1. Study on the microcosmic mechanism of a high-performance paraffin inhibitor

Li, Jin-Bo ; Jia, Qing-Ming ; Wang, Guang-Yi ; Li, Ya-Zhou
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 74-77+85, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Department of Scientific and Technological Project Management, Xi'an Shiyou University, Xi'an 710065, China (2) School of Material Science and Engineering, Xi'an Jiaotong University, Xi'an 710049, China (3) No.2 Production Plant, Changqing Oilfield Branch Company, Qingcheng 745100, China
Abstract: In order to prevent paraffin accumulating on the pipe and rod in well-bore, a high-performance paraffin inhibitor (XP-4152) is synthesized by the compounding of a copolymer with a nonionic surfactant. The experimental results show that the paraffin-inhibiting efficiency of this paraffin inhibitor can reach to 85% when it is prepared under optimal condition. The microcosmic paraffin-inhibiting mechanism of this paraffin inhibitor is studied by Fourier transform infrared spectrometry, polarization microscope, differential scanning calorimetry, X-ray diffraction analysis. The results show that adding the paraffin inhibitor into pure paraffin can change the structure of the paraffin crystal, decrease the cumulation density of the paraffin crystal, and therefore inhibit the growth of paraffin crystal. The application results in Changqing Oilfield indicate that XP-4152 paraffin inhibitor can well inhibit the accumulation of paraffin on the pipe and rod in well-bore. (6 refs)
Database: Compendex
Data Provider: Engineering Village

2. Analysis of main control factors of the physical property of tight sandstone reservoir

Tang, Hai-Fa ; Peng, Shi-Mi ; Zhao, Yan-Chao ; Li, Ai-Rong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 59-63, January 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Resources and Information, China University of Petroleum (Beijing), Beijing 102249, China (2) Faculty of Resources, China University of Geosciences (Wuhan), Wuhan 430074, China (3) College of Oil and Gas Resource, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Taking He-2 member of lower Shihezi formation in upper Paleozoic, Ordos Basin as an example, the factors of controlling the physical property of the tight sandstone reservoir are discussed in detail by comprehensively studying on the sedimentology, lithology and diageneses of the reservoir based on core, well logging data. It is shown that He-2 reservoir belongs to braided river sedimentary system. The distribution of microfacies controls the spatial distribution of reservoir property, the main river channel microfacies of the braided river has the best reservoir property. From the components of the sandstone, the reservoir physical property tends to be getting better with the increase of the quartz content and the decrease of the feldspar and detritus contents. The reservoir experienced intensive diageneses, of which compaction and cementation have damage action on the preservation of original intergranular pore, and hence they reduce the porosity and permeability of the reservoir and make the sandstone reservoir tight. But corrosion can improve the physical property of the reservoir in certain extent. From the study results above, it is held that the recognition of secondary pore development zones can guide the exploration of tight sandstone gas reservoir. (10 refs)
Database: Compendex
Data Provider: Engineering Village

3. Seasonal time series analysis based on genetic algorithm

Liu, Shu-Ying (1, 2); Cheng, Guo-Jian (1); Zheng, Jian-Guo (2); Yang, Cheng-Yong (3)
Source: *Journal of Donghua University (English Edition)*, v 24, n 2, p 284-287, 2007; **ISSN:** 16725220; **Publisher:** Editorial Board of Journal of Dong Hua University
Author affiliation: (1) Department of Computer Science, Xi'an Shiyou University, Xi'an 710065, China (2) Glorious Sun School of Business and Management, Donghua University, Shanghai 200051, China (3) System Development Department, Pingan Insurance (Group), Company of China LTD., Shenzhen, Guangdong 518029, China
Abstract: Pattern discovery from the seasonal time-series is of importance. Traditionally, most of the algorithms of pattern discovery in time series are similar. A novel mode of time series is proposed which integrates the Genetic Algorithm (GA) for the actual problem. The experiments on the electric power yield sequence models show that this algorithm is practicable and effective. (6 refs)
Main heading: Pattern recognition
Controlled terms: Genetic algorithms - Mathematical models - Problem solving - Time series analysis
Uncontrolled terms: Electric power yield sequence - Estimation analysis
Classification Code: 723.5 Computer Applications - 921 Mathematics - 922.2 Mathematical Statistics
Treatment: Theoretical (THR) - Experimental (EXP)

Database: Compendex
Data Provider: Engineering Village

4. Compensatory petroleum accumulation rules in the Mesozoic of Shaanbei area

Wu, Fuli (1); Zhao, Jingzhou (1); Yan, Shike (2); Guo, Deyun (2, 3); Yang, Xianchao (2, 3); Cao, Jinzhou (2, 3); Meng, Xiangzhen (2, 4)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 3, p 23-26+31, May 2007; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (2) Yanchang Petroleum Corporation, Yanchuan 717208, China (3) Department of Geology, Northwest University, Xi'an 710069, China (4) Research Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100082, China
Abstract: The main source rocks and reservoirs of Ordos Basin are located in Shaanbei area, where developed Triassic and Jurassic petroleum pools of the Mesozoic. The forming of oil pool depended on the compensation of those accumulation factors and was also controlled by the compensation of oil deposits in different formations. The locations of Chang 6 Member, Chang 2 Member and Jurassic reservoirs were compensated in section. Most oil-bearing intervals in Chang 6 Member are lithologic traps, which developed in the favorable areas of source rocks. The oil-bearing interval of Chang 2 Member was controlled by the cap rocks of Chang 4-Chang 5 Member and Chang 1 Member, and also controlled by the nose-type uplift to an extent. The distribution of the Jurassic reservoirs was controlled by the underlying cap rock and structures. (18 refs)
Main heading: Crude petroleum
Controlled terms: Lithology - Oil bearing formations - Petroleum reservoirs - Rocks
Uncontrolled terms: Compensatory petroleum accumulation - Ordos Basin - Reservoir distribution - Shaanbei area
Classification Code: 481.1 Geology - 512.1.1 Oil Fields
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

5. The deep-lake deposit in the Upper Triassic Yanchang Formation in Ordos Basin, China and its significance for oil-gas accumulation

Chen, QuanHong (1); Li, WenHou (1); Gao, YongXiang (2); Guo, YanQin (3); Feng, JuanPing (3); Zhang, DaoFeng (3); Cao, HongXia (1); Liang, JiWei (1)
Source: *Science in China, Series D: Earth Sciences*, v 50, n SUPPL. 2, p 47-58, November 2007; **ISSN:** 10069313, **E-ISSN:** 18622801; **DOI:** 10.1007/s11430-007-6029-7; **Publisher:** Springer Verlag
Author affiliation: (1) State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an 710069, China (2) Institute of Oil and Gas Resources, Xi'an Shiyou University, Xi'an 710065, China (3) Changqing Oil Field Branch Company of China Petroleum, Xi'an 710021, China
Abstract: The deep-lake facies of the Yanchang Formation represents a large outflowing lake basin in the Ordos area. Its deposition can be divided into four stages: lake genetic and expanding stage, peak stage, inversion stage and dying stage. All the stages are obviously consistent with the evolution of depositional environment and the paleoclimate in the region. The study indicates that the lake basin has evolution fluctuations from highstand to lowstand for four times in its evolution history, and the deposition center of the lake has not obviously moved, staying along the Huachi-Yijun belt. The deep lake sedimentary system mainly consists of deep water deltas and turbidite fans during the entire evolution course of the lake basin in the Late Triassic. The former mainly developed on the slope of steep shore of the delta in the early period of the deep-water expansion and gradually experienced a big shift from deep-water deltas to shallow-water platform delta. And the latter appeared almost in all the above stages and had two types of turbidite fans, slope-moving turbidite fans and slump turbidite fans. The slope-moving turbidite fans have relatively complete facies belts overlapping one another vertically and consist of the slope channel of inter fans, the turbidite channel, inter turbidite channel and turbidite channel front of middle fans and outer fans (or lakebottom plain). However, the slide-moving turbidity fans are formed in the deep lake with their microfacies difficult to be distinguished, and only the center microfacies and edge microfacies can be determined. The two types of the turbidity fans are similarly distributing in the near-root-slope and far-root-slope regions. The deep-lake deposition governs the distribution of the hydrocarbon and reservoir, while the slope-moving turbidite fans are excellent reservoirs for oil-gas exploration due to their great thickness, widespread distribution and accumulation properties. © Science in China Press 2007. (39 refs)
Main heading: Petroleum prospecting
Controlled terms: Catchments - Lakes - Petroleum reservoirs - Sedimentology
Uncontrolled terms: Oil-gas exploration - Sedimentary system

Classification Code: 444.1 Surface Water - 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
Funding Details: Number: IRT0559, Acronym: -, Sponsor: Changjiang Scholar Program of Chinese Ministry of Education; Number: 2003CB214602, Acronym: NKRDPC, Sponsor: National Key Research and Development Program of China;
Funding text: Received December 28, 2006; accepted May 10, 2007 doi: 10.1007/s11430-007-6029-7 †Corresponding author (email: allred@163.com) Supported by the National Basic Research Program of China (Grant No. 2003CB214602) and the Changjiang Scholars and Innovative Research Team in University (Grant No. IRT0559)
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

6. Sedimentary characteristics of far-resource sand-braided river with low curvature channel for the Chang 2+3 oil reservoir in the east of Shaanxi Province

Wang, Jian-Min (1); Wu, Chang-Rong (2)
Source: *Kuangwu Yanshi*, v 27, n 4, p 92-97, December 2007; **Language:** Chinese; **ISSN:** 10016872; **Publisher:** Kuangwu Yanshi
Author affiliation: (1) School of Oil and Gas Resource, Xi'an Petroleum University, Xi'an 710065, China (2) Chengdu University of Technology, Chengdu 610059, China
Abstract: Outcrop observation and drilling well section study revealed that Chang 2+3 oil layer in the northeast of Shaanxi province was resulted from the deposition of far-resource sand-braided river with low curvature channel. Its sedimentary type may be divided into two subfacies of river channel and flood plain, as well as five micro-facies types of riverbed lag deposit, channel sand dam, natural levee, crevasse splay and flood-plain, with the channel sand dam as the major deposition. From Chang 3 to Chang 2 stage, sedimentary distribution on surface and sedimentary association on cross section showed a characteristic durative propagation and stepwise overlap toward delta plain. Sedimentation of far-resource sand-braided river with low curvature channel lacks restrictive river channel, and channel sand dam forms large-scale sandy flat or overlap extensive sand body on surface with sedimentary province of flood-plain very restricted. River channel bar is well developed in the profile association, characterized by extensive superposition, wide and thick composite channel sand dam with good continuity and connectivity as well as the "sand enclosed mud" association. Meanwhile, the development of far-resource sand-braided river with low curvature channel of the Chang 2 + 3 affected the property and character of adjacent delta plain. (8 refs)
Main heading: Petroleum reservoirs
Controlled terms: Oil well drilling - Sedimentary rocks - Sedimentation
Uncontrolled terms: Low curvature channel - Oil layer - Sand-braided river
Classification Code: 482.2 Minerals - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 802.3 Chemical Operations
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

7. Synthesis and crystal structure of heteropolytungstate (C3H5N2)2Na8 [{Co(H2O)}2WO(H2O) (AsW9O33)2]·33H2O

Liu, Xue-Mei ; Fu, Feng ; Xu, Hai-Sheng ; Xue, Gang-Lin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 85-88, November 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Key Laboratory for Applied Chemistry, Xi'an Shiyou University, Xi'an 710065, China (2) Key Laboratory of Shaanxi Province for Physico-Inorganic Chemistry, Northwest University, Xi'an 710069, China (3) Key Laboratory of Shaanxi Province for Chemical Reaction Engineering, Yan'an University, Yan'an 716000, China
Abstract: The novel sandwich heteropolytungstate (C3H5Na2)2Na8 [{Co(H2O)}2WO(H2O) (AsW9O33)2]·33H2O is obtained by the reaction of Na2WO4·2H2O with NaAsO2·6H2O, Co(NO3)2·6H2O and imidazole in pH approximately equals 5.5 and at 80°C. Its structure is determined by X-ray diffraction analysis and element analysis. This is a salt, which crystallizes in the tetragonal space group P-421m with a=1.7191(10) c=1.6376(13) nm, V=4.840(5) nm3, Z=2, R1=0.0484, wR2=0.0714 (I > $_{2\sigma)}$. The structure of [{Co(H2O)}2WO(H2O) (AsW9O33)2]10- reveals a sandwose-like arrangement of two $_{\{\alpha}$–B-AsW9} moieties enclosing two Co(H2O)2+ whose coordinated number is five. (12 refs)
Database: Compendex
Data Provider: Engineering Village

8. Geological characteristics and exploration prospect of Upper Paleozoic reservoirs in Yanchang area, Ordos Basin

Wu, Fu-Li (1); Zhao, Jing-Zhou (1); Yan, Shi-Ke (2); Guo, De-Yun (2, 3); Yang, Xian-Chao (2, 3); Yan, Yun-Kui (2, 3); Cao, Jin-Zhou (2, 3); Meng, Xiang-Zhen (2, 4); Wang, Yong-Dong (1, 2); Wang, Bian-Yang (1)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 34, n 4, p 401-405, August 2007;
Language: Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (2) Shaanxi Yanchang Petroleum (Group) Co. Ltd., Yan'an 717208, China (3) Department of Geology, Northwest University, Xi'an 710069, China (4) Research Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100082, China
Abstract: The degree of exploration is low in Yanchang area, SE Ordos Basin. The paper analyses its paleogeographic format, sedimentary facies and their distribution characteristics, rock characteristics, and reservoir conditions, and forecasts the exploration prospect for gas in the lower Shihezi and Shanxi Formations. The conditions of gas source and cap rock are favorable in the area, where develop the main gas productive reservoirs of the lower Shihezi and Shanxi Formations located on the delta front facies, delta plain facies and littoral-shallow lake facies. Quartzose sandstones and litharenites are the primary and secondary reservoirs respectively, and are of low porosity and permeability. Based on rock characteristics, physical property and pore configuration, the reservoirs are divided into four types. Industrial gas is formed in types I to III, and type IV doesn't contain industrial gas. The low production rate results from the dispersed distribution of reservoirs. The area of Zichang-Yanchuan-Yanchang, which has multiple-phase channel deposits and thick sandstones, is a promising gas exploration area. (15 refs)
Main heading: Petroleum reservoirs
Controlled terms: Geological surveys - Natural gas - Natural resources exploration - Porosity - River basin projects
Uncontrolled terms: Gas exploration - Ordos Basin - Reservoir characteristics - Upper Paleozoic - Yanchang area
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 522 Gas Fuels - 512.1.1 Oil Fields - 501 Exploration and Prospecting - 481.4 Geophysical Prospecting - 481.3.1 Geothermal Phenomena - 481.1 Geology
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

9. Some new structural properties of shortest 2-connected steiner networks

Peng, Shuying (1); Li, Meili (2); Zhang, Shenggui (3, 4); Cheng, T. C. Edwin (4)
Source: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, v 4613 LNCS, p 317-324, 2007, *Frontiers in Algorithmics - First Annual International Workshop, FAW 2007, Proceedings*; **ISSN:** 03029743, **E-ISSN:** 16113349; **ISBN-13:** 9783540738138; **DOI:** 10.1007/978-3-540-73814-5_31; **Conference:** 1st International Frontiers in Algorithmics Workshop, FAW 2007, August 1, 2007 - August 3, 2007; **Publisher:** Springer Verlag
Author affiliation: (1) College of Science, Tianjin Polytechnic University, Tianjin 300160, China (2) Department of Mathematics, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (3) Department of Applied Mathematics, Northwestern Polytechnical University, Xi'an, Shaanxi 710072, China (4) Department of Logistics, Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
Abstract: In this paper we give a number of structural results for the problem of constructing minimum-weight 2-connected Steiner networks for a set of terminals in a graph and in the plane. A sufficient condition for a minimum-weight 2-connected Steiner network on a set of points in the plane to be basic is also obtained. Using the structural results, we show that the minimum-weight 2-connected Steiner network on a set of terminals Z is either a minimum-weight 2-connected spanning network on Z or isomorphic to one of several specific networks when |Z| = 6 or 7. © Springer-Verlag Berlin Heidelberg 2007. (6 refs)
Main heading: Computer networks
Controlled terms: Set theory - Structural properties
Uncontrolled terms: 2-connected Steiner network - Specific networks
Classification Code: 408 Structural Design - 723 Computer Software, Data Handling and Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 951 Materials Science
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

10. Effects of several factors on the properties of a foamed gel

Chen, Qi-Bin ; Ma, Bao-Qi ; Ni, Bing-Hua
Source: *Huadong Ligong Daxue Xuebao /Journal of East China University of Science and Technology*, v 33, n 1, p 71-74+119, February 2007; **Language:** Chinese; **ISSN:** 10063080; **Publisher:** East China University of Science and Technology
Author affiliation: (1) Department of Chemistry, East China University of Science and Technology, Shanghai 200237, China (2) School of Chemistry and Chemical Engineering, Xi'an Petroleum University, Xi'an 710065, China
Abstract: A foamed gel is generated in a cross-linking polymer solution containing a foaming agent under aeration. The method used is similar to those for general aqueous foam generation. This work investigated the effects of the different concentrations of polyacrylamide and the gas flow rates on the foam quality (ϕ) and the air bubble size respectively. Results show that ϕ value increases with the concentration of PAM and gas flow rate, and the air bubble still appeared as a ball when ϕ value reaches above 0.86. On one hand, the mean size of air bubble increases with the concentration of PAM, the higher the concentration, the sharper the increasing; on the other hand, the mean size of bubble increases with the gas flow rate. In addition, the variation of the stability of a foamed gel with temperature and the effect of time on bubble size were studied too. It is proved that under 30°C, the stability of foamed gel is satisfactory, whereas above 35°C, it becomes unsatisfactory and time has a significant effect on the bubble size. (8 refs)
Database: Compendex
Data Provider: Engineering Village

11. Use situation and processing technology of PAO (group IV) base stocks

Zhang, Jun-Tao ; Hou, Xiao-Ying ; Li, Kun-Wu ; Liang, Sheng-Rong ; Zhang, Jing-He
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 52-57, September 2007; **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) Research Center of Petroleum Processing and Petrochemicals, Xi'an Shiyou University, Xi'an 710065, China (3) Diversified Business Project Department, Lanzhou Petrochemical Branch Company, CNPC, Lanzhou 730060, China (4) Petrochemical Branch Company, Tarim Oilfield, CNPC, Kuerle 841000, China
Abstract: The performance, the development and prospects of the use of Groups IV base stocks (PAO) are discussed. The present situation and development trend of the processing technology of the PAO base stocks are analyzed. Compared with Groups I, II and III/III+(GTL) base oils, PAO has some prominent properties, including higher viscosity index, better low-temperature fluidity, lower volatility, and better anti-oxidation capacity, which give PAO some advantages over conventional lubricants, such as economy of fuel oil increasing, friction and wear of equipment decreasing, service life of equipment lengthening, oil drain interval of equipment increasing and environment pollution decreasing. In the future, increasingly rigorous requirements of energy saving and environmental protection will benefit the rapid growth of the use of PAO. Compared with mono-phase processing technology of PAO, the multi-phase processing technology of PAO has Due to the obvious advantages in investment and cost and therefore it becomes a new trend to the research and development of PAO processing technology. (29 refs)
Database: Compendex
Data Provider: Engineering Village

12. Study of temperature compensated FBG pressure sensor based on widened bandwidth

Wei, Ting (1, 2); Qiao, Xue-Guang (1, 2); Jia, Zhen-An (1); Fu, Hai-Wei (1); Wang, Hong-Liang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 18, n 4, p 418-421, April 2007; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Shaanxi Key Laboratory of Photoelectric Sensing Logging, Xi'an Petroleum University, Xi'an 710065, China (2) Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Science, Xi'an 710068, China
Abstract: A novel temperature compensated FBG pressure sensor based on round metal diaphragm is presented and studied theoretically and experimentally. FBG was affixed along the radius of diaphragm. The pressure was measured by the bandwidth of FBG because the bandwidth action is insensitive to temperature. This approach showed a pressure resolution of ± 0.18 MPa and a pressure sensitivity of 0.28 nm/MPa in the range 0.0 MPa to 7.2 MPa when the spectral resolution is 0.05 nm for spectral analyzer. The experimental results match the theoretical analysis well. (10 refs)
Main heading: Pressure sensors

Controlled terms: Bandwidth - Fiber Bragg gratings - Pressure measurement - Spectral resolution
Uncontrolled terms: Chirped effect - Compensated fiber Bragg grating (FBG) pressure measurement - Spectral analyzer
Classification Code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 944.3 Pressure Measuring Instruments - 944.4 Pressure Measurements
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

13. Flow distribution characteristics of intermediate headers of a supercritical once-through boiler's water cooled walls, operating under variable pressure conditions

Zhu, Yu-Qin ; Li, Ya-Hong ; Bi, Qin-Cheng ; Chen, Ting-Kuan
Source: *Dongli Gongcheng/Power Engineering*, v 27, n 5, p 663-666, October 2007; **Language:** Chinese; **ISSN:** 10006761; **Publisher:** Shanghai Power Equipment Research Institute
Author affiliation: (1) Technology Research Center of Petroleum Refinement Engineering, Xi'an Petroleum University, Xi'an 710065, China (2) National Key Lab of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: Flow distribution characteristics, of intermediate distribution headers between water walls, under sub-critical pressure conditions, of a domestic manufactured 600 MW once-through boiler, has been studied. The effect of the medium's pressure on flow distribution characteristics, in the vertical water wall tubes connected with the header, was studied under the following conditions: pressure p = 12-21 MPa, mass flow G = 400-1200 kg/m2 · s, steam content x = 0-1.0. Results show that the non-uniformity, of flow distribution among the parallel connected branch pipes, reduces with the header's increasing pressure and the inlet mass flow. In case the inlet mass flow contains little steam, then flow distribution non-uniformity in the branch pipes increases with increasing steam content; but as soon as the inlet steam mass content exceeds 0.6, non-uniformity of flow distribution decreases with increasing steam content at inlet. (6 refs)
Database: Compendex
Data Provider: Engineering Village

14. Application of integrated geophysics in the study of the characteristics of the deep faulted structures in Chongqing reservoir area of Three Gorges

Zhao, Jun-Long ; Mao, Suo-Ming ; Hu, Jian-Ping
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 52-56, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Oil and Gas Resources, Xi'an Shiyou University, Xi'an 710065, China (2) College of Geology Engineering and Surveying and Mapping Engineering, Chang'an University, Xi'an 710054, China (3) China Rail No.7 Bureau Group Co. Ltd., Zhengzhou 450009, China (4) Department of Computer Science and Technology, Tianjin Institute of Urban Construction, Tianjin 300384, China
Abstract: The multiple interpretations of geophysical inversion determine the necessity and importance of integrated geophysical interpretation. In order to thoroughly study the characteristics of the deep faulted structures and to supply the basic data for the monitoring and control of the earthquakes and geological disasters in the reservoir area, the research method of the integrated geophysics together with field investigation data is used for the study and analysis of the available seismic, gravity and aeromagnetic data, and the new recognition of the characteristics of the deep faulted structures are obtained. (12 refs)
Database: Compendex
Data Provider: Engineering Village

15. A novel algorithm for detecting air holes in steel pipe welding based on hopfield neural network

Gao, Weixin (1, 2); Tang, Nan (1); Mu, Xiangyang (1)
Source: *Proceedings - SNPD 2007: Eighth ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing*, v 1, p 79-83, 2007, *Proceedings - SNPD 2007: Eighth ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing*; **ISBN-10:** 0769529097, **ISBN-13:** 9780769529097; **DOI:** 10.1109/SNPD.2007.66; **Article number:**

4287478; **Conference:** SNPD 2007: 8th ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing, July 30, 2007 - August 1, 2007; **Publisher:** Inst. of Elec. and Elec. Eng. Computer Society
Author affiliation: (1) School of Electrical Engineering, Xian Shiyou University (2) School of Electrical Engineering, Xian Shiyou University, Xian, China
Abstract: The paper segment x-ray images of steel pipe welding to assess the quality of welding. Image segmentation is posed as an optimization problem, and is correlated with the energy function of the multistage Hopfield neural network. The algorithm for optimization and the principle of selecting coefficient are also given. The algorithm is easy to be programmed. As an application, we successfully segment some real industrial welding x-ray images. © 2007 IEEE. (9 refs)
Main heading: Welding
Controlled terms: Algorithms - Image segmentation - Neural networks - Optimization - Steel pipe - X ray analysis
Uncontrolled terms: Air holes - Industrial welding - Optimization problem
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 461.1 Biomedical Engineering - 538.2 Welding - 545.3 Steel - 723.2 Data Processing and Image Processing - 921.5 Optimization Techniques
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

16. Research and implementation of the dynamic load balancing algorithm based on service grid

Ren, Chang-Lin ; Wang, Jia-Hua
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 115-118, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Information Center, Xi'an Shiyou University, Xi'an 710065, China (2) Computer College, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The operation scheduling of the service grid is actually several local agents automatically and transparently scheduling many operations, and these local agents use resources in coordination. In order to enhance the utilization rate of the resources and the throughout rate of the service grid system, the load balancing in the system must be implemented. A hierarchy dynamic load balancing dispatch mode is put forward, and the structure of the load balancing system is presented. Task allocation is the core of load balancing system. A dynamic dual-threshold job dispatch algorithm is designed and implemented, in which the running-job number, performance and load information of every local agents are synthetically considered. The comprehensive performance of the job dispatch algorithm is superior to that of traditional job scheduling algorithm, and it is better when the number of running jobs is greater. (7 refs)
Database: Compendex
Data Provider: Engineering Village

17. Study on controlling system for variable structure of stabilized platform in rotary steering drilling system

Cui, Qilin (1); Zhang, Shaohuai (2); Liu, Yuxiang (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 3, p 120-123, May 2007; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: According to the mathematical model and the working environment of the stabilized platform, the variable structure control scheme was advisable to the control system of the stabilized platform in the rotary steering drilling system. The invariant conditions of the stabilized platform control system for variable structure control were verified and a sliding mode was constructed. The control law that is able to reduce effectively chattering was designed using the exponential reaching law and soften sign function law. The simulations and experiments show that the control algorithm has good quality of robustness, high accuracy control result and rapid following velocity. The remarkable controlling effects can be gotten by this controlling system. (9 refs)
Main heading: Drilling platforms
Controlled terms: Computer simulation - Control systems - Mathematical models - Oil well drilling - Robustness (control systems) - Structural design - Variable structure control
Uncontrolled terms: Rotary steering drilling system - Sliding mode - Stabilized platform - Surface simulation test - Variable structure control algorithm

Classification Code: 408.1 Structural Design, General - 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 723.5 Computer Applications - 731.1 Control Systems - 921 Mathematics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

18. Aeolotropism and its exploitation significance of Chang 21 low permeability sandstone reservoir of Yanchang Formation, Shunning Oilfield

Wang, Jian-Min (1)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 34, n 2, p 170-174, April 2007;
Language: Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China
Abstract: Synthetic analysis of the acolotropism and oiliness of Chang 21 reservoir bed in Shunning Oilfield, Ordos Basin reveals: the reservoir has serious acolotropism, developed compact interlayers, and permeability sections with the normal-abnormal rhythmicity. The aeolotropism is more serious vertically than horizontally, in river sides than in river body, and in Chang 21-2 reservoir bed than in Chang 21-1. Microsopic heterogeneity is the key factor restricting reservoir's permeability. Sedimentary facies belt and diagenesis obviously control the permeability, which influences the oil-gas distribution and water injection profile or production profile. The compact interlayers in Chang 21 can effectively block vertical seepage of liquids, restrict intralayer seepage, and stop artificial cracks from breaking through. They are favorable to collecting water drive energy, increasing water drive efficiency and reserves utilization degree, and arc the important basis for dividing exploitation members and working out water-injection development plan. (17 refs)
Main heading: Oil field development
Controlled terms: Cracks - Injection (oil wells) - Low permeability reservoirs - Oil bearing formations - Sandstone - Water
Uncontrolled terms: Aeolotropic characteristics - Development plan - Low permeability - Oil-gas distribution - Sandstone reservoir bed
Classification Code: 444 Water Resources - 481.1 Geology - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

19. Numerical simulation on temperature field in Ta/Ta-16MnR argon-arc welder joint

Li, Zhen (1)
Source: *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering*, v 36, n 8, p 1350-1353, August 2007; **Language:** Chinese; **ISSN:** 1002185X; **Publisher:** Rare Metals Materials and Engineering Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China
Abstract: By using ANSYS, the temperature field of tube to tube sheet argon-arc welded joint which consisting of tantalum (Ta) tube and Ta/16MnR clad sheet was simulated. The numerical simulation results of four kinds of welded joints were obtained. The results show that the thickness of tantalum layer of Ta/16MnR clad sheet is primary factor for welding quality. The tantalum layer thickness of Ta/16MnR clad sheet needs 2.5 mm, otherwise the 16MnR steel beneath tantalum layer would melt. The numerical simulation result has been substantiated by the experimental results in reference. (5 refs)
Main heading: Tantalum
Controlled terms: Computer simulation - Temperature distribution - Welding - Welds
Uncontrolled terms: Argon arc welding - Numerical simulation - Temperature field
Classification Code: 538.2 Welding - 543.4 Tantalum and Alloys - 641.1 Thermodynamics - 723.5 Computer Applications
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

20. Study on the two nonlinear control Techniques for induction motors

Zhang, Qi-Zhi ; Shi, Fu-Bin ; Liu, Guang-Xing ; Li, Lin
Source: *Xi'an Jianzhu Keji Daxue Xuebao/Journal of Xi'an University of Architecture and Technology*, v 39, n 4, p 584-588, August 2007; **Language:** Chinese; **ISSN:** 10067930; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China
Abstract: In this paper a comparison study is made of two nonlinear control techniques for induction motors, namely nonlinear state feedback control and Lyapunov integral control. With thin two control methods the completely dynamic decoupling and linear control is realized. The addition of the integral term and current control the latter improves the dynamical properties of the system. The simulation results show that these have satisfying performances. The latter has better dynamical properties and the high robustness of the motor parameters uncertainty. (10 refs)
Database: Compendex
Data Provider: Engineering Village

21. A new algorithm for distribution network planning

Ke, Xian-Bo (1); Gao, Wei-Xin (2); Li, Xiao-Bing (2)
Source: *2006 International Conference on Power System Technology, POWERCON2006*, 2007, *2006 International Conference on Power System Technology, POWERCON2006*; **ISBN-10:** 1424401119, **ISBN-13:** 9781424401116; **DOI:** 10.1109/ICPST.2006.321570; **Article number:** 4116117; **Conference:** 2006 International Conference on Power System Technology, POWERCON2006, October 22, 2006 - October 26, 2006; **Sponsor:** IEEE Power Engineering Society,IEEE/PES; POWERCON2006; **Publisher:** Institute of Electrical and Electronics Engineers Inc.
Author affiliation: (1) Northwest China Grid Company Limited (2) Xi'an Shiyou University
Abstract: This paper presents a new algorithm, which is based on Hopfield neural network, to plan distribution power network. The algorithm changes distribution network planning problem into a directed graph-planning problem. The Hopfield neural network is not designed to decide which alternative line should be selected, but to decide the in-degree of each node, so the calculation result is a radical directed graph. By this way, the distribution network is determined simultaneously. The energy function and algorithm for planning the distribution network are also given. An example shows the proposed Hopfield neural network can successfully plan distribution power network. © 2006 IEEE. (12 refs)
Main heading: Electric power distribution
Controlled terms: Algorithms - Graph theory - Neural networks - Problem solving - Strategic planning
Uncontrolled terms: Energy function - Hopfield neural network - Radical directed graph
Classification Code: 706.1.2 Electric Power Distribution - 723.4 Artificial Intelligence - 912.2 Management - 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

22. Multiple-point statistic reservoir modeling method based on workflow technology

Wang, Jia-Hua ; He, Jian
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 101-103+109, November 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Computer, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Manual reservoir modeling is not able to meet the needs of modeling. The system framework of the multiple-point statistic reservoir modeling workflow based on workflow technology is put forward and the functions of every layers of the framework are discussed. The visual modeling workflow design of the application layer of the system and the implementation of key techniques are emphatically studied for raising modeling efficiency and reducing modeling cost. (7 refs)
Database: Compendex
Data Provider: Engineering Village

23. Study on fiber grating sensor with self-compensation capability for stress hysteresis and temperature

Wang, Hongliang ; Qiao, Xueguang ; Feng, Dequan ; Li, Ming
Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 28, n 3, p 550-554, March 2007; **Language:** Chinese; **ISSN:** 02543087; **Publisher:** Science Press
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China

Abstract: To study fiber grating sensor with self-compensation capability, the design structure that combines plane diaphragm and four-symmetric cantilever is adopted; two Bragg gratings that have same wavelengths are symmetrically affixed on the upper and lower surfaces of the cantilever to form the sensing head. The pressure tuning method of dual-FBG/s Bragg wavelength difference is realized. Theoretical analysis and experimental results indicate that the sensor has the capability of self-compensation for stress hysteresis and temperature effects, and the problems of cross-sensitivity for pressure and temperature in dual-FBG sensors are solved. The linearity and repeatability of the sensor system are improved. The maximal wavelength difference of 6.6 nm is obtained, The measurement sensitivities in pressure and temperature measurement are estimated to be 1.12 nm/MPa in the range from 0 MPa to 6 MPa and 0.028 nm/°C in the temperature range from 15 to 110 °C, respectively. (8 refs)
Database: Compendex
Data Provider: Engineering Village

24. Implementation of the information hiding technology based on VB and its application

Zhao, Ji-Dong ; Xu, Ying-Zhuo
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 81-85, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Computer, Xi'an Shiyou University, Xi'an 710065, China
Abstract: As information security becomes more and more concerned, the information hiding analysis technology of digital image becomes an important research direction in the field of hiding information. A safe and effective solution scheme is presented for the information hiding of BMP bitmap based on multimedia files. An algorithm for information hiding and retrieving in digital images and its implementation with Visual Basic are described in detail. The algorithm makes ciphertext be transmitted smoothly and be protected effectively in network, which can meet the needs of the high reliability and security of audited signature information circulation in open network environment. Finally, the implementation result is analyzed and an application example of the technology in collaborative drilling engineering design is presented. (9 refs)
Database: Compendex
Data Provider: Engineering Village

25. Three-dimensional visualization of steering drilling information

Li, Yan-Hua ; Xu, Ying-Zhuo
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 75-78, January 2007; **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 modeling, display and human-machine interaction in the visualization of a 3-D object are discussed thoroughly, and they are applied to the three-dimensional visualization of steering drilling information. Thus, the 3D visualization of the formation, real well track, target point and designed well track in steering drilling can be implemented. A case is presented. By the visualization of drilling information, drilling workers can clearly understand the structure of formation and the characteristics of reservoir, increase the control ability of drilling bit and thus can improve drilling success rate. (7 refs)
Database: Compendex
Data Provider: Engineering Village

26. Calculation methods of oil-saturation based on new ratio of carbon to oxygen

Pang, Ju-Feng (1); Shi, Jian-Hua (1); Wang, Qing-Hua (1)
Source: *Yuanzineng Kexue Jishu/Atomic Energy Science and Technology*, v 41, n 1, p 109-112, January 2007; **Language:** Chinese; **ISSN:** 10006931; **Publisher:** Atomic Energy Publishing House
Author affiliation: (1) Xi'an Shiyou University, P.O. Box 248, Xi'an 710065, China
Abstract: Based on the new C/O ratio and old C/O ratio values and the porosity of the formations, two new and two semi-empiric methods were used to calculate the curves and values of oil-saturations changed with depth of formations, respectively. The results show that the new method by new ratio is the best way to calculate the oil-saturation, and the calculated oil-saturation values agree with the real values. (3 refs)
Main heading: Oil fields
Controlled terms: Calculations - Carbon - Numerical methods - Oxygen - Saturation (materials composition) - Spectrometry
Uncontrolled terms: New ratio of carbon to oxygen - Oil saturation

Classification Code: 512.1.1 Oil Fields - 801.4 Physical Chemistry - 804 Chemical Products Generally - 921 Mathematics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

27. Development of WDM-based device driver

Song, Xin-Ai ; Yu, Kun
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 113-115, July 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Abstract: Windows driver model (WDM) is the device driver developing model put forward newly by Microsoft. The model, the structure, and the implement of WDM device driver are analyzed, and a case for developing parallel port driver using DriverStudio3.2 and VC+ + is presented. (3 refs)
Database: Compendex
Data Provider: Engineering Village

28. Analysis of the viscosity loss of polymer solution in the process of injection allocation

Chen, Ming-Qiang ; Sun, Zhi-Qiang ; Wang, Jiang-Shun ; Wan, Ling-Xia
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 60-63, May 2007; **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 viscosity of polymer solution is a key parameter of the polymer flood. It graduately reduces in the process of injection allocation. According to theoretical analysis and field tests, it is found that the viscosity loss produces mainly in filters, polymer injecting pumps, static mixers and shot holes. Sum of the polymer viscosity losses there accounts for 50%-60% of total loss. Through the optimization of injection allocation parameters and the rationally selection of injection allocation equipment, the viscosity loss will is decreased by 8%-16%. (4 refs)
Database: Compendex
Data Provider: Engineering Village

29. Influences of shearing action and depressant on the rheological property of waxy crude

Feng, Bing ; Dong, Feng-Juan ; Zhang, Hua ; Jiang, Hua-Yi
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 64-67, January 2007; **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: In order to study the influences of the depressant and shearing action on the rheological property of waxy crude, the properties of the crude oil with depressant and without depressant are measured under different shearing rates. It is shown that depressant and shearing action can all make the morphology, size and structure of wax crystal changing and therefore influence the rheological property of waxy crude; the depressant and shearing action can influence each other. The condensation point of the waxy crude decreases by 26°C, it is 16°C before the depressant is added and -10°C after depressant is added; the anomalistic point of the waxy crude decreases by 4°C, from 30°C to 26°C; wax precipitation point basically does not vary. There is greater difference between the viscosities of the crude samples without depressant and with depressant, and as a whole, the viscosity of the former is lower than that of the latter. The influence of shearing action on the rheological property of the crude sample without depressant is clearly greater than that of the crude sample with depressant; the influence degree of shearing action on the rheological property of the crude sample with depressant is greatly related to the shearing rate and temperature; the reduction of the viscosity of the crude sample with depressant decreases with the increase of shearing action strength, and it will not decrease when the shearing action exceeds certain range. (6 refs)
Database: Compendex
Data Provider: Engineering Village

30. Development of the DC speed controller against the pulse load rapidly changing based on the CPLD

Zhang, Qi-Zhi ; Shi, Fu-Bin ; Li, Lin

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 89-91, July 2007; **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: In accordance with the high-frequency pulse load of an electric runner, a kind of speed regulator for DC motor based on CPLD is designed. Taking a sport apparatus driven by the DC motor of 1-2 kW as an example, PWM control signal is generated using CPLD of high performance and the speed and current regulation circuit to accurately control the electric runner. Industrial experiments show that the developed DC speed regulator has high performance and high performance-price ratio, and it can be used in other small power DC speed regulating systems with the same type of load. (2 refs)
Database: Compendex
Data Provider: Engineering Village

31. Effect of topographic height difference on the technological calculation of natural gas transportation pipeline

Dong, Zheng-Yuan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 41-43, September 2007; **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 accurate formula for the technological calculation of natural gas transportation pipeline is presented through solving the basic equation group of gas steady flow, in which the effect of the topographic height difference is considered. The simplified expression of the accurate formula and the corresponding formula for the technological calculation of horizontal pipeline are also presented. The effect of the topographic height difference on the technological calculation of natural gas transportation pipeline is studied through numerical calculation. The results show that the topographic height difference has obvious effect on pressure drop, but it has little effects on the calculation results of pipeline diameter and gas flow rate, its effect on the technological calculation of natural gas transportation pipeline should be considered when the topographic height difference is greater than 200 m. The result in this paper can provide theoretical basis for the design and technological calculation of natural pipeline. (4 refs)
Database: Compendex
Data Provider: Engineering Village

32. Gas source analysis of Yingnan-2 gas reservoir in the eastern part of Talimu Basin

Li, Yan-Xia
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 27-30, July 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Hydrocarbon Resource, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The natural gas in Yingnan-2 condensate gas pool is wet gas and rich in nitrogen. The content of hydrocarbons ranges from 78.86% to 87.67%, of which, methane accounts for 68.92%-76.67%, heavy hydrocarbon accounts for 9.17%-14.01% and nitrogen gas accounts for 13.89% -21.07%. The carbon isotopes of methane and ethane compositions are in the range of -38.6 [per mille] --36.2 [per mille] and-30.9 [per mille] --34.7 [per mille] respectively. According to the components and carbon isotope characteristics of the gas, it is held that Yingnan-2 condensate gas is from the oil-cracked gas generated from hypemature Cambrian-Lower Ordovician sapropel kerogens. The identification modes of ln(C2/C3)-ln(C1/C2), #13C2-#13C3 verify also that Yingnan-2 gas is from oil-cracked gas. There is high content of adamantine in the condensate oil in the gas pool, which shows that the condensate oil is cracked. The cracking degree of the oil is 80%-90%. (9 refs)
Database: Compendex
Data Provider: Engineering Village

33. Study on signal transmission technique in rotary steering drilling

Li, Qi (1); Peng, Yuanchao (1); Zhang, Shaohuai (1); Liu, Zhikun (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 4, p 108-111, July 2007; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The common pulse transmission modes in rotary steering drilling including drilling fluid pulse transmission, cable transmission, acoustic wave transmission and electromagnetic wave transmission were analyzed. The drilling

fluid negative pulse transmission mode was selected to send the instruction signal to the modulating rotary steering tool. The overall scheme of the drilling fluid negative pulse signal transmission was designed. According to the change of pump displacement, three-descending and three-ascending pulse transmission modes were proposed by comprehensively considering short instruction transmission and the accurate identification. Considering the need of instruction transmission, the limit condition of magnitude and orientation of the guiding force, and the downhole storage capacity, three-descending and three-ascending ternary-notation negative pulse encoding combination mode was optimized. The receiving of downhole signal was achieved by detecting the current or frequency change of the downhole generator. The laboratory experiment proved that the method was reliable. The integrative command control software system was developed. (8 refs)
Main heading: Oil well drilling
Controlled terms: Acoustic wave transmission - Computer software - Drilling fluids - Electric cables - Electromagnetic wave transmission - Oil well drilling equipment - Signal processing
Uncontrolled terms: Command control software - Drilling fluid pulse - Modulating rotary steering tool - Rotary steering drilling system - Signal transmission technique
Classification Code: 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 711 Electromagnetic Waves - 751.1 Acoustic Waves - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

34. Study on high efficiency new tray of 3D round valves

Zhou, San-Ping ; Chu, Ya-Zhi ; Chen, Bing ; Fan, Yu-Guang
Source: *Guocheng Gongcheng Xuebao/The Chinese Journal of Process Engineering*, v 7, n 4, p 657-660, August 2007; **Language:** Chinese; **ISSN:** 1009606X; **Publisher:** Science Press
Author affiliation: (1) Institute of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The structure design and feature of a new type of 3D round valves were analyzed particularly. In an experimental rectangular column of 1000 mm × 350 mm, the compared experiments between two trays equipped with 3D round valves and F1 type valves respectively were performed by employing a typical model experimental system of water-air. In the experiments, hydraulic properties, such as tray pressure drop, entrainment rate and leakage rate, were measured, and mass transfer efficiency were determined through the method of oxygen-absorption. The experimental results demonstrate that under the same condition, compared with that of the tray equipped with Fl type valves, the tray efficiency of 3D round valve is improved by about 20%, and its entrainment rate is slightly lowered. In the range of application in industry, the tray pressure drop and leakage rate of 3D round valves are both lower than those of F1 type tray. Consequently, the 3D round valve is proven to be a better valve in terms of comprehensive technology. (13 refs)
Database: Compendex
Data Provider: Engineering Village

35. Calculation model of the economic diameter and critical flowrate of isothermal oil transportation pipeline

Dong, Zheng-Yuan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 74-76+79, May 2007; **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: Considering the effects of oil viscosity and pipeline flowrate on pump efficiency, flow state and economic pipe diameter, using the sum of the allocated expense per year of pipeline construction investment, the pipeline maintenance expense per year and the energy consume expense per year for pipeline running as the objective function, the complete calculation model for the economic diameter and critical flowrate of the isothermal oil transportation pipeline are presented. The model is verified by a case. Fibonacci search algorithm is used in the calculation of the case. The result of the case shows that the model is suitable for various flow states, and it well reflects how the effects of oil viscosity and pipeline flowrate on the economic pipe diameter, and there is a better calculation convergence. The method provides a reliable theoretical basis for the economic design of the isothermal oil transportation pipeline. (7 refs)
Database: Compendex
Data Provider: Engineering Village

36. New algorithm for detecting air bubbles in steel pipe welding of X-ray based on hopfield neural network

Gao, Weixin (1); Tang, Nan (1); Li, Lin (1); Mu, Xiangyang (1)
Source: *Jixie Gongcheng Xuebao/Chinese Journal of Mechanical Engineering*, v 43, n 4, p 193-197, April 2007; **Language:** Chinese; **ISSN:** 05776686; **DOI:** 10.3901/JME.2007.04.193; **Publisher:** Editorial Office of Chinese Journal of Mechanical
Author affiliation: (1) College of Electrical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In order to detect the air bubbles in welding gap, the multi-layer Hopfield neural network is presented to segment welding X-ray image. The image segmentation is posed as an optimization problem. The energy function is constructed to meet the characteristics of welding X-ray image such as great noise and random positions of air bubbles. The principle of selecting coefficient is given through some experiments. A new algorithm for segmenting welding X-ray image is also put forward based on multi-layer Hopfield neural network. The algorithm is combined with median filtering and neural network to wipe off noise and find air bubbles effectively. As an application, the algorithm successfully segments some real industrial welding X-ray images. (11 refs)
Main heading: Welds
Controlled terms: Computer applications - Defects - Hopfield neural networks - Image processing - Image segmentation - Inspection - X rays
Uncontrolled terms: Air bubbles - Welding gap
Classification Code: 538.2 Welding - 723.2 Data Processing and Image Processing - 723.4 Artificial Intelligence - 723.5 Computer Applications - 913.3.1 Inspection
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

37. Down-hole video imaging technology

Zhang, Jiatian ; Yan, Zhengguo ; Hu, Changling ; Ma, Hushan
Source: *Yi Qi Yi Biao Xue Bao/Chinese Journal of Scientific Instrument*, v 28, n 4, p 714-717, April 2007; **Language:** Chinese; **ISSN:** 02543087; **Publisher:** Science Press
Author affiliation: (1) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Downhole video logging technique captures borehole images by downhole camera and can be applied to well casing inspection, downhole fishing, downhole completion quality inspection, etc. A prototype of the down-hole video logging instrument was designed, which adopts wavelet based image-compression, high speed digital modulation transmission, CPLD based demodulation, and special downhole instrument structure design to solve some key technical problems, such as downhole video image compression, high speed cable data transmission, down-hole illumination, high temperature, etc.. 3000 m cable data transmission and 125deg;C environment test were carried out. Experiment results prove that the instrument works reliably and stably, and the image is clear and stable. (8 refs)
Database: Compendex
Data Provider: Engineering Village

38. Simulation of the down-hole short-distance communication system based on 2DPSK

Lu, Jian-Jun ; Wang, Yue-Long ; Wu, Ying-Long ; Wei, Na
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 93-95+100, November 2007; **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: The simulation design of the overall structure and the sub-modules of a 2DPSK communication system are finished according to the principle of binary difference code phase-shift keying (2DPSK) by using MATLAB. The factors of influencing the bit error rate of the short-distance communication system are studied in order to find the optimal values of the code rate and the cut-off frequency of filter at optimal work frequency. The analysis of the simulation result indicates that the system can meet the basic needs of the down-hole short-distance communication, and it has better anti-noise performance in the circumstance of lower signal-to-noise ratio of transmission channel. In this paper, the function simulation and analysis of the 2DPSK communication system provide basis for the implementation of future full-digital down-hole short-distance communication system. (7 refs)
Database: Compendex
Data Provider: Engineering Village

39. Experimental study on the effect of micro-fracture on the water displacing oil law in low-permeability reservoir

Zhang, Guo-Hui ; Ren, Xiao-Juan ; Zhang, Ning-Sheng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 44-47+51, September 2007; **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: It has an important significance to recognize the effect of micro-fracture on the water flooding development of low-permeability reservoirs. Five cores with micro-fractures from Chang 6 reservoir are studied by water displacement oil experiments, and the experimental results show that: (1) the micro-fracture has little effect on displacement efficiency, but it enlarges the flow path of oil and water and improves reservoir permeability; (2) the no-water displacing efficiency of the micro-fracture cores is low, but the final displacing efficiency of them is close to the that of non-fracture cores; (3) compared with non-fracture cores, the two-phase area width of the relative permeability curve of the micro-fracture cores is narrower, and its water cut goes up faster. (9 refs)
Database: Compendex
Data Provider: Engineering Village

40. Information fusion technology for formation damage diagnosis based on evidence theory

Wang, Jiang-Ping
Source: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*, v 31, n 4, p 144-148, August 2007; **Language:** Chinese; **ISSN:** 16735005; **Publisher:** University of Petroleum, China
Abstract: A mathematical mergence model based on decision level data fusion and evidence theory was developed for formation damage diagnosis by analyzing the features of multiple source information of formation damages. The concrete algorithm of the data fusion in decision level was presented. By analyzing and diagnosing the water sensitivity of a reservior, the reservior information from multi-sources which reflects the formation damage types was processed comprehensively by the model, and the formation damage types were judged systemically. The accuracy and reliability of formation damage diagnosis can be effectively improved. (6 refs)
Database: Compendex
Data Provider: Engineering Village

41. Application of probabilistic neural network technique in lithology inversion of seismic data

Zhang, Shao-Hong
Source: *Liaoning Gongcheng Jishu Daxue Xuebao (Ziran Kexue Ban)/Journal of Liaoning Technical University (Natural Science Edition)*, v 26, n SUPPL. 2, p 16-18, November 2007; **Language:** Chinese; **ISSN:** 10080562; **Publisher:** Editorial Office of Journal of Liaoning Technical University
Author affiliation: (1) College of Petroleum and Resource, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In view of the fact that the target reservoir thickness is small and the lateral change of lithology is big, a specific method of probabilistic neural network is used so as to overcome the difficulty of lithology inversion using seismic data in conventional way. The construction of the network model and the steps of prediction are discussed. The probabilistic neural network method is used based on the correlation among the features of logging, seismic attributes and geological lithology characteristics, and it has a good effect in processing the actual data to identify the reservoir lithologic information. The result is has certain guiding significance to the petroleum exploration and development in the survey area. (6 refs)
Database: Compendex
Data Provider: Engineering Village

42. Modifying demulsifier by chain expanding and branching methods

Xu, Jia-Ye (1); Ma, Xi-Fei (1); Chen, Shi-Jia (1); Chen, Shi-Jun (1)
Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 23, n 2, p 99-103, April 2007; **Language:** Chinese; **ISSN:** 10018719; **Publisher:** Science Press

Author affiliation: (1) Chemistry and Chemical Engineering College, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Several new modified demulsifiers were synthesized by the chain expending and branching of polyether B61. The chain expending was carried out by the reaction of polyether B61 with adipic acid to introduce the carboxyl group in the B61 molecule. Then the branching was carried out by the reaction of the chain expending resultant with triethylenetretramine, D-sorbic alcohol, D-xylose, pentaerythrite and so on, respectively. The relative molecular masses of chain expending products were determined through the method of terminal analysis to see the relation between the molecular structure and their properties. The interfacial tensions of the new modified demulsifiers were measured to see the relation between the interfacial tension and demulsification. The results of demulsification tests indicated that the demulsifying ability of B61 polyether for crude oil was enhanced obviously after chain expending and branching, and for the crude oil demulsification expending and branching product was better than the only chain expending product. As the branching agent, polyamines showed better modification than polyalcohols. It was shown that there exists some relationship between the demulsifying ability and the interfacial tension. (10 refs)
Main heading: Polyethers
Controlled terms: Chain length - Chemical modification - Crude petroleum - Demulsification - Molecular structure - Surface tension
Uncontrolled terms: Branching agent - Branching method - Chain expanding - Modifying demulsifier - Polyether B61
Classification Code: 513.1 Petroleum Refining, General - 801.4 Physical Chemistry - 802.3 Chemical Operations - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

43. New graphic method for safe crossing river problem

Wang, Jia-Hua ; Wang, Xiang-Bo ; Li, Mei-Li ; Cao, Chun-Xiang ; Wang, Xiao-Yan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 103-105, July 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Computer, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) School of Business Administration, Capital University of Business and Economics, Beijing 100026, China
Abstract: To solve the safe crossing river problem, a new solving method based on graph theory is presented. In this solution, a vertex is designed into a tuple with 4 items, which are 'man', 'wolf', 'goat', and 'cabbage', and each item in the tuple can be assigned the value of 'on this shore', 'on board', or 'on other shore'. Then the actual model is transformed into graph structures. Finally the solution of the problem is gained by searching out a path on the graph. The solving method is helpful to analyze the solution space of a problem domain and to acquire normal solution, random solution, optimal solution, etc. The solving method shows how to transform an actual problem into a theory model and use graph theory to solve the practical problem. (7 refs)
Database: Compendex
Data Provider: Engineering Village

44. Study and development of a Mannich based corrosion inhibitor for hydrochloric acid acidifying

Wang, Jing-Guang ; Yu, Hong-Jiang ; Li, Qian-Ding
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 77-79, May 2007; **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: Mannich base is a kind of excellent corrosion inhibitors, and they are widely applied in the acidifying operations of oil-gas wells. A low-cost Mannich base is developed using cyclohexylamine as raw material. It may be used as the main agent for the oil or gas well acidifying corrosion inhibitor. Taking the static corrosion rate as the experimental appraisal target, the types of raw material are selected, and the influences of reaction temperature, reaction time, reaction system pH on the corrosion inhibiting performance of the products are studied. The synthesis technological conditions of the main agent of acidifying corrosion inhibitor are optimized, and the optimal synthesis technological conditions are obtained. The corrosion inhibiting performance of the synthesized corrosion inhibitor of different concentrations to N-80 steel is tested, and the coordinative effect of the main agent with synergists is discussed. The test result shows that, the first-grade corrosion inhibitor in petroleum and natural gas industry standards can be gained by adding the synthesized corrosion inhibitor of 0.5% into the industrial hydrochloric acid of 20% at 607°C. (4 refs)

Database: Compendex
Data Provider: Engineering Village

45. Determination of eccentric displacement vector in rotary steering drilling

Zhou, Jing (1); Fu, Xinsheng (1); Yao, Wenbin (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 5, p 124-127, September 2007; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Institute of Downhole Measurement and Control, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The pad positioning device in the controllable eccentric stabilizer XTCS can decide the magnitude and direction of eccentric displacement vector. It is difficult to measure the displacement of eccentric vector using the normal sensor, because of the complex structure. The system identification method can be used to determine the displacement of positioning device instead of the displacement sensor. The operation speciality of positioning system was simulated, and a dynamic mathematical model for the hydraulic positioning system of limb was deduced. The identification model was validated by experiment. The actual engineering application capability of the system identification model was evaluated. This method can afford foundation for the use of controllable eccentric stabilizer in XTCS. (8 refs)
Main heading: Well drilling
Controlled terms: Hydraulics - Identification (control systems) - Mathematical models
Uncontrolled terms: Controllable eccentric stabilizer - Eccentric displacement vector - Positioning system - Rotary steering drilling
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 632.1 Hydraulics - 731.1 Control Systems - 921 Mathematics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

46. Characteristics of the upper Paleozoic marine depositional system in Zizhou area of the eastern Ordos Basin

Pang, Jun-Gang ; Wu, Shao-Bo ; Guo, Yan-Qin ; Wang, Gui-Cheng ; Li, Wen-Hou
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 24-27+31, November 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Abstract: In order to provide basis for searching for favourable sandbodies and natural gas accumulation areas with high yield, the upper Paleozoic marine deposit system is studied by the combination of field observation and laboratory research. It is held that two depositional systems of barrier coast and shallow marine shelf develop in the upper Paleozoic;in the evolution of paleo-geography, barrier isoland-lagoon fades develops in Benxi Formation; shallow marine shelf deposit is formed in Taiyuan Formation in the east and the southwest of the studied area, and tidal-flat deposit is formed in the middle and the northwest of it. Sand flat and barrier island fades distribute in a limited range, but the sandbodies in which there are them have good physical property, they are natural gas reservoirs. (14 refs)
Database: Compendex
Data Provider: Engineering Village

47. Analysis of rock-physical properties through angle-gather sections

Zhang, Shao-Hong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 18-20, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Oil and Gas Resource, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The seismic characteristics of the layered sand-mudstone media filled with oil and gas in their pores with different rock-physical property are studied by means of angle-gather data. Offset sections are transformed into angler-gather sections by ray-parameter method, and both big and small angle gathers are got. The processed results show that the angle-gather sections of the layered sand-mudstone media filled with different fluid present obviously different time-lapse attributes. Thus, it is an effective way to study the rock-physical characteristics of the sand-mudstone reservoir by means of angle-gather data. This method has the guiding significance for the monitoring of formation liquids (water, oil and gas) in the exploration and development of petroleum and coal. (4 refs)
Database: Compendex

Data Provider: Engineering Village

48. Study on performance of 3D narrow strip float valve

Chu, Ya-Zhi ; Feng, Yu-Kun ; Zhou, San-Ping
Source: *Huaxue Gongcheng/Chemical Engineering (China)*, v 35, n 7, p 4-6+18, July 2007; **Language:** Chinese; **ISSN:** 10059954; **Publisher:** Editorial Office of Chemical Engineering (China)
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The structural features, experimental studies and industrial uses of a novel patent-3D narrow strip float valve were presented. In an experimental rectangular column of 1000 mm × 350 mm, the pressure drop, entrainment, weeping rate were measured by using air-water system, and tray efficiency was determined by the method of oxygen-desorption, and was compared with F1-type valve under the same condition. Experimental results and industrial uses show that tray efficiency of 3D narrow strip float valve is evidently better than that of F1-type valve, and has a wider peak range and lower pressure drop; weeping rate tends to zero in operating flexibility range, but is slightly higher than F1-type valve below weeping point. Consequently, 3D narrow strip float valve is a better new valve in terms of comprehensive performance. (7 refs)
Database: Compendex
Data Provider: Engineering Village

49. Synthesis of starch-modified cationic polymer flocculant

Li, Min ; Qu, Cheng-Tun ; Wu, Xin-Min ; Wang, Xin-Qiang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 111-114, May 2007; **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: Using sweet potato starch as raw material, a kind of cationic polymer flocculant F4 is synthesized. And the factors of affecting the synthesis process are investigated. The results show: the optimal synthesis conditions of graft copolymer are starch of 5 g, initiation agent of 0.35 g, AM of 10 g, reaction temperature of 50°C and reaction time of 3 h. The conditions of cationization are NaOH of 0.08 g, GTA of 3 g, reaction temperature of 70°C and reaction time of 2 h. (8 refs)
Database: Compendex
Data Provider: Engineering Village

50. Rheological properties of colloidal liquid aphrons

Yan, Yong-Li ; Qu, Cheng-Tun ; Zhang, Ning-Sheng ; Chen, Jie-Rong
Source: *Gaodeng Xuexiao Huaxue Xuebao/Chemical Journal of Chinese Universities*, v 28, n 9, p 1720-1725, September 2007; **Language:** Chinese; **ISSN:** 02510790; **Publisher:** Higher Education Press
Author affiliation: (1) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (3) School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: Colloidal liquid aphrons (CLA) composed of polyoxyethylene 3 dodecyl ether (AEO-3)/n-decane/sodium dodecyl sulphate (SDS)/water were subjected to a full rheological characterization. Steady-state flow and dynamic viscoelasticity were measured via a Haake RV-30 viscosimeter and a controlled stress rheometer Haake RS 300 with cone-plate geometry, respectively. The effects of the volume ratio of dispersed oil phase to the continuous phase (PVR), temperature and shear rate on the rheological behavior of CLA were also discussed. The results of the steady-state analysis indicate that both CLA and emulsions studied here were typical non-Newtonian liquids and exhibited strong shear thinning behavior. The flow curves of CLA were well described by the Hershel-Bulkley equation. Thixotropy was not observed in any of CLA and emulsions. The findings from the oscillatory viscoelastic analysis suggest that no linear viscoelasticity region existed in the entire range of stresses for low PVR (2-4), and at the PVR of 8, the systems display a viscoelastic behavior. The effect of temperature on the flow behavior and viscoelasticity of CLA and emulsions was not evident. The rheological properties of CLA are analogous to that of high internal phase ratio emulsions (HIPRE) through a comparison of the findings throughout this work and conclusions of HIPRE reported previously. This similarity further suggests that CLA and HIPRE display a similar microstructure. (23 refs)
Database: Compendex
Data Provider: Engineering Village

51. The FBG sensing technology based on fiber laser

Liu, Ying-Gang (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Zhao, Da-Zhuang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 18, n 9, p 1065-1067+1081, September 2007; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Optical Fiber Sensing Laboratory, School of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Analyzing the principle of erbium-doped fiber laser (EDFL) and the sensing mechanism of fiber Bragg grating (FBG), the sensing system of FBG based on ring EDFL was established. In this system, the FBG acted as not only a filter but a sensor to choice wavelength and sense the change of temperature or pressure. The temperature characteristics of the FBG sensor, that was processed by temperature sensitivity enhancing technique, was studied by experiment, and the temperature resolution was better than 0.3°C. After insteading of using the fluorescence source and the FBG that was pasted on cantilever beam, the spectrum shape of output sensing signal was compared under identical acting force. The technical method could eliminate the influence of FBG's chirp to sensing signal effectively. This method had the features of simplicity and high signal-to-noise ratio, and suited for the FBG sensing system with middle and long distance. (8 refs)
Main heading: Fiber optic sensors
Controlled terms: Cantilever beams - Fiber Bragg gratings - Fiber lasers - Fluorescence - Signal to noise ratio - Temperature measurement - Wavelength
Uncontrolled terms: Erbium doped fiber laser (EDFL) - Sensing technology - Temperature resolution
Classification Code: 732.2 Control Instrumentation - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 744.4 Solid State Lasers - 944.6 Temperature Measurements
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

52. Synthesis and Characterization of mesoporous molecular sieve Al-MCM-41

Meng, Hua-Dong ; Zhang, Jun-Tao ; Ding, Li-Qin ; Liang, Sheng-Rong ; Wang, Xiao-Quan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 104-107, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Research Centre of Petroleum Processing and Petrochemicals, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Mesoporous molecular sieve Al-MCM-41 is synthesized in a basic medium by hydrothermal crystallization method, using sodium silicate as silicate source, sodium aluminate as aluminium source and cetyltrimethyl ammonium bromide as template. The effects of synthesis conditions on the quality of Al-MCM-41 are investigated by X-Ray, TEM, IR and N2 adsorption-deadsorption. The results show that the mesoporous molecular sieve with good crystallization degree and ordered pore structure can be obtained when pH value is 11-13, the ratio of template to SiO2 is 0.07-0.20, the crystallizing time is 72 h at 120°C, the synthesized product is baked for 5 h to 550°C at the heating rate of 2°C/min. The result of N2 adsorption-desadsorption shows pore-volume, BET special surface area and mean pore size of Al-MCM-41 are 0.942 cm3/g, 1190 m2/g and 3.16 nm separately. (8 refs)
Database: Compendex
Data Provider: Engineering Village

53. Novel fiber Bragg grating sensor for simultaneous discriminating measurement of temperature and pressure

Yu, Da-Kuan (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Fu, Hai-Wei (1); Zhao, Da-Zhuang (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 18, n 10, p 1146-1149, October 2007; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Shaanxi Key Laboratory of Photoelectric Sensing Logging, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel double-fiber Bragg grating (FBG) sensor for simultaneous discriminating measurement of temperature and pressure was proposed based on columned vessel and piston. FBG 1 and FBG 2 were stuck to the fundus material by strong pastern. Fundus material was fixed by dowels between the piston and the bottom of columned vessel. The changes of temperature and pressure in the columned vessel result in the wavelength shift of FBG 1. Only the change of temperature in the columned vessel causes the wavelength shift of FBG 2, the pressure's influence can be neglected. The external pressure and temperature can be measured by testing the reflective

wavelength shift of FBG 1 and FBG 2. The experimental pressure sensitivity coefficienit is 0.8223 nm/MPa, and the temperature sensitivity coefficient is 0.0322 nm/°C.which are 274 and 3.2 times of that bare FBG respectively. The sensor can be used in the liquid or gas environment to high-sensitivity simulataneous discriminating measurement of temperature and pressure in the range 0-10 MPa, -20-100°C. The sensitivity of sensor can be altered by changing the fundus or the parameters of fundus material and piston to meeth the measurements of different sensitivities. (8 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Fiber optics - Pistons - Temperature - Wavelength
Uncontrolled terms: Discriminating measurement - Pressure sensing - Temperature sensing
Classification Code: 612.1.1 Internal Combustion Engine Components - 641.1 Thermodynamics - 741.3 Optical Devices and Systems
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

54. Combined modulation and harmonic suppression

Cheng, Weibin (1, 2); Zhong, Yanru (2); Jin, Shun (2)
Source: *Conference Proceedings - IPEMC 2006: CES/IEEE 5th International Power Electronics and Motion Control Conference*, v 1, p 602-606, 2007, *Conference Proceedings - IPEMC 2006: CES/IEEE 5th International Power Electronics and Motion Control Conference*; **ISBN-10:** 1424404487, **ISBN-13:** 9781424404483; **DOI:** 10.1109/IPEMC.2006.297080; **Article number:** 4078142; **Conference:** IPEMC 2006: CES/IEEE 5th International Power Electronics and Motion Control Conference, August 14, 2006 - August 16, 2006; **Sponsor:** China Electrotechnical Society (CES); **Publisher:** Institute of Electrical and Electronics Engineers Inc.
Author affiliation: (1) Xi'an Shiyou University, Xi'an, 710065, China (2) Xi'an University of Technology, Xi'an, 710048, China
Abstract: The output of pulse width modulation includes harmonics with invariable frequencies and invariable magnitudes, which are sources of conducted interference and load resonance . Based on the spectrum analysis of switching modulation and sinusoidal pulse width modulation (SPWM) , frequency modulation and low frequency amplitude modulation are combined to make a nonlinear swing for the modulated frequencies, to spread the harmonics frequencies broader , to reduce the average amplitudes of various harmonics , and the experimental results are also given out in this paper . ©2006 IEEE. (8 refs)
Main heading: Amplitude modulation
Controlled terms: Harmonic analysis - Spectrum analysis - Voltage control - Pulse width modulation - Frequency modulation
Uncontrolled terms: Combined modulation - Conducted interferences - Harmonic - Harmonic suppression - Load resonance - Low-frequency - Sinusoidal pulse width modulation
Classification Code: 731.3 Specific Variables Control - 921.6 Numerical Methods
Database: Compendex
Data Provider: Engineering Village

55. Data acquisition system for electromagnetic propagation resistivity logging

Liu, Sheng-Hu ; Xing, Ya-Min
Source: *Xinan Shiyou Daxue Xuebao/Journal of Southwest Petroleum University*, v 29, n 5, p 25-29, October 2007; **Language:** Chinese; **ISSN:** 10002634; **Publisher:** Science Press
Abstract: The LWD method has many advantages the traditional cable borehole survey because of its higher accuracy, higher geologic strata resolution capacity, much less time and cost. To meet the current logging technology needs, A data acquisition and processing system for electromagnetic propagation resistivity logging while drilling is designed. The acquisition system structure, acquisition Program, the digital design of LWD is introduced, the design and the implementation of each functional module discussed. The system which is designed on the basis of the high precise DSP and FPGA implements signal pretreatment, high speed A/D control and digitalization of the phase sensitive demodulation etc, optimizes the acquisition and processing system and supplies a new way for the development of logging while drilling. Experimental results show that system performance has reached the design requirement. (12 refs)
Database: Compendex
Data Provider: Engineering Village

56. A simple high capability C+L broad bandwidth erbium-doped fiber source

Qiao, Xue-Guang ; Xi, Cong-Ling ; Jia, Zhen-An ; Liu, Ying-Gang
Source: *Bandaoti Guangdian/Semiconductor Optoelectronics*, v 28, n 1, p 23-26, February 2007; **Language:** Chinese; **ISSN:** 10015868; **Publisher:** China National Publishing Industry Trading Corporation
Abstract: A novel C+L band erbium-doped fiber broadband light source with high power was introduced. In the experiment, a fiber loop mirror made from 3 dB coupler was employed, meanwhile, power controlling circuit made fiber output steady. Single stage fiber and two pump LDs of 980 nm was used, and C-band amplified spontaneous emission of backward again enhanced the efficiency of LD and stability of output of fiber. Meanwhile, selecting appropriate erbium-doped fiber length simultaneously got output of C + L band with power higher than 26.67 mW (14.26 dBm), whose average wavelength was 1550.887 nm. (9 refs)
Database: Compendex
Data Provider: Engineering Village

57. Data compression technique of downhole video image

Yan, Zheng-Guo ; Zhang, Jia-Tian
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 94-97, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Key Laboratory of Shaanxi Province for Photoelectric Sensing Logging, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The bandwidth for the data transmission of logging cable is very limited, so image compression is the key technology to the development of a downhole video. A down-hole video image compression system based on wavelet transform is developed. It accomplishes the compression of video images by wavelet transform, subband coding, adaptive quantization and entropy coding, and it achieves to a very high compress ratio. The DSP technology and special image compression IC used in the system makes the compression ratio and data stream easy to be controlled. The down-hole video image compression system is suitable to the data transmission single-core cable, multi-core cable, or photoelectric logging cable. A field insertion technology is used in the decompression and playback of the video image, and the real-time playing speed of 50 fields per second of PAL system video is realized. (10 refs)
Database: Compendex
Data Provider: Engineering Village

58. A novel FBG pressure sensor for high pressure

Liu, Qin-Peng (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Li, Ting (1); Wang, Xiang-Yu (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 18, n 11, p 1293-1295, November 2007; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers
Author affiliation: (1) Photo-Electricity Sensing and Logging Key Laboratory of Shanxi Province, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel fiber Bragg grating sensor for high pressure is proposed. The relationship between the central wavelength of FBG and the pressure is deduced, and the analytical formula of pressure sensitivity is also derived. From the result of experiment, the pressure sensitivity is derived, which is 19.73 times than that of the bare FBG. From 0 MPa to 45 MPa, the fiber Bragg grating sensor has good linearity and repetition, the experimental results agree with the theoretical one. It is also indicated that the pressure sensitivity and range of measure are tunable. (7 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Diffraction gratings - Pressure sensors - Wavelength
Uncontrolled terms: Pressure sensing - Pressure sensitivity
Classification Code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 944.3 Pressure Measuring Instruments
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

59. Research of high temperature sensing for fiber Bragg grating

Liu, Qin-Peng (1); Qiao, Xue-Guang (1); Jia, Zhen-An (1); Wang, Xiang-Yu (1); Li, Ting (1)
Source: *Guangdianzi Jiguang/Journal of Optoelectronics Laser*, v 18, n 2, p 147-149, February 2007; **Language:** Chinese; **ISSN:** 10050086; **Publisher:** Board of Optronics Lasers

Author affiliation: (1) Photo-electricity Sensing and Logging Key Laboratory of Shanxi Province, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Based on a temperature sensing module of the fiber Bragg grating (FBG), temperature sensing characteristics of in FBG were studied, and the analytical formulae of temperature effective linear sensitivity coefficients was deduced. Response characteristics of FBG in high temperature were analyzed. The way to reduce non-linear response in high temperature was proposed. The experimental result indicates that by improving thermal-expansion coefficients of encapsulation the non-linear response of FBG in high temperature can be reduced effectively. (9 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Encapsulation - Temperature - Thermal expansion
Uncontrolled terms: Fiber sensing - High temperature sensing - Linearity
Classification Code: 641.1 Thermodynamics - 714.2 Semiconductor Devices and Integrated Circuits - 741.3 Optical Devices and Systems
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

60. Calculation of short-circuit mechanical strength for powerformer™

Wang, Shislian (1, 2); Liu, Zeyuan (1); Li, Yanming (3); Guo, Yinna (4); Gao, Hong (4)
Source: *2006 International Conference on Power System Technology, POWERCON2006*, 2007, *2006 International Conference on Power System Technology, POWERCON2006*; **ISBN-10:** 1424401119, **ISBN-13:** 9781424401116; **DOI:** 10.1109/ICPST.2006.321523; **Article number:** 4115874; **Conference:** 2006 International Conference on Power System Technology, POWERCON2006, October 22, 2006 - October 26, 2006; **Sponsor:** IEEE Power Engineering Society,IEEE/PES; POWERCON2006; **Publisher:** Institute of Electrical and Electronics Engineers Inc.
Author affiliation: (1) Nanjing University of Aeronautics and Astronautics, Nanjing, China (2) Xi'an Shiyou University (3) Xi'an Jiaotong University, Xi'an, China (4) Xi'an Shiyou University, Xi'an, China
Abstract: Initial conditions and the time corresponding to most serious states of short-circuit was got based on the T-model of power transformer. Considering the conditions to be voltage at primary winding, short-circuit forces of windings and turns for transformer were calculated with FEM coupling magnetic field and circuit method under the 2D symmetrical model. As the turn corresponding to max forces along axial and radial direction is selected to researching object, static and dynamic finite element model is presented for single turn considering the characteristics of Powerformer. Selecting 4th strength theory, the stress distributions were calculated for static and dynamic states, respectively. The relationships between equivalent stress and precompression and spacer numbers are discussed; Displacements and its spectrums were analyzed, the law of equivalent stress via time was also done. And comparisons of equivalent stress at static and dynamic were done too. © 2006 IEEE. (17 refs)
Main heading: Short circuit currents
Controlled terms: Electric potential - Finite element method - Magnetic fields - Power transformers
Uncontrolled terms: Equivalent stress - Primary winding
Classification Code: 701.1 Electricity: Basic Concepts and Phenomena - 701.2 Magnetism: Basic Concepts and Phenomena - 706.2 Electric Power Lines and Equipment - 921.6 Numerical Methods
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

61. FBG sensor for stress based on double cantilever beam

Liu, Qin-Peng ; Qiao, Xue-Guang ; Jia, Zhen-An ; Wang, Xiang-Yu ; Li, Ting
Source: *Guangzi Xuebao/Acta Photonica Sinica*, v 36, n 9, p 1645-1647, September 2007; **Language:** Chinese; **ISSN:** 10044213; **Publisher:** Chinese Optical Society
Author affiliation: (1) Photo-electricity Sensing and Logging Key Laboratory of Shaanxi Province, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel fiber Bragg grating sensor for stress sensing is proposed. The linearity range between the central wavelength and the load was analyzed and proved. The fiber Bragg grating (FBG) was stickled to the free arm of the double cantilever and its stress response was obtained when adding load to the free end of the double cantilever. The result shows that the wavelength of FBG shifts about 0.156 nm when the load is 300 g, the sensitivity (-0.05 nm/N) of the system is reached from experiment, this kind of FBG sensor have a function to improve the sensitivity of stress. And there was a very good linearity and repetition between the central wavelength of fiber Bragg grating and stress,

and there is no hysteresis effect. It is also indicated that the stress sensitivity of the sensor varies with the size of the double Cantilever Beam and the mechanical parameters of the material. (11 refs)
Database: Compendex
Data Provider: Engineering Village

62. Estimation of source number using fourth-order cumulant in blind source separation

Jin, Hai-Hong ; Ye, Ji-Min
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 107-110, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China (2) School of Sciences, Xidian University, Xi'an 710071, China
Abstract: The estimation method of source number in blind source separation (BSS) is studied when the number of source signals is less than the number of observed signals. When there is not additive noise, an accurate estimation of source number can be given in probability 1. When there is additive noise, the estimation of source number can be obtained by constructing an appropriate fourth-order cumulant matrix, converting the estimation of source number into the estimation of the effective rank of the matrix and making the SVD decomposition of the matrix. Finally, the proposed estimation method is compared with available GDE estimation method by simulation, it is shown that when signal-noise ratio is greater than 5 dB, the former can estimate well the source number but the latter does not. (9 refs)
Database: Compendex
Data Provider: Engineering Village

63. Recent progress in new magnetic field controlled shape memory alloys

Yuan, Bi-Fei (1, 2)
Source: *Cailiao Gongcheng/Journal of Materials Engineering*, n 2, p 62-66, February 2007; **Language:** Chinese; **ISSN:** 10014381; **Publisher:** Beijing Institute of Aeronautical Materials (BIAM)
Author affiliation: (1) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) China National Logging Corporation, Beijing 100101, China
Abstract: The magnetic field controlled shape memory alloy is a new functional material with large magnetic field induced strain and high frequency, and it is one of the focus in the field of smart materials. The phase transformation and magnetic field induced strain characteristics of Ni-Mn-Ga alloys are summarized, and then the detailed progress in structure, phase transformation, shape memory effect and magnetic properties of Co-Ni-Ga and Ni-Fe-Ga alloys are introduced, problems in the research are discussed. (42 refs)
Database: Compendex
Data Provider: Engineering Village

64. Application results of two vertical drilling systems in Talimu Oilfield and their comparison

Liu, Lei ; Liu, Zhi-Kun ; Gao, Xiao-Rong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 79-81+86, January 2007; **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) Talimu Shengli Drilling Company, Kuerle 841000, China
Abstract: Inclining prevention and drilling-speed enhancing is a pair of contradiction in drilling well in mountain front steep structural formation. The inclination angle of the mountain front structural formation in Talimu Basin generally ranges from 15° to 80°. In order to solve the contradiction, three internationally advanced vertical drilling systems are introduced. Two of them, VTK drilling system and Power-V drilling system are applied in Talimu Oilfield. The application results of them in Kela-4 well show that, they can all effectively control hole inclination and increase drilling speed, but the performance of Power-V drilling system is better than that of VTK drilling system. Some problems existing in the field applications of them are proposed and some improvement suggestions are given. (5 refs)
Database: Compendex
Data Provider: Engineering Village

65. Formation sequence of interfacial reaction products and diffusion path in SiC/Ti6Al4V composite

Lu, Xianghong (1, 2); Yang, Yanqin (1); Ma, Zhijun (1); Huang, Bin (1); Luo, Xian (1); Chen, Yan (1)
Source: *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering*, v 36, n 7, p 1162-1168, July 2007; **ISSN:** 1002185X; **Publisher:** Rare Metals Materials and Engineering Press
Author affiliation: (1) State Key Lab. of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China (2) Xi'an Shiyou University, Xi'an 710065, China
Abstract: SiC continuous fiber-reinforced Ti6Al4V matrix composites were fabricated and then heat-treated in vacuum under different conditions. The formation of interfacial reaction products and the diffusion path were studied by using of SEM, EDS and XRD methods. The results showed that the content fluctuation of reactive elements such as C, Ti and Si appeared in interfacial reaction layers. Alloying element Al in matrix did not diffuse into interfacial reaction zone remarkably, but piled up in front of the matrix-reaction layer interface, and the interfacial reaction products were identified as Ti3SiC2, TiCx, Ti5Si3Cx and Ti3Si; At the beginning of interfacial reaction, there was a TiCx+Ti5Si3Cx duplex-phase zone. As soon as every single-phase zone formed, the whole diffusion path was to be SiC |Ti3SiC2| Ti5 Si3Cx|TiCx|Ti3Si| Ti6Al4V+TiCx; The interfacial reaction layer growth is controlled by diffusion and follows a role of parabolic rate, and the activation energy Qk and k0 of SiC/Ti6Al4V are 290.935 kJ&middotmol-1 and 2.49 × 10-2 m&middots-1/2, respectively. (11 refs)
Main heading: Metallic matrix composites
Controlled terms: Activation energy - Alloying elements - Energy dispersive spectroscopy - Heat treatment - Scanning electron microscopy - Silicon carbide - Surface chemistry - X ray diffraction analysis
Uncontrolled terms: Diffusion path - Interfacial reaction products
Classification Code: 531 Metallurgy and Metallography - 537.1 Heat Treatment Processes - 801.4 Physical Chemistry - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

66. Design of arm robot for assistant teaching based on VB

Wu, Xiao-Meng ; Zhang, Qi-Zhi ; Tang, Nan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 100-102, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Key Laboratory of Shaanxi Province for Electric Drive Drilling Rig Control Technique, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Nowadays, robot is widely used in industrial production process. The arm robot for assistant teaching is a typical robot, and the designs of the overall plan, the structure and the control system of it are proposed. The control system of the arm robot is designed by means of computer control technique and using Visual Basic, and the design interface is simple and easy to operate. (11 refs)
Database: Compendex
Data Provider: Engineering Village

67. Strong convergence of Reich-Takahashi iterative sequence for asymptotically pseudo-contractive mapping

Ran, Kai ; Sun, Shu-E
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 111-115, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Department of Mathematics, Xi'an University of Arts and Science, Xi'an 710065, China (2) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The convergence of Reich-Takahashi iterative sequence for uniformly L-Lipschitzan asymptotically pseudo-contractive mappings is studied in arbitrary Banach space. The fixed point theorem of approximating to the uniformly L-Lipschitzan asymptotically pseudo-contractive mapping by Reich-Takahashi iterative sequence is obtained. The theorem removes the assumption of the uniform differentiability of the norm of Banach space, which generalizes the results in recent some literatures. The demonstration method is advanced. (7 refs)
Database: Compendex
Data Provider: Engineering Village

68. Flat currents and solutions of sigma model on supercoset targets with 2m grading

Ke, San-Min (1); Shi, Kang-Jie (1); Wang, Chun (1, 2); Wu, Sheng (1)
Source: *Chinese Physics Letters*, v 24, n 12, p 3374-3377, December 1, 2007; **ISSN:** 0256307X, **E-ISSN:** 17413540; **DOI:** 10.1088/0256-307X/24/12/024; **Publisher:** Institute of Physics Publishing
Author affiliation: (1) Institute of Modern Physics, Northwest University, Xi'an 710069, China (2) College of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: We find one parameter flat currents of the sigma model on supercoset targets with 2m grading given by Young satisfaction equations of motion and the Virasoro constraint. This means that one can generate a series of classical solutions from the original one. For these new solutions one can also construct flat currents and conserved charges, which form the same set with the original one. © 2007 Chinese Physical Society and IOP Publishing Ltd. (26 refs)
Main heading: Grading
Controlled terms: Equations of motion
Uncontrolled terms: 'current - Classical solutions - Equation of motion - New solutions - Sigma model - Virasoro constraints
Classification Code: 921.2 Calculus
Database: Compendex
Data Provider: Engineering Village

69. Experimental study of the high-density salt water drilling fluid with high-temperature resistance for deep wells

Zhang, Xi-Feng ; Li, Tian-Tai ; Shi, Li-Yu ; Zhang, Bin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 37-40, September 2007; **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) Tarim Petrleum Branch Company, CNPC, Kuerle 841000, China
Abstract: In Tarim Oilfield, the high-density salt water drilling fluid often becomes viscous in drilling process and its rheological property is difficult to control. In order to ensure normal drilling and reduce formation damage, it is necessary to develop an appropriate drilling fluid. Based on the common drilling fluid formulations, the factors of influencing the rheological property of the high-density salt water drilling fluid are analyzed according to a lot of laboratory experiments, and an optimum formulation is determined. It is shown that the factors of influencing the rheological property of the high-density salt water drilling fluid are mainly the contents of caustic soda and bentonite, secondly the density of the drilling fluid and the kind of weighting material. Compounding different weighting materials is one of the effective ways to control the rheological property of the high-density salt water drilling fluid. The optimized drilling fluid formulation can meet the needs of the drilling fluid under high temperature in Dina area of Tarim Oilfield. (5 refs)
Database: Compendex
Data Provider: Engineering Village

70. Some structural characteristics of nonbasic shortest 2-connected Steiner networks

Li, Mei-Li ; Peng, Shu-Ying
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 111-114, January 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China (2) College of Sciences, Tianjin Polytechnic University, Tianjin 300160, China
Abstract: The shortest 2-connected Steiner network on the Euclidean plane is widely applied in the design of water or electric power supplying networks. Some structural characteristics of nonbasic shortest 2-connected Steiner networks are proven by means of block graphs. (8 refs)
Database: Compendex
Data Provider: Engineering Village

71. Primary investigation of the coupling of channel flow with seepage

Lin, Jia-En ; Li, Liang ; Yang, Hui-Zhu

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 2, p 11-15, March 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Department of Mechanics, Tsinghua University, Beijing 100084, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In accrodance with the characteristics of vuggy reservoirs, a basic idea for studying the flow law in this kind of media is put forward: this kind of vuggy reservoir system is decomposed into vug units and fracture units, the two kinds of units alternatively connect and consist of the total reservoir system. The flow in vug units is considered as channel flow or piping flow, and the flow in fracture units as seepage and follows Darcy law. Based on this idea, the planar linear flow theory of vuggy reservoirs is established, and the corresponding physical model, mathematical model and its numerical solving method are presented respectively. (16 refs)
Database: Compendex
Data Provider: Engineering Village

72. Experimental and theoretical study of diffusion bonding in fabricating and annealing Ti matrix composite

Lu, Xianghong (1, 2); Yang, Yanqing (1); Luo, Xian (1); Liu, Yucheng (1); Huang, Bin (1); Chen, Yan (1)
Source: *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering*, v 36, n 10, p 1709-1716, October 2007; **ISSN:** 1002185X; **Publisher:** Rare Metals Materials and Engineering Press
Author affiliation: (1) State Key Lab. of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China (2) Xi'an Shiyou University, Xi'an 710065, China
Abstract: Ti6Al4V/TAl diffusion couples were fabricated and then heat-treated in vacuum under different conditions. The microcosmic metallographic structure, morphologies and the composition distribution in diffusion bonding zone were studied by using of OPM, SEM and EDS methods. The results show that diffusion couples are bonded well, and the alloying elements Al and V diffuse from Ti6Al4V to TAl, and Ti atoms diffuse in the opposite direction. The transition zone of the alloying elements follows a role of parabolic rate. At the same time, based on Koher's ternary solution model and Miedema's model for calculating the thermodynamical interaction coefficients, as well as according to the inter-diffusion coefficients of the alloying elements and the numerical solution of the phenomenological equation, the theoretical diffusion profiles of alloying elements and Ti are obtained, which are well fitted to the experimental data. So it can predict the distribution of the diffusion atoms at the diffusion bonding interface. (22 refs)
Main heading: Metallic matrix composites
Controlled terms: Alloying elements - Annealing - Calculations - Chemical analysis - Diffusion bonding - Energy dispersive spectroscopy - Heat treatment - Morphology - Optical microscopy - Scanning electron microscopy - Titanium alloys
Uncontrolled terms: Composition - Diffusion profiles - Thermodynamical interaction coefficients - Ti6Al4V/TAl diffusion couple
Classification Code: 951 Materials Science - 931.3 Atomic and Molecular Physics - 931.2 Physical Properties of Gases, Liquids and Solids - 921 Mathematics - 801 Chemistry - 542.3 Titanium and Alloys - 538.1 Metal Bonding - 537.1 Heat Treatment Processes - 531 Metallurgy and Metallography
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

73. Simulation of influence of source distances on neutron-gamma ray spectra for oil sandstone formation and water flooding in borehole

Pang, Jufeng ; Tian, Yajuan
Source: *He Jishu/Nuclear Techniques*, v 30, n 5, p 424-431, May 2007; **Language:** Chinese; **ISSN:** 02533219; **Publisher:** Science Press
Author affiliation: (1) Xi'an Petroleum University, Xi'an 710065, China
Abstract: A neutron-gamma ray logging software package based on Monte Carlo simulation is introduced in this paper. It can be used for calculating space, energy and time distributions of the of neutron-gamma ray. In an open hole well without any instrument, oil-saturated sandstone formation and injected water in it, computer simulations can be done with the software package for energy and time distributions of the neutron-gamma rays, generating neutron-gamma ray spectra at various source distances in the borehole axis and wall. Influences of the source distances on neutron-gamma ray distributions and on neutron-gamma ray spectra in borehole axis and wall were discussed. (4 refs)
Database: Compendex
Data Provider: Engineering Village

74. Voltammetric behavior of urapidil and its determination at multi-wall carbon nanotube paste electrode

Zheng, Li (1, 2); Song, Junfeng (1)
Source: *Talanta*, v 73, n 5, p 943-947, October 31, 2007; **ISSN:** 00399140; **DOI:** 10.1016/j.talanta.2007.05.015;
Publisher: Elsevier
Author affiliation: (1) Institute of Analytical Science, Northwest University, 710069, China (2) College of Chemistry and Chemical Engineering, Xi'an Shiyou University, 710065, China
Abstract: The voltammetric behavior of urapidil was investigated. In pH 6.8 Britton-Robinson buffer, an irreversible oxidation peak of urapidil at 0.62 V (versus SCE) at a multi-wall carbon nanotube paste electrode (MWNT-PE) was observed, which was more sensitive with lower potential than that at the carbon paste electrode (CPE). The oxidation of urapidil was a two-electron and two-proton process with adsorption character. A differential pulse voltammetric method was proposed for the determination of urapidil. The peak current of the oxidation peak of urapidil was linearly with its concentration in a range from 5.0 × 10-8 to 2.0 × 10-6 mol/L at open-circuit accumulation for 60 s, with a detection limit of 3.8 × 10-8 mol/L. The proposed method was employed to determine urapidil in urapidil tablets. © 2007 Elsevier B.V. All rights reserved. (17 refs)
Main heading: Drug products
Controlled terms: Absorption - Carbon nanotubes - Concentration (process) - Electrochemical electrodes - Electrochemical oxidation - pH effects - Voltammetry
Uncontrolled terms: Chemically modified electrodes - Differential pulse voltammetric methods - Multi wall carbon nanotube paste electrodes - Multi wall carbon nanotubes
Classification Code: 761 Nanotechnology - 801.1 Chemistry, General - 801.4.1 Electrochemistry - 802.1 Chemical Plants and Equipment - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804.2 Inorganic Compounds - 933.1 Crystalline Solids
Funding Details: Number: 20475043, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;
Funding text: The authors would like to acknowledge financial support from the National Natural Science Foundation of China (Grant No. 20475043).
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

75. Stress sensitivity of tight reservoir and its influence on oilfield development

Yu, Zhongliang (1); Xiong, Wei (1); Gao, Shusheng (1); Liu, Junping (2)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 4, p 95-98, July 2007; **Language:** Chinese; **ISSN:** 02532697;
Publisher: Science Press
Author affiliation: (1) Institute of Porous Flow and Fluid Mechanics, Chinese Academy of Sciences, Langfang 065007, China (2) Xi'an Shiyou University, Xi'an 710065, China
Abstract: The relationship between permeability and net stress of tight reservoir was experimentally studied, and a method to evaluate permeability-stress sensitivity was established on the basis of the original net stress of reservoir rather than the low net stress. This method can correctly reflect the change of pore structure, and the quadratic polynomial curve can capture the nuances of the stress sensitivity. The permeability damage caused by the elastic and plastic distortion is permanent and irreversible. The pore structure tested by scanning electron microscope and rate-controlled mercury penetration showed that porosity was weakly affected by permeability-stress sensitivity, while the size and shape of throat determined the degree of permeability-stress sensitivity. The theoretical calculation shows that there is a cone of permeability depression near the well bottom. The stress sensitivity has some influence on oil production. (12 refs)
Main heading: Low permeability reservoirs
Controlled terms: Mechanical permeability - Oil field development - Oil fields - Petroleum reservoirs - Pore structure - Stresses
Uncontrolled terms: Net stress - Stress sensitivity - Tight reservoir
Classification Code: 481.1 Geology - 512.1 Petroleum Deposits - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

76. Robust controller for energy regenerating electric vehicle

Zhou, Haobin (1, 2); Long, Bo (1); Bai, Zhifeng (1); Jiang, Hui (1); Cao, Binggang (1)
Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 41, n 5, p 567-570, May 2007; **Language:** Chinese; **ISSN:** 0253987X; **Publisher:** Xi'an Jiaotong University
Author affiliation: (1) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Material Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Based on the analysis of driving and regenerating circuit for the brushless DC motor, the regenerating controlling system is designed to lower the energy dissipation due to frequent starting and braking. Focusing on the speed-current double closed loops system, H# controller is developed. The experimental results show that H# outperforms the traditional PID controller for resisting perturbation, accelerating, response, and the controller enables to extend the mileage by 1.8% to 2.6%. (6 refs)
Main heading: Electric vehicles
Controlled terms: Braking - Brushless DC motors - Closed loop control systems - Energy dissipation - Perturbation techniques - Robustness (control systems)
Uncontrolled terms: Energy regenerating - H infinity robust controller - Mileage - Speed current double closed loops system
Classification Code: 525.4 Energy Losses (industrial and residential) - 602 Mechanical Drives and Transmissions - 702.1.2 Secondary Batteries - 705.3.2 DC Motors - 731.1 Control Systems - 921 Mathematics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

77. Energy integration detection via time-frequency distribution and morphological filtering

Shang, Hai-Yan (1, 2); Shui, Peng-Lang (1); Zhang, Shou-Hong (1); Zhang, Ya-Bin (1); Zhu, Tian-Qiao (1)
Source: *Dianzi Yu Xinxi Xuebao/Journal of Electronics and Information Technology*, v 29, n 6, p 1416-1420, June 2007; **Language:** Chinese; **ISSN:** 10095896; **Publisher:** Science Press
Author affiliation: (1) National Lab. of Radar Signal Processing, Xidian University, Xi'an 710071, China (2) Electronic Engineering Department, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Long duration integration of the interesting signal energy is a key to develop an effective detector under severe noise background in many applications. With the time-frequency concentration characteristic of the interesting signal, a new energy integration detect method is proposed in this paper based on the morphological filtering in the time-frequency plane. Firstly, the optimal kernel of the Cohen's Time-Frequency Distribution (TFD) is designed and the TFD of the observation is calculated. Thereafter, the support region of strong energy is estimated by thresholding the TFD and morphological filtering the obtained binary image. Finally, the energy on the estimated region is integrated to judge whether a signal is present or not. Simulation results show that the proposed method is effective in low ratios of signal to noise case. (8 refs)
Main heading: Signal detection
Controlled terms: Frequency modulation - Signal to noise ratio
Uncontrolled terms: Long duration energy integration - Morphological filtering - Optimal kernel design - Time frequency distribution (TFD)
Classification Code: 716 Telecommunication; Radar, Radio and Television
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

78. Fault diagnosis system for pump work indicating diagram based on neural network and gray-level matrix

Wu, Wei ; Chen, Guo-Ding ; He, Yan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 119-121, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Electromechanical Engineering, Northwestern Polytechnic University, Xi'an 710072, China (2) College of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In order to effectively utilize pump work indicating diagram for improving the efficiency of mechanical sucker-rod pumping system, the characteristics of the pump work indicating diagrams under different working conditions are analyzed, and the diagnosis of the working conditions of the mechanical sucker-rod pumping system is accomplished

by means of the neural network of an improved BP algorithm. So the faults of the mechanical sucker-rod pumping system can be judged according to the characteristics of its pump work indicating diagrams. The diagnosing result of a case is identical to the measured result, which indicates the improved neural network can accurately identify and cluster the characteristics of the pump work indicating diagrams. (5 refs)
Database: Compendex
Data Provider: Engineering Village

79. Research on torque ripple control of brushless DC motor for mini-battery electric vehicle

Long, Bo (1); Cao, Binggang (1); Zhou, Haobin (2); Bai, Zhifeng (1); Liu, Xiaobo (2)
Source: *Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University*, v 41, n 5, p 576-579, May 2007;
Language: Chinese; **ISSN:** 0253987X; **Publisher:** Xi'an Jiaotong University
Author affiliation: (1) School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) School of Mechanical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Aiming at permanent brushless DC motor in mini-BEV (battery electric vehicle) with torque ripple and violent noise during low speed running, the fuzzy control method is combined with slide mode control method to suppress the influence due to un-modeling parameters, and to ensure the robustness in the process of reaching slide mode plane. Compared with existing modulating method, torque ripple is greatly reduced by uniform modulating in one monocycle, increasing current slope of upcoming conducting phase instantaneously suppresses the torque ripple by 30% during low speed with obviously lower initiating noise. This method has the merits of easy in realization and being able to obtain good effect. (8 refs)
Main heading: Electric vehicles
Controlled terms: Brushless DC motors - Fuzzy control - Robustness (control systems) - Storage battery vehicles
Uncontrolled terms: Minibattery electric vehicle - Slide mode control method - Slide mode plane - Torque ripple
Classification Code: 702.1.2 Secondary Batteries - 705.3.2 DC Motors - 731.1 Control Systems
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

80. Productivity of horizontal well in deformation medium of low-permeability reservoirs

Chen, Mingqiang (1); Zhang, Minglu (2); Pu, Chunsheng (1, 3); Gao, Yongli (1)
Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 28, n 1, p 107-110, January 2007; **Language:** Chinese; **ISSN:** 02532697; **Publisher:** Science Press
Author affiliation: (1) Xi'an Shiyou University, Xi'an 710065, China (2) PetroChina Changqing Oilfield Company, Xi'an 710021, China (3) China University of Petroleum, Dongying 257062, China
Abstract: Aiming at the complexity and multiple flow forms at the bottom of flow field in horizontal well, the basic flow forms of fluid field near and far horizontal wells in low-permeability reservoir were analyzed. The calculating formulas for producing capacity of horizontal well in low-permeability reservoir with deformation medium and start-up pressure gradient were developed. The productivity characteristics of horizontal well and various flow features in different horizontal section of well were discussed by analyzing and calculating examples. The results showed that the productivity of horizontal well in low-permeability reservoir decreased with the increment of start-up pressure gradient and deformation coefficient of medium. As the horizontal section of well got longer, the fluid far away from horizontal well changed from the radial flow to the planar flow. The main pattern of fluid near horizontal well was radial flow. (7 refs)
Main heading: Low permeability reservoirs
Controlled terms: Deformation - Flow fields - Horizontal wells - Pressure gradient - Productivity
Uncontrolled terms: Deformation medium - Oil well productivity - Start-up pressure gradient
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 481.1 Geology - 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 913.1 Production Engineering
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

81. The radioactive abnormality characteristics of typical regions in Ordos Basin and its geological implications

Tan, ChengQian (1, 2); Liu, ChiYang (1); Zhao, JunLong (2); Zhang, RongRong (1)
Source: *Science in China, Series D: Earth Sciences*, v 50, n SUPPL. 2, p 174-184, November 2007; **ISSN:** 10069313, **E-ISSN:** 18622801; **DOI:** 10.1007/s11430-007-6021-2; **Publisher:** Springer Verlag
Author affiliation: (1) State Key Laboratory of Continental Dynamics, Northwest University, Xi'an 710069, China (2) Department of Resources Engineering, Xi'an Shiyou University, Xi'an 710054, China
Abstract: There are many results of single mineral enrichment characteristic, such as oil, gas, coal and uranium, but little is known about the synergistic research of these important minerals and the study of uranium enrichment features in the deep basin. So, the study on the paragenesis regularity and coexisting relation of many minerals in the basin will promote the integrated forecast and cooperative exploitation of the basin. Based on the plentiful logging data and geological data, this paper studies the distributing feature of higher Gamma abnormality. The analysis on 33 core samples' test results indicates that the increasing of Gamma abnormality is due to the increasing of the uranium element, and the enrichment of uranium is a result of the activation and conglomeration of uranium. On the basis of the recognization of radioactive abnormality and the study about the reality of oil,gas,coal or uranium coexisting in a basin and its mechanism, the paper shows that there is a certain mutual promotion in oil, gas, coal and uranium in the basin, which provides an important theory basis for cooperative exploitation of energy resources. © Science in China Press 2007. (20 refs)
Main heading: Uranium deposits
Controlled terms: Energy resources - Geochemistry - Mineralogy
Uncontrolled terms: Oil-gas-coal-uranium - Ordos basin - Paragenesis - Radioactive abnormality
Classification Code: 481.2 Geochemistry - 482.2 Minerals - 504.5 Uranium Mines - 525.1 Energy Resources and Renewable Energy Issues - 547 Minor, Precious and Rare Earth Metals and Alloys - 622.1 Radioactive Materials, General
Funding Details: Number: 2003CB214607, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: Received March 9, 2007; accepted June 10, 2007 doi: 10.1007/s11430-007-6021-2 †Corresponding author (email: cqtan-001@163.com) Supported by the National Basic Research Program of China (Grant No.2003CB214607) and the Program for Changjiang Scholars and Innovative Research Team in University (Grant No. IRT0559)
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

82. Evaluation thoughts and methods in the undeveloped reserves value

Zhang, Zhong-Hua ; Liu, Chuan-Xi ; Yuan, Xiang-Chun ; Li, Liu-Ren
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 115-118, January 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Research Institute of Petroleum Exploration and Development, Sinopec, Beijing 100083, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The model for calculating the characteristic value of the quality of undeveloped reserves or newly proven reserves is established based on the analysis of the relationship between well spacing density and an increase in single-well recoverable reserves of water-flooding reservoirs, and the characteristic points of the reserve quality and their relations with main geologic parameters of reservoirs are discussed. The model reflecting the distribution of reserves static value is established according to economic limit requirement of the increase in the recoverable reserves of a new well under certain economic conditions. A new method for evaluating the quality and value of reserves is presented. (8 refs)
Database: Compendex
Data Provider: Engineering Village

83. Design of a machine vision system

Mu, Xiang-Yang ; Zhang, Tai-Yi
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 104-109, November 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China (2) College of Electronic Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The concept of a machine vision system and the configuration of a typical machine vision system are presented. Based on the analysis of user demands, it is discussed how to design a machine vision system by using

light source, optical lens, camera, image grabber, image processing software and so on, and the key techniques in the design are also discussed. Finally a case is showed. (9 refs)
Database: Compendex
Data Provider: Engineering Village

84. New technology for the preparation of a kind of ashless antioxydant

Xu, Jia-Ye ; Wang, Xiao-Ling ; Zhang, Ke-Liang ; Xue, Wei-Guo ; Zhou, Xu-Guang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 76-78, July 2007; **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) Research and Development Center of Lubricating Oil, CNPC, Lanzhou 730060, China
Abstract: Methyl 3-(3,5-ditertbutyl-4-hydroxyphenyl) propionate is prepared by using KOH as the catalyst instead of traditional (CH3)3COK, which is the intermediate product in the preparation of the objective product 3-(3,5-Di-tert-butyl-4-hydroxyphe-nyl) propionate-2'-Ethylhexyl(EDTHP). The objective product is obtained by the transesterification of the intermediate product and 2-ethylyexanol. It has light color, high content of effective component and good anti-oxidation property. The objective product is characterized by element analysis, IR and IHNMR, and the results show that, the mass fractions of C, H and O in the objective production are as great as the theoretically calculated mass fractions; the structure of the objective product is the same as that of industrial sample according to their infrared spectrogram; its molecular formula is the same as the predicted molecular formula according to its IHNMR analysis result. The content of effective component in rough product is determined by HPLC external standard method, it reaches to 91.3%, while the content of effective component in industrial sample is 77.0%. (10 refs)
Database: Compendex
Data Provider: Engineering Village

85. Synthesis and performance evaluation of a diesel low-temperature liquidity modifier MMVA

Zhang, Chun-Lan ; Li, Qian-Ding ; Zhang, Xi-Wen
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 100-103, May 2007; **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) Petroleum Chemical Engineering Branch Company, Changqing Oilfield Company, Xianyang 712000, China
Abstract: A diesel low-temperature liquidity improver MMVA is synthesized by the copolymerization of methylacrylate, maleic anhydride, vinyl-acetic ester and acrylamide. the best synthesis technological conditions are determined through the orthogonal experiment and extreme difference analysis: the molar ratio of monomers is 2:1:1:0.5, the dose of initiator is 0.5%, polymration temperature is 90°C, reaction time is 6 h. The effects of the quadri-polymer on the solidification point temperature and the cold filter plugging point temperature of diesel oil and its compound effects with other pour point depressants and non-ionic surfactants are examined in laboratory. The results show that the solidification point temperature and the cold filter plugging point temperature of the mixed diesel oil of Changqing Petroleum Chemical Engineering Branch Company can be decreased by 10°C and 2°C separately only adding this copolymer of 0.05% to the mixed diesel oil, and if the polymer is compounded with the bio-polymer of octadecyl methacrylate and maleric anhydride and surfactant methyl monoethanolamine salt, the cold filter plugging point temperature of the mixed diesel oil can be decreased by 4°C. (4 refs)
Database: Compendex
Data Provider: Engineering Village

86. Analysis of well-test data in a multiwell reservoir with water injection

Lin, Jia-En (1); Yang, Hui-Zhu (2)
Source: *Proceedings - SPE Annual Technical Conference and Exhibition*, v 4, p 2613-2629, 2007, *SPE Annual Technical Conference and Exhibition 2007, ATCE 2007*; **ISBN-13:** 9781604239263; **Conference:** SPE Annual Technical Conference and Exhibition 2007, ATCE 2007, November 11, 2007 - November 14, 2007; **Publisher:** Society of Petroleum Engineers (SPE)
Author affiliation: (1) SPE, Xi'an Petroleum University, United States (2) Tsinghua University, China
Abstract: In this paper, a general method has been developed by taking into account the production time for analyzing the pressure buildup or falloff data from a well located in a bounded homogeneous rectangular reservoir, with an

arbitrary number of both production and injection wells. In the new solution, injection-production ratio (IPR) was introduced to measure the regional strength of fluid injection or well interference. The previous solution developed by Marhaendrajana et al (1999) is a special case of this new solution. For the analysis of well test data from a well in multiwell reservoir where both production and injection wells exist, we treat the "well interference" effect as a "regional reservoir pressure trend". We use a diagnostic plot comprising the pressure change and pressure derivative calculated with respect to, and graphed vs., equivalent time to recognize the interference of offset wells. For oil/water systems, we assume that saturation gradients are negligible in the drainage area of the tested well.The proposed method enables one to calculate the total mobility or permeability-thickness product and the skin factor with accuracy from pressure buildup (or falloff) data dominated by regional reservoir pressure trend. A field example has been presented to illustrate the validity and applicability of the proposed method. The significant new contribution of this work is the development of the new multi-well solution by taking into account well interference effects from both production and injection well. Copyright 2007, Society of Petroleum Engineers. (12 refs)
Main heading: Oil wells
Controlled terms: Injection (oil wells) - Petroleum reservoirs - Water injection - Well pressure
Uncontrolled terms: Bounded homogeneous rectangular reservoirs - Multiwell reservoirs - Pressure buildup - Production time
Classification Code: 446.1 Water Supply Systems - 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 612.1 Internal Combustion Engines, General
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

87. Morphologies and properties of poly(phthalazinone ether sulfone ketone) matrix ultrafiltration membranes with entrapped TiO2 nanoparticles

Li, Jin-Bo (1, 2); Zhu, Jie-Wu (1); Zheng, Mao-Sheng (1)
Source: *Journal of Applied Polymer Science*, v 103, n 6, p 3623-3629, March 15, 2007; **ISSN:** 00218995, **E-ISSN:** 10974628; **DOI:** 10.1002/app.25428; **Publisher:** John Wiley and Sons Inc.
Author affiliation: (1) School of Material Science and Technology, Xi'an Jiaotong University, Xi'an 710049, China (2) Department of Science and Technology, Xi'an Shiyou University, Xi'an 710061, China
Abstract: Poly(phthalazine ether sulfone ketone) (PPESK) is a newly developed membrane material with superior thermal stability and comprehensive properties. Titanium dioxide (TiO2)-entrapped PPESK ultrafiltration (UF) membranes were formed by dispersing uniformly nanosized TiO2 particles in the casting solutions. Initially, the inorganic nanoparticles were organically modified with silane couple reagent to overcome the aggregation and to improve the dispersibility in organic solvent. The membranes were prepared through the traditional phase inversion method. The effects of inorganic TiO2 nanoparticles on the membrane surface morphology and cross section structure were investigated using scanning electronic microscopy (SEM) and atomic force microscopy (AFM). Water contact angle (CA) measurement was conducted to investigate the hydrophilicity and surface wettability of the membranes. The influence of TiO2 on the permeability, antifouling, and tensile mechanical properties of the PPESK membranes were evaluated by UF experiments and tensile tests. The experimental results showed that the obtained TiO2-entrapped PPESK UF membranes exhibit remarkable improvement in the antifouling and mechanical properties because of the introduction of TiO2 nanoparticles. © 2006 Wiley Periodicals, Inc. (26 refs)
Main heading: Titanium dioxide
Controlled terms: Atomic force microscopy - Casting - Contact angle - Nanostructured materials - Polymeric membranes - Scanning electron microscopy - Thermodynamic stability - Ultrafiltration
Uncontrolled terms: Casting solutions - Comprehensive properties - Poly(phthalazinone ether sulfone ketone) - Ultrafiltration membrane
Classification Code: 933.1 Crystalline Solids - 931.2 Physical Properties of Gases, Liquids and Solids - 817.1 Polymer Products - 804.2 Inorganic Compounds - 802.3 Chemical Operations - 741.3 Optical Devices and Systems - 741.1 Light/Optics - 641.1 Thermodynamics - 534.2 Foundry Practice
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

88. Evaluation and venture assessment of the economic recoverable reserves of the gas-cap reservoir in Lamadian Oilfield

Qin, Guo-Wei ; Pu, Chun-Sheng ; Qin, Wen-Long

Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 6, p 28-31, November 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Petroleum Engineering, China University of Petroleum (East China), Dongying 257061, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The economic recoverable reserves and the economic recovery factor of the gas-cap reservoir are predicted by using cash flow method based on the studies of characteristics and the tectonic of the gas-cap reservoir of Lamadian Oilfield. At the same time, the risks of the proven reserves, probable reserves and possible reserves and the uncertain factors of influencing them are analyzed using the probability distribution method. The results show that, gas yield is the most sensitive factor to the reserves values, and the price and the production cost of the natural gas are secondary sensitive factors, which provides important theoretical basis for the scientific development of the gas-cap reservoir, uncertainties of economic recoverable reserves in this paper. (10 refs)
Database: Compendex
Data Provider: Engineering Village

89. Design and application of the automatic desanding equipment for oil tank

Kou, Jie ; Cao, Xue-Wen ; Xiao, Rong-Ge
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 57-59+63, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Storage and Construction, China University of Petroleum (East China), Dongying 257061, China (2) College of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: In our country, the reserves of sandstone oilfields is great and the distribution of them is extensive. With the exploitation of the oilfields, the sand production rate graduate increases. The deposition of sand makes the efficiency of settling tanks decline and working life shorter, which affects the regular production of oilfields. There is oil in sand, and which results in polluting environment pollution and resource waste. In order to solve the problems above, a two-stage desanding scheme of settling desanding and swirling desanding is determined and a set of automatic desanding equipment for oil tank is designed by the comparison and analysis of several desanding means. The equipment is composed of oil tank desanding part, closed desanding channel and centrifugal sand washing part. Field test shows that the equipment runs well and desanding result is satisfying. Good economical and social benefits are obtained. (6 refs)
Database: Compendex
Data Provider: Engineering Village

90. Experiment study on viscoelasticity of associative polymer solutions

Cao, Bao-Ge ; Luo, Ping-Ya ; Zhao, Yong-Gang
Source: *Xinan Shiyou Daxue Xuebao/Journal of Southwest Petroleum University*, v 29, n 4, p 118-121+148, August 2007; **Language:** Chinese; **ISSN:** 10002634; **Publisher:** Science Press
Author affiliation: (1) Petroleum Engineering Institute, Xi'an Petroleum University, Xi'an 710000, China
Abstract: In order to study on viscoelasticity of associative polymer solution (APS) in actual reservoir, the viscoelasticity of APS has been studied when concentration and salinity vary in Daqing main reservoirs temperature and formation water salinity of oil field. The results show: the influence of concentration and salinity on the viscoelasticity of APS is the same as on HPAM solution. The viscoelasticity of HPAM solution is resulted from tangle between molecular chains, while the viscoelasticity of APS is mainly caused by the associating action between molecular chains, therefore APS shows obvious elasticity in lower concentration. In low and wide frequency scope, the elasticity of APS is larger than the one of HPAM solution obviously, which explains that APS will show obvious elasticity in lower shear velocity when APS flows in porous media, which signifies that the purpose may be achieved by using polymer solution's elasticity to enhance displacement efficiency in not very high injecting rate. (15 refs)
Database: Compendex
Data Provider: Engineering Village

91. Temperature-stress-seepage coupling effect in super-low permeability reservoirs

Zhang, Xuan-Qi ; Yu, Li-Gang ; Guo, Xiao-Qiang ; Wen, Guo ; Yang, Hong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 2, p 45-47+51, March 2007; **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) Institute of Porous Flow and Fluid Mechanics, Chinese Academy of Sciences, Langfang 065007, China

Abstract: The changes in the permeability and core structure of super-low permeability reservoirs caused by the lower temperature of injected fluid will result in the temperature stress seepage coupling effect in the super-low permeability reservoirs. The cores for the experiments are selected from the super-low permeability reservoir of Changqing Oilfield. And their permeability is measured under constant pressure and different temperature. The experimental results show that, (1) when temperature decreases, the permeability of the cores decreases, and about two-third of experimented cores will fracture even break at about 25°C. In the range of 25 [similar to] 15 °C the permeability of the cores is the most sensitive to temperature, the change of the permeability is also the greatest, and the change is partially irreversible. (2) When temperature increases, the permeability will increase slightly; when temperature decreases again it will decrease, and when temperature decreases to original formation temperature the permeability of the cores is greater than the primary value, but the increment is not great. Therefore, the water-injection operation of the super-low permeability reservoirs should not be carried out in winter. The normal development of the reservoirs should be carried out under reasonable production pressure difference and suitable water injection temperature should be maintained. (6 refs)
Database: Compendex
Data Provider: Engineering Village

92. Face recognition method combining 3D face model with 2D recognition

Zhao, Minghua (1); You, Zhisheng (2); Zhao, Yonggang (3); Liu, Zhifang (2)
Source: *Proceedings of the 4th International Conference on Image and Graphics, ICIG 2007*, p 655-660, 2007, *Proceedings of the 4th International Conference on Image and Graphics, ICIG 2007*; **ISBN-10:** 0769529291, **ISBN-13:** 9780769529295; **DOI:** 10.1109/ICIG.2007.93; **Article number:** 4297164; **Conference:** 4th International Conference on Image and Graphics, ICIG 2007, August 22, 2007 - August 24, 2007; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Computer Science and Enigeering, Xi'an University of Technology, Xi'an, China (2) Institute of Image and Graphic, Sichuan University, Chengdu, China (3) Xi'an Shiyou University, Xi'an, China
Abstract: A new algorithm that combines 3D face model construction with 2D recognition is proposed. 3D face models are projected to different directions and a series of 2D face images are obtained. The projected 2D results are used as templates to match the input face images with different poses. The method that constructs 3D face model with 2.5D scans acquired by Minolta vivid 910 is studied and a 3D face database containing 10 persons is built. Experimental results show that the proposed algorithm is faster than 3D morphable model method and is more efficient than the method that uses just frontal images as templates while dealing with face images with pose variations. © 2007 IEEE. (8 refs)
Main heading: Face recognition
Controlled terms: Three dimensional computer graphics
Uncontrolled terms: 3-D face modeling - 3d face database - 3D face models - 3D Morphable model - Face images - Face recognition methods - Frontal images - Pose variation
Classification Code: 723.2 Data Processing and Image Processing - 723.5 Computer Applications
Database: Compendex
Data Provider: Engineering Village

93. Experimental study of large range enhanced pressure sensitivity concerning fiber bragg grating pressure sensor

Feng, De-Quan ; Qiao, Xue-Guang ; Liu, Ying-Gang ; Zhou, Hong ; Luo, Xiao-Dong ; Yu, Da-Kuan ; Wang, Hong-Liang
Source: *Guangzi Xuebao/Acta Photonica Sinica*, v 36, n 7, p 1273-1276, July 2007; **Language:** Chinese; **ISSN:** 10044213; **Publisher:** Chinese Optical Society
Author affiliation: (1) College of Sciences, Xi'an Shiyou University, Xi'an 710065, China (2) Institute of Photonics and Photo-Technology, Northwest University, Xi'an 710069, China (3) Department of Physics, Northwest University, Xi'an 710069, China
Abstract: A new type of high-pressure sensing device has been designed and fabricated, in which fiber Bragg grating is sticked on a Ti-alloy tube in view of its excellent properties such as low elastic modulus and little dependence on environmental temperatures. By comparing with the real-time monitor of resistance strain gage, the response of relative shift of the central wavelength reflected from fiber Bragg grating has been investigated experimentally upon the applied tuning pressure. The results show that this device possesses improve linear response and repeatability, and it is in good agreement with theoretical analysis. Remarkably, after sensitivity enhancement, and the pressure sensitivity can reach 0.034 nm/MPa in the pressure range of 0-40 MPa. (9 refs)
Database: Compendex
Data Provider: Engineering Village

94. Numerical simulation on heat transfer enhancement inside internally longitudinal protuberant finned tube under pulsating flow

Wu, Feng (1); Wang, Qiu-Wang (2)
Source: *Zhongguo Dianji Gongcheng Xuebao/Proceedings of the Chinese Society of Electrical Engineering*, v 27, n 35, p 108-112, December 15, 2007; **Language:** Chinese; **ISSN:** 02588013; **Publisher:** Chinese Society for Electrical Engineering
Author affiliation: (1) Institute of Petroleum Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: The turbulent pulsating flow and heat transfer in an internally longitudinal protuberant finned tube was numerically investigated by solving unsteady three-dimensional elliptical Navier-Stokes equations. The realized k-ε turbulent model was adopted. The dynamic behaviors of velocity flied, average Nusselt number and friction number of the internally longitudinal protuberant finned tube were numerically analyzed in a pulsating period, and it was further investigated by changing the frequency of the pulsating flow. It was found that the intensity of heat transfer enhancement increases with increase of pulsating frequency, while the pressure drop will be increased simultaneously, the intensification of heat transfer in internally longitudinal protuberant finned tube are gradually better than pressure drop with increase of pulsating frequency. (20 refs)
Main heading: Heat transfer
Controlled terms: Dynamics - Friction - Navier Stokes equations - Nusselt number - Pressure drop
Uncontrolled terms: Internally longitudinal protuberant finned tube - Numerical simulation - Pulsating flow - Pulsating frequency - Turbulent model
Classification Code: 631.1 Fluid Flow, General - 641.2 Heat Transfer - 931.1 Mechanics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

95. Synthesis and characterization of reactive polyacrylate latex with epoxy group

Liu, Xiang (1); Nie, Ying (2); Fan, Xiao-Dong (1)
Source: *Gaofenzi Cailiao Kexue Yu Gongcheng/Polymeric Materials Science and Engineering*, v 23, n 5, p 37-40, September 2007; **Language:** Chinese; **ISSN:** 10007555; **Publisher:** Chengdu University of Science and Technology
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 Shiyou University, Xi'an 710065, China
Abstract: A novel complex latex with core-shell structure was synthesized using methyl methacrylate (MMA), butyl acrylate (BA), 2-ethylhexyl acrylate (EHA) and glycidyl methacrylate (GMA) as monomers. Two steps of seeded emulsion polymerization were employed for constructing a micro-phase separated morphology with PMMA-BA layer as the core and PEHA-GMA layer as the shell. Transmission Electron Microscopy was used to inspect the latex particles, and the result confirms that the particles obtained are indeed possessing a desired core-shell structural character. The chemically reactive behavior of the latex was studied by adding the latex with water soluble Urea Formaldehyde resin. It is found that the glass transition temperature, the mechanical strength of copolymers prepared present marked enhancements, and the hydroscopicity of copolymers is reduced following addition of UF resin under raising thermal treatment temperature. (5 refs)
Main heading: Polyacrylates
Controlled terms: Characterization - Copolymers - Emulsion polymerization - Epoxy resins - Glass transition - Heat treatment - Strength of materials - Structure (composition) - Synthesis (chemical) - Transmission electron microscopy - Urea formaldehyde resins
Uncontrolled terms: 2-ethylhexyl acrylate - Butyl acrylate - Core-shell structure - Epoxy group - Glycidyl methacrylate - Methyl methacrylate - Reactive polyacrylate latex
Classification Code: 802.2 Chemical Reactions - 815.1.1 Organic Polymers - 815.2 Polymerization - 951 Materials Science
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

96. Study on the biodegradability of oil-field wastewater and refinery wastewater

Qin, Fang-Ling ; Song, Shao-Fu ; Zhou, Juan
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 58-60, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Key Lab. of Shaanxi Province for Oilfield Environmental Pollution and Formation Damage Control, College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: The biodegradability of the refinery wastewater, the polymer displacement wastewater and the high-salinity wastewater from oilfield are analyzed and evaluated by BOD5/CODCr and Warburg respiration apparatus. The results indicate that the refinery wastewater and the polymer displacement wastewater are biodegradable, but the high-salinity wastewater from oilfield is not easy to be directly biodegraded. Compared with using Warburg respiration apparatus, BOD5/CODCr evaluation method is simpler and easier to operate, but its reliability is worse. The breath curve of microorganism determined by Warburg respiration apparatus can more accurately reflect the biodegradability of wastewater, and it can provide the experimental basis for the biological treatment of wastewater in the future. (11 refs)
Database: Compendex
Data Provider: Engineering Village

97. Application of complex calcium-based desilication agent in the treatment of dense oil polluted water

Dong, Tao ; Qu, Cheng-Tun ; Wang, Xin-Qiang
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 108-110+114, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Lab. of Shaanxi Province for Oil-gas Oilfield Environ. Pollution Control and Reservoir Protection, College of Chemistry and Chemical Engineering, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Silicon removal is very important to the safe operation of the boilers for the treatment of dense oil polluted water. And the selection of desilication agent is one of key factors to the desilication process. The desilication agent together with flocculant is used in order to increase the removing ratio of silicon. The effects of reaction temperature, reaction time, pH value of reaction system and dose of desilication agent on the removing ratio of SiO2 in the wastewater are investigated through orthogonal tests. It is shown that the remains of SiO2 is reduced from 200 mg/L to 23.2 mg/L when the reaction temperature, reaction time, pH value of reaction system and dose of desilication agent are 60°C, 3 h, 7 and 0.75 g/L separately. (5 refs)
Database: Compendex
Data Provider: Engineering Village

98. Analysis of dominant factors of the oil-water interface in the oil reservoir of Sanjianfang Formation, Shanshan Oilfield

Han, Tao ; Wang, Hui ; Peng, Shi-Mi ; Ma, Hong-Lai ; Wu, Hong-Guo
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 1, p 21-24, January 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Resources and Information, China University of Petroleum (Beijing), Beijing 102249, China (2) Publishment Center, Xi'an Shiyou University, Xi'an 710065, China (3) Tuha Oilfield Company, Tuha 838202, China
Abstract: Shanshan Oilfield lies in Taibei Sag of Tuha Basin. The regional groundwater in this sag is gravity flow, and it flows from north to south. The recharge area of the groundwater is in the Bogeda mountain front zones in northern Taibei Sag and the drainage area is in the north border of the central faulted zone of Taibei Sag. From the recent drilling data of infill wells, it is found that there is an obvious difference between the recent cognition and the original cognition of the oil-water interface. Through analyses of the oil-water interface distribution and the salinity, chemical composition and type of the groundwater, it is held that the difference is caused by the rise of the oil-water interface. Shanshan Oilfield is just in the drainage area of the groundwater, and the groundwater flow into the oilfield from the north-western basin, which makes the oil-water interface in the western and northern parts rise and makes the salinity and chemical composition of the groundwater changed. The finding can provide guidance for determining the depth of infill wells and improving the precision of the interpretation of water-flooded reservoirs. (14 refs)
Database: Compendex
Data Provider: Engineering Village

99. Temperature-insensitive fiber Bragg grating pressure sensing with plane round metal diaphragm

Wei, Ting (1, 2); Qiao, Xueguang (1, 2); Jia, Zhen'an (2); Fu, Haiwei (2); Wang, Hongliang (2)
Source: *Guangxue Xuebao/Acta Optica Sinica*, v 27, n 1, p 80-84, January 2007; **Language:** Chinese; **ISSN:** 02532239; **Publisher:** Chinese Optical Society
Author affiliation: (1) Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an 710068, China (2) Shaanxi Key Laboratory of Photoelectric Sensing Logging, Xi'an Shiyou University, Xi'an 710065, China
Abstract: A novel temperature-insensitive pressure sensor based on fiber Bragg grating (FBG) broadened bandwidth technique using a plane round metal diaphragm is studied theoretically and experimentally. Considering the strain modulating trait of the diaphragm, the smart box structure is adopted and FBG is affixed radially, with the axis center of FBG aiming at the zero strain zone of the diaphragm. Temperature-independent pressure sensing is measured by bandwidth of FBG due to the bandwidth is sensitive to strain but temperature. This approach shows a pressure resolution of ±0.15 MPa and a pressure sensitivity of 0.34 nm/MPa in the range 0-0.75 MPa, with the spectral resolution of the spectral analyzer of 0.05 nm. The experimental results match the theoretical analysis well. (9 refs)
Main heading: Pressure sensors
Controlled terms: Bandwidth - Diaphragms - Fiber Bragg gratings - Pressure measurement - Spectral resolution
Uncontrolled terms: Chirped effect - Optical sensing - Plane round metal diaphragm - Temperature insensitive pressure measurement
Classification Code: 741.1 Light/Optics - 741.3 Optical Devices and Systems - 944.3 Pressure Measuring Instruments - 944.4 Pressure Measurements
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

100. Evaluation of the safety of the combustion gas produced in high-energy gas fracture

Qin, Wen-Long ; Chen, Zhi-Qun ; Pu, Chun-Sheng
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 4, p 53-55+59, July 2007; **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) Xi'an Modern Chemistry Institute, Xi'an 710065, China (3) Faculty of Petroleum Engineering, China University of Petroleum (East China), Dongying 257061, China
Abstract: The combustion process in oil well in high-energy gas fracture is simulated by manometric bomb test. The composition of the gas produced in the combustion process of the high-energy gas fracture bombs produced by 5 manufacturers is analyzed by infrared spectrum technique. The results show that there is poisonous gas of hydrocyanic acid in the combustion gas special fracture bombs. The mechanism of producing the poisonous gas is analyzed, and the measures for inhibiting it are put forward. (8 refs)
Database: Compendex
Data Provider: Engineering Village

101. Basic characteristics of the Chang 6 reservoir in the southwest area of Chuankou Oilfield and their main control factors

Shi, Bao-Hong ; Zhao, Jing-Zhou ; Yan, Yun-Kui ; Sun, Xing-Wang ; Wang, Yong-Dong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 14-17, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) College of Oil and Gas Resource, Xi'an Shiyou University, Xi'an 710065, China (2) Department of Geology, Northwest University, Xi'an 710069, China (3) Yanchang Petroleum Group Corporation, Yanchuan 717208, China
Abstract: The Chang 6 reservoir in the southwest area Chuankou Oilfield is composed of feldspathic sandstones and lithic arkose sandstones, which is characterized by low compositional maturity, high textural maturity and low-porosity and low-permeability. There is point-line contact form and porous cementation type between rock grains. The main pore types are granular pore and secondary dissolution pore. The sedimentary fades, mineral composition and grain diameter of the sandstones are the key factors of influencing the reservoir formation and evolution. The reservoir has undergone the strong compaction and cementation, which are the main factors of resulting in the low-porosity and low permeability of the reservoir. Dissolution is the main factor for increasing the porosity of the reservoir. (11 refs)
Database: Compendex
Data Provider: Engineering Village

102. Model and simulation of a polymer-coated Fiber Bragg Grating sensor

Shao, Jun (1, 2); Qiao, Xueguang (2); Jia, Zhenan (2); Liu, Junhua (1)
Source: *2007 8th International Conference on Electronic Measurement and Instruments, ICEMI*, p 4165-4169, 2007, *2007 8th International Conference on Electronic Measurement and Instruments, ICEMI*; **ISBN-10:** 1424411351, **ISBN-13:** 9781424411351; **DOI:** 10.1109/ICEMI.2007.4351107; **Article number:** 4351107; **Conference:** 2007 8th International Conference on Electronic Measurement and Instruments, ICEMI, August 16, 2007 - August 18, 2007; **Publisher:** IEEE Computer Society
Author affiliation: (1) School of Electrical Engineering, Xi' an Jiaotong University, Xi' an, 710049, China (2) Shaanxi Key Lab. of Photoelectric Sensing Logging, School of Science, Xi'an Shiyou University, Xi'an 710065, China
Abstract: Embedding a FBG with polymer could improve the pressure sensitivity of a sensor. Based on the theory of elastic mechanics, considered the polymer with optical fiber transversely isotropy, which is encapsulated in the metal tube and 3 components of stress are not equal, the relation between the shift of Bragg wavelength and the pressure is proposed. How to improve the pressure sensitivity is also discussed. It is useful for designing a fiber grating sensor. © 2007 IEEE. (14 refs)
Main heading: Fiber Bragg gratings
Controlled terms: Plastic optical fibers - Optoelectronic devices - Fiber optic sensors
Uncontrolled terms: Bragg wavelength - Elastic mechanics - Fiber grating sensor - Fiber gratings - Model and simulation - Polymer-coated fibers - Pressure sensitivities - Transversely isotropy
Classification Code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems
Database: Compendex
Data Provider: Engineering Village

103. Effect of pre-deformation on fatigue crack propagation life of X60 pipeline steel

Zhao, Xinwei (1); Luo, Jinheng (1); Wang, Rong (2); Zheng, Maosheng (3); Dong, Baosheng (1)
Source: *Proceedings of the Biennial International Pipeline Conference, IPC*, v 2, p 337-343, 2007, *Proceedings of the ASME International Pipeline Conference 2006, IPC 2006*; **DOI:** 10.1115/IPC2006-10192; **Conference:** 2006 6th International Pipeline Conference, IPC 2006, September 25, 2006 - September 29, 2006; **Sponsor:** ASME, International Petroleum Technology Institute, IPIT; **Publisher:** American Society of Mechanical Engineers
Author affiliation: (1) Tubular Goods Research Center of CNPC (2) Xi'an Petroleum University (3) Xi'an Jiaotong University
Abstract: It is impossible to keep oil and gas pipeline free from defects in fabrication, installation and serving processes. Mechanical damage is one of import causes of pipeline failure accidents. Mechanical damage might endanger the safety of pipelines and even shorten their service life. 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 propagation life of pre-deformed X60 pipeline steel can be predicted using a previously proposed equation, i.e., da/dN = B(#K - #Kth)2 The threshold #Kth for fatigue crack propagation decreases with the pre-deformation. The fatigue crack propagation coefficient B increases with the pre-deformation, So pre-deformation accelerates fatigue crack propagation and shortens fatigue life. The result is expected to be beneficial to the understanding of the effect of dents on the safety of pipelines and fatigue life prediction. Copyright © 2006 by ASME. (24 refs)
Main heading: Fatigue crack propagation
Controlled terms: Damage detection - Deformation - Steel pipe - Surface defects - Tensile testing
Uncontrolled terms: Fatigue life prediction - Pipeline steel - Tensile deformation
Classification Code: 545.3 Steel - 619.1 Pipe, Piping and Pipelines - 951 Materials Science
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

104. Novel face recognition method based on 3D model projection

Zhao, Ming-Hua ; You, Zhi-Sheng ; Liu, Zhi-Fang ; Zhao, Yong-Gang
Source: *Guangdian Gongcheng/Opto-Electronic Engineering*, v 34, n 12, p 77-81+117, December 2007; **Language:** Chinese; **ISSN:** 1003501X; **Publisher:** Chinese Academy of Sciences

Author affiliation: (1) Institute of Image and Graphic, Sichuan University, Chengdu 610064, China (2) School of Computer Science and Engineering, Xi'an University of Technology, Xi'an 710048, China (3) Xi'an Shiyou University, Xi'an 710065, China
Abstract: A new algorithm that combines 3D face model construction with 2D recognition is proposed. 3D face models are projected to different directions and then a series of 2D face images are obtained. The projected 2D results are used as templates to match the input face images with different poses. The method which constructs 3D face model with 2.5D scans acquired by Minolta vivid 910 is studied and a 3D face database containing 10 persons is built. Experimental results show that the proposed algorithm is faster than 3D deformable model method and is more efficient than the method that uses just front images as templates while dealing with face images with pose variations. (9 refs)
Database: Compendex
Data Provider: Engineering Village

105. Law of petroleum accumulation and distribution in Triassic Chang 2 oil-bearing Formation in eastern North Shaanxi Slope, Ordos Basin

Zhao, Jing-Zhou (1); Wang, Yong-Dong (2); Meng, Xiang-Zhen (2, 3); Shi, Bao-Hong (1); Wang, Xiao-Mei (1); Cao, Qing (1)
Source: *Shiyou Kantan Yu Kaifa/Petroleum Exploration and Development*, v 34, n 1, p 23-27, February 2007; **Language:** Chinese; **ISSN:** 10000747; **Publisher:** Science Press
Author affiliation: (1) School of Petroleum Resources, Xi'an Shiyou University, Xi'an 710065, China (2) Yanchang Petroleum Corporation, Tongchuan 717208, China (3) Research Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China
Abstract: The formation and distribution of Chang 2 accumulations in Triassic Yanchang Formation in the North Shaanxi Slope is considered to be controlled by sedimentary facies, and the accumulations are lithologic, on which the structural and other factors are believed to have no important effect. The reason is that the Slope is a large smooth monocline dipping westward and characterized by simple structure without folds and faults. The present study shows that they are controlled by multiple factors, such as sedimentary facies, the background of nose-shaped uplift, faults, hydrodynamics, etc. The background of nose-shaped uplift is important for the formation and enrichment of the accumulations. Faults as migration pathways are important to the formation and distribution of the accumulations. Hydrodynamic condition is a significant factor for updip direction barrier. Besides lithologic accumulations, structure-lithologic and structure-hydrodynamic composite accumulations are possibly the main types of the Chang 2 accumulations. (23 refs)
Main heading: Catchments
Controlled terms: Crude petroleum - Hydrodynamics - Oil bearing formations - Petroleum reservoirs
Uncontrolled terms: Chang 2 reservoirs - Distribution law - North Shaanxi Slope - Ordos Basin - Reservoir type - Triassic
Classification Code: 444 Water Resources - 481.1 Geology - 512.1.1 Oil Fields - 631.2 Hydrodynamics
Treatment: Applications (APP)
Database: Compendex
Data Provider: Engineering Village

106. Study of frictional resistance characteristics of high-pressure steam-water two-phase flows

Zhu, Yu-Qin ; Li, Ya-Hong ; Bi, Qin-Cheng ; Chen, Ting-Kuan
Source: *Reneng Dongli Gongcheng/Journal of Engineering for Thermal Energy and Power*, v 22, n 5, p 539-541, September 2007; **Language:** Chinese; **ISSN:** 10012060; **Publisher:** Harbin Research Institute
Author affiliation: (1) Technology Research Center of Petroleum Refinery Engineering, Xi'an Shiyou University, Xi'an 710065, China (2) National Key Laboratory on Multi-Phase Flows in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, China
Abstract: A study was performed of the frictional resistance characteristics of the water-wall tubes in subcritical and close-to-critical pressure zones of a 600 MW once-through boiler made in China. The test section consists of lCrl8Ni9Ti stainless steel tubes having a diameter of $\phi 25$ × 3 mm with the following experimental parameters: pressure p=12-21 MPa, mass flow rate G=400-1200 kg/(m2·s) and mass steam content x=0-1.0. Through the tests, studied was the impact of working medium pressure, mass flow velocity and mass steam content on the frictional resistance. On the basis of a great deal of data obtained from the tests and related theoretical analyses, a correlation formula of

frictional resistance of water-wall tubes was derived, which is suited for design purposes. The relative error between the calculated values and test ones does not exceed 15%. (6 refs)
Database: Compendex
Data Provider: Engineering Village

107. Algorithm for recovering multicast routing based on the bounded QoS of subtree

Liu, Fang ; Zhang, Ming-Long ; Wan, Xiao-Zhong
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 5, p 86-89+115, September 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
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 (3) Northwest China Power Network Co. Ltd., Xi'an 710048, China
Abstract: It is found that multicast tree will be divided into some subtrees with different QoS demands after a routing node in the multicast tree goes wrong. Usual treatment method is that all the nodes in the subtrees of the node at fault are used for reconstructing a new multicast tree. In this paper, an algorithm is proposed, by which the subtrees can fast be connected into a new multicast tree according to the QoS information of the subtrees after a routing node goes wrong at fault. Only if this connection fails, are all the nodes in the subtrees used for reconstructing the new multicast tree. The results of the simulation tests show that the success ratio of this connection can be higher than 80%. In addition, the algorithm can shorten the recovery time of the multicast tree and decrease the expense of recovering the multicast tree. It can increase the reliability of the system as well. (8 refs)
Database: Compendex
Data Provider: Engineering Village

108. Advances in technology of olefin oligomerization for α–olefins preparation

Wu, Tao ; Zhang, Jun-Tao ; Ni, Bing-Hua
Source: *Xiandai Huagong/Modern Chemical Industry*, v 27, n SUPPL. 1, p 48-53, June 2007; **Language:** Chinese; **ISSN:** 02534320; **Publisher:** China National Chemical Information Center
Abstract: The technology for alpha-olefin production and the latest research advances in olefin oligomerization catalysts are introduced in this paper. Several kinds of industrialized olefin oligomerization technologies are compared, while the merits and shortcomings of each technology and homogenious catalyst are discussed. It is pointed out the olefin oligomerization heterogeneous catalytic system is one of the potential research aspects in alpha-olefin production by the olefin oligomerization, because it owns lots of merits such as moderate operating pressure, easy to regenerate catalyst, easy to separate from products, no corrosion to equipments, easy to realize consecutive production, and significant reduction in production cost and etc.. (39 refs)
Database: Compendex
Data Provider: Engineering Village

109. Study on the effect law of low-frequency pulse waves on the seepage performance of reservoir cores

Yang, Yue ; Pu, Chun-Sheng ; Wang, Ping
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 2, p 123-125+128, March 2007; **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) Qilicun Production Plant, Yanchang Petroleum Group, Yan'an 716001, China (3) Research Institute of Exploration and Development, Changqing Petroleum Branch Company, Xi'an 710021, China
Abstract: The low-frequency pulse production increasing technique is a new oil recovery factor enhancing method. The influences of the low-frequency pulse of different frequencies on the flow of single-phase and two-phase fluid in porous media are studied by laboratory core experiments using self-designed vibration oil production testing unit. The results show that, appropriate low-frequency pulse wave can improve oil displacement result, enhance recovery factor and decrease water content. The result of oil production increasing is related to the frequency of the low-frequency pulse, the permeability of core is the most increased when the frequency is near the natural frequency of the core. The result of oil production increasing is also related to the permeability of the cores, the oil production increasing result of low-permeability cores is better than that of medium or high permeability cores. By the low-frequency pulse, the decline

of the residual oil saturations of the low-permeability cores can reach to 10%, and the increase of their recovery factors can reach to 15%. (3 refs)
Database: Compendex
Data Provider: Engineering Village

110. Fractal algorithms for finding global optimal solutions

Song, Ju-Long (2); He, Xiangjian (3); Qian, Fu-Cai (1, 4)
Source: *Fourth International Conference on Information Technology and Applications, ICITA 2007*, p 258-261, 2007, *Fourth International Conference on Information Technology and Applications, ICITA 2007*; **ISBN-10:** 0980326702, **ISBN-13:** 9780980326703; **Conference:** 4th International Conference on Information Technology and Applications, ICITA 2007, January 15, 2007 - January 18, 2007; **Sponsor:** Heilongjiang University, Harbin, China; Shanghai Jiao Tong University, Shanghai, China; IEEE, NSW Section, Australia; **Publisher:** Charles Sturt University
Author affiliation: (1) IEEE (2) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi, 710065, China (3) Computer Vision Research Group, University of Technology, Sydney, Australia (4) School of Automatization and Information Engineering, Xi'an University of Technology, Xi'an, Shaanxi 710049, China
Abstract: For solving constrained nonlinear optimization problems, a new algorithm, which is called Fractal Algorithm, is presented. Feasible region is partitioned by fractal combining with golden section. Bad region is deleted, gradually and finally optimal solution remains. The advantages of the local fine structure of fractal and the quick convergence of golden section method are taken. Hence, the fractal algorithm is highly efficient and. highly speedy. The algorithm has the character of strong adaptability to a class of complex function. It requests only that the object function has one order derivative. The minimum can be found at any precision at which a computer can work. Furthermore, this method requests so little memory that it almost can. be implemented on any PC of which the efficiency is almost not influenced. The proof showing convergence of the algorithm, is given. The numerical results show that the algorithm is effective. (9 refs)
Main heading: Fractals
Controlled terms: Algorithms - Global optimization - Numerical methods - Optimization - Problem solving
Uncontrolled terms: Adaptability - Nonlinear optimization - Object functions - Optimization methods
Classification Code: 921 Mathematics - 921.5 Optimization Techniques - 921.6 Numerical Methods
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

111. Evaluation of development result of Zhangqu-2 area

Ruan, Min ; Qi, Wen-Qi ; Li, Qing-Yin
Source: *Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of Xi'an Shiyou University, Natural Sciences Edition*, v 22, n 3, p 64-66, May 2007; **Language:** Chinese; **ISSN:** 1673064X; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Faculty of Petroleum Engineering, China University of Petroleum (Beijing), Beijing 102249, China (2) Management Department of Science Research, Xi'an Shiyou University, Xi'an 710065, China (3) No.1 Production Plant, Changqing Oilfield Branch Company, Yan'an 716000, China
Abstract: The objective evaluation of water-flooding development result is the key to search for further development potential tapping measures, improving development conditions and enhancing development result. Combining development practice of the Zhangqu-2 area, the water-flooding development result evaluation indexes reserves exploitation degree, recoverable reserves, water storage rate, water drive index, injection volume, etc. of the studied area are objectively analyzed, and it is held that the general development state of the area is better. But there are still some unfavorable factors to the development result. Of them, lower control degree of water drive is an important factor of restricting the development result at present. (4 refs)
Database: Compendex
Data Provider: Engineering Village

112. Global optimization under nonlinear constraints based on apollonius fill

Song, Julong (1); He, Xiangjian (2); Lin, Zhenxian (3)
Source: *Proceedings - Third International Conference on Natural Computation, ICNC 2007*, v 5, p 39-43, 2007, *Proceedings - Third International Conference on Natural Computation, ICNC 2007*; **ISBN-10:** 0769528759, **ISBN-13:** 9780769528755; **DOI:** 10.1109/ICNC.2007.405; **Article number:** 4305011; **Conference:** 3rd International Conference

on Natural Computation, ICNC 2007, August 24, 2007 - August 27, 2007; **Publisher:** Inst. of Elec. and Elec. Eng. Computer Society
Author affiliation: (1) School of Science, Xi'an Shiyou University, Xi'an, Shaanxi 710065, China (2) Faculty of Information Technology, University of Technology, Sydney, NSW 2007, Australia (3) Department of Applied Mathematics and Physics, Xi'an Posts and Telecommunications Institute, Xi'an, Shaanxi 710061, China
Abstract: Making use of Apollonius Fill, an algorithm is presented, which is for finding solutions of global optimization problems nonlinearly constrained by a circular region in the plane. Using this algorithm, global optimum can be computed fast and precisely. We request no more than first order derivatives of objective functions for the optimization algorithm. If we do not care about the processing time taken, for any given objective function, the global optimum can be obtained as precisely as requested. The proof of convergence of this algorithm is also given in this paper. We use a few numerical examples to show that this algorithm is effective, reliable, and hence is valuable in practice. © 2007 IEEE. (7 refs)
Main heading: Constraint theory
Controlled terms: Computational efficiency - Computer simulation - Convergence of numerical methods - Global optimization - Nonlinear systems - Problem solving
Uncontrolled terms: Global optimum - Optimization problems
Classification Code: 723.4 Artificial Intelligence - 723.5 Computer Applications - 921.5 Optimization Techniques - 921.6 Numerical Methods - 961 Systems Science
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

113. Mathematical and computer simulation technology of condensate oil and gas wells stimulated by electromagnetic heating

PU, Chun-sheng (1, 2); PEI, Run-you (1); HUANG, Hai (3); FENG, Jin-de (1); SU, Guo-hui (3)
Source: *Journal of Hydrodynamics*, v 19, n 3, p 292-302, June 2007; **ISSN:** 10016058; **DOI:** 10.1016/S1001-6058(07)60061-4; **Publisher:** China Ocean Press
Author affiliation: (1) Institute of Petroleum and Gas engineering, China University of Petroleum, Beijing, 102200, China (2) College of Petroleum engineering, China University of Petroleum (East China), Dongying, 257061, China (3) Petroleum engineering department, Xi'an Shiyou University, Xi'an, 710065, China
Abstract: In this article, the recent research achievements on the theory and technology of condensate oil and gas wells stimulated by electromagnetic induction heating during middle or late exploitation period were introduced for the first time at home and abroad. A new kind of electromagnetic wave induction heating equipment XAEMH-1 was developed. Taking near wellbore zone temperature field as the main research object, which is the key factor for the condensation and retrograde vaporization during electromagnetic heating, the mathematical simulation model for a condensate oil and gas well stimulated by electromagnetic heating to eliminate blockage near wellbore region was established. A corresponding computer system was developed to dynamically predict and evaluate the efficiency of this electromagnetic heating process. Through this computer system, the near wellbore region distributions of several important factors such as temperature, pressure, condensate oil saturation and relative permeability can be described quantitatively. A condensate gas well in a late exploitation period reservoir here in China was chosen as a practical example to test the effectiveness of this new technology and some satisfactory results were obtained. These results proved that it is feasible to eliminate the near wellbore region blockage by electromagnetic heating. A new prospective stimulation method was given for the condensate oil and gas reservoirs during middle or late exploitation period. © 2007 Publishing House for Journal of Hydrodynamics. (16 refs)
Main heading: Crude petroleum
Controlled terms: Computer simulation - Induction heating - Natural gas wells - Oil wells - Petroleum reservoirs - Vaporization
Uncontrolled terms: Condensate oil - Electromagnetic heating - Gas wells - Wellbore region
Classification Code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.2.1 Natural Gas Fields - 642.1 Process Heating - 723.5 Computer Applications - 802.3 Chemical Operations
Funding Details: Number: 2001CB2091-06-04, Acronym: -, Sponsor: National Basic Research Program of China (973 Program);
Funding text: * Project supported by the National Basic Research Program of China (973 Program,Grant No. 2001CB2091-06-04). Biography: PU Chun-sheng (1959-), Male, Ph. D., Professor
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

114. Pressure Buildup Analysis Using Type Curves for a Well in a Pressure-Maintained System

Jia'en, LIN (1, 2); Huizhu, YANG (1)
Source: *Chinese Journal of Chemical Engineering*, v 15, n 1, p 6-11, February 2007; **ISSN:** 10049541; **DOI:** 10.1016/S1004-9541(07)60026-3; **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: The development and application of a new solution is demonstrated for the type-curve analysis and interpretation of well test data from a multiwell reservoir system of both production and injection wells with two-phase flow. The buildup type curves or buildup behavior could be obtained through the solution by using superposition. But a new outer boundary condition for variable pressure boundary must be introduced to obtain the correct pressure buildup solutions by superposition. A technique is shown to determine the deviation time from the infinite-acting semilog radial flow stabilization in the derivatives of pressure, which is calculated with respect to and plotted vs. shut-in time. Field examples are given to illustrate the use of the proposed method for analyzing transient pressure data from a well located in a multi-well water-injection reservoir. An adaptive genetic algorithm-based method is used to match the pressure and pressure derivative data to estimate reservoir parameters. The validity and applicability of the proposed method are also demonstrated through the examples. © 2007 Chemical Industry and Engineering Society of China (CIESC) and Chemical Industry Press (CIP). (19 refs)
Main heading: Two phase flow
Controlled terms: Boundary conditions - Genetic algorithms - Graph theory - Pressure effects
Uncontrolled terms: Multi-well reservoir - Pressure buildup - Type curve analysis
Classification Code: 631.1 Fluid Flow, General - 723 Computer Software, Data Handling and Applications - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 931.1 Mechanics
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village