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1

标题: Theoretical investigation for the EPR g factors and the local structure for the two tetragonal Ni3+ centers in ACoO(2) (A = H, Li)

作者: Zhang, HM (Zhang, Hua-Ming); Xiao, WB (Xiao, Wen-Bo); Wan, X (Wan, Xiong)

来源出版物: JOURNAL OF ALLOYS AND COMPOUNDS 卷: 583 页: 244-247 DOI: 10.1016/j.jallcom.2013.08.185 出版年: JAN 15 2014

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摘要: The electron paramagnetic resonance g factors and the local structure for the tetragonal Ni3+ centers in HCoO2 and LiCoO2 are theoretically studied from the perturbation formulas of the g factors for a 3d(7) ion with low spin (S = 1/2) in tetragonally elongated octahedra. In these formulas, the related molecular orbital coefficients are quantitatively determined from the cluster approach in a uniform way. According to the calculations, the ligand octahedra around Ni3+ are suggested to suffer relative elongation 2.57% (and 1.6%) along the [001] (or C-4) axis for the tetragonal Ni3+ centers in HCoO2 (and LiCoO2), due to the Jahn- Teller effect. The calculated g factors based on the above Jahn-Teller elongations are in good agreement with the observed values. (C) 2013 Elsevier B.V. All rights reserved.

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语种: English

文献类型: Article

作者关键词: Electron Paramagnetic Resonance (EPR); Defect structures; Ni3+; LiCoO2; HCoO2

KeyWords Plus: SPIN-HAMILTONIAN PARAMETERS; TRANSITION-METAL IONS; ATOMIC SCREENING CONSTANTS; PARAMAGNETIC-RESONANCE; ELECTRODE MATERIALS; LITHIUM BATTERIES; CATHODE MATERIALS; OPTICAL SPECTRA; SCF FUNCTIONS; HIGH-PRESSURE

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2

标题: Microstructures of Nb/Nb5Si3 composites and it alloyed with W, Mo and W -Mo fabricated by spark plasma sintering

作者: Xiong, BW (Xiong, Bowen); Cai, CC (Cai, Changchun); Wang, ZJ (Wang, Zhenjun)

来源出版物: JOURNAL OF ALLOYS AND COMPOUNDS 卷: 583 页: 574-577 DOI:10.1016/j.jallcom.2013.08.151 出版年: JAN 15 2014

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摘要: Microstructures of Nb/Nb5Si3 composites and it alloyed with W, Mo and W -Mo fabricated by spark plasma sintering were investigated. The microstructures were examined using scanning electron microscope (SEM). X-ray diffraction (XRD) was performed on the bulk specimens for identification of phases. The chemical species were analyzed using electron-probe micro-analysis (EPMA). Results indicated that the microstructures Nb/Nb5Si3 composites include primary Nb and eutectic mixtures of Nb and Nb5Si3, and the coarse and fine eutectic mixtures are detected. The microstructure of Nb/Nb5Si3 composites alloyed with W or Mo is unaltered, and W and Mo elements solid solution in Nb and Nb5Si3 phase are detected, but that alloyed with W and Mo together, The microstructures are change obviously, including Nb phase, the solid solubility phases of W and Mo atoms in Nb, and the solid solubility phases of Nb atoms in W are also found, but the solid solubility phenomenon of Nb5Si3 phases is not detected. The microhardness of Nb and Nb5Si3 phases increases obviously because of solid solution strengthening. (C) 2013 Elsevier B. V. All rights reserved.

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语种: English

文献类型: Article

作者关键词: Spark plasma sintering; Microstructure; Nb/Nb5Si3 composites; Solid solution strengthening

KeyWords Plus: IN-SITU COMPOSITES; FRACTURE-TOUGHNESS; TEMPERATURE; ADDITIONS; STRENGTH; TI; HF

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3

标题: Pulsed remote field eddy current technique applied to non-magnetic flat conductive plates

作者: Yang, BF (Yang, Binfeng); Zhang, H (Zhang, Hui); Zhang, C (Zhang, Chao); Zhang, ZB (Zhang, Zhanbin)

来源出版物: NONDESTRUCTIVE TESTING AND EVALUATION 卷: 28 期: 4 页 : 354-366 DOI: 10.1080/10589759.2013.823607 出版年: DEC 1 2013

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摘要: Non-magnetic metal plates are widely used in aviation and industrial applications. The detection of cracks in thick plate structures, such as multilayered structures of aircraft fuselage, has been challenging in nondestructive evaluation societies. The remote field eddy current (RFEC) technique has shown advantages of deep penetration and high sensitivity to deeply buried anomalies. However, the RFEC technique is mainly used to evaluate ferromagnetic tubes. There are many problems that should be fixed before the expansion and application of this technique for the inspection of non-magnetic conductive plates. In this article, the pulsed remote field eddy current (PRFEC) technique for the detection of defects in non-magnetic conducting plates was investigated. First, the principle of the PRFEC technique was analysed, followed by the analysis of the differences between the detection of defects in ferromagnetic and non- magnetic plain structures. Three different models of the PRFEC probe were simulated using ANSYS. The location of the transition zone, defect detection sensitivity and the ability to detect defects in thick plates using three probes were analysed and compared. The simulation results showed that the probe with a ferrite core had the highest detecting ability. The conclusions derived from the simulation study were also validated by conducting experiments.

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语种: English

文献类型: Article

作者关键词: pulsed remote field eddy current; non-magnetic conducting plate; probe design; defect quantification

KeyWords Plus: CURRENT SIGNALS; INSPECTION; TUBES

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ISO 来源出版物缩写: Nondestruct. Test. Eval.

来源出版物页码计数: 13

4

标题: On a nonlocal elliptic problem arising in the confinement of a plasma in a current carrying stellarator

作者: Zou, WL (Zou, Weilin); Li, FQ (Li, Fengquan); Lv, BQ (Lv, Boqiang)

来源出版物: MATHEMATICAL METHODS IN THE APPLIED SCIENCES 卷: 36 期: 16 页: 2128-2144 DOI: 10.1002/mma.2742 出版年: NOV 15 2013

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摘要: This paper deals with a nonlocal free boundary problem arising in the study of the dynamics of the confinement of a plasma in a Stellarator device. The free boundary represents the separation between the plasma and vacuum regions, and the nonlocal term involves the notions of relative rearrangement and monotone rearrangement. We establish some new properties on the decreasing rearrangement that can be used to prove the convergence of the approximate problem, and then prove the existence of solutions by Galerkin method. Copyright (c) 2013 John Wiley & Sons, Ltd.

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语种: English

文献类型: Article

作者关键词: nonlinear elliptic equations; relative rearrangement; current carrying Stellarator; plasma physics; free boundary problem

KeyWords Plus: FREE-BOUNDARY; RELATIVE REARRANGEMENT; PHYSICS; MODEL; EQUILIBRIUM; EQUATION

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ISO 来源出版物缩写: Math. Meth. Appl. Sci.

来源出版物页码计数: 17

5

标题: Preparation and Electromagnetic Properties of the BaFe12O19/Multiwall Carbon Nanotubes/Poly(3-methyl-thiophene) Composites

作者: Zhao, J (Zhao, Jie); Xie, Y (Xie, Yu); Le, ZG (Le, Zhanggao); Luo, Y (Luo, Yan); Gao, YH (Gao, Yunhua); Zhong, R (Zhong, Rong); Qin, YC (Qin, Yuancheng); Pan, JF (Pan, Jianfei); Huang, Y (Huang, Yan)

来源出版物: POLYMER COMPOSITES 卷: 34 期: 11 页: 1801-1808 DOI: 10.1002/pc.22584 出版年: NOV 2013

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摘要: The BaFe12O19/multiwall carbon nanotubes/poly(3-methyl-thiophene) (BaFe12O19/MCNTs/P(3MT)) composites were synthesized through an in situ chemical polymerization of 3-methyl-thiophene (3MT) in the presence of BaFe12O19/MCNTs composite powders. The BaFe12O19/MCNTs/P(3MT) composites were characterized by the fourier transform infrared spectrometry (FTIR) and X-ray diffraction (XRD). The morphologies of the composites were observed by scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The electric conductive properties were tested by a four- probe conductivity tester and the magnetic properties were measured by vibrating sample magnetometer (VSM). The electromagnetic performance tests showed that when the mass ratio of BaFe12O19 to MCNTs was 0.4, and the BaFe12O19/MCNTs to P(3MT) was 0.15, the conductivity, saturation magnetization (M-s) and residual magnetization (M-r) of the BaFe12O19/MCNTs/P(3MT) composites achieved 166.740 S/m, 29.884 emu/g, and 17.581 emu/g, respectively. POLYM. COMPOS., 34:1801-1808, 2013. (c) 2013 Society of Plastics Engineers

入藏号: WOS:000325714300003

语种: English

文献类型: Article

KeyWords Plus: IN-SITU POLYMERIZATION; FERRITE NANOCOMPOSITES; MAGNETIC-PROPERTIES; NANOTUBES; NANOPARTICLES

地址: [Zhao, Jie; Xie, Yu; Luo, Yan; Zhong, Rong; Qin, Yuancheng; Pan, Jianfei; Huang, Yan] Nanchang Hangkong Univ, Dept Chem Mat, Nanchang 330063, Peoples R China.

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6

标题: Electroabsorption Spectra of Lead Sulfide (PbS) Quantum Dots in a Polymer Film

作者: Liu, XM (Liu, Xiaoming); Lu, Y (Lu, Ying); Dai, ZH (Dai, Zhonghua); Tang, XH (Tang, Xinghua); Yan, LS (Yan, Liushui)

来源出版物: JOURNAL OF PHYSICAL CHEMISTRY C 卷: 117 期: 41 页: 21483-21489 DOI: 10.1021/jp4074448 出版年: OCT 17 2013

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摘要: The electric field response of lead sulfide (PbS) quantum dots with near- infrared absorption of 1000-1600 nm (corresponding to diameters of 2-5 nm) embedded in a PMMA film has been systematically studied by using electric field modulation spectroscopy. For all PbS quantum dots samples, the electroabsorption spectra across the first and second exciton bands are similar in shape to the second derivative of the absorption spectra, indicating the enhancement of the electric dipole moment following the optical transition to these exciton bands. The analysis of the electroabsorption spectra shows that the dipole moments for both first and second exciton bands increase a little bit with increasing particle size. The quadratic field dependence is observed between the modulated absorption spectrum and the electric field of PbS quantum dots doped in a PMMA film.

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语种: English

文献类型: Article

KeyWords Plus: CDSE NANOCRYSTALS; OPTICAL-PROPERTIES; INFRARED-EMISSION; COLLOIDAL PBSE; ABSORPTION; EVOLUTION; STATE; WELLS

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7

标题: Analysis of Electron Recombination in Dye Sensitized Solar Cells Based on the Forward Bias Dependence of Dark Current and Electroluminescence Characterization

作者: Xiao, WB (Xiao Wen-Bo); Liu, WQ (Liu Wei-Qing); He, XD (He Xing-Dao)

来源出版物: CHINESE PHYSICS LETTERS 卷: 30 期: 10 文献号: 108801 DOI: 10.1088/0256-307X/30/10/108801 出版年: OCT 2013

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引用的参考文献数: 25

摘要: The current-voltage and electroluminescence characteristics of dye- sensitized solar cells (DSSCs) are investigated under forward dc bias in a dark environment at room temperature. The results show that the presence of dyes can play an important role in improving device performance, and also produce defects at the TiO2/dye/electrolyte interfaces, which dominate the electron-hole recombination process and become a limiting factor in obtaining high-efficiency DSSCs. The goodness of fit between measured and calculated data supports these conclusions.

入藏号: WOS:000326492900057

语种: English

文献类型: Article

KeyWords Plus: EQUIVALENT-CIRCUIT; EFFICIENCY; TRANSPORT; STATES

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8

标题: Porosity Formation Mechanism in Laser Spot Microwelding of Pt-Ir Alloy and 316L Stainless Steel Wires

作者: Huang, YD (Huang Yongde); He, P (He Peng); Lin, TS (Lin Tiesong); Feng, JC (Feng Jicai); Zhou, YN (Zhou, Y. Norman)

来源出版物: RARE METAL MATERIALS AND ENGINEERING 卷: 42 期: 10 页: 2079-2082 出版年: OCT 2013

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引用的参考文献数: 14

摘要: The porosity formation mechanism of the laser spot microwelded joints between Pt-Ir alloy and 316L stainless steel wires was investigated by characterizing the weld geometry, morphology and distribution of porosity in cross sections. The porosity is believed to be a result of preferential vaporization of stainless steel alloying elements spread into weld pool. Porosity is also attributed to low solubility of stainless steel alloying elements in weld pool due to its high temperature. In addition, the solidification process is speeded up by high heat conductivity of Pt-Ir alloy as well as characteristics of laser microwelding, and the porosity is formed.

入藏号: WOS:000326482000020

语种: Chinese

文献类型: Article

作者关键词: laser microwelding; porosity; formation mechanism; Pt-Ir alloy

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9

标题: Study on Physical Deviation Factors on Laser Induced Breakdown Spectroscopy Measurement

作者: Wan, X (Wan Xiong); Wang, P (Wang Peng); Wang, Q (Wang Qi); Zhang, Q (Zhang Qing); Zhang, ZM (Zhang Zhi-min); Zhang, HM (Zhang Hua-ming)

来源出版物: SPECTROSCOPY AND SPECTRAL ANALYSIS 卷: 33 期: 10 页: 2599-2602 DOI: 10.3964/j.issn.1000-0593(2013)10-2599-04 出版年: OCT 2013

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摘要: In order to eliminate the deviation between the measured LIBS spectral line and the standard LIBS spectral line, and improve the accuracy of elements measurement, a research of physical deviation factors in laser induced breakdown spectroscopy technology was proposed. Under the same experimental conditions, the relationship of ablated hole effect and spectral wavelength was tested, the Stark broadening data of Mg plasma laser induced breakdown spectroscopy with sampling time-delay from 1. 00 to 3. 00 mu s was also studied, thus the physical deviation influences such as ablated hole effect and Stark broadening could be obtained while collecting the spectrum. The results and the method of the research and analysis can also be applied to other laser induced breakdown spectroscopy experiment system, which is of great significance to improve the accuracy of LIBS elements measuring and is also important to the research on the optimum sampling time-delay of LIBS.

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语种: Chinese

文献类型: Article

作者关键词: Laser induced breakdown spectroscopy; Measurement deviation of physics; Stark broadening; Ablation hole effect

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10

标题: One-Step Solution Immersion Process to Fabricate Superhydrophobic Surfaces on Light Alloys

作者: Ou, JF (Ou, Junfei); Hu, WH (Hu, Weihua); Xue, MS (Xue, Mingshan); Wang, FJ (Wang, Fajun); Li, W (Li, Wen)

来源出版物: ACS APPLIED MATERIALS & INTERFACES 卷: 5 期: 20 页: 9867-9871 DOI: 10.1021/am402303j 出版年: OCT 2013

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摘要: A simple and universal one-step process bas been developed to render light alloys (including AZ91D Mg alloy, 5083 Al alloy, and TC4 Ti alloy) superhydrophobic by immersing the substrates in a solution containing low- surface-energy molecules of 1H,1H,2H,2H-perfluorooctyltrichlorosilane (PFOTS, 20 mu L), ethanol (10 mL), and H2O (10 mL for Al and Mg alloy)/H2O2 (15%, 10 mL for Ti alloy). Field-emission scanning electron microscopy, X-ray photoelectron spectroscopy, and water contact angle measurements have been performed to characterize the morphological features, chemical composition, and wettability of the surfaces, respectively. The results indicate that the treated light alloys are rough-structured and covered by PFOTS molecules; consequently, the surfaces show static contact angles higher than 150 degrees and sliding angles lower than 10 degrees. This research reveals that it is feasible to fabricate superhydrophobic surfaces (SHS) easily and effectively without involving the traditional two-step processes. Moreover, this one-step process may find potential application in the field of industrial preparation of SHS because of its simplicity and universality.

入藏号: WOS:000326212900001

语种: English

文献类型: Article

作者关键词: superhydrophobicity; light alloys; one-step process

KeyWords Plus: WETTABILITY; CONTACT

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11

标题: Superoleophobic Textured Copper Surfaces Fabricated by Chemical Etching/Oxidation and Surface Fluorination

作者: Ou, JF (Ou, Junfei); Hu, WH (Hu, Weihua); Liu, S (Liu, Sheng); Xue, MS (Xue, Mingshan); Wang, FJ (Wang, Fajun); Li, W (Li, Wen)

来源出版物: ACS APPLIED MATERIALS & INTERFACES 卷: 5 期: 20 页: 10035-10041 DOI: 10.1021/am402531m 出版年: OCT 2013

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摘要: We report a convenient route to fabricate superoleophobic surfaces (abridged as SOS) on copper substrate by combining a two-step surface texturing process (first, the substrate is immersed in an aqueous solution of HNO3 and cetyltrimethyl ammonium bromide, and then in an aqueous solution of NaOH and (NH4)(2)S2O8) and succeeding surface fluorination with 1H,1H,2H,2H- perfluorodecanethiol (PFDT) or 1-decanethiol. The surface morphologies and compositions were characterized by field emission scanning electron microscopy and X-ray diffraction, respectively. The results showed that spherical micro-pits (SMP) with diameter of 50-100 mu m were formed in the first step of surface texturing; in the second step, Cu(OH)(2) or/and CuO with structures of nanorods/microflowers/microballs were formed thereon. The surface wettability was further assessed by optical contact angle meter by using water (surface tension of 72.1 mN m(-1) at 20 degrees C), rapeseed oil (35.7 mN m(-1) at 20 degrees C), and hexadecane (25.7 mN m(-1) at 20 degrees C) as probe liquids. The results showed that, as the surface tension decreasing, stricter choosing of surface structures and surface chemistry are required to obtain SOS. Specifically, for hexadecane, which records the lowest surface tension, the ideal surface structures are a combination of densely distributed SMP and nanorods, and the surface chemistry should be tuned by grafted with low-surface-energy molecules of PFDT. Moreover, the stability of the so-fabricated sample was tested and the results showed that, under the testing conditions, superhydrophobicity and superoleophobicity may be deteriorated after wear/humidity resistance test. Such deterioration may be due to the loss of outermost PFDT layer or/and the destruction of the above-mentioned ideal surface structures. For UV and oxidation resistance, the sample remained stable for a period of 10 days.

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语种: English

文献类型: Article

作者关键词: copper; superoleophobicity; composite structures; stability

KeyWords Plus: SUPERHYDROPHOBIC SURFACES; ALKANETHIOLS; COATINGS; ALUMINUM; WATER; ZINC

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12

标题: Preparation and characterization of an electromagnetic material: The graphene nanosheet/polythiophene composite

作者: Zhao, J (Zhao, Jie); Xie, Y (Xie, Yu); Le, ZG (Le, Zhanggao); Yu, J (Yu, Jian); Gao, YH (Gao, Yunhua); Zhong, R (Zhong, Rong); Qin, YC (Qin, Yuancheng); Huang, Y (Huang, Yan)

来源出版物: SYNTHETIC METALS 卷: 181 页: 110-116 DOI: 10.1016/j.synthmet.2013.08.015 出版年: OCT 1 2013

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摘要: An electromagnetic material of the graphene nanosheet (GN)/polythiophene (PT) composite has been prepared by in situ chemical polymerization method. The structures of the as-prepared composites are characterized by the X-ray diffraction and the Fourier transform infrared. The morphologies have been analyzed by the scanning electron microscopy and the transmission electron microscopy. The electromagnetic properties have been tested by the four-probe conductivity tester and the vibrating sample magnetometer. The results show that the GN/PT composites with different mass ratio of GN to thiophene (Th) have the irregular-layered structures. When the mass ratio of GN to Th is 0.4, the magnetic saturation value of the composites achieves 15.33 emu/g, and the conductivity reaches 12.17 x 10(-3) S/cm. Based on the experimental results, a probable formation mechanism for the GN/PT composites has been proposed. Crown Copyright (C) 2013 Published by Elsevier B.V. All rights reserved.

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语种: English

文献类型: Article

作者关键词: Graphene; Polythiophene; Composites; Electromagnetic properties

KeyWords Plus: POLYTHIOPHENE NANOPARTICLES; FACILE SYNTHESIS; GRAPHITE OXIDE; NANOCOMPOSITES; ADSORPTION; NANOSHEETS

地址: [Zhao, Jie; Xie, Yu; Yu, Jian; Zhong, Rong; Qin, Yuancheng; Huang, Yan] Nanchang Hangkong Univ, Dept Chem Mat, Nanchang 330063, Peoples R China.

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13

标题: Autonomous seam acquisition and tracking system for multi-pass welding based on vision sensor

作者: Gu, WP (Gu, W. P.); Xiong, ZY (Xiong, Z. Y.); Wan, W (Wan, W.)

来源出版物: INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY 卷: 69 期: 1-4 页: 451-460 DOI: 10.1007/s00170-013-5034-6 出版年: OCT 2013

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摘要: Automatic welding technology is a solution to increase welding productivity and improve welding quality, especially in thick plate welding. In order to obtain high-quality multi-pass welds, it is necessary to maintain a stable welding bead in each pass. In the multi-pass welding, it is difficult to obtain a stable weld bead by using a traditional teaching and playback arc welding robot. To overcome these traditional limitations, an automatic welding tracking system of arc welding robot is proposed for multi-pass welding. The developed system includes an image acquisition module, an image processing module, a tracking control unit, and their software interfaces. The vision sensor, which includes a CCD camera, is mounted on the welding torch. In order to minimize the inevitable misalignment between the center line of welding seam and the welding torch for each welding pass, a robust algorithm of welding image processing is proposed, which was proved to be suitable for the root pass, filling passes, and the cap passes. In order to accurately track the welding seam, a Fuzzy-P controller is designed to control the arc welding robot to adjust the torch. The Microsoft Visual C++6.0 software is used to develop the application programs and user interface. The welding experiments are carried out to verify the validity of the multi-pass welding tracking system.

入藏号: WOS:000326112900040

语种: English

文献类型: Article

作者关键词: Multi-pass welding; Laser vision sensor; Image processing; Seam tracking

KeyWords Plus: FUZZY-LOGIC; FUSION

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来源出版物页码计数: 10

14

标题: Mechanically durable superhydrophobic surfaces prepared by abrading

作者: Wang, FJ (Wang, Fajun); Yu, S (Yu, Shan); Ou, JF (Ou, Junfei); Xue, MS (Xue, Mingshan); Li, W (Li, Wen)

来源出版物: JOURNAL OF APPLIED PHYSICS 卷: 114 期: 12 文献号: 124902 DOI: 10.1063/1.4822028 出版年: SEP 28 2013

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引用的参考文献数: 35

摘要: Superhydrophobic surfaces with both excellent mechanical durability and easy reparability based on polytetrafluoroethylene/room temperature vulcanized silicone rubber (PTFE/RTVSR) composites were prepared by a simple abrading method. The surface energy of RTVSR matrix decreased with the increasing volume fraction of PTFE particles, and the surface rough microstructures of the composites were created by abrading. A water droplet on the surface exhibited a contact angle of about 165 degrees +/- 3.4 degrees and a sliding angle of about 7.3 degrees +/- 1.9 degrees. Such superhydrophobic surfaces showed strong mechanical durability against sandpaper because the surfaces were prepared in the way of mechanical abrasion, and the fresh exposed surfaces were still superhydrophobic. In addition, the micro-structures on the elastic surface of the composite will be compressed by elastic deformation to avoid being broken during the friction cycles when cotton fabric was used as an abrasion surface. The deformation will rebound to renew the original surface structures when the load is withdrawn. Therefore, the elastic PTFE/RTVSR composites are of advantage to construct superhydrophobic surfaces with better abrasion resistance. More importantly, such superhydrophobicity can be repaired by a simple abrading regeneration process within a few minutes when the surface is damaged or polluted by organic contaminant. (C) 2013 AIP Publishing LLC.

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语种: English

文献类型: Article

KeyWords Plus: EASY-REPAIRABILITY; COATINGS; WETTABILITY; FABRICATION; RESISTANCE; ABRASION

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ISO 来源出版物缩写: J. Appl. Phys.

来源出版物页码计数: 6

15

标题: DELAY-INDUCED DYNAMICAL TRANSITIONS IN SINGLE HINDMARSH -ROSE SYSTEM

作者: Zheng, YG (Zheng, Y. G.)

来源出版物: INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS 卷: 23 期: 9 文献号: 1350150 DOI: 10.1142/S0218127413501502 出版年: SEP 2013

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摘要: The dynamical transitions resulting from time delay in single Hindmarsh- Rose system are investigated in the present paper. As the time delay varies, the change of the structure of slow manifold is first formulated by using the method of stability switch. Then, the delay-induced dynamical transitions are investigated through the analysis of geometric singular perturbation, and in several case studies, the mechanism of the dynamical transitions is illuminated. Numerical results demonstrate the validity of the theoretical results.

入藏号: WOS:000325770200007

语种: English

文献类型: Article

作者关键词: Hindmarsh-Rose model; time delay; stability switch; singular perturbation; slow manifold

KeyWords Plus: DIFFERENTIAL-EQUATIONS; NEURAL-NETWORKS; TIME- DELAY; MODEL; STABILITY; SLOW

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16

标题: Influences of strain on electronic structure and magnetic properties of CoFe2O4 from first-principles study

作者: Huang, YL (Huang You-Lin); Hou, YH (Hou Yu-Hua); Zhao, YJ (Zhao Yu-Jun); Liu, ZW (Liu Zhong-Wu); Zeng, DC (Zeng De-Chang); Ma, SC (Ma Sheng-Can)

来源出版物: ACTA PHYSICA SINICA 卷: 62 期: 16 文献号: 167502 DOI: 10.7498/aps.62.167502 出版年: AUG 2013

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摘要: Spinel ferrites, such as CoFe2O4, can be used in various fields such as computer technology, aerospace, and medical biotechnology due to their good electromagnetic properties. Although, CoFe2O4 thin films have good application prospects in the magnetoelectric composites, the effects of strain on the electronic structure and magnetic properties of cobalt ferrite film have not been reported. Through the use of two-dimensional strain model closer to the epitaxial growth experiments, the films of Cobalt ferrite are simulated on various substrates with a realistic biaxial strain model by first-principles plane-wave pseudopotential method based on density functional theory, and combined with the generalized gradient approximation in the paper. And the structural stabilities, electronic structures and magnetic properties of CoFe2O4 films are studied. The results show that the inverse spinel is still energetically favored under strain, but the energy difference decreases, thus Fe3+ ions in the tetrahedral sites and Co2+ ions in the octahedral sites are easier to exchange their positions. As the strain increases, the band gap of cobalt ferrite becomes narrower, and the magnetic moment of atom in the lattice changes, while the net magnetic moment changes little.

入藏号: WOS:000324867800060

语种: Chinese

文献类型: Article

作者关键词: spinel cobalt ferrite; first-principles; electronic structure; magnetic properties

KeyWords Plus: BRILLOUIN-ZONE INTEGRATIONS; TOTAL-ENERGY CALCULATIONS; AUGMENTED-WAVE METHOD; THIN-FILMS; EPITAXIAL- GROWTH; PHASE-TRANSITION; HIGH COERCIVITY; BASIS-SET; FERRITE; NANOSTRUCTURES

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17

标题: Generation of the self-similar parabolic pulses by designing comb-like profiled dispersion fiber based on alternately arranged single-mode fibers and dispersion-shifted fibers

作者: Jiang, GY (Jiang, Guang-yu); Fu, YJ (Fu, Yan-jun); Huang, Y (Huang, Yan); Chen, HT (Chen, Hai-tao)

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摘要: Based on the nonlinear Schrodinger equation and the linearly chirped parabolic pulse generation in the dispersion decreasing fiber with normal dispersion, a novel scheme for the generation of the self-similar parabolic pulse via a comb-like profiled dispersion fiber with normal group-velocity dispersion has been proposed and the corresponding model is established. We study, analytically and numerically, the evolution of the self-similar parabolic pulse in comb-like profiled dispersion fiber with dispersion profile close to that of the dispersion decreasing fiber, and the influence of different initial energies and pulse widths on the linearly chirped parabolic pulse formation in the comb-like profiled dispersion fiber. The results show that the evolution of the self-similar parabolic pulses can realized in the comb-like profiled dispersion fiber, the results of which are in good agreement with these of the dispersion decreasing fiber, and the best-matched scheme of designing and optimizing comb-like profiled dispersion fiber will help to obtain the ideal similaritons. (C) 2013 Elsevier GmbH. All rights reserved.

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语种: English

文献类型: Article

作者关键词: Nonlinear optics; Comb-like profiled dispersion fiber; Self-similarity

KeyWords Plus: DECREASING FIBER; SIMILAR PROPAGATION; OPTICAL- FIBERS; AMPLIFIERS

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**EI收录5篇，其中1、2为JA, 3~4为CA**

1.Accession number: 20134716994586

Title: Effect of mandrel on cross-section quality in numerical control bending process of stainless steel 2169 small diameter tube

Authors: Fang, Jun1, 2 ; Lu, Shiqiang2 ; Wang, Kelu2 ; Xu, Jianmei2 ; Xu, Xiaomei2 ; Yao, Zhengjun1

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Language: English

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Abstract: The tube numerical control (NC) bending process is a much complex physical process with multifactors coupling interactive effects. The mandrel is the key to improve forming quality and to enhance forming limit. In this study, based on the platform of ABAQUS/Explicit, a 3D elastic-plastic finite element model of NC bending process of 2169 (0Cr21Ni6Mn9N) stainless steel tube was established, key technological problems were solved, and its reliability was

validated. Then, simulation and analysis of the processes were carried out, and the influence laws of mandrel types and mandrel parameters on cross-section quality were obtained. The results show that the wall thinning or cross section deformation is serious at the middle part and small in the vicinity of the bending plane or initial bending plane; the wall thinning degree increases or the cross section deformation degree decreases with the increase of mandrel diameter or mandrel extension length; the effect of bulb mandrel on the cross section quality is more significant than that of cylinder mandrel. And the reasonable mandrel types and mandrel parameters are chosen for the 2169 high-pressure hydraulic tube with small diameter. The results may lead to better understanding of mandrel role in the improvement of forming quality and forming limit in the NC bending process. ? 2013 Jun Fang et al.

Number of references: 21

Main heading: Tubes (components)

Controlled terms: Bending (deformation) - Numerical control systems

Uncontrolled terms: Complex physical process - Cross-section deformation - Elastic-plastic finite element model - Interactive effect - Numerical control bending - Simulation and analysis - Small diameter tube - Stainless steel tube

Classification code: 421 Strength of Building Materials; Mechanical Properties - 616.1 Heat Exchange Equipment and Components - 731.1 Control Systems

DOI: 10.1155/2013/849495

Database: Compendex

2. Accession number: 20134316902444

Title: Fenchel duality based dictionary learning for restoration of noisy images

Authors: Wang, Shanshan1, 2 ; Xia, Yong3, 4 ; Liu, Qiegen5, 6 ; Dong, Pei7 ; Feng, David Dagan7, 8 ; Luo, Jianhua9

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Corresponding author: Wang, S. (sophiaw@it.usyd.edu.au)

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Publisher: Institute of Electrical and Electronics Engineers Inc., 445 Hoes Lane / P.O. Box 1331, Piscataway, NJ 08855-1331, United States

Abstract: Dictionary learning based sparse modeling has been increasingly recognized as providing high performance in the restoration of noisy images. Although a number of dictionary learning algorithms have been developed, most of them attack this learning problem in its primal form, with little effort being devoted to exploring the advantage of solving this problem in a dual space. In this paper, a novel Fenchel duality based dictionary learning (FD-DL) algorithm has been proposed for the restoration of noise-corrupted images. With the restricted attention to the additive white Gaussian noise, the sparse image representation is formulated as an \ell-{2}\hbox{-}\ell1 minimization problem, whose dual formulation is constructed using a generalization of Fenchel's duality theorem and solved under the augmented Lagrangian framework. The proposed algorithm has been compared with four state-of-the-art algorithms, including the local pixel grouping-principal component analysis, method of optimal directions, K-singular value decomposition, and beta process factor analysis, on grayscale natural images. Our results demonstrate that the FD-DL algorithm can effectively improve the image quality and its noisy image restoration ability is comparable or even superior to the abilities of the other four widely-used algorithms. ? 2013 IEEE.

Number of references: 48

Main heading: Problem solving

Controlled terms: Algorithms - Finite difference method - Image reconstruction - Lagrange multipliers - Principal component analysis - Restoration

Uncontrolled terms: Additive White Gaussian noise - Augmented Lagrangians - Conjugate gradient descents - Dictionary learning - Dictionary learning algorithms - Fenchel duality - Method of optimal directions - Sparse image representations

Classification code: 402 Buildings and Towers - 409 Civil Engineering, General - 741 Light, Optics and Optical Devices - 921 Mathematics - 921.6

Numerical Methods - 922.2 Mathematical Statistics

DOI: 10.1109/TIP.2013.2282900

Database: Compendex

非我校文章

3.Accession number: 20134416911076

Title: Grain refinement of superalloy K4169 with low-voltage pulsed magnetic field treatment

Authors: Xie, Xiao Hua1 ; Chen, Le Ping1 ; Xiao, Cheng Bo2 ; Tang, Xin2

Author affiliation: 1 School of Aeronautical Manufacturing Engineering, Nanchang Hangkong University, Nanchang 330063, China

2 Science and Technology on Advanced High Temperature Structure Materials Laboratory, Beijing Institute of Aeronautical Material, China

Source title: Advanced Materials Research

Abbreviated source title: Adv. Mater. Res.

Volume: 821-822

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Pages: 877-882

Language: English

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Conference name: 3rd International Conference on Textile Engineering and Materials, ICTEM2013

Conference date: August 24, 2013 - August 25, 2013

Conference location: Dalian, China

Conference code: 100396

Publisher: Trans Tech Publications Ltd, Kreuzstrasse 10, Zurich-Durnten, CH-8635, Switzerland

Abstract: The influences of different pouring temperature and mold temperature on solidified structure of superalloy K4169 under low-voltage pulsed magnetic field (LVPMF) were investigated in the paper. The experimental results show that solidified structure of superalloy K4169 under LVPMF can be refined greatly with appropriate cooling rate of the alloy. The dendrite growth is restrained and the microstructure is changed from larger dendrite grains to smaller equiaxed grains. When the pouring temperature is at 1380 °C-1530 °C or the mold temperature is at 1000 °C-1300 °C, the increase of pouring temperature or mold temperature enhances the refinement effect of LVPMF processing. With the increase of the pouring temperature or the mold temperature, average grain size of the alloy decreases and the primary phase degrades from developed dendrites into equiaxed crystals under the LVPMF. ? (2013) Trans Tech Publications, Switzerland.

Number of references: 10

Main heading: Superalloys

Controlled terms: Grain refinement - Grain size and shape - Magnetic fields - Molds - Textiles - Textures

Uncontrolled terms: Average grain size - Mold temperatures - Pouring temperatures - Pulsed magnetic field treatment - Pulsed magnetic fields - Refinement effects - Solidified structures - Superalloy K4169

Classification code: 531 Metallurgy and Metallography - 531.2 Metallography - 701.2 Magnetism: Basic Concepts and Phenomena - 816.2 Plants and Machinery for Plastics and Other Polymers - 819 Synthetic and Natural Fibers; Textile Technology - 933 Solid State Physics

DOI: 10.4028/www.scientific.net/AMR.821-822.877

Database: Compendex

4. Accession number: 20134416915155

Title: Effect of low-voltage pulsed magnetic field on solidified structure of superalloy K4169

Authors: Xie, Xiao Hua1 ; Zhou, Quan1 ; Xiao, Cheng Bo2 ; Tang, Xin2

Author affiliation: 1 School of Aeronautical Manufacturing Engineering, Nanchang Hangkong University, Nanchang 330063, China

2 Science and Technology on Advanced High Temperature Structure Materials Laboratory, Beijing Institute of Aeronautical Material, China

Source title: Applied Mechanics and Materials

Abbreviated source title: Appl. Mech. Mater.

Volume: 423-426

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Issue date: 2013

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Conference name: 3rd International Conference on Applied Mechanics, Materials and Manufacturing, ICAMMM 2013

Conference date: August 24, 2013 - August 25, 2013

Conference location: Dalian, China

Conference code: 100385

Publisher: Trans Tech Publications Ltd, Kreuzstrasse 10, Zurich-Durnten, CH-8635, Switzerland

Abstract: Effects of different pulse voltage and frequency on solidified structure of superalloy K4169 under low-voltage pulsed magnetic field (LVPMF) were investigated in this paper, and the related mechanism was also discussed. The experimental results show that grain of superalloy K4169 can be refined greatly by LVPMF treatment during the course of solidification. Growth of dendrite is restrained and primary grain is changed from large dendrites to smaller equiaxed grains. When the pulse voltage is at 0-280V, grain size of the alloy decreases as pulse voltage increases, and primary dendrites are fractured from well-developed dendrites into fine equiaxed grains and non-dendritic structures. When the pulse frequency is at 0-5Hz, the increase of pulse frequency enhances the refinement effect of LVPMF processing. With the increase of the pulse frequency, grain size of the alloy increases. ? (2013) Trans Tech Publications, Switzerland.

Number of references: 10

Main heading: Superalloys Controlled terms: Grain growth - Grain size and shape - Magnetic fields - Manufacture - Textures

Uncontrolled terms: Fine equiaxed grains - Non-dendritic structure - Primary dendrite - Pulse frequencies - Pulsed magnetic fields - Refinement effects - Solidified structures - Superalloy K4169

Classification code: 531 Metallurgy and Metallography - 531.2 Metallography - 537.1 Heat Treatment Processes - 701.2 Magnetism: Basic Concepts and Phenomena - 933 Solid State Physics

DOI: 10.4028/www.scientific.net/AMM.423-426.725

Database: Compendex

5. Accession number: 20134516955129

Title: Hot deformation behavior and processing map of aluminum alloy 2D70

Authors: Liu, Da-Bo1 ; Yang, Shou-Jie1 ; Wang, Ke-Lu2 ; Dong, Xian-Juan2

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2 School of Aeronautical Manufacturing Engineering, Nanchang Hangkong University, Nanchang 330063, China

Corresponding author: Liu, D.-B. (liudabo1969@126.com)

Source title: Zhongguo Youse Jinshu Xuebao/Chinese Journal of Nonferrous Metals

Abbreviated source title: Zhongguo Youse Jinshu Xuebao

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Issue: 8

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Document type: Journal article (JA)

Publisher: Central South University of Technology, Hunan, Changsha, 410083, China

Abstract: The isothermal compression tests with constant strain rate for aluminum alloy 2D70 were conducted by THERMECMASTOR-Z hot simulator. The hot deformation behaviors in the temperature range of 320-530°C and the strain rate range of 0.001-70.0 s-1 were investigated. Then, the processing maps under these deformation conditions were constructed and the deformation thermomechanical parameters were then optimized based on the generated processing maps. The results show that the flow instability zone increases with true strain increasing during the hot deformation process. Otherwise, when the strain rate is higher than 1.0 s-1, most of the deformation behavior is located at the flow instable zone. Under this condition, the domain of flow localization appears at the temperature lower than 350°C and mechanical instability exhibits at the temperature higher than 500°C. While, when the strain rate is lower than 0.1 s-1 and the temperature is lower than 350°C, the wedge cracking can be found. On the base of the experimental results including processing map and microstructure, the optimum deformation thermomechanical parameter ranges of aluminum alloy 2D70 can be confirmed to the temperature range of 370-460°C and the strain rate range of 0.004-0.1 s-1.

Number of references: 20

Main heading: Hot working

Controlled terms: Compression testing - Deformation - Microstructure - Strain rate

Uncontrolled terms: Constant strain rate - Deformation conditions - Hot deformation behaviors - Hot deformation process - Isothermal compression tests - Mechanical instabilities - Processing maps - Thermo-mechanical parameters Classification code: 421 Strength of Building Materials; Mechanical Properties - 422 Strength of Building Materials; Test Equipment and Methods - 535.2 Metal Forming - 933 Solid State Physics - 943 Mechanical and Miscellaneous Measuring Instruments - 951 Materials Science

Database: Compendex 非第一单位

**CPCI收录3篇**

1

标题: Hydrothermal synthesis, characterization and optical properties of Zn-doped CdS dendritic nanostructures

作者: Feng, H (Feng, Hao); Duan, JH (Duan, Junhong); Xu, ZY (Xu, Zhenya)

编者: Liu X; Zhang K; Li M

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摘要: Zn-doped CdS dendritic nanostructures were prepared by a simple hydrothermal method. The product displays single-crystalline characteristic. The dendritic crystal is formed by growing along several equivalent directions ([2 (1) over bar(1) over bar0],[(1) over bar(1) over bar 20] and [(1) over bar2 (1) over bar0]). Due to doping Zn, the CdS dendritic nanostructures present some beneficial properties and are promising candidates for future applications in optoelectronic nanodevices.

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文献类型: Proceedings Paper

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会议赞助商 : NE Univ, Harbin Inst Technol, Jilin Univ

作者关键词: Zn-doped CdS; dendritic nanostructures; growth; optical properties

KeyWords Plus: NANOWIRES; ARRAYS

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2

标题: Design of Amplitude Transformer for Ultrasonic Vibration Milling System Based on ABAQUS

作者: Gao, YF (Gao Yanfeng); Wang, SQ (Wang Shunqin); Lu, D (Lu Dong)

编者: Liu X; Zhang K; Li M

来源出版物: ADVANCES IN MANUFACTURING SCIENCE AND ENGINEERING, PTS 1-4 丛书: Advanced Materials Research 卷: 712-715 页: 1226-1229 DOI: 10.4028/www.scientific.net/AMR.712-715.1226 出版年: 2013

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被引频次合计: 0

引用的参考文献数: 6

摘要: Amplitude transformer is an important part of the ultrasonic vibration milling system. In this paper, a conical amplitude transformer is designed by the analytic method preliminarily firstly. Then its vibration modal is analyzed based on the finite element software ABAQUS in order to find the natural frequency of the amplitude transformer. At last the dimensions of the amplitude transformer with tools are modified through finite element method, so that an optimal vibration frequency is found, which makes sure that the amplitude transformer in the work vibration in longitudinal reliably.

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文献类型: Proceedings Paper

会议名称: 4th International Conference on Manufacturing Science and Engineering (ICMSE 2013)

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作者关键词: Ultrasonic vibration; Amplitude transformer; Modal analysis

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3

标题: Value analysis on inventory information sharing in supply chain

作者: Zhou, LX (Zhou, Lixia); Li, TJ (Li, Taijie); Li, SY (Li, Shiyu)

编者: Liu X; Zhang K; Li M

来源出版物: ADVANCES IN MANUFACTURING SCIENCE AND ENGINEERING, PTS 1-4 丛书: Advanced Materials Research 卷: 712-715 页: 3063-3066 DOI: 10.4028/www.scientific.net/AMR.712-715.3063 出版年: 2013

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摘要: This paper attempts to illustrate the benefits of supply chain partnerships with information sharing, especially with the inventory information sharing. Based on a two-stage supply chain comprising a retailer and a manufacturer, quantitative analysis have been performed to explore supply chain members' optimal inventory control policies, specifically, both the retailer and the manufacturer can obtain performance improvement in terms of inventory cost with the inventory information sharing.

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会议赞助商 : NE Univ, Harbin Inst Technol, Jilin Univ

作者关键词: Supply chain; inventory information sharing; total cost

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