the safe density limit of drilling fluid to make sure that the borehole wall is stable during drilling. The three pressure profiles and other formation mechanical parameters of Su-4 and Su-6 wells in Sulige area are calculated according to their logging data by using the set of models. The results are identical to the used data in field, which proves that the calculated three pressures, other mechanical parameters and the safe density limit of drilling fluid are reliable. The calculated results can provide a reliable technological basis for high-speed safe drilling in Sulige area. (7 refs)
Database: Compendex
Data Provider: Engineering Village

66. Analytical method for the division and description of reservoir flowing unit

Song, Zi-Qi ; Chen, Rong-Huan ; Kang, Li-Ming ; Yang, Jin-Lin ; Pan, Ling-Li ; Wang, Jing ; Lu, Xiang-Wei
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 3, p 56-59, May 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Abstract: The basic theory and the method of studying reservoir flowing unit are presented. The sixth reservoir unit of Duo-1 Member of Zhen-12 block in Jiangsu Oilfield and the conglomerate reservoir of Keshang Formation of the 8th block in Kelamayi Oilfield are divided into flowing unit. The former is divided into 4 kinds of flowing units, and the parameters of 4 kinds of flowing units and their physical parameters are presented. The latter is divided into 5 kinds

of flowing units, and the physical characteristics of the 5 kinds of flowing units are analyzed. The distribution and the characteristics of every kinds of flowing units are discussed, and the relationships between them and sedimentary microfacies, restraining barrier and interbed are described. (5 refs)
Database: Compendex
Data Provider: Engineering Village

67. Development of the software for the risk probability analysis of long-distance oil/gas pipeline

Yan, Feng-Xia ; Gao, Hui-Lin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 72-76, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The failure of long-distance oil/gas pipeline being as top accident, the fault tree of the long-distance oil/gas pipeline is established using fault tree analysis method; All the minimum cut sets and the probability of the top accident are got through the qualitative and quantitative analyses of the fault tree; the structure importance degree, the probability importance degree and the critical importance degree of all the basic accidents are calculated. The overall structure and the functions of the software and their implementation are presented. Lastly, an application case is provided. (8 refs)
Database: Compendex
Data Provider: Engineering Village

68. Novel C + L band broadband high power source with two-stages double-passes

Guo, Xiao-Dong (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Zhao, Da-Zhuang (1); Wang, Xiao-Feng (1); Liu, Ying-Gang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 16, n 3, p 282-285, March 2005; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Optical Fiber Sensing Lab., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The principle of C + L band ASE fiber light source of two-stage double-pass was investigated and optimized. The output of C + L band with high power was achieved experimentally. The output of C + L (between 1520 and 1610 nm) is 19.2 mW (12.93 dBm) when double-pass forward pumping is used in first stage, and the mean wavelength is 1552.823 nm; the output of C + L (between 1524 and 1610 nm) is 21.13 mW (13.25 dBm) when double-pass backward pumping is used in first stage, and the mean wavelength is 1 552.925 nm. The lengthes of two stages are individually about 7 m (lower doped) and 31 m (higher doped). Meanwhile, after the character of output spectra, efficiency of pump and flatness were discussed and compared about two kinds, the conclusion is that double-pass backward pumping of the first stage in the two-stage double-pass configuration is more perfect for the design of C + L band ASE fiber source. (16 refs)
Main heading: Fiber optics
Controlled terms: Electron energy levels - Light emission - Light sources - Optical pumping - Semiconductor lasers
Uncontrolled terms: Amplified spontaneous emission - Broadband light source - C + L band fiber light source - Erbium-doped fiber - Guided wave and fiber optics
Classification Code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 744.4.1 Semiconductor Lasers - 931.3 Atomic and Molecular Physics
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

69. Two-stage double-pass L-band fiber light source with high power based on fiber loop mirror

Guo, Xiao-Dong (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Zhou, Hong (1); Zhao, Da-Zhuang (1); Liu, Ying-Gang (1); Wang, Xiao-Feng (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 16, n 6, p 665-669, June 2005; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Optical Fiber Sensing Laboratory, Xi'an Shiyou University, Xi'an 710065, China

Abstract: The basic principle of L-band is presented, based on 3 dB wide band coupler, the fiber loop mirror with high reflectivity is obtained, through optimal designs and experiments, the two-stage double-pass of L-band with high power amplified spontaneous emission (ASE) fiber source was developed. The fiber lengths of two-stages are about 7 m (low concentration) and 31 m (high concentration) respectively, the output power of L-band, when double-pass forward pumping is used in the configuration, is 21.48 mW (13.32 dBm), the mean wavelength is 1573.52 nm; When double-pass backward pumping is used in the first stage, the output power of L-band is 22.71 mW (13.56 dBm), and the mean wavelength is 1574.66 nm. By comparison with the characters of the efficiency of pump and the flatness of spectrum, the two-stage double-pass structure with the double-pass backward pumping in the first state is more perfect for the design of L-band with high power. Also, as high power (higher than 30 mW) of C-band is easy to obtain, so output ASE of C + L band (from 1520 to 1610 nm) with power higher than 50 mW could be achieved. (14 refs)
Main heading: Fiber lasers
Controlled terms: Erbium - Mirrors - Optical fibers - Spontaneous emission
Uncontrolled terms: Amplified spontaneous emission (ASE) - Erbium doped fiber (EDF) - Fiber loop mirror - L-band fiber light source
Classification Code: 547.2 Rare Earth Metals - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 744.4 Solid State Lasers
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

70. Velocity and temperature distributions of the circular pipe flow of waxy crude oil

Dong, Zheng-Yuan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 37-40+52, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The analytic solutions of the velocity and the temperature distributions of the circular pipe flow of waxy crude oil under constant pipe-wall temperature and constant environment temperature separately are obtained based on the momentum equation and energy equation which control the flow of fluid and the constitutive equation which describes the flow properties of fluid. The analysis shows that the analytic solutions given are generally suitable to various rheological behaviors of waxy crude oil. When yield stress is not equal to zero, there is cylindrical flow in the center of the pipe, the radius of the cylindrical flow is in direct proportion to yield stress; the distributions of velocity and temperature in radius direction are all uniform within the cylindrical flow, and the distributions of velocity and temperature in radius direction are curvilinear without the cylindrical flow. The effect of rheological parameters on the distributions of velocity and temperature are analyzed through the calculation of a case. The results given in this paper lay a foundation for the accurate calculations of the pressure loss and the heat power loss in the transportation of waxy crude oil through circular pipeline. (7 refs)
Database: Compendex
Data Provider: Engineering Village

71. Mechanism of rotary steering drilling tool

Yan, Wen-Hui ; Peng, Yong ; Zhang, Shao-Huai
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 5, p 94-97, September 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The working principle and structure of a rotary steering drilling tool are introduced. The main technical properties of the tool are described. The tool mainly includes three parts: (1) unit of stabilization platform; (2) unit for controlling and assigning working liquid; (3) unit of Push-the-Bit working structure. The wellbore data can be transmitted to measurement while drilling (MWD) unit from the test component in the tool through a short distance communication component and then transmitted to the instrument on ground by MWD unit. At the same time, the receiver in the component receives the instruction from the instrument on ground, and then control the high-pressure hole located on the upper plate hose by controlling and assigning working liquid with a controller in the stabilization platform unit. The unit for controlling and assigning working liquid takes the filtered mud as the working liquid distributed in three mud pipes in turn. The mud provides the 'pad' with a motive force and maintains the direction of the join force on the position in accord with the high-pressure hole on the upper valve all the time. Thus there will form a side force near the bit flapping the wall of the well. The adjustment of the size and direction of the side force acted on the wall and the flapping frequency could directly control the steering state of the drilling tool. (15 refs)

Database: Compendex
Data Provider: Engineering Village

72. Design and implementation of a scientific and technologic information website visiting statistic system

Yuan, Tong-Lu ; Sun, Cai-Ping ; Lin, Hai ; Cao, Jun-Xia
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 84-86, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Department of Science and Technology, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Foreign Language, Xi'an Shiyou University, Xi'an 710065, China (3) Shaanxi Energy Vocational and Technological College, Xianyang 712000, China
Abstract: The construction and improvement of a website needs to understand the visiting information of users to the website. The design of website visiting information statistic system is introduced by taking the automatic statistic of scientific and technologic information website visiting information as an example. The system is implemented using ASP and SQL Server 2000. It can automatically record the statistical data of users' visiting to the website. The system is easy to operate, and the administrators can easily analyze the data so as to further guide the construction of the website. (3 refs)
Database: Compendex
Data Provider: Engineering Village

73. Novel C+L band erbium-doped fiber broadband light source with high power

Guo, Xiao-Dong (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Wang, Xiao-Feng (1)
Source: *Zhongguo Jiguang/Chinese Journal of Lasers*, v 32, n 5, p 609-612, May 2005; **Language:** Chinese; **ISSN:** 02587025; **Publisher:** Science Press
Author affiliation: (1) Optical Fiber Sensing Laboratory, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A high-power broadband light source covering C-band and L-band (1520-1610 nm) by using two kinds of different concentration erbium-doped fiber was reported in this paper. In the dual-stage double-pass structure, the double-pass forward pumping was used in the first stage, the fiber of lower doped concentration was 7.5 m, and the output of first stage was used as seed signal; in the second stage, backward pumping was used, and the fiber of much higher doped concentration was 31.2 m. The fiber loop reflector was used to enhance the conversion efficiency of pumping LD, and high output power and good flatness were also achieved. After matching the pumping power of the two stages, the amplified spontaneous emission (ASE) source with the high output power of 19.20 mW (12.83 dBm) and with the mean wavelength of 1552.82 nm was developed and obtained. Meanwhile, the relation between the output and the change of pumping in the configuration was discussed implicitly, it was important to the design of the source. (11 refs)
Main heading: Fiber lasers
Controlled terms: Erbium - Fiber optics - High power lasers - Optical fibers - Optically pumped lasers - Spontaneous emission
Uncontrolled terms: Amplified spontaneous emission (ASE) - Backward pumping - Dual-stage double-pass configuration - Erbium-doped fibers - Fiber light source - Fiber loop reflectors - Forward pumping
Classification Code: 547.2 Rare Earth Metals - 741.1.2 Fiber Optics - 744.1 Lasers, General - 744.4 Solid State Lasers
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

74. Stress sensitivity of super-low permeability reservoirs and its influence on the productivity of oil well

Li, Zhuan-Hong ; Ren, Xiao-Juan ; Zhang, Ning-Sheng ; Qi, Yin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 60-63, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The stress sensitivity of some Chang-6 super-low permeability reservoir is systemically studied by experiments. The study results show that, the stress sensitivity degree of this super-low permeability reservoir ranges

from 26% to 80%, the lower the permeability, the stronger the stress sensitivity; the underground permeability under original formation condition is apparently lower than the permeability under surface condition, there is better linear relationship between them; after the reservoir is injured by stress sensitivity, its permeability can't be immediately recovered, the ultimate permeability restoration rate is 68.60% to 100%, the higher the original permeability, the greater the ultimate permeability restoration rate; when the rock permeability is under 0.5×10-3μm2, the stress sensitivity of reservoir rock apparently increases. The model prediction show that if formation pressure drops to 5 MPa, the production of oil well is decreased by 8.6% to 35.7% because of stress-sensitivity damage, the lower the permeability, the greater the drop of the productivity. (10 refs)
Database: Compendex
Data Provider: Engineering Village

75. Design of a dynamic monitoring system for oil pipeline leakage and its implementation

Yan, Zheng-Guo ; Zhang, Jia-Tian ; Hu, Chang-Ling ; Ma, Hu-Shan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 66-68+73, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Electron. Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The system can real-time monitor the leakage of a pipeline by monitoring the change of the pressure inside a pipeline at both ends of the pipeline. The working state of the pipeline is analyzed and whether and where the leakage occurred is judged according to the characteristics of water hammer wave propagation. The system can sound the alarm when the leakage is detected. The operating principle, functional modules, hardware constitution and software flow charts of the system are described. Field tests show that the system works reliably. (7 refs)
Database: Compendex
Data Provider: Engineering Village

76. Development of an oil-soluble viscosity-reducing agent for extra-viscous crude oil

Yu, Hong-Jiang ; Liu, Xiang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 63-65, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Firstly, a polyacrylic acid with certain molecular mass is synthesized, then sorbic alcohol and stearic acid are added into it separately, and finally, an oil-soluble viscosity-reducing agent is obtained by two-step esterification reaction. The effects of the reaction conditions on the viscosity-reducing result of the product are studied, and the optimal reaction conditions are obtained: the substance mass ratio of polyacrylic acid to sorbic alcohol to stearic acid is 1-0.6:0.6; reaction temperature is 110~115°C; reaction time is 5~7 h. The effects of the dose of the viscosity-reducing agent and temperature on its viscosity-reducing result are also studied, the studied result shows that, it has the best viscosity-reducing result when its concentration in crude oil is 0.8 g/L and temperature ranges from 42.5°C to 50°C. (6 refs)
Database: Compendex
Data Provider: Engineering Village

77. Design and application of short-wave data transmission interface circuit based on single-chip AT89C2051

Kang, Si-Min ; Wu, Ying-Long ; Gao, Hong ; Cheng, Wei-Bin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 80-83, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: With the development of information technique, it is urgent to provide the capability of digital communication for the short-wave radios which are generally used for audio communication in remote country. For this reason, a novel interface circuit is designed in order to meet the requirement of field operation in oilfields. The wireless transmission of digital signal is realized by using single-chip AT89C2051 as a kernel of hardware. The hardware circuit and programming flow chart are presented. The design of short-wave data transmission interface circuit makes full use of the current short-wave radios and meets the continuously increasing demand of the data transmission in oilfields. (5 refs)
Database: Compendex

Data Provider: Engineering Village

78. Water flooding technology with changeable pressure and flux based on preceding booster

Cheng, Wei-Bin ; Wu, Jiu-Fu
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 4, p 115-118, July 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The statistics show that the electric power consumption in water flooding development takes up 33%-56% in the total power consumption of oil production. The energy-saving problem is emergent in water flooding system. The pump-control-pump (PCP) technique based on two pumps connected in series is put forward to regulate the output pressure and flux of water flooding system and to make the high-pressure and high-power water flooding pump working with high efficiency by means of preceding booster. The mathematical models for the control system were established on the basis of the superposition characteristic analysis of pumps used in large-scale water flooding station. The automatic control theory and energy-saving principle are introduced. The output pressure and flux of water flooding station are taken as the objective functions, and high efficiency, energy-saving and optimization operation are realized in high-pressure water flooding station. (12 refs)
Database: Compendex
Data Provider: Engineering Village

79. Application of Boolean Operation in modeling

Wu, Chun-Yan ; Liu, Bing
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 81-83+86, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Three-dimensional animation technology is widely used in the design and making of CAT. Combining the making process of courseware at present, it is discussed how to use Boolean Operation in modeling under 3ds max software. Some difficulties in the application of Boolean Operation and the methods of solving them are presented. (7 refs)
Database: Compendex
Data Provider: Engineering Village

80. Application of determining the size of the particle using laser diffraction in the design of temporary plugging drilling/completion fluid formulation

Zhang, Xi-Feng ; Li, Tian-Tai ; Zhang, Ning-Sheng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 34-36, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The size of the particle in temporary plugging fluid must be measured in order to make the temporary plugging fluid form the mud cake whose permeability is almost zero on the sidewall. The principle and the characteristics of measuring particle size using laser diffraction are introduced, and the application of the method in the design of temporary plugging drilling/completion fluid formulation is also presented. Compared with other particle size measuring methods, this method has the advantages of high measuring speed, little quantity of sample, wide measuring range and no need for calibration. This method will have wide application prospects in petroleum industry and other fields. The temporary plugging drilling/completion fluid formulations are successfully designed for Talimu Oilfield, Qinghai Oilfield, Changqing Oilfield etc. using this method. (5 refs)
Database: Compendex
Data Provider: Engineering Village

81. Direct torque control (DTC) system based on neural network and fuzzy logic

Qi, Zhong-Xia ; Zhu, Xiao-Ping

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 62-65, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Mech. Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The key components in DTC system are a stator flux observer and a inverter state selector. The stator flux observer in the DTC system of a conventional asynchronous motor is simulated by learned neural network replacing U-I-N model. Fuzzy control algorithm is introduced in the inverter state selector, the hierarchical control of the inverter state is implemented by the stator flux linkage error, and torque error and flux linkage angle and less fuzzy control rules are used. Simulation result shows that the DTC system based on neural network and fuzzy logic has a strong robust and good dynamic performance. (7 refs)
Database: Compendex
Data Provider: Engineering Village

82. Study of simultaneous measurement of temperature and pressure using double fiber Bragg gratings with polymer package

Sun, An (1); Qiao, X.G. (1); Jia, Z.A. (1); Li, M. (1); Zhao, D.Z. (1)
Source: *Optical Engineering*, v 44, n 3, p 1-4, March 2005; **ISSN:** 00913286, **E-ISSN:** 15602303; **DOI:** 10.1117/1.1870493; **Article number:** 034402; **Publisher:** SPIE
Author affiliation: (1) Xi'an Shiyou University, Optical Fiber Sensing Laboratory, Xi'an 710065, China
Abstract: A simple and practical method to simultaneously measure pressure and temperature using a double fiber Bragg grating (FBG) sensor is presented in which a double FBG is coated in a particular metal tube by a special polymer. In this manner, the inaccuracy induced by the mismatch of pressure and temperature sensitivity can be overcome effectively. The experimental results indicate that this scheme can measure pressure and temperature simultaneously. The temperature and pressure inaccuracy of sensors is about 0.5°C and 0.5 MPa, respectively, within the measuring range of 20 to 100°C and 0 to 20 MPa. © 2005 Society of Photo-Optical Instrumentation Engineers. (10 refs)
Main heading: Fiber optic sensors
Controlled terms: Fiber Bragg gratings - Polymers - Pressure measurement - Temperature measurement
Uncontrolled terms: Polymer package - Simultaneous measurement
Classification Code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 815.1 Polymeric Materials - 944.4 Pressure Measurements - 944.6 Temperature Measurements
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

83. Multi-parameter inversion of array laterolog responses

Liu, Zhen-Hua ; Zhang, Xia
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 30-33, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Mech. Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: A two-dimensional multi-parameter inversion algorithm for array laterolog is proposed. A four-parameter invaded transitional zone model is established, and in the model, formation is radially divided into four parts of borehole, flushed zone, transitional zone and original formation. The linear variation of the resistivity of the transitional zone realistically describes invasion process. Four parameters (the resistivity of original formation, resistivity of transitional zone, the radius of flushed zone and the radius of transitional zone) are inverted by using modified damped least square method. Compared with traditional step invasion model, the result calculated by this invaded transitional zone model has higher stability and faster convergence rate. This algorithm reduces the dependence of solutions on initial values, constrains the domain of solutions, and enhances the reliability of inversed results. (11 refs)
Database: Compendex
Data Provider: Engineering Village

84. Study on property improvement of polymer coated material for opticalfibre Bragg gratings by using nmSiO2

Zhou, Hong ; Qiao, Xueguang ; Wang, Hongliang ; Jia, Zhenan ; Luo, Jun ; Li, Lan ; Zhao, Dazhuang

Source: *Guangzi Xuebao/Acta Photonica Sinica*, v 34, n 9, p 1332-1335, September 2005; **Language:** Chinese; **ISSN:** 10044213; **Publisher:** Chinese Optical Society
Author affiliation: (1) Optical Fiber Sensing Laboratory, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The principle of property improvement for polymer by using rigid nanometric particles has been presented, and analysis of property-improving mechanism for polymer material by using nmSiO2/siloxane (silicone rubber) has been emphasized. Taking solvent gasoline No. 120 as dispersing agent, a kind of compounded material has been made through co-mixing method to obtain nmSiO2-vinyl siloxane with addition of hydrogen-containing siloxane for vulcanizing reaction. The agglomerative structure of the said material has been analyzed and studied by using AJ-IIIa atom-powered microscope, and its mechanical property has been tested. Results show that the elastic modulus of material has been enhanced by 15.4%, the tensile strength increased by 19.4%, and the specific elongation of breaking increased by 30% after improving property with siloxane rubber. Adopting property-improved siloxane polymer material to coat the optical fibre Bragg grating pressure sensor, the coupling behavior between coated material and optical fibre Bragg grating can be effectively upgraded. Through controlling the content of particles, the stiffness and strength of siloxane are increased, hence range-varying pressure sensor can be manufactured, at the same time service life of the sensor can also be lengthened. (10 refs)
Database: Compendex
Data Provider: Engineering Village

85. Measurement of pressure and displacement by using the optical fiber grating sensor based on the C-shaped elastic tube

Zhou, Hong (1); Qiao, Xue-Guang (1); Wang, Hong-Liang (1); Wei, Ting (1); Li, Lan (1)
Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 32, n 1, p 142-145, February 2005; **Language:** Chinese; **ISSN:** 10012400; **Publisher:** Science Press
Author affiliation: (1) Lab. of Optical Fiber Sensing, Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The structure design of a fiber Bragg grating (FBG) sensor based on the C-shaped elastic tube has been put forward. The tuning of the FBG reflected wave length is carried out by using the excess pressure in the elastic tube for making the free end of the said tube produce displacement, or making the surface of the said tube produce stress. The linear relationship of FBG reflected wavelength variation against both the pressure and the free end displacement has been obtained. In a pressure range of 1-6 MPa, the relationship between FBG reflected wave length and pressure or displacement is a linear characteristic, with the sensitivity of the pressure and displacement sensor reaching 0.0305 nm/MPa and 0.0359 nm/mm respectively, with the linear tuning range being 0.183 nm and 0.215 nm respectively, and with the wave length resolving capability being 3.05 pm and 0.718 pm respectively. (9 refs)
Main heading: Fiber optic sensors
Controlled terms: Distance measurement - Elastic moduli - Fiber Bragg gratings - Force measurement - Sensitivity analysis
Uncontrolled terms: C shaped elastic tube - Displacement measurement - Optic fiber sensing - Sensing principle
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 741.1.2 Fiber Optics - 921 Mathematics - 943.2 Mechanical Variables Measurements
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

86. Research on small-diameter deep-hole drill for vibration drilling

Xu, Xusong ; Yang, Jiangxin ; Sun, Zhiying ; Liu, Zhanfeng
Source: *Zhongguo Jixie Gongcheng/China Mechanical Engineering*, v 16, n 9, p 764-766, May 10 2005; **Language:** Chinese; **ISSN:** 1004132X; **Publisher:** China Mechanical Engineering Magazine Office
Author affiliation: (1) Zhejiang Univ., Hangzhou 310027, China (2) Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: Based on analyzing the demands of small-diameter deep-hole drill for vibration drilling, a new inner-chip removal drill was designed. The structures and tool grinding features were analyzed and vibration drilling experiments were done. Matching the cutting parameters and vibration parameters, it can achieve reliable chip breaking and smooth chip disposing, and the drilled deep-hole has high dimensional precision, small surface roughness values and small linearity errors. The reasons of technical effects improved by vibration drilling using the new drill were analyzed. It shows that the drill has good and reliable technical performance. (6 refs)
Database: Compendex
Data Provider: Engineering Village

87. Research on the mechanism of magnetism-indepentent azimuth angle measured with six accelerators

Di, Qinfeng (1); Zhang, Xiaoke (1); Li, Tiantai (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 2, p 67-69+10, Febrary 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Shanghai Inst. Appl. Math. and Mech., Shanghai University (2) Xi'an Shiyou University
Abstract: At present, hole trajectory azimuth angle is measured mainly with magnetism sensor, but which is restricted by magnetic field and the metal tube around the surveying equipment. In this paper, a new 6 single-axis accelerators is put forward. Two sets of measuring unit consisting of 3 accelerators in 3 mutually perpendicular directions are placed 30 m apart. The azimuth angle change between the two units can be calculated by once operation according to the deviation angles and relative torsion angles measured with the units at each point. The mechanism of this technique can be summarized as the joint changes of hole trajectory deviation to make the hole axial line be tortuosity. The tortuosity can be described by bit weight in axial direction and the angle change of drill string bynormal can be considered as the torsion angle of the borehole. The measurement principle, calculation model and calculation example are carried out in details. The azimuth angle measured by this way is named gravity azimuth. The method can be applied to geothermal well, cased well and the wells in abnormal earth magnetism regions. (5 refs)
Main heading: Angle measurement
Controlled terms: Boreholes - Geothermal wells - Magnetic field effects - Magnetism - Sensors - Tubes (components)
Uncontrolled terms: Accelerators - Azimuth angle - Calculation model - Deviation angle - Measurement mechanism
Classification Code: 943.2 Mechanical Variables Measurements - 732.2 Control Instrumentation - 701.2 Magnetism: Basic Concepts and Phenomena - 619.1 Pipe, Piping and Pipelines - 615.1 Geothermal Energy - 501.1 Exploration and Prospecting Methods - 481.3.1 Geothermal Phenomena
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

88. Influence of welding thermal cycle on toughness and microstructure in grain-coarsening region of X80 pipeline steel

Xu, Xue-Li (1); Xin, Xi-Xian (1); Shi, Kai (1); Zhou, Yong (1)
Source: *Hanjie Xuebao/Transactions of the China Welding Institution*, v 26, n 8, p 69-72, August 2005; **Language:** Chinese; **ISSN:** 0253360X; **Publisher:** Harbin Research Institute of Welding
Author affiliation: (1) Department of Materials Science and Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The influence of welding thermal cycle on toughness and microstructure in grain-coarsening region in the heat affected zone (HAZ) of X 80 pipeline steel was investigated by weld thermal simulation technique, metallography, transmission electron microscopy (TEM), the instrumented Charpy impact toughness test and fracture toughness test. The results showed that there were different microstructures in the simulated grain-coarsening region of X80 pipeline steel under six different welding thermal cycle conditions. When the thermal cycling parameters were small, the microstructure of grain-coarsening region was primarily lower bainite and lath martensite, and when the thermal cycling parameters increased, it was mainly granular bainite. The structural morphology of M-A islands changed from thin and short bars to large long bars or large piece-like, and distributed in the grains instead of on the grain boundary. At the same time, the number of the M-A islands increased and the toughness got worse. (4 refs)
Main heading: Welding
Controlled terms: Composition - Fracture toughness - Grain growth - Heat affected zone - Mechanical properties - Microstructure - Pipelines - Steel - Thermal cycling - Transmission electron microscopy
Uncontrolled terms: Grain coarsening region - Pipeline steels
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 531.2 Metallography - 537.1 Heat Treatment Processes - 538.2 Welding - 545.3 Steel
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

89. Synthesis of bisphenol-B using concentrated hydrochloric acid as catalyst

Zhang, Ke-Liang ; Xu, Jia-Ye ; Zhou, Jian-Ying

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 68-69+73, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Bisphenol-B is synthesized, and its yield can reach to 78.5%. The influencing factors of the synthesis reaction are studied by experiments. The results show that, the type and dose of main catalyst, the dose of catalyst accelerator, the molar ratio of phenol to 2-butanone, reaction temperature, reaction time etc. are the main influencing factors. The optimal synthesis conditions are: concentrated hydrochloric acid is used as main catalyst, its dose is 33.3 mL; mercaptoacetic acid is used as catalyst accelerator, its dose is 0.15 mL; the molar ratio of phenol to 2-butanone is 2.5·1; the reaction temperature is 60-65°C; the reaction time is 6 h. (5 refs)
Database: Compendex
Data Provider: Engineering Village

90. Design of intelligent high-voltage DC power supply for ESP

Zhou, Haobin ; Zhong, Guixiang ; Wang, Yi
Source: *Gaodianya Jishu/High Voltage Engineering*, v 31, n 5, p 61-63, May 2005; **Language:** Chinese; **ISSN:** 10036520; **Publisher:** Science Press
Author affiliation: (1) Department of Materials Engineering and Scientifics, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A kind of intelligent high-voltage direct current power supply for ESP is introduced. The power supply utilizes the inverter technology and uses IGBT as the main power device, SKHI22AH4 as the driving circuits and SG3525A as the controller. It is controlled by single-chip. The external characteristic controlling can be realized by PI algorithm. The power make the low-voltage system, high-voltage system and the controlling system as a whole. The output has two styles: pure direct current and pulse. And the external characteristics have three styles: constant current, constant voltage and down slope. The parameter and working style can be adjusted in field or be remote controlled through computer. A lot of field experiments have been made. It indicates that the power supply has advantages in the using result, the controllability of the output characteristic, the weight and the volume, the reducing production cost, the security and construct etc. (4 refs)
Database: Compendex
Data Provider: Engineering Village

91. Study on the method for measuring the content of water in gas in laboratory

Jin, Xiang-Zhe ; Zhang, Ning-Sheng ; Wang, Xin-Qiang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 3, p 83-86, May 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Natural gas and the gases produced in oil refining process contain water. These gases are harmful to safe production and the use and the transportation of them. Therefore, the content of the water must accurately be measured and strictly be controlled. Some methods most in use are introduced by which the content of water in gases is measured in laboratory, and the shortcomings of them are analyzed separately. Based on this, a new method for measuring the content of water in gases in laboratory is put forward. The new method is based on the strong hydroscopicity of concentrated sulfuric acid. The water in gas is completely absorbed when the gas passes in turn through two absorbing bottles filled with concentrated sulfuric acid, and then the sum of the increments of the weights of the two bottles is equal to the weight of the water in the gas. The experimental results show that, the measured result is accurate as long as the mass fraction of the water absorbed by the concentrated sulfuric acid is less than 10%; the maximum measurement error of this method is 0.8% when the flow rate of the gas is less than 38 L/h and the temperature of the gas ranges from room temperature to 70°C; the average error under different temperatures is less than 0.6%. The use of the method is simple, convenient, and the measurement result is accurate. (5 refs)
Database: Compendex
Data Provider: Engineering Village

92. Displacement and temperature simultaneous measurement with single fiber bragg grating

Wei, Ting (1, 2)

Source: *Chinese Journal of Sensors and Actuators*, v 18, n 2, p 358-362, June 2005; **Language:** Chinese; **ISSN:** 10041699; **Publisher:** Guojia Jiaowei Quanguo Gaoxiao Chuangan Jishu Yanjiuhui
Author affiliation: (1) Xian Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xian 710068, China (2) Optical Fiber Sensing Laboratory, Xian Shiyou University, Xian 710065, China
Abstract: A novel displacement and temperature simultaneous measurement fiber Bragg grating sensor with a single FBG is presented and studied both theoretically and experimentally based on cantilever structure. FBG is affixed on the profile of the cantilever. Vertical displacement of the cantilever free end is measured by bandwidth of FBG due to the bandwidth action is insensitive to the temperature. The temperature is measured by wavelength shift of FBG due to the wavelength shift is insensitive to the strain. Due to the spectral resolution of 0.1 nm for spectral analyzer, the sensitivity of displacement measurement and temperature measurement are 0.513 nm/mm and 0.029 nm/°C, the resolving power are 0.193 mm and 3.4°C, and the measurement range of displacement and temperature is up to 6.15 mm and 45°C respectively. The experimental results match the theoretical analysis well. (14 refs)
Main heading: Temperature measurement
Controlled terms: Bandwidth - Fiber Bragg gratings - Optical resolving power - Sensors - Spectrum analyzers
Uncontrolled terms: Cantilevers - Chirped effects - Displacement and temperature simultaneous measurement - Displacement sensing
Classification Code: 716.1 Information Theory and Signal Processing - 732.2 Control Instrumentation - 741.1 Light/ Optics - 944.6 Temperature Measurements
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

93. Oil-layer or gas-layer deliverability test achieved by Multi-Layer Sampling Tester

Ma, Jianguo (1); Ren, Guafu (1); Zhou, Sanping (1); Qin, Yanbin (1)
Source: *Well Testing*, v 14, n 5, p 21-24+76, October 25, 2005; **Language:** Chinese; **ISSN:** 10044388; **Publisher:** Well Testing
Author affiliation: (1) Xi'an Petroleum University
Abstract: By isolating layers selectively, "Multi-Layer Sampling Tester" can pretest formation and obtain integrated pressure transient curve, thus, estimate dynamic parameters of each layer, such as: formation static pressure, effective permeability and damage factor, etc. the apparatus also can complete deliverability test, measure every flow rate and its corresponding steady flow pressure, obtain true formation fluid samples, get fluid phase, fluid component and flow rate of each layer at different flow pressure real-time, and complete quantitative output test in advance. Compared with common well test, the apparatus costs very short time and are easy to operate, so can save lots of gas and oil resources and raise testing quality. All these characteristics make the apparatuses appropriate to use in gas-layer and oil-layer deliverability test in down-hole condition. (4 refs)
Main heading: Crude petroleum
Controlled terms: Cost effectiveness - Mechanical permeability - Real time systems - Steady flow - Well testing
Uncontrolled terms: Damage factor - Deliverability test - Multi-layer sampling test - Selected layer test
Classification Code: 446.1 Water Supply Systems - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General - 722.4 Digital Computers and Systems - 911.2 Industrial Economics - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

94. Discussion of foam corrosion inhibition in air foam drilling

Meng, Y. (1); Wan, L. (2); Chen, X. (3); Chen, G. (3); Yang, L. (2); Wang, J. (4)
Source: *Second SPE International Symposium on Oilfield Corrosion 2005: Corrosion Control in Oil and Gas Production - "Fluids, Chemicals, Materials and More", Proceedings*, p 15-25, 2005, *Second SPE International Symposium on Oilfield Corrosion 2005: Corrosion Control in Oil and Gas Production - "Fluids, Chemicals, Materials and More", Proceedings*; **Article number:** SPE 94469; **Conference:** Second SPE International Symposium on Oilfield Corrosion 2005: Corrosion Control in Oil and Gas Production - "Fluids, Chemicals, Materials and More", Proceedings, May 13, 2005 - May 13, 2005; **Publisher:** Society of Petroleum Engineers
Author affiliation: (1) SPE, Southwest Petroleum Inst. (2) Tubular Goods Research Center (3) Great Wall Drilling Co. (4) Xi'an ShiYou U.
Abstract: Simulating corrosion condition of air foam drilling, corrosion inhibition performance and foaming properties of stable foam are evaluated. Corrosion product layer images and composites are investigated by scanning electron

microscope, energy dispersion spectrometer and x-ray diffraction analysis. The results show that corrosion pitting with sodium chloride crystalline grain forms on the surface of steel corroded by formation water. Foam can retard corrosion, particles in foam uniformity, thinness and tightness. After adding foam and inhibitor no obvious corrosion phenomenon happens but existing tiny trace originating from washing and erosion. Foam corrosion inhibition mechanism is first put forward through laboratory data and theoretical analysis, which mostly consists in foam agent absorption on steel surface; viscosifier complexing characteristic; oxygen isolation; foam enwrapping sands, reducing erosion. Adding inhibitor and oxygen scavenger, foam corrosion inhibition ability is improved further. Indoor experiment and field application show foam drilling substituting for dry air drilling and adjusting pH value and adding inhibitor reduce sharply corrosion of drilling tools. Special formula in Western Gasfield of China X-14 well is 2.0%F4+0.3%HPAM + 0.2%XC + 0.5%CT2 + 0.05%Na 2SO3. Practice proved that this method effectively restrained drilling tools corrosion and improved economic benefits. This paper is the first in a series of studies designed to bring forward foam corrosion inhibition in air foam drilling. The goal is to better understand the mechanism of foam corrosion inhibition, to be able to select the proper inhibitor and extend air foam drilling techniques in suit region. Copyright 2005, Society of Petroleum Engineers Inc. (6 refs)
Main heading: Foams
Controlled terms: Corrosion - Scanning electron microscopy - Steel - X ray diffraction analysis
Uncontrolled terms: Drilling tools - Oxygen isolation - Stable foams
Classification Code: 539.1 Metals Corrosion - 545.3 Steel - 741.1 Light/Optics - 801 Chemistry - 804 Chemical Products Generally
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

95. Experimental study on the hydroscopicity of fracture reservoir

Qi, Yin ; Zhang, Ning-Sheng ; Ren, Xiao-Juan ; Wei, Jin-Xing ; Zhang, Cun-Hou
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 34-36, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Petroleum Eng., Xi'an Shiyou Univ., Xi'an 710065, China (2) Qinghai Oilfield Co., Dunhuang 736200, China
Abstract: The water-intake capacity of the fracture reservoir in some tract in Nanyishan is experimentally studied. It is shown that, the fracture reservoir has high water-intake speed, it can reach to higher water saturation within 20 h, and final average water saturation is 54.5%; final average hydroscopicity displacement efficiency is 37%; the higher the clay mineral content in the reservoir, the greater the water-intake quantity increases and the more the increase of the volume of the cores; the average volumetric expansion rate of the cores is 4.51%; hydroscopicity has serious damage to reservoir permeability, and the permeability reduces by 81.87% on average. Therefore, water invasing into reservoir should be reduce as far as possible in the process of development. (6 refs)
Database: Compendex
Data Provider: Engineering Village

96. Study of super-resolution processing of targets within a synthetic transmitting beam

Shang, Hai-Yan (1, 2); Chen, Bo-Xiao (1); Su, Hong-Tao (1); Zhang, Shou-Hong (1)
Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 32, n 4, p 599-602+642, August 2005; **Language:** Chinese; **ISSN:** 10012400; **Publisher:** Science Press
Author affiliation: (1) Key Lab. of Radar Signal Processing, Xidian Univ., Xi'an 710071, China (2) Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: For a radar system with only one receiving antenna and the transmitting antenna arrays, in order to improve the target angular resolution, the MUSIC algorithm is applied to process the super-resolution of targets within the transmitting beam. As the signal model of the separated and processed data after being received by a single antenna is equivalent to that of the general receive antenna arrays in a nonuniform way, the super-resolution can be realized, which is proved by simulation results. The super-resolution processing of the synthetic transmitting beam in the receiving terminal surely improves the distinction ability of the radar and the accuracy of the angular measurement. (11 refs)
Main heading: Antenna arrays
Controlled terms: Computer simulation - Estimation - Low pass filters - Radar systems - Receiving antennas - Signal processing - Signal to noise ratio

Uncontrolled terms: Distinction ability - DOA estimation - MUSIC algorithm - Nonuniform arrays - Signal model - Super resolution - Synthetic transmitting beam - Target angular resolution
Classification Code: 703.2 Electric Filters - 716.1 Information Theory and Signal Processing - 716.2 Radar Systems and Equipment - 723.5 Computer Applications - 921 Mathematics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

97. Study on the factors of influencing the depositional rate of chemical nickel-phosphorus plating

Wang, Xiao-Quan ; Wei, Shuai ; Xing, Ru-Lin ; Yan, Mi-Lin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 55-58, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Tubular Goods Research Center, CNPC, Xi'an 710065, China
Abstract: The relationships are studied by experiments between the depositional rate of nickel-phosphorus plating and the concentrations of nickel sulfate and sodium hypophosphite, the pH value, the category and dose of complexing agent of plating liquid. The experimental results show that, the depositional rate increases with the increase of the concentrations of nickel sulfate, sodium hypophosphite and complexing agent and the pH value, and it is also concerned with the category of complexing agent. The optimal formation of plating liquid is: the concentrations of nickel sulfate and sodium hypophosphite are all 28~35 g/L, the pH value is 5.5 ~-6.0, compound complexing agent should be used, and the dose of complexing agent is determined according to the concentration of nickel ion in plating liquid. (6 refs)
Database: Compendex
Data Provider: Engineering Village

98. Identifying low-resistivity reservoirs by means of dynamic invasion logging data

Zhang, Jian-Hua ; Luo, Jun ; Ouyang, Jian
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 52-54, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Science, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Exploration Business, CNPC, Beijing 100724, China
Abstract: The invasion of high-salinity mud is one of the reasons why the formation resistivity is low. The longer the time when the reservoir soaks in the mud, the more the logging responses deviate from the true formation resistivity, and the more difficult the logging interpretation becomes. The dynamic logging model for describing drilling fluid invading formation is established based on multi-phase seepage flow theory, the formula of the electric property of rock and logging theory, which provides a effective method for identifying the low-resistivity oil/gas reservoirs caused by the invasion of high-salinity mud. The trial-and-error method is used to simulate the resistivity record from logging data, and then the true formation resistivity is obtained by inversion. (11 refs)
Database: Compendex
Data Provider: Engineering Village

99. Information visualization and cooperative decision virtual system for geosteering drilling

Xu, Ying-Zhuo ; Li, Qi
Source: *Xitong Fangzhen Xuebao / Journal of System Simulation*, v 17, n 10, p 2414-2417, October 2005; **Language:** Chinese; **ISSN:** 1004731X; **Publisher:** Acta Simulata Systematica Sinica
Author affiliation: (1) Institute of Computer, Xi'an Petroleum University, Xi'an 710065, China (2) Institute of Petroleum Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: Aiming at the lack of traditional data analysis, deal, interpretation, revelation and decision method, an information visualization and cooperative decision virtual system constructed by the technology of virtual reality and CSCW in the network was put forward. This system can provide a new-style remote immersing information visualization and cooperative decision work environment for geosteering drilling to improve drilling success ratio. The system architecture and the realization of information visualization and collaborative decision environment are in detail described. (6 refs)

Database: Compendex
Data Provider: Engineering Village

100. Cooperative virtual design system for drilling engineering based on network

Fang, Ming ; Cuan, Ying
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 3, p 90-94, May 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Sch. of Comp., Xi'an Shiyou Univ., Xi'an 710065, China (2) Sch. of Comp., Xidian Univ., Xi'an 710071, China
Abstract: Based on the characteristics of drilling engineering design under network environment, the concept and system architecture of the cooperative virtual design for drilling engineering based on network are presented. By the use of the computer supported cooperative work and virtual reality technologies, the cooperative virtual drilling design platform and distributed tele-immersion design platform based on multi-agents were developed. For orienting drilling engineering group design workflow, the system supported by cooperative data warehouse of drilling engineering can make a group of designers working in cooperative, distributed and paralleled tele-immersion drilling engineering design and implement distributed cooperative virtual design and decision analysis. The system can also make the designers having sufficient cooperative, visualization and scene feeling when making drilling engineering group design and cooperative work under cross-region departments. The functions and key technologies of the system were discussed in detail. (11 refs)
Database: Compendex
Data Provider: Engineering Village

101. PID controller with neural nets optimizing parameters and its stimulation

Niu, Jian-Jun ; Wu, Wei ; Chen, Guo-Ding
Source: *Xitong Fangzhen Xuebao / Journal of System Simulation*, v 17, n 6, p 1425-1427, June 2005; **Language:** Chinese; **ISSN:** 1004731X; **Publisher:** Acta Simulata Systematica Sinica
Author affiliation: (1) Mechanic Engineering School, Xi'an Shiyou University, Xi'an 710065, China (2) Electro-mechanics School, Northwestern Polytechnic University, Xi'an 710072, China
Abstract: A new algorithm is put forward, in which parameters of the PID controller are optimized online by BP net based on RBF net identifying the Jacobian matrix of the controlled plant. The programming steps under MATLAB platform are described. Simulation is carried out to prove that this algorithm is valid and feasible. (7 refs)
Database: Compendex
Data Provider: Engineering Village

102. Theory and applications of computational cybernetics

Wu, Xu-Guang ; Mu, Xiang-Yang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 57-61, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Marine Coll., Northwestern Polytech. Univ., Xi'an 710072, China (2) Coll. of Electron. Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: At present, the researches on cybernetics lead to such a trend: research branches are more and more, the dependence of the researches on models is stronger and stronger, and the algorithms used to analyze and design controllers become also more and more complicated. In order to more effectively solve these problems, raise the design precision and the robustness of control system, and improve the environment of analyzing and designing control system, the concept of computational cybernetics is first presented in this paper. It is held that stability and dissipation are the foundational performances of most systems. Based on this recognition, some foundations! theorems and formulas are deduced for the analysis of system robust and the design of robust controller. Research results show the unified framework of system can be built based on the notion of system energy dissipation, and the unified framework of system solution can be built based on LMI (linear matrix inequality). Finally, the research contents, methods and basic mathematic and physical characteristics of computational cybernetics are discussed. (16 refs)
Database: Compendex
Data Provider: Engineering Village

103. A new type of dry power transformer based on XLPE cable winding

Gao, Yingna (1); Wang, Shishan (2); Gao, Hong (1)
Source: *ICEMS 2005: Proceedings of the Eighth International Conference on Electrical Machines and Systems*, v 3, p 1771-1774, 2005, *ICEMS 2005: Proceedings of the Eighth International Conference on Electrical Machines and Systems*; **ISBN-10:** 7506274078, **ISBN-13:** 9787506274074; **Article number:** 1575061; **Conference:** ICEMS 2005: 8th International Conference on Electrical Machines nd Systems; **Sponsor:** China Electrotechnical Society; Chinese Society for Electrical Enigeering; IEEE Beijing Section; Korean Institute of Electrical Engineers; Natural Science Foundation of China; IEEE Beijing Section; **Publisher:** Inst. of Elec. and Elec. Eng. Computer Society
Author affiliation: (1) School of Electronic Engineering, Xi'An Shiyou University, Xi'an, 710065, China (2) Nanjing University of Aeronautics and Astronautics, Nanjing, 210016, China
Abstract: This paper summarizes a new type of dry transformer, which is developed firstly by ABB, whose brand name is Dryformer. Dryformer is produced by combining modern high voltage XLPE cable technology with conventional transformer. The following conclusion can be derived from the analysis of construction features of the new type dry transformer: compared with the tradition transformer, it has the following advantages, high voltage rating, large capacity, combustion retardation, better performance to endure very fast transient voltage stress and lower line losses. The technique of solid insulation is adopted in the new dry transformer so that the pollution from leakage of insulating oil can be avoided, and so XLPE cable-winding transformer is very suitable in environment sensitive places such as populous cities, hydropower stations, and under ground caver and so on. It is a developing trend of high voltage dry transformer. (6 refs)
Main heading: Electric transformers
Controlled terms: Electric insulation - Electric potential - Electric windings - Hydroelectric power plants - Leakage currents
Uncontrolled terms: Combustion retardation - Lower line losses - Voltage rating - Voltage stress
Classification Code: 611.1 Hydroelectric Power Plants - 701.1 Electricity: Basic Concepts and Phenomena - 704 Electric Components and Equipment - 704.1 Electric Components
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

104. Simulating calculation of transient voltage distribution for power transformer with software PSPICE

Gao, Hong (1); Wang, Shishan (2); Guo, Yingna (1); Wei, Na (1)
Source: *ICEMS 2005: Proceedings of the Eighth International Conference on Electrical Machines and Systems*, v 3, p 1788-1790, 2005, *ICEMS 2005: Proceedings of the Eighth International Conference on Electrical Machines and Systems*; **ISBN-10:** 7506274078, **ISBN-13:** 9787506274074; **Article number:** 1575065; **Conference:** ICEMS 2005: 8th International Conference on Electrical Machines nd Systems; **Sponsor:** China Electrotechnical Society; Chinese Society for Electrical Enigeering; IEEE Beijing Section; Korean Institute of Electrical Engineers; Natural Science Foundation of China; IEEE Beijing Section; **Publisher:** Inst. of Elec. and Elec. Eng. Computer Society
Author affiliation: (1) School of Electronic Engineering, Xi'an Shiyou University, Xi'an, 710065, China (2) Nanjing University of Aeronautics and Astronautics, Nanjing, 210016, China
Abstract: Power transformer plays a very important role in power system. Moreover, dielectric strength of power transformer windings under over voltage is a vital standard to test. Thus, in order to design high-quality and low cost power transformer, it is compulsory that transient voltage distribution in power transformer windings under over voltage is acquired in the designing stages. In most paper, transformer windings are simplified to circuit model. Then, it is programmed and transient voltage distribution is achieved. To be sure, some method do achieved satisfied calculation result. However, the process is rather complex. Meanwhile, the result is not intuition at all. Therefore, a transient circuit model used in simulating calculation with Pspice is described. The circuit model is taken account of loss in transformer windings and simplifies parameters. In addition, transient analysis function and graphical interfaces of EDA software - Pspice is used to simulate the transient voltage distribution of that power transformer under lighting over voltage as well as the transformer is switched In the no loaded circuits. The simulated is agreement with measured results perfectly, which show that the model can represent transient response of the transformer and simplifies the process of calculation. (15 refs)
Main heading: Electric power distribution
Controlled terms: Computer software - Dielectric properties - Electric potential - Electric transformers - Electric windings - Interfaces (computer)
Uncontrolled terms: Dielectric strength - Loaded circuits - Power transformer windings - Transient voltage distribution

Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 723 Computer Software, Data Handling and Applications - 722.2 Computer Peripheral Equipment - 706.1.2 Electric Power Distribution - 704.1 Electric Components - 704 Electric Components and Equipment - 701.1 Electricity: Basic Concepts and Phenomena
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

105. Research and application of oil well interval pumping technology in low permeable reservoir

Tang, Xin ; Yang, Zhao-Zhong ; Li, Xiu-Jin ; Yang, Yi ; Yang, Wei-Zong
Source: *Xinan Shiyou Xueyuan Xuebao/Journal of Southwestern Petroleum Institute*, v 27, n 3, p 44-48, June 2005; **Language:** Chinese; **ISSN:** 10002634; **Publisher:** Science Press
Author affiliation: (1) Xi'an Petroleum Institute, Xi'an 710065, China
Abstract: Operation of the rod pump systems of the Third Recovery Plant in Changqing Oilfield were analyzed. After the analyzing interval pumping mechanism, combining the law of flow through porous medical of low permeable reservoir, the law of interval pumping was studied, under the condition of no decrease of the production rate. The interval pumping cycle was determined through the practical and theoretical study, so that the problems of the low production rate and low efficiency wells were solved and better benefit was obtained. (3 refs)
Database: Compendex
Data Provider: Engineering Village

106. Experimental study on solidifying oily sludge by using cement as hardening agent

Feng, Ji-Li ; Qu, Cheng-Tun ; Wang, Xin-Qiang ; Li, Yong-Hui
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 43-45, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Chem. and Chem. Eng., Xi'an Shiyou Univ., Xi'an 710065, China (2) Eng. Constr. Co., Zhongyuan Oilfield, Puyang 457001, China
Abstract: A great deal of oily sludge is produced in the process of water flooding development of oilfields. The oily sludge which is from Wenyi Sewage Treatment Plant of Zhongyuan Oilfield is solidified by using cement. The environmental safety of the hardened substance is evaluated by its compression strength, and the contents of COD, oil and toxic element in its lixivating liquid. It is shown that, when the mass ratio of cement to oily sludge is 2:1, the compression strength of the hardened substance can be over 16 MPa; when the mass ratio is 0.972, the COD content in its lixivating liquid is less than 150 mg/L at 50°C and in 20 h; when the mass ratio ranges from 1:1 to 1.8:1, the oil content in its lixivating liquid is less than 5 mg/L at 25°C and in 120 h, and the toxic element content in its lixivating liquid can meet the request of GB5085. 3-1996. (6 refs)
Database: Compendex
Data Provider: Engineering Village

107. Study on the damage of injection wells to Chang-1 reservoir in Youfangzhuang and the factors caused the damage

Yan, Jian ; Liu, Xiao-Juan ; Zhang, Ning-Sheng ; Zhang, Xing-Hua ; Wang, Jun-Feng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 24-26, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) No. 3 Production Plant, Changqing Oilfield Company, Yinchuan 750006, China
Abstract: At present, the water injection pressure of Chang-1 reservoir in Youfangzhuang is higher, the formation pressure rapidly drops, and the valid period of the measures for increasing water injection is shorter. To solve these problems, the possible reservoir damages caused by formation property, the quality of injected water, the plugging of mechanical admixture, scaling, and so on and the damage degree of them are evaluated. The results show that the main factor caused the reservoir damage is scaling. Finally, some suggestions for reducing reservoir damage are presented, which provides basis for selecting proper plugging-removing and water injection-increasing measures. (3 refs)
Database: Compendex
Data Provider: Engineering Village

108. Under balance pressure drilling of Bo-601 well

Wang, Ai-Ming
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 53-56, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Bohai Drilling Company, Shengli Oilfield Co. Ltd., Dongying 257000, China
Abstract: Bo-601 well is a important evaluation well, and the aim of drilling it is to extend the oil and gas range of the lower parts of the burial hill in Boshen-6 fault block. Under balance pressure drilling technique is used in the fourth drilling of the well to drill through Fengshan Formation of Cambrian. Using under balance pressure drilling technique aims at preventing the mud loss and pollution of Palaeozoic limestone reservoir in this area and therefore protecting oil reservoir. In the process of under balance pressure drilling, high-production commercial oil and gas flow is found, and drill stem tests are successfully carried out. Under balance pressure drilling technique also enhances the drilling rate of deep wells. The application of under balance pressure drilling technique to Bo-601 well provides the experience for drilling the fractured formation in Bonan area. The geological design and engineering design of Bo-601 well, the main technical difficulties in drilling construction, and the pre-drilling preparation, drilling, completing and construction result of the under balance pressure drilling of Bo-601 well are introduced in detail. (6 refs)
Database: Compendex
Data Provider: Engineering Village

109. Experimental study on the dehydration of heavy oil by microwave

Jiang, Hua-Yi ; Huang, Li ; Wei, Ai-Jun
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 49-51, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, Southwest Petroleum Institute, Chengdu 610500, China
Abstract: Heavy oil is a kind of the oil of high viscosity and great specific gravity, so the dehydration of it is very difficult. The dehydration of heavy crude oil is carried out in laboratory by microwave radiation, and the effect laws of microwave disposing ways and the water cut of the heavy crude oil on dehydrating result are studied. The microwave dehydration is compared with general thermal sedimentation dehydration. The experimental results show that, microwave dehydration has better result than general thermal sedimentation dehydration, and that the power and the radiation time of microwave and the water content of emulsion have greater effects on the dehydration result. The research results can be used for guiding the actual applications of heavy oil microwave dehydration. (4 refs)
Database: Compendex
Data Provider: Engineering Village

110. Reservoir characteristics of the fourth and the fifth units of Triassic Yanchang Formation in Baiyushan area, Eerduosi Basin

Wang, Bao-Qing ; Jiang, Ji-Hui ; Han, Hui-Ping
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 1-5, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Dept. of Resource Eng., Xi'an Shiyou Univ., Xi'an 710065, China (2) Coll. of State Land Resource, Chang'an Univ., Xi'an 710054, China
Abstract: The sandstones of the fourth and the fifth units of Triassic Yanchang Formation deposit in subaqueous distributary channels and are composed of fine arkoses. The types of pores in the reservoir are mainly in-tergranular pores, intragranular dissolved pores, moldic pores/relic moldic pores and cement dissolved pores. The diageneses occurred in the sandstones are mainly compaction, cementation and dissolution. The sandstones are of low porosity and low permeability because of their sedimentation and diageneses. The porosity ranges from 0.35% to 16.22% with a mean of 11.40%. The permeability ranges from 0.004×10-3 μm2 to 182×10-3 μm2 with a mean of 1.26×10-3 μm2. The sandstones are classified into four types and the most of them are type II and type III. (7 refs)
Database: Compendex
Data Provider: Engineering Village

111. Study on the conditions for predicting the productivity of Sulige Gasfield by mono-point analysis method

Gou, Hong-Gang ; Min, Qi ; Pu, Chun-Sheng ; Zhang, Rong-Jun
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 3, p 75-78, May 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Gasfield Development, Changqing Oilfield Company, Xi'an 710021, China
Abstract: The theoretical basis of the mono-point predicting productivity method is analyzed, and a mathematic model of the method is established which is suitable for Sulige Gasfield. The conditions are discussed that must be met when the model is applied in the gasfield. It is shown that, the mono-point productivity predicting method is very effective to Sulige Gasfield, but when it is used, the production time of the predicted oil wells must be longer than 200 h, and the bottom-hole return pressure ratio must be less than 80%. (6 refs)
Database: Compendex
Data Provider: Engineering Village

112. Optimization of the well pattern of Es2x low-permeability reservoir of Dalujia Lin-56-4 fault block by numerical simulation

Hao, Xin-Wu ; Li, Liu-Ren ; Wang, Cheng-Zhen ; Ji, Lei ; Gong, Lan-Hua ; Shi, Qing-Jun
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 5, p 31-35+40, September 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Linpan Production Plant, Shengli Oilfield Ltd. Co., Linyi 251507, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Es2x low-permeability reservoir of Dalujia Lin-56-4 fault block is a low-permeability fault block reservoir with large edge water, great dip and small oil areas, and its well pattern arrangement and the coordination of well pattern arrangement with edge water are the key to the effective development of the reservoir. Based on fine reservoir description data and various tested data, the well pattern arrangement of the reservoir is optimized by means of fine reservoir numerical simulation. The result of this paper can provide the guidance for the adjustment of the overall development plan of this kind of reservoirs. (7 refs)
Database: Compendex
Data Provider: Engineering Village

113. Study on the calculation of probabilistic reserves under the control conditions of sedimentary microfacies spatial distribution (Study on the calculation of probabilistic reserves under the control conditions of sedimentary microfacies spatial distribution)

Zhang, Zonglin (1, 2, 2); Wang, Jiahua (1)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 25, n 11, p 27-29, November 25, 2005; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Petroleum University (2) Changqing Oil Field Company
Abstract: The method of calculating gas probabilistic reserves is studied under the control conditioni of sedimentary microfacies spatial distribution. The gas reservoir in north Shaanxi is approached by reservior stochastic modeling and with the data from 144 wells. On the basis of determining the spatial distribution? of sedimentary microfacies: i. e. gypseous dolomite ground of tideland, tide-edge lagoon facies. mudly dolomite ground of undertide, gypseous dolomite ground of undertide and gypseous dolomite ground of over-tide, and taking these as control, the spatial distributions of petrophysical parameters, such as porosity, permeability and gas saturation are obtained, and then the reserves arc calculated. With 50 random seeds, probabilistic reserves under control of spatial distribution of sedimentary facies, and without the control, are calculated and analyzed, The former probabilistic reserves obviously are bigger than the latter ones. This illuminates the consideration of facies-control to probabilistic reserves is very necessary. (12 refs)
Main heading: Petroleum reservoirs
Controlled terms: Data reduction - Random processes - Sediments
Uncontrolled terms: Facics control - Petrophysical parameters - Spatial distribution
Classification Code: 483 Soil Mechanics and Foundations - 512.1.1 Oil Fields - 723.2 Data Processing and Image Processing - 922.1 Probability Theory
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

114. The design of working fluid control distribution in rotary steering drilling tool

Yan, Wenhui (1); Peng, Yong (1); Shi, Hongxun (1)
Source: *Drilling and Production Technology*, v 28, n 5, p 69-72+4, September 20, 2005; **Language:** Chinese; **ISSN:** 1006768X; **Publisher:** Drilling and Production Technology (Zuancai Gongyi)
Author affiliation: (1) Xi'an Petroleum Institute, Xi'an 710065, Shanxi, China
Abstract: The design of working fluid control distribution unit is one of the key and difficulty point about realizing the oriented function of rotary steering drilling tool. The unit's working trait is determined by the central angle of upper plate value high pressure hole, the structure size of upper and lower plate value friction pairs and the sealing property of friction pairs. The function form of thrust with tool is decided by the size of the central angle of upper plate value high pressure hole and directly influence oriented utility, using term and sealing property. The analysis of theory shows that the optimal value of the central angle θ = 180° as the covering angle of three "palm" composition of function forces is α = 60°. Because of the limitation of drive torque which is provided by torque generator with tool, the friction resistance torque of upper and lower plate value friction pairs should be reduced in order to steadily control the control axis. The friction torque is influenced by the structure of the upper and lower plate value friction pairs. The paper gave the structure of the upper and lower plate value and key size and quantitatively analyzed the friction resistance torque.
Main heading: Oil well drilling
Controlled terms: Electric resistance - Fluid dynamics - Friction - Gas engineering - Rotating machinery - Torque
Uncontrolled terms: Drilling tool - Fluid control distribution - Friction resistance torque - Rotary steering
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 522 Gas Fuels - 601.1 Mechanical Devices - 701.1 Electricity: Basic Concepts and Phenomena - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

115. Development of optimizing system of two-parameters for sensing pressure and temperature with dual-fiber Bragg grating sensor

Wang, Hongliang (1); Qiao, Xueguang (1); Zhou, Hong (1); Wei, Ting (1); Fu, Haiwei (1, 2); Zhao, Dazhuang (1)
Source: *Guangxue Xuebao/Acta Optica Sinica*, v 25, n 7, p 875-880, July 2005; **Language:** Chinese; **ISSN:** 02532239; **Publisher:** Chinese Optical Society
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China (2) School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: A new structure of fiber Bragg grating (FBG) sensor based on sticking two FBGs on tubular elastic element is developed. Simultaneous measurement for the pressure and temperature has been experimented by two FBGs producing two wave spike respectively. In the range of 0-20 MPa and 20-150°C, the FBG's Bragg wavelength change is linear to the pressure and temperature. The pressure and temperature sensitivities are 0.089 nm/MPa and 0.024 nm/°C respectively. The experimental value of coefficient matrix of the FBG's wavelength change to pressure and temperature is coincident with the theoretical value very well, and the relative error is 1.8%. Compared with the standard measurement method, and the accuracies of pressure and temperature are 0.47% and 0.74% respectively. The method can cut the error arising from the temperature cross-sensitivity in pressure, the error of which is about 0.16% as pressure and temperature are at 20 MPa and 150°C respectively. (5 refs)
Main heading: Fiber optic sensors
Controlled terms: Fiber Bragg gratings - Fiber optics - Optical fibers - Pressure measurement - Temperature measurement - Temperature measuring instruments
Uncontrolled terms: Fiber Bragg grating sensors - Sensor optimization - Two-parameter sensing
Classification Code: 732.2 Control Instrumentation - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 944.4 Pressure Measurements - 944.5 Temperature Measuring Instruments - 944.6 Temperature Measurements
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

116. Treatment of produced wastewater by flocculation settlement-Fenton oxidation-adsorption method

Yang, Zhi-Gang ; Zhang, Ning-Sheng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 50-53+65, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Sch. of Energy and Power, Xi'an Jiaotong Univ., Xi'an 710049, China (2) Coll. of Petroleum Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: Most produced wastewater in the oilfields in our country is used for waterflooding, but a part of produced water is drained into the environment and produces a bad influence on the environment. The produced wastewater of Ganguyi Oilfield being taken as a research target, the result of the wastewater treatment method of flocculation settlement-Fenton oxidation-adsorption is studied in laboratory. The effects of pH value, the dose of H2O2, the dose of Fe2+, oxidation time, adsorption time, and the dose of active carbon on the removal efficiency of COD are investigated. The experimental results show that, the optimal treatment conditions are poly-ferric sulfate as flocculant, settlement time of 30 min; pH value of 3.0-4.0, 30%H2O2 of 8 mL/L, Fe3+ to H2O mass ratio of 4%, oxidation time of 120 min; active carbon dose of 4.0-5.0 g/L, adsorption time of 120 min. Under these treatment conditions, the oil content in the wastewater can be reduced to 5 mg/L from 93.1 mg/L, the suspended substance can be reduced to 10 mg/L from 172 mg/L, and the CODCr. value can be reduced to 100 mg/L from 2634 mg/L. The treated produced wastewater reaches to the national primary standard. (3 refs)
Database: Compendex
Data Provider: Engineering Village

117. Development of high density drilling fluid suitable to Kela block of Talimu Oilfield

Zhang, Xi-Feng ; Zhang, Ning-Sheng ; Ren, Xiao-Juan ; Zhu, Jin-Zhi ; Zou, Sheng-Li
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 4, p 57-59+63, July 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) Headquarters of Petroleum Exploration and Development, Talimu Oilfield, Kuerle 841000, China
Abstract: Jdike Formation of Neogene and the salt paste bed of Paleogene is drilled across in Kela block. There is a long segment of mud shale and salt paste bed, and the average formation pressure coefficient of the segment of rock statum is high. According to these characteristics of the statum, a sort of high density drilling fluid system suitable to the statum is selected, and then the heavy weight additives, the macromolecule polymer viscosifiers and the fluid loss additives commonly used in Talimu Oilfield are sieved, and the doses of the additives are determined by laboratory experiments. Thus, two formulations of the drilling fluid suitable to Kela block are determined, they have good inhibition, resistance to high temperature, favorable rheological property and low filter loss in high temperature and pressure. They can meet the requirement of drilling engineering and protection reservoir from damage in Kela block. (4 refs)
Database: Compendex
Data Provider: Engineering Village

118. Studies on pressure sensing characteristics of a compounding-fiber grating sensor

Wang, Hong-Liang (1); Qiao, Xue-Guang (1); Fu, Hai-Wei (1, 2); Li, Ming (1); Zhao, Da-Zhuang (1); Zhou, Hong (1); Wei, Ting (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 16, n 3, p 259-262, March 2005; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Coll. of Sci., Xi'an Shiyou Univ., Xi'an 710065, China (2) Coll. of Electron. and Info. Eng., Xi'an Jiaotong Univ., Xi'an 710049, China
Abstract: A compounding-sensing setup for measuring pressure, which is based on a fiber Bragg grating (FBG) and a precision elastic embedded in a polymer filled metal cylinder to enhance the pressure sensitivity, was studied experimentally and theoretically. The results show that the Bragg wavelength change is linear to the pressure and the measured pressure sensitivity of the fractional change in the Bragg wavelength of new FBG sensor is 0.57 nm&middotMPa-1, and the measure range of the pressure has been expanded to 0-4 MPa. The setup only increased sensitivity of the pressure and held the sensitivity characteristics of a bare FBG, so using precision elastic can compensate the effect of time-lag due to the stress of polymer material and avoid elasticity lag and aftereffect of the sensor. (6 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Curve fitting - Error compensation - Fiber optics - Optical sensors - Pressure measurement - Sensitivity analysis
Uncontrolled terms: Enhance-sensitivity-coating - Pressure-sensing-characteristics

Classification Code: 741.3 Optical Devices and Systems - 944.4 Pressure Measurements
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

119. Framework of digital campus application system

Sheng, Yun ; Fang, Ming
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 1, p 69-73, January 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Coll. of Comp. Sci. and Eng., Xi'an Inst. of Technol., Xi'an 710032, China (2) Coll. of Comp., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: Based on the analyses of the development of the recent network techniques and the characteristics of products, the idea is proposed that technical standards must be combined with products in the construction of a digital campus application system. The framework of the digital campus application system with a unified authentication system and its implementation are described. (5 refs)
Database: Compendex
Data Provider: Engineering Village

120. Well trajectory control theory for rotary steering drilling system and applied techniques

Li, Qi ; Du, Chun-Wen ; Zhang, Shao-Huai
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 4, p 97-101, July 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) Postdoctoral Working Station, Northwestern Polytechnical University, Xi'an 710072, China (3) Training Centre, Changqing Oilfield, Xifeng 745217, China
Abstract: The well trajectory controlling principles and modes for modulated rotary steering drilling system were researched. According to the deviation between the actual well trajectory and the planned one, the well trajectory controlling method and the corresponding algorithm were determined. By using the algorithm for generating control commands, a downhole tool manipulated on the surface was designed to meet the requirements of the well trajectory control technology. The software of the surface monitoring and control system was developed. The design and implementation of the well trajectory control program were especially introduced. (6 refs)
Database: Compendex
Data Provider: Engineering Village

121. Synthesis and evaluation of copolymer AMSA as crude oil flow improver

Zhang, Yao-Jun (1, 2); Qi, Chao-Rong (1); Gao, Guang-Zhong (1); Li, Ju-Yuan (1)
Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 21, n 2, p 35-39, April 2005; **Language:** Chinese; **ISSN:** 10018719; **Publisher:** Science Press
Author affiliation: (1) Coll. of Chem. and Chem. Eng., Xi'an Shiyou Univ., Xi'an 710065, China (2) Lab. of Multiphase Flout, Xi'an Jiaotong Univ., Xi'an 710049, China
Abstract: A copolymerization type of flow improver (AMSA) was synthesized by free radical copolymerization reactions of octadecyl acrylate, maleric anhydride, styrene and acrylonitrile. The synthesized flow improver AMSA has an optimum effect of pour point depressing for the waxy crude oil of Zhongyuan oilfield when it was synthesized under the conditions of that the mole ratio of octadecyl acrylate, maleric anhydride, styrene and acrylonitrile was 16:1:1:3, mass fraction of azobisisobutyronitrile (AIBN) was 1.2%, reaction temperature was 85°C, reaction time was 7 h. When 0.1% (mass fraction) of the flow improver AMSA was added into Zhongyuan crude oil, the pour point of the waxy crude oil was reduced by 14°C, the apparent viscosity was lowered by 92.9% and the yield value was decreased by 96.4% at 25°C. (7 refs)
Main heading: Crude petroleum
Controlled terms: Copolymerization - Copolymers - Rheology - Styrene - Synthesis (chemical)
Uncontrolled terms: Acrylonitrile - Azobisisobutyronitrile (AIBN) - Flow improver - Maleric anhydride - Octadecyl acrylate - Pour point depressant - Quadripolymer - Waxy crude oil - Zhongyuan crude oil
Classification Code: 815.2 Polymerization - 815.1 Polymeric Materials - 804.1 Organic Compounds - 931.1 Mechanics - 802.2 Chemical Reactions - 523 Liquid Fuels - 512.1 Petroleum Deposits - 631.1 Fluid Flow, General
Treatment: Experimental (EXP)
Database: Compendex

Data Provider: Engineering Village

122. Experiments on complex blockage removing acid for Ansai Oilfield in the middle-late waterflooding stage

Li, Tian-Tai ; Liu, Xiao-Jing ; Dong, Yue ; Zhao, Jin-Sheng ; Wang, Ya-Ping
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 32, n 6, p 101-104, December 2005; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) School of Petroleum Engineering, Xi'an Shiyou University, Shaanxi 710065, China (2) Oil Production Plant No. 1, PetroChina Changqing Oilfield Company, Shaanxi 716000, China
Abstract: Ansai Oilfield is in the middle-late stage of waterflooding development and the reservoir is complexly plugged after long term production and kinds of stimulations. For the producers of short production history, the organic matters are the major blockage, and for the ones with longer production history, the blockage is composed of both organic and inorganic matters, and the blockage in the injectors is mainly caused by molisites, ferrites, bacterias, water sensitivity and velocity sensitivity. The plugging mechanism and influencing factors were studied according to the blockage features of the producers and injectors. Based on the plugging and blockage removing mechanism, the acid remover for the Ansai Oilfield is developed. The experiments and field applications prove that the acid remover can remove the formation blockage effectively and increase the oil production and water injection. (10 refs)
Database: Compendex
Data Provider: Engineering Village

123. Study on the compatibility of encapsulated heat-generating agent system with hydrofracturing fluid

Wu, Jin-Qiao ; Liu, Xiao-Juan ; Wu, Xin-Min ; Zhang, Ning-Sheng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 2, p 52-54, March 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Sch. of Energy and Power Eng., Xi'an Jiaotong Univ., Xi'an 710049, China (2) Coll. of Petroleum Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: The compatibility of ammonium chloride-sodium nitrite-oxalic acid microcapsule (catalyst of reaction) heat-generating system with hydroxypropyl guar hydrofracturing fluid is studied. It is shown that when oxalic acid microcapsule, gel-breaker and heat-generating agents compound with the hydrofracturing fluid, the viscosity of hydrofracturing fluid system reduces a little, and its final viscosity keeps about 300 mPa·s after it is sheared 2 h at the rate of 170 s-1. The result indicates that the encapsulated heat-generating agent-hydrofractuing fluid system is stable, and it has a good shearing resistance; they have a good compatibility. (4 refs)
Database: Compendex
Data Provider: Engineering Village

124. Fracturing fluid with microencapsulated heat-generating system and corresponding technology

Wu, Jin-Qiao ; Zhang, Ning-Sheng ; Wu, Xin-Min ; Liu, Xiao-Juan ; Liu, Jing
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 5, p 115-118+122, September 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) College of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: During fracturing treatment for oil reservoirs with low temperature, shallow layer and high freezing point, it is difficult to overcome uncompleted breakdown of gel because of uncompleted clean-up of fracturing fluids and cold damage to formation by injecting cold fluid. It is suggested to adopt a new microencapsulated heat-generating hydraulic fracturing fluid system made of the common hydraulic fracturing fluid compounded with microencapsulated heat-generating agents. Three kinds of chemical heat-generating system were investigated, and the NH4Cl-NaNO2 heating system was determined. According to the reaction characteristics of the system, oxalic acid was chosen as the catalyst of the reaction and encapsulated using ethyl cellulose and paraffin as coating materials by phase separation method. The results show that the new hydraulic fracturing fluid containing microencapsulated heat-generating agents has a good stability and compatibility. When the fracturing fluid with NH4Cl-NaNO2 concentration of 2.0 mol/L and the oxalic acid microcapsule fraction of 0.93% and the ammonium persulfate fraction of 0.08% was sheared at the rate of

170 s-1 for two hours, the peak of temperature can reach 78.0°C, and the viscosity of fracturing liquid was about 300 mPa·s. After gel breaking for four hours, the viscosity of residual liquid was 3.12 mPa·s. (11 refs)
Database: Compendex
Data Provider: Engineering Village

125. Reservoir characteristics of the sixth unit of Triassic Yanchang Formation in Houbei area, Eerduosi Basin

Han, Hui-Ping ; Wang, Bao-Qing ; Li, Yong ; Wu, Chun-Ying ; Jiang, Ji-Hui
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 3, p 67-71, May 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Geoscience and State Land Resource, Chang'an University, Xi'an 710054, China (2) Department of Resource Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In Yangchang Formation in Houbei area, the most of reservoir rock is fine arkose and a little part of reservoir rock is fine lithic arkose. The porosity of it ranges from 10% to 15%, and the permeability ranges from 0.1 × 10-3 μm2 to 1 × 10-3 μm2. The reservoir rock is of low porosity and permeability and serious heterogeneity. The sixth reservoir unit of Triassic Yanchang Formation deposits in lacustrine delta front environment, and the sand bodies of the reservoir develop in subaqueous distributary channel. The stable structural condition and sedimentary environment are beneficial to the formation of large and thick sand bodies. Compaction and the precipitation of authigenec minerals, such as calcite, laumontite and chlorite, greatly reduces the porosity of original sediments. The dissolution of feldspar, intermediate/basic volcanic rock fragments and laumontite creates a large quantity of intragranular and cement dissolution pores. (9 refs)
Database: Compendex
Data Provider: Engineering Village

126. Genetic algorithm based optimal dynamic planning of low-voltage side reactive power compensators

Hu, Hai-Yan (1); Wu, Xiao-Meng (1, 2); Liu, Jian (3)
Source: *Dianli Zidonghua Shebei / Electric Power Automation Equipment*, v 25, n 3, p 29, 2005; **Language:** Chinese; **ISSN:** 10066047; **Publisher:** Electric Power Automation Equipment
Author affiliation: (1) Xi'An Shiyou University, Xi'an 710065, China (2) Xi'An University of Technology, Xi'an 710048, China (3) Xi'An University of Science and Technology, Xi'an 710054, China
Abstract: The highest investment benefit,which is discounted back to present,is taken as the objective function;the restriction of total investment is considered as penalty functions and an augmented index is thus established ; each possible installing location of the ARCE (Automatic Reactive Compensation Equipments) is regarded as a gene;the value of each gene is the installing time of ARCE while zero means no ARGE installed ; the genetic algorithm is thus applied to obtain the optimal dynamic planning of ARCEs on the low voltage side of distribution network while considering load change. Three cases are detailed:without total investment limitation,with total investment limitation and phase investment limitation. Results show that the proposed method is feasible. (10 refs)
Main heading: Reactive power
Controlled terms: Cost benefit analysis - Electric loads - Electric power distribution - Electric power systems - Genetic algorithms - Installation
Uncontrolled terms: Automatic Reactive Compensation Equipments (ARCE) - Dynamic planning - Phase investment limitation - Reactive power planning
Classification Code: 703.1 Electric Networks - 706.1 Electric Power Systems - 706.1.2 Electric Power Distribution - 723 Computer Software, Data Handling and Applications - 911 Cost and Value Engineering; Industrial Economics
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

127. Adaptive genetic algorithm for address assignment in digital signal processor code generation

Zhang, Dan (1); Li, Zengzhi (1); Song, Hong (2); Liu, Ji (1)
Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 39, n 12, p 1315-1318, December 2005; **Language:** Chinese; **ISSN:** 0253987X; **Publisher:** Xi'an Jiaotong University

Author affiliation: (1) School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: An adaptive genetic algorithm is proposed in order to perfectly generate the target code of digital signal processors with auto-increment/auto-decrement indirect addressing modes. The core of the proposed algorithm is as follows. The address assignment solutions are encoded as binary gene schemes. The fitness function is calculated according to the reciprocal of sum of non-neighbor of address register trace. Then the adaptive strategy is applied to operate ordered crossover and swap mutation operations on individuals with higher fitness using lower probability to preserve better genes for next generations, and for those with lower fitness using higher probability to eliminate the worse genes. This strategy can avoid local optimal and speed up convergence. The simulation experiments with large numbers of stochastic variable's access sequences show that the proposed algorithm has high execution efficiency and reduces the cost of address computation instructions by 11% and 8% respectively in comparison with Liao's algorithm and Leupers' algorithm. (7 refs)
Main heading: Digital signal processing
Controlled terms: Adaptive algorithms - Data storage equipment - Data structures - Genetic algorithms - Signal encoding
Uncontrolled terms: Adaptive genetic algorithm - Address assignment - Auto-increment/auto-decrement
Classification Code: 722.1 Data Storage, Equipment and Techniques - 723.2 Data Processing and Image Processing - 921 Mathematics
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

128. Study on the synthesis and properties of organosilicon/acrylate core-shell composite latex

Liu, Xiang ; Fan, Xiao-Dong ; Luo, Huan
Source: *Gaofenzi Cailiao Kexue Yu Gongcheng/Polymeric Materials Science and Engineering*, v 21, n 2, p 173-176, March 2005; **Language:** Chinese; **ISSN:** 10007555; **Publisher:** Chengdu University of Science and Technology
Author affiliation: (1) Dept. of Chem. Eng., Northwestern Polytech. Univ., Xi'an 710072, China (2) Dept. of Chem. and Chem. Eng., Xi'an Shiyou Univ., Xi'an 710065, China
Abstract: Methylmethacrylate, butyl acrylate and 2-ethylhexyl acrylate and A-174 were used as monomers, ammonium persulfate (APS) as the initiator to synthesize the organosilicon/acrylate core-shell composite latex by two-stage emulsion polymerization. The particle morphology of the composite latex was observed by transmission electron microscopy, and glass transition temperature and hydroscopicity of copolymers were determined. It is found that the latex particle has core-shell structure, the glass transition temperature of copolymer is about 13.6°C. The core-shell copolymers synthesized possess better mechanical property and water resistance compared with the copolymers synthesized through normal emulsion polymerization techniques. (4 refs)
Database: Compendex
Data Provider: Engineering Village

129. Fractal algorithm for finding nonlinear global optimal solution

Song, Ju-Long ; Qian, Fu-Cai
Source: *Xi Tong Gong Cheng Yu Dian Zi Ji Shu/Systems Engineering and Electronics*, v 27, n 12, p 2051-2053+2102, December 2005; **Language:** Chinese; **ISSN:** 1001506X; **Publisher:** Chinese Institute of Electronics
Author affiliation: (1) School of Science, Xi'an Shiyou Univ., Xi'an 710065, China (2) School of Automatization and Information Engineering, Xi'an Univ. of Technology, Xi'an 710049, China
Abstract: A new algorithm based on fractal and golden section for solving nonlinear global optimal solution is presented, which is called fractal algorithm. The algorithm has taken the full advantage of the local fine structure of fractal and the quick convergence of golden section, and only few part of research interval is searched, so it is a high efficient and high speedy optimal algorithm. The following is the character of the algorithm: strong adaptability, adapting to complex function. The precision of calculation is satisfying. On the other hand, this method needs so little memory that it almost can be implemented on any personal computer and its efficiency is not influenced. The proof of convergence of the algorithm is given. The illustrations show the algorithm is effective. (13 refs)
Database: Compendex
Data Provider: Engineering Village

130. Review on the linear constitutive equation and its dynamics applications to viscoelastic materials

Li, Junqiang (1, 2); Liu, Hongzhao (1); Wang, Zhongmin (1)
Source: *Zhendong yu Chongji/Journal of Vibration and Shock*, v 24, n 2, p 116-121, April 2005; **Language:** Chinese; **ISSN:** 10003835; **Publisher:** Chinese Vibration Engineering Society
Author affiliation: (1) School of Mechanical and Precision Instrument, Xi'an University of Technology, Xi'an 710048, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The study on linear constitutive equation of viscoelastic materials is summarized. Five typical models in common use are recommended and discussed, they are complex modulus model, standard model, fractional derivative model, fractional exponential model and mini-oscillator model. The dynamics applications of these models are briefly discussed. (37 refs)
Main heading: Viscoelasticity
Controlled terms: Applications - Derivatives - Dynamics - Linear equations - Mathematical models - Oscillators (mechanical) - Standards
Uncontrolled terms: Complex modulus - Constitutive equation - Relaxation modulus - Viscoelastic materials
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 601.1 Mechanical Devices - 804.2 Inorganic Compounds - 902.2 Codes and Standards - 921.6 Numerical Methods - 931.1 Mechanics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

131. Experimental study on frictional flow resistance in water wall tubes of a 600 MW supercritical once-through boiler

Zhu, Yu-Qin ; Chen, Ting-Kuan ; Bi, Qin-Cheng
Source: *Dongli Gongcheng/Power Engineering*, v 25, n 6, p 786-789, December 2005; **Language:** Chinese; **ISSN:** 10006761; **Publisher:** Shanghai Power Equipment Research Institute
Author affiliation: (1) National Laboratory of Multiphase Flow, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Characteristics of factional flow resistance of water wall tubes of a domestic manufactured 600 MW supercritical once-through boiler have been studied. Tests were performed with a ϕ = 25 × 3 mm tube section, made of stainless steel 1Cr18Ni9Ti, in the following parameter ranges: pressure p = 23 - 25 MPa, mass flow G = 400-1200 kg/(m2 · s), specific enthalpy of working medium h = 600 - 2600 kJ/kg and Reynolds number Re = 1.2 × 104 - 1.0 × 106. Influences of the above parameters (including the medium's temperature) on the friction coefficient were investigated. Test results show that the friction coefficient has a step jump on passing the phase change point, abating with rising pressure. Based on the test data, an empirical formulas is obtained for calculating friction coefficients of water wall tubes, under supercritical pressure conditions, with a possible error below 10% compared with experimental measurements. (4 refs)
Database: Compendex
Data Provider: Engineering Village

132. A programming model for an embedded media processing architecture

Zhang, Dan (1); Li, Zeng-Zhi (1); Song, Hong (2); Liu, Long (1)
Source: *Lecture Notes in Computer Science*, v 3553, p 251-261, 2005, *Embedded Computer Systems: Architectures, Modeling, and Simulation: 5th International Workshop, SAMOS 2005. Proceedings*; **ISSN:** 03029743; **DOI:** 10.1007/11512622_27; **Conference:** 5th International Workshop on Embedded Computer Systems: Architectures, Modeling, and Simulation, SAMOS 2005, July 18, 2005 - July 20, 2005; **Publisher:** Springer Verlag
Author affiliation: (1) School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an Shaanxi 710049, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an Shaanxi 710065, China
Abstract: To follow rapid evolution of media processing algorithms, the latest media processing architecture enhances the execution efficiencies of media applications by adding a programmable vision processor and by improving memory hierarchy, while complicates the programming. In this paper, the features of this architecture are analyzed, the reason of inefficiency of media application implemented by general programming model is studied and SPUR programming model is proposed. In SPUR, media data and operations are expressed as media streams and corresponding operations naturally. Moreover, algorithm is divided into high-level part written by SP-C and low-level part written by UR-C. Fine-grained data parallelism are exploited explicitly as well. Experimental results show that SPUR provides programmer a novel, expressive and efficient programming way, and obviously improves readability, robustness,

development efficiency and object-code quality of media applications. © Springer-Verlag Berlin Heidelberg 2005. (27 refs)
Main heading: Computer programming
Controlled terms: Algorithms - Codes (symbols) - Computer architecture - Embedded systems - Mathematical models - Robustness (control systems)
Uncontrolled terms: Data parallelism - General programming model - Memory hierarchy - Readability
Classification Code: 722 Computer Systems and Equipment - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 731.1 Control Systems - 921 Mathematics
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

133. Effect of wettability alteration on the relative permeability of low-permeability water-wet oil and gas reservoirs

Ren, Xiao-Juan ; Liu, Ning ; Qu, Zhi-Hao ; Zhang, Ning-Sheng
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 32, n 3, p 123-124+134, June 2005; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) Northwest University, Shaanxi 710069, China (2) Department of Research Engineering, Xi'an Shiyou University, Shaanxi 710065, China (3) PetroChina Exploration and Devmt. Res. Inst., Beijing 100083, China
Abstract: For studying the effect of wettability alteration on the water relative permeability of water-wet low-permeability reservoirs, LW-1 is developed and used to alter the rock surface from water wet to intermediate or weak oil wet. The experimental results show that the gas relative permeability of cores from low permeability water wet gas reservoirs was improved by 1.06 times through wettability alteration; and the water relative permeability of cores from low permeability water wet oil reservoirs was improved by 2.60 times. It is one of the effective methods to decrease formation damage, enhance water injectivity and improve influx water flowback in reservoir stimulation. (13 refs)
Database: Compendex
Data Provider: Engineering Village

134. An Adaptive Hybrid Immune Genetic Algorithm for maximum cut problem

Song, Hong (1); Zhang, Dan (2); Liu, Ji (2)
Source: *Lecture Notes in Computer Science*, v 3611, n PART II, p 863-866, 2005, *Advances in Natural Computation: First International Conference, ICNC 2005. Proceedings*; **ISSN:** 03029743; **DOI:** 10.1007/11539117_121; **Conference:** First International Conference on Natural Computation, ICNC 2005, August 27, 2005 - August 29, 2005; **Sponsor:** Ziangtan University; **Publisher:** Springer Verlag
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an Shaanxi 710065, China (2) School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an Shaanxi 710049, China
Abstract: The goal of maximum cut problem is to partition the vertex set of an undirected graph into two parts in order to maximize the cardinality of the set of edges cut by the partition. This paper proposes an Adaptive Hybrid Immune Genetic Algorithm, which includes key techniques such as vaccine abstraction, vaccination and affinity-based selection. A large number of instances have been simulated, and the results show that proposed algorithm is superior to existing algorithms. © Springer-Verlag Berlin Heidelberg 2005. (6 refs)
Main heading: Immunology
Controlled terms: Genetic algorithms - Graph theory - Vaccines
Uncontrolled terms: Immune genetic algorithms - Undirected graphs
Classification Code: 461.6 Medicine and Pharmacology - 461.9.1 Immunology - 723 Computer Software, Data Handling and Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

135. Effects of ultrasonic wave on the surface properties of solid particle

Yang, Zhi-Gang ; Qu, Cheng-Tun ; Zhang, Ning-Sheng ; Wang, Xin-Qiang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 53-55+76, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The effects of the ultrasonic wave of different frequencies, powers, irradiation times and temperatures on the size of solid particle and the desorption effect of ultrasonic wave on the HDTMA (hexadecane trimethyl ammonium bromide) adsorbed on the surface of the clay particle are studied. The results show that, the greater the power of ultrasonic wave and the longer the irradiation time of ultrasonic wave, the smaller the size of the solid particle; there is minimum mean particle size at 55°C ; the mean value of the longer axis of the solid particle decreases from 12.575 μm to 7.799 μm and the mean value of shorter axis of it decreases from 6.998 μm to 5.453 μm when the frequency, power, irradiation time and temperature of ultrasonic wave are 40 kHz, 50 W, 50 min and 55°C respectively. The desorption efficiency of ultrasonic wave on the HDTMA adsorbed on the surface of clay particle increases with the increase of the power, irradiation time and temperature of ultrasonic wave, and the desorption efficiency can arrive at 64.69% when the frequency, power, irradiation time and temperature are 80 kHz, 50 W, 50 min and 65°C, respectively. (4 refs)
Database: Compendex
Data Provider: Engineering Village

136. Analysis of characteristics of gas reservoir and damage factors of key tectonic zone (Analysis of characteristics of gas reservoir and damage factors of key tectonic zone)

Li, Tiantai (1, 3); Zhao, Jinsheng (2); Kang, Youxin (2)
Source: *Drilling and Production Technology*, v 28, n 6, p 55-58+5, November 2005; **Language:** Chinese; **ISSN:** 1006768X; **Publisher:** Drilling and Production Technology (Zuancai Gongyi)
Author affiliation: (1) Oil and Gas Engineering Institute, Petroleum (Beijing) University (2) Petroleum Engineering Institute, Xi'an Petroleum University (3) Continued Educational Institute, Xi'an Petroleum University, Xi' an 710065, Shanxi, China
Abstract: Keyi tectonic zone is the largest gas - producing structure in Tarim Basin. Because of the deficient knowledge of reservoir characteristics and the factors, which can result in formation damage, some technological measure damaged the reservoir, which affected the gas well production. According to laboratory core - analysis and in - house damage test of sensibility, the reservoir characteristics of Key tectonic zone and the factors which damaged the reservoir are studied, and latent damage factors of reservoir are briefly analyzed, and the relevant reservoir safeguards are proposed. Through investigation, the type of rock is debrital rock, and the types of reservoir spaces are medium - fine - micro porosity, and the reservoir has medium - low permeability and medium fine throat. The reservoir is a gas reservoir with strong internal and planar heterogeneity. For different reservoir, different measures to safeguard reservoir should be carried out. For Bashijiqike in Kelasu tectonic zone, the invasion of solid particle, liquid and other sensibility damage should be avoided. For shallow gas reservoir in Dabei Tubei and Tuzi area, we should take more attention to sensibility damage, block by water and invasion of solid particle and liquid. For Yangxia and Ahe of Yiqikelike tectonic zone, we should prevent block by water and spontaneous imbibitions, and at the same time, we should notice other sensibility damage. If there developed some crack, we should avoid fracturing circulation loss under the high proportion mud. (4 refs)
Main heading: Gas producers
Controlled terms: Cracks - Debris - Fracturing (oil wells) - Mining - Particles (particulate matter) - Petroleum reservoir evaluation - Tectonics
Uncontrolled terms: Damage - Interstitial matter - Pore configuration - Reservoir characteristics
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 511.1 Oil Field Production Operations - 502.1 Mine and Quarry Operations - 522 Gas Fuels - 481.1 Geology - 451.1 Air Pollution Sources - 421 Strength of Building Materials; Mechanical Properties - 452.3 Industrial Wastes
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

137. Deriving of XML structural model from frame

Li, Gaohe ; Zhang, Yanli ; Li, Qi
Source: *Jisuanji Gongcheng/Computer Engineering*, v 31, n 15, p 73-75, Aug 15 2005; **Language:** Chinese; **ISSN:** 10003428; **Publisher:** Shanghai Computer Society
Author affiliation: (1) School of Computer, Xi'an Petroleum University, Xi'an 710065, China (2) School of International Business, Shanxi Normal University, Xi'an 710062, China (3) School of Petroleum Engineering, Xi'an Petroleum University, Xi'an 710065, China

Abstract: A method of mapping frame representation onto corresponding XDD(XML declarative description) representation is proposed. The frame's components are structure, constraints, and relationships, all of them can be represented by XDD. Thus, frame and XDD can be used to model XML documents, where the frame representation acts as the conceptual model and the XDD representation as structural model of XML documents respectively. (4 refs)
Database: Compendex
Data Provider: Engineering Village

138. Study on the polymerization of P(DMDAAC-AM)using reversed phase method

Qu, Cheng-Tun ; Wang, Xin-Qiang ; Chen, Jie-Rong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 20, n 6, p 41-44, November 2005; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The effects of the mass fraction of monomers, the variety and mass fraction of initiator, the pH value of reaction system, reaction temperature and reaction time on the characteristic viscosity of the product in the copolymerization of DMDAAC (dimethyldiallylammonium chloride) and AM (acrylamide) by using reversed phase method are studied. It is shown that, the characteristic viscosity of copolymer P(DMDAAC-AM) is over 12 when VA-044 is used as the initiator and its mass fraction is 0.3%, the mass fraction of the monomers is 20%, the mole ratio of DMDAAC to AM is 0.4, the pH value of reaction system is 5, the volumetric fraction of oil is 30%, the reaction temperature is 55°C and the reaction time is 5 h. The oily wastewater in Shengli Oilfield and Liaohe Oilfield is respectively treated using the copolymer, and the light transmittance of the treated wastewater reaches above 90% when the characteristic viscosity of the copolymer is above 12 and the mass concentration of it is 1.0 mg/L. (10 refs)
Database: Compendex
Data Provider: Engineering Village

139. Novel technique of temperature sensitivity enhancement and reflection spectrum improvement of fiber Bragg gratings

Wei, Ting ; Qiao, Xueguang ; Jia, Zhenan ; Wang, Hongliang ; Fu, Haiwei
Source: *Guangzi Xuebao/Acta Photonica Sinica*, v 34, n 8, p 1209-1212, August 2005; **Language:** Chinese; **ISSN:** 10044213; **Publisher:** Chinese Optical Society
Author affiliation: (1) Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an 710068, China (2) Optical Fiber Sensing Laboratory, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel fiber grating temperature sensing technique and its experimental result is reported, which eliminates the chirped effects of polymer-packaged, improves the reflection spectrum of FBG and the technique of repeated packaged by using a kind of polymer-packaged with biggish thermal expansion coefficient and a special coupling agent. The experimental result indicates that, within 30.6°C-120°C, the temperature sensitivity is 0.1173 nm/°C and the resolution temperature measurement is less than or equal 0.43°C, which are 11 times higher than that of the bare FBG and the most important advantage is that the reflection spectrum remains same in the whole test. The average temperature sensitivity multiple of polymer-packaged fiber Bragg gratings is #'=10.34, which matches the theoretical multiple γ=10.76 well. The linearity of the temperature response curves is 0.9983. (13 refs)
Database: Compendex
Data Provider: Engineering Village

140. Novel high flattening erbium-doped fiber light source with high power

Guo, Xiao-Dong (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Wang, Xiao-Feng (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 16, n 1, p 14-16, January 2005; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Optical Fiber Sensing Lab., Xi'an Petroleum Univ., Xi'an 710065, China
Abstract: A new flattening superfluorescent fiber source (SFS) with high power was obtained by using a fiber loop reflector made of 3 dB coupler, its linewidth is 35.28 nm with a power ripple of 3 dB without using any external spectral filters, and the output power is about 7.679 mW (about C-band), and the mean wavelength is 1545.881 nm. A double-pass output was composed when a fiber loop reflector was added to the forward point of configuration. Compare with other methods, it is more simple, and easy to be realized, and it could enhance the efficiency of the pump LD and

stability of the source, and has a lower cost, so the high flattening of C + L band with high power can be achieved easily. It is important for many applicant when high flattening and high power are needed at the same time. (15 refs)
Main heading: Fiber lasers
Controlled terms: Erbium - High power lasers - Optical fibers - Optical pumping - Optically pumped lasers - Spontaneous emission
Uncontrolled terms: Erbium-doped fibers (EDF) - External spectral filters - Fiber loop reflectors - High flattening - Superfluorescent fiber source (SFS)
Classification Code: 547.2 Rare Earth Metals - 741.1.2 Fiber Optics - 744.4 Solid State Lasers
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

141. Strain-induced martensitic transformation in fatigue crack tip zone for a high strength steel

Huo, C.Y. (1, 2); Gao, H.L. (2)
Source: *Materials Characterization*, v 55, n 1, p 12-18, July 2005; **ISSN:** 10445803; **DOI:** 10.1016/j.matchar.2005.02.004; **Publisher:** Elsevier Inc.
Author affiliation: (1) Material Science and Engineering Institute, Xi'an Jiatong University, Xi'an, Shaanxi 710049, China (2) Department of Materials Science and Engineering, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China
Abstract: The stability of retained austenite within the fatigue plastic zone of a high strength steel was studied through use of transmission electron microscopy with thin foil specimens containing fatigue cracks. The results show that retained austenite inside the plastic zone at the fatigue crack tip has been transformed into martensite due to plastic deformation. Because of the effect of the energy absorbed and crack closure in the process of strain-induced martensitic transformation, the propagation rate of fatigue crack can be reduced. © 2005 Elsevier Inc. All rights reserved. (8 refs)
Main heading: Steel
Controlled terms: Crack propagation - Cracks - Cyclic loads - Energy absorption - Martensitic transformations - Plastic deformation - Strain - Strength of materials - Transmission electron microscopy
Uncontrolled terms: Crack tips - High strength steel - Plastic zone - Strain-induced transformation
Classification Code: 408.1 Structural Design, General - 421 Strength of Building Materials; Mechanical Properties - 531.2 Metallography - 545.3 Steel - 741.3 Optical Devices and Systems - 931.3 Atomic and Molecular Physics
Funding Details: Number: 2002-45/01JK131,50374056, Acronym: -, Sponsor: -;
Funding text: The authors thank the national Natural Science Foundation of China and Shaanxi Province for the funding granted to this study through project 50374056 and 2002-45/01JK131.
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

142. Effect of tensile specimen shape factor on test results for high grade line pipe with heavy thickness

Ji, Ling-Kang ; Xie, Li-Hua ; Wang, Hong-Xia ; Yang, Su ; Wang, Ya-Long ; Li, Xiao
Source: *Kang T'ieh/Iron and Steel (Peking)*, v 40, n SUPPL., p 393-398, November 2005; **ISSN:** 0449749X;
Publisher: Chinese Society for Metals
Author affiliation: (1) Key Laboratory for Mechanical and Environmental Behavior of Tubular Goods, CNPC, Xi'an 710065, China (2) Tubular Goods Research Center, CNPC, Xi'an 710065, China (3) Petroleum Engineering Institute, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The tests and analysis results of the tensile properties of stripe and bar specimens in different directions for high grade and heavy thickness line pipes with different dimensions were described. The conclusion is that the shape of the specimen affects the tensile strength, yield strength, elongation and yield to tensile ratio etc. very much. The reason of the difference between the two types of specimens is further discussed, which are structure homogeneousness, Bauschinger Effect, deformation hardening, etc.. Based on the results of test and analysis, several points that should be noticed when the tensile property in linepipe product standard is drafted are illuminated and suggested at the end of this paper. (9 refs)
Database: Compendex
Data Provider: Engineering Village

143. Communication of information from surface to downhole by sensors sensitive to the vibration of drill stem

Zhou, Jing ; Fu, Xin-Sheng
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 26, n 2, p 104-106+110, March 2005; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Res. Inst. of Downhole Inspection, Xi'an Petroleum Univ., Xi'an 710065, China
Abstract: A new method for communication of information from surface to downhole by sensors sensitive to the vibration of the drill stem while steerable rotary drilling was proposed. One acceleration sensor is used to replace two pressure sensors at downhole. The acceleration sensor is sensitive to the operation of the surface pumps. A downhole instrument was manufactured according to the principle of this method. The data from laboratory and downhole tests show that the downhole sensor is sensitive to the operation of the surface mud pump. The validity of this method was approved by many oilfield experiments. (6 refs)
Database: Compendex
Data Provider: Engineering Village

144. Analysis of cracked beam based on wavelet finite element

Xue, Ji-Jun ; Yang, Long ; Wang, Xin-Hu
Source: *Xitong Fangzhen Xuebao / Journal of System Simulation*, v 17, n 8, p 1816-1819, August 2005; **Language:** Chinese; **ISSN:** 1004731X; **Publisher:** Acta Simulata Systematica Sinica
Author affiliation: (1) Tubular Goods Research Center, CNPC, Xi'an 710065, China (2) School of Petroleum Engineering, Southwest Petroleum Institute, Chengdu 610500, China (3) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710061, China
Abstract: Aiming at the singularity near the cracked tip of a member, the method combining wavelet finite element method with fracture mechanics was proposed, and the element stiffness matrixes of the wavelet beam element and the crack element were derived. After the additional internal freedoms were eliminated by condensation technology, the element stiffness matrix of the equivalent cracked beam was presented. The wavelet FEM for known depth and position of the crack was established. The numerical example indicates that this method can effectively improve the analysis accuracy of crack problems and has practical value of engineering. (11 refs)
Database: Compendex
Data Provider: Engineering Village

145. New multi-function system to deal with hacker intrusion

Li, Weihua (1); Jiang, Lan (2)
Source: *Xibei Gongye Daxue Xuebao/Journal of Northwestern Polytechnical University*, v 23, n 3, p 299-302, June 2005; **Language:** Chinese; **ISSN:** 10002758; **Publisher:** Northwestern Polytechnical University
Author affiliation: (1) Northwestern Polytechnical University, Xi'an 710072, China (2) Xi'an Petroleum University, Xi'an 710065, China
Abstract: Our aim is to provide many functions in our new multi-function system for dealing with hacker intrusion. These functions include conventional detection and alert, non-conventional hacker deception and trapping, and restoration of damaged files. Our system is a multi-layer comprehensive active defense system, integrating real-time intrusion detection, alert, security accident restoration, and hacker deception. In the full paper, we explain in much detail how to implement the many functions in our new system. Here we give only a briefing. Compared with conventional IDS (Intrusion Detection System), our new system can not only monitor and trap hackers in real-time mode, but also can realize intrusion tolerance better. The detection function of our system can not only monitor hacker attack but also cleverly track the hacker until the hacker's true source is found. The restoration function of our system can restore important files which have been attacked by hacker or infected by virus. Our new system has been employed successfully on several networks; it can deal effectively with 31 categories of known hacker attacks, whose ways of attack number as many as 2045. (6 refs)
Main heading: Security of data
Controlled terms: Accidents - Computer networks - Error detection - Functions - Monitoring - Real time systems - Restoration
Uncontrolled terms: Conventional detection - Hacker intrusion - Hacker trapping - Security accident restoration
Classification Code: 921.6 Numerical Methods - 914.1 Accidents and Accident Prevention - 913.5 Maintenance - 723.2 Data Processing and Image Processing - 722.4 Digital Computers and Systems - 721.1 Computer Theory,

Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory - 716.1 Information Theory and Signal Processing
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

146. Effect of mechanical stress on casting residual stress

Luo, Shu-Sheng
Source: *Zhuzao Jishu/Foundry Technology*, v 26, n 3, p 211-213, March 2005; **Language:** Chinese; **ISSN:** 10008365;
Publisher: Science Press
Author affiliation: (1) Dept. of Mat. Sci. and Eng., Xi'an Petroleum Univ., Xi'an 710065, China
Abstract: Mechanical stress can obviously affect intensity, distribution of stress through the experiments and tests. The produce and form of casting stress are affected. It has provisionally as a kind of stress. However, it will affect the residual stress forever. (1 refs)
Database: Compendex
Data Provider: Engineering Village