

Table of Contents

Preface and Sponsors

Nano-Materials and Technology

A Study on Characteristics of TiH₂-Al-Nb Alloyed Powder During High Energy Ball Milling H. Chen, T.Y. Zhang, X.Y. Lu, S.Q. Jia and Z.L. Chai	1
Carbon Nanofibers Preparation Using Carbon Monoxide from the V-Type Pyrolysis Flame Y.C. Liu and B.M. Sun	6
Controlled Growth and Supercapacitive Behaviors of CVD Carbon Nanotube Arrays D.D. Zhao, Z. Yang, H. Wei and Y.F. Zhang	11
Controlled Hydrothermal Growth of CuO-Based Nanostructures from Copper Alginate B.B. Wang, Q.S. Kong, J.P. Sun, Q.F. Yu, Q. Ji and Y.Z. Xia	19
Controlled Morphology of One-Dimensional Manganese Dioxide with Dramatic Enhancing Removal Efficiency to Heavy Metal Ions in Aqueous Solution X.F. Ma, M.J. Gao, X.C. He and G. Li	23
Controlled Synthesis of Mn₃O₄ and MnOOH by a Hydrothermal Method and Their Electrochemical Behaviors Z.C. Zhou, S.T. Xing, Z.C. Ma and Y.S. Wu	31
Detection Trace Copper by Carbon Nanotube Chemically Modified Electrode via Flame Synthesis Q. Jiang, R. Yang, Z.W. He, B. Huang and Y. Zhao	37
Development of a Polyurethane Nanocomposite Reinforced with Carbon Nanotube Composite Nanofibers Z.J. Chang	41
Kinetics-Controllable Hetero-Precipitation Process on the Nanoscale Solid-Liquid Interface of Spherical Particles X.F. Wu, Y.C. Liao, R.L. Yue and Y.F. Chen	45
Effect of Modification by WTP-08 on Dispersity of Nanosized CalciumCarbonate and Its Mechanism H. Ding, B.K. Wang, N. Liang and K. Liu	51
Effects of Annealing on Microstructure and Mechanical Properties of Bulk Nanocrystalline Fe₃Al Based Alloy Prepared by Aluminothermic Reaction P.Q. La, X.F. Lu, Y. Yang, Y.P. Bai and Y.P. Wei	57
Effects of Deformation and Aging on Microstructure and Performances of CuSn₁₀Zn₂FeCo Alloy by Centrifugal Casting Z.Q. Feng, Z.D. Wang, Q.S. Wang, H. Zhang, C.X. Lu and D.W. Zhang	62
Electron Beam Curing of Epoxide Modified MWNTs/Epoxy Composites Y.Y. Lu, H. Li and H.Z. Liu	69
Electrospun Europium Complex/Polymer Composite Microfibers and Its Modified Photoluminescence Properties H.X. Yin, Y.Z. Long, F. Yu, S.J. Zhao and X.L. She	74
Fabrication and Characterization of Fullerene / Dibenzo-Tetrathiafulvalene Solar Cells A. Suzuki, K. Yano and T. Oku	80
Long Si₃N₄ Nanowires Fabricated by PECVD J.W. Song and X.Y. Ma	85
Fabrication and Optical Properties of Nb₂O₅ Inverse Opal Photonic Crystals by PS Opal Template Y.Q. Yang, P.D. Han, Y.P. Li, M.H. Dong, L.L. Zhang, H.H. Guan, C.L. Zhang and B.S. Xu	90
Fabrication of Self-Assembled Three-Dimensional Fibrous Stackings by Electrospinning M.M. Li and Y.Z. Long	95
Fabrication of Surface Energy Gradients Using Self-Assembled Monolayer Surfaces Prepared by Photodegradation C.S. Liu, D.M. Zheng, J.G. Zhou, Y. Wan and Z.W. Li	102

Facile Controlled Synthesis of Manganese Oxide Hierarchical Microspheres by Hydrothermal Method D.Y. Li and Y.F. Chen	107
Flame Synthesis of Carbon Nanotubes and Nanocapsules Z.Y. Ding, B.M. Sun, B. Jia and X.L. Ding	116
Synthesis Mechanism of Flame Synthesized Deformity Carbon Nanotubes Z.Y. Ding, B.M. Sun, Y.H. Guo, B. Jia and X.L. Ding	122
Functionalization of Multiwalled Carbon Nanotubes by Poly (Ethylene Glycol) and Non-Isothermal Crystallization Kinetic Study S. Gao, K.Y. Sui, Z.M. Wu, W.W. Wu and Y.Z. Xia	127
Germanium Dioxide Nanocubes with Different Size Distributions and Its Gibbs Free Energy Theory H. Wang, Y. Tao, G.Q. Zhang, Y.P. Xia, F.H. Gong, H.P. Wu and G.L. Tao	135
Growth of Carbon Nanotubes in Calcium Phosphate Matrix with Different Ca/P Molar Ratio X.Y. Lu, T. Qiu, J.Y. Liu, B.H. Wu and J. Weng	141
Magnetic-Field-Assisted Hydrothermal Growth of Manganese Dioxide Nanostructures and their Phase Transformation Y.M. Hu, M.Y. Zhu, Y. Li, H.M. Jin and Z.Z. Zhu	148
Mg(OH)₂ Crystals Synthesized by CHM Method L.H. Cao, S.H. Zhi and N.H. Wang	153
Microstructure and Mechanical Properties of SiC/Al Nanocomposite W.L. Gu, M. Sun, X.G. Wang, W.B. Sheng and G.M. Zhu	158
Monodispersed Protein Stabilized Silver Nanoprisms: Synthesis, Optical Properties and Surface-Enhanced Raman Scattering Application D.H. Zhang, X.H. Liu and X. Wang	162
Morphological Control of Calcium Carbonate Particles by a Novel Polymer-Surfactant Aggregate H. Tang, X.F. Yang, Q. Wu, C.S. Li and X. Yan	168
Nano-Montmorillonite/SBS Composite Modified Asphalt: Preparation and Aging Property X.D. Tang, X.L. Kong, Z.G. He and J. Li	175
Non—Isothermal Differential Scanning Calorimetry Studies on Nanocrystallization Kinetics of Fe₈₁Si_{3.5}B_{13.5}C₂ Amorphous Alloy Y. Zhang, W. Lu, B. Yan, Y.X. Wang and Y. Yang	180
Oxygen Plasma Induced ZnO-CuO Nanostructure Growth on a Brass Substrate by Atmospheric-Pressure Plasma Jet H.L. Chen, Z.C. Liou and S.J. Lin	186
Performance Evaluation of Nano-Montmorillonite/SBS Modified Asphalt Paving Mixtures X.D. Tang, X.L. Kong, F. Huang and J. Li	191
Phase and Shape Evolution of CdS Nanocrystallites under Solvothermal Conditions G. Xu, Y.F. Zhang, Y.G. Zhao, Q.Q. Wang and G.R. Han	195
Phase Diagram of MgCl₂-LiCl-Na₂-SiO₃-H₂O System at 200°C and Synthesis of Hectorite X.J. Yin, Y.Z. Jia, Y. Jing, Y. Yao and J. Ma	201
Polar and Nonpolar ZnO Nanowire QWs Grown with PLD Using Nanowire Arrays with Tuning Density as Physical Templates B.Q. Cao, H.M. Wei, X.L. Hu and H.B. Gong	207
Preparation and Aging Property of Nannocomposite CaCO₃/SBS Modified Asphalts X.D. Tang, Z.G. He, X.K. Man and D.Y. Zhang	213
Fabrication and Characterization of Ni-TiO₂ Nanocomposite Coatings and Their Corrosion Resistance Behaviors J.J. Hao, Y.A. Bai, C.R. Wang and X.Y. Liu	217
Preparation and Characterization of Core-Shell γ-Fe₂O₃@SiO₂@ Al₂O₃ Magnetic Catalyst L.Q. Yu, X.L. Zhong, Y.P. Zhang and C.G. Liu	223
Preparation and Characterization of Graphene Oxide-ZnO Nanocomposites W.B. Zou, J.W. Zhu and X. Wang	228
Preparation and Characterization of MWCNTs/FSiPUA Hybrid Film M. Miao, Y.H. Qi, Z.P. Zhang and Z. Zhang	233

Preparation and Characterization of the Decarbonization Preventing Nano-Coating Applied in Spring Steel Protection	
X.J. Wang, S.F. Ye, H.W. Xu, L.Q. Wei, X. Zhou and Y.F. Chen	238
Preparation of Carbon-Encapsulated Fe Core-Shell Nanostructures by Confined Arc Plasma	
Z.Q. Wei, X.Y. Wang and H. Yang	245
Production of Helical Polymer Microfibers by Electrospinning	
C.C. Tang, Y.Z. Long and J.C. Chen	250
Rapid Detection of Copper by the Carbon Nanotube Chemically Modified Electrode	
R. Yang, Q. Jiang, P. Liu, Q. Chen, Y.J. Wang and Y. Zhao	255
Research on Properties of Ca-Co-O Thermoelectric Material with Adding Sm	
J.C. Mu, X.T. Wei and L.P. Zhang	260
Thermophysical Properties of Al₂O₃-Water Nanofluids	
B.J. Zhu, W.L. Zhao, J.K. Li, Y.X. Guan and D.D. Li	266
Sputtering Phenomena of ZnS Nanomaterial by Impacting of High-Energy Electron in a Transmission Electron Microscope	
K.J. Zhang, H.Y. Zhou and X.H. Liu	272
Au Nanowires Encapsulated in Carbon Nanotubes: Structure, Melting and Mechanical Properties	
Y.X. Wang, Z.Y. Pan, B.E. Zhu, Y. Xiao and S.H. Guo	277
Study of CO₂ Capture Using Triethanolamine-Modified Mesoporous Silica	
H.L. Zhang	286
Surface Nanostructure of Annealed 40Cr Steel by Supersonic Particles Bombarding Treatment	
Y.L. Liu and T.Y. Xiong	291
Syntheses, Structure, and Properties of the Dimer Cu(DMAP)₄(ClO₄)₂ (DMAP = 4-N, N-Dimethylaminopyridine)	
L. Wang and D.P. Sun	296
Synthesis and Cathodoluminescence of CdS Nanowires	
X.D. Hu and H.Q. Zhang	301
Synthesis and Electrochemical Performances of Electroactive Nano Layered Organic-Inorganic Perovskite Containing Trivalent Iron Ion	
J. Wu, X. Zhou, H.X. Liu, Z.D. Lin and G.F. Chen	307
Synthesis of Crystalline ZnSe Nanowires by Pulsed Laser Deposition for Application in Polymer-Inorganic Solar Cells	
J.S. Lai, L. Chen, X.N. Fu, J. Sun, Z.F. Ying, J.D. Wu and N. Xu	314
Synthesis of Gold Nanoparticle/Silica Nanostructures	
J.S. Jan, P.J. Chen and Y.H. Ho	321
Synthesis, Characterization and Capacitive Behaviors of Nanoporous Carbons Obtained by Using the Template of Zeolite-13X/MCM-48 Biporous Molecular Sieve	
H. Xu and Q.M. Gao	326
Template-Free Synthesis and Properties of Polyaniline Nanostructures Doped with Different Oxidants	
H. Yang, Y.Z. Long and H.J. Ding	334
Thermophysical Performances of Al₂O₃-Water Nanofluids and Its Heat Transfer Enhancement in Heat Pipe	
D.D. Li, W.L. Zhao, J.K. Li, Y.X. Guan and Z.M. Liu	339
White-Light-Emitting Phosphate Phosphors of SrZn₂(PO₄)₂: Eu²⁺, Mn²⁺ Synthesized through Combustion Process	
X.S. Yan, W.W. Li and K. Sun	344
Magnetic Materials at Nano-Scale	
A Facile Preparation of Carbon-Supported Nanoscale Zero-Valent Iron Fibers	
Q.S. Kong, C.X. Guo, B.B. Wang, Q. Ji and Y.Z. Xia	349
Effects of Two-Step Annealing on the Magnetic Properties of Iron-Based Nanocrystalline Soft Magnetic Material	
Q. Song and S.Q. Qin	353

Microstructure and Magnetic Properties of the CoPtRu-SiO₂ Single and CoPtRu-SiO₂/Co₇₂Pt₂₈-SiO₂ Double Layer Nanocomposite Films R.J. Tang, W.L. Zhang and Y.R. Li	358
Synthesis and Characterization of Co²⁺-Doped Fe₃O₄ Nanoparticles by the Solvothermal Method X.J. Sun, F.T. Liu and Q.H. Jiang	364
Synthesis and Characterization of Core-Shell Structured Bimagnetic Cobalt-Coated Iron Nanoparticles K.P. Su, Z.W. Liu, X.X. Shan, Z.G. Zheng, X.C. Zhong, H.Y. Yu and D.C. Zeng	370
Synthesis of Fe₃O₄ Nanocrystals and Application in Photocatalytic Degradation of Levofloxacin Lactate X.D. Hu, H.Q. Zhang and D.M. Cao	376
Effect of Pulsed Magnetic Field Treatment on the Magnetic Properties of the Fe-Nd-Al-B Alloys Prepared by Suction Casting Q. Bai, H. Man, Y.J. Tang, H. Xu and S. Xia	383
A Fe-Based Amorphous Composite Coating on Al Plate by Electrothermal Explosion Spraying Y.T. Wang, W.Q. Hu and Z.D. Liu	389
Binary Ni-Ta Bulk Metallic Glasses Designed by Using a Cluster-Plus-Glue-Atom Model J.B. Qiang, L. Yuan, Q. Wang, Y.M. Wang, C. Dong, W. Zhang and A. Inoue	395
Effect of Minor Si and Ag Additions on Glass-Forming Ability of Ti-Cu-Co-Zr-Sn-Be Bulk Metallic Glass X.F. Zhang, H.X. Li, Z.Q. Jiang and S.H. Yi	400
The Microalloying Effects in Cu-Based Bulk Metallic Glasses L.J. Yue, J.S. Han and K. Xie	407
Influence of the Melting Temperature on the Fabrication of a Ti-Cu-Zr-Ni-Sn Bulk Metallic Glass K.F. Xie, K.F. Yao and T.Y. Huang	413
Microstructural Characteristics and Mechanical Behaviors of AlCoCrFeNi High-Entropy Alloys at Ambient and Cryogenic Temperatures J.W. Qiao, S.G. Ma, E.W. Huang, C.P. Chuang, P.K. Liaw and Y. Zhang	419
Rare Earth Elements on Glass-Forming Ability and Thermal Stability of Cu-Zr-Al Metallic Glass Y.F. Wang, L. Li, C. Sun, Q.L. Lu and Z.Q. Shi	426
The Nanocrystal and Its Thermal Stability in Ti₄₀Zr₂₅Ni₈Cu₉Be₁₈ Metallic Glass during Homogeneous Deformation X. Zhou, H.C. Kou, J. Wang, Y. Li, J.S. Li and L. Zhou	431