

Table of Contents

Preface and Committees

Chapter 1: Composites, Materials Engineering and Technologies

The Micro-Analysis about the Morphology and Characteristics of the Ball Mill Slag Powder T. Ye, P. Jia and B. Jiang	3
The Research of Hydrophilic Modification of PVC/PES Blended Membrane by the Additive of CA S.H. Jiang, J. Wu, H.Z. Zhou, C.W. Jiang and J. Wang	8
High Speed Extrusion Rheological Behavior Analysis of Marine ABS/PC Alloy Y. Liu, W.L. Yao and X.Q. Li	14
First-Principle Studies on the Stability of AlN(0001)/NbB₂(0001) Interface H. Zhao, K.Y. Liu and Q. Han	18
Mechanical Properties and Toughening Mechanisms of Multi-Walled Carbon Nanotube Reinforced Yttria-Stabilized Zirconia Composite L. Zhang, W.W. Liu and Y. Chen	24
Energetic Studies on the B Effect on the Oxidation of γ-TiAl Alloys G.Y. Zhang, G.L. Liu, J.S. Bao, C.M. Liu and H. Zhang	28
Carbon Fiber Reinforced SiC Matrix Composites Fabricated by Preceramic Impregnation and Pyrolysis Process Combining SiC Nano Powder Infiltration J.J. Wang, W.S. Lin, L.H. Duan and X.Z. Yan	34
Fabrication of TiB₂/TiC Duplex Particles Reinforced Carbon Steel Matrix Surface Composite C.Q. Guo, X.Y. Hua and J.W. Han	40
Static Recrystallization and Texture Evolution of 316L Stainless Steel Fibers H.O. Yu, Y. Wang, Y. Liu and H.P. Tang	45
Research in an Original Si-Mn-Mo-Nb 800MPa Dual Phase Steel with Low Carbon H. Wang, K.H. Hu, C.J. Lin, L.B. Pan and Z.C. Ye	51
Effect of Copper Content on Mechanical Properties of Short Carbon Fiber Reinforced ZrC Matrix Composites Y. Cheng, X.J. Su, G.L. Hou, Z.L. Shi, C.R. Zhong and Y.K. Xing	55
Study on the Brush Plating Technology of Super-Strength Duralumin C.C. Zhu and B.X. Guo	61
Polyurethane Nanocomposite Films by Using Cellulose Nanospheres as Green Nanofillers Z.G. Ni, Z.J. Dou, T. Lin, M. Cheng and Z.Y. Qin	65
Performance Improvement of Hydrogen Peroxide Sensor via Cadmium Doped Nickel Oxide Modifying N-Silicon Electrode H.X. Li, C.Y. Shen, Q. Wu and W.S. Xia	69
A Novel Method for Co-Simulating 1-3 Piezocomposite Performance M.T. Cui and Y.X. Duan	73
Different Carbon Nanotube Content and Dispersant on the Preparation of Fe₃O₄ / CNTs Y. Cheng, K.N. Sun and A.M. Li	79
Three-Dimensional Simulation of Nano-Composite Ceramic Tool Materials S. Hao and C.Z. Huang	86
Temperature Influences on Preparation and Tribological Characteristics of Electrostatically Sprayed PTFE/PEEK Composite Coatings J.Q. Zhang, E.Y. Ming and C.H. Zhang	91
Study on Preventing Springback for Nanoporous Thermal Insulating Composites J.P. Feng, Q. Huang and X. Feng	97
The Preparation and Research of the Electroless Plating Rare Earth Alloys X.L. Qin, L.J. He, Y.L. Wang, K. Wang, M.M. Gao, Y. Zhang, X.K. Yang, Q. Chen, W.H. Dong and L. Zhang	101

Two-Step Annealing for Solution-Based Metal Induced Crystallization of Amorphous Silicon Films J. Jin, X.L. Qu and W.M. Shi	109
Influence of WC Content on Microstructure and Wear Resistance of (Cu-50Mo)-WC Composites X.L. Cheng and B.H. Tian	115
Effect of TiC Content on the Microstructure and Wear Resistance of (Cu/50W)-TiC Composite Prepared by Spark Plasma Sintering T. Yin, B.H. Tian, Y. Zhang and Y. Liu	120

Chapter 2: Functional Materials

The Study of Electromagnetic Steel Sheet High Cycle Fatigue Properties M.H. Ho, P.K. Lee, P.N. Wang, C.Y. Chang and P.C. Shen	127
Stiffness and Damping Characteristics of a Wide Parabolic Film Slider Bearing Operating with Ferrofluids J.R. Lin	132
Temperature Influence on the Viscoelastic Electromechanical Deformation of Dielectric Elastomer J.J. Sheng, Y.Q. Zhang, S.Y. Li and H.L. Chen	137
Dielectric Strength of Flame-Retardant Reinforced Polyamides at High Temperature M. Rapeaux	143
A 1D Analysis of Nano Multiferroic Composites for the Novel Read Head Technology S. Choowitsakunlert, T. Satitchantrakul and R. Silapunt	149
First-Principle Study on Half-Metallic Ferromagnetism and Structural Stability of C-Doped Alkaline-Earth Chalcogenides under Pressure H. Zhao and Q. Han	155
Stability and Microstructure Characterization of Barrierless Cu (Sn, C) Films X.N. Li, L.J. Jin, L.R. Zhao and C. Dong	163
Study on Synthesis Technology of Dibutyl Phosphate Z.G. Nie, Y.F. Hu, Q. Xu and J.M. Hu	169
Study on Preparation and Application of High Performance Complex Alloy Coating Material Covering Plastic Matrix M.M. Li	173

Chapter 3: Luminescent and Optical Materials

Influence of the Surfaces Characteristics on the Luminescent Property of Porous Silicon Y.L. Ding, Y. Zhao, Y. Feng, X.Y. Liang, L.J. Wang, J.H. Min and W.M. Shi	181
A Facile Synthesis and Optical Properties of Novel 2-substituted-5-naphthylmethylene Thiadiazole Derivatives T.F. Tan, Y.X. Li, L.G. Bai, B.P. Wu, H.Y. Guo and Z.C. Suo	188
Well-Defined LaBO₃:Tb³⁺ Hierarchical Architectures: Facile Synthesis and Luminescence Properties G. Jia, J.Y. Liu, D.B. Dong and C.M. Zhang	193
Template-Directed Synthesis and Upconversion Luminescence of Y₂O₃ Hollow Spheres C.M. Zhang, J.Y. Wang, Y.M. Liu and G. Jia	198
VUV-Photoluminescence Properties of (Gd, La)₂O₂CO₃: Eu³⁺ Z.L. Wang, S.Q. Wang, N. Yao and X.M. Wei	203
Crystal Structure, Optical Properties of Molecular Crystals 1, 3-propanediol Bis(4-aminobenzoate) R.T. Xue, W.S. Sun and S.R. Yu	207

Chapter 4: Polymer Materials Science

Glucose Molecularly Imprinted Electrochemical Sensor Based on Chitosan and Nickel Oxide Electrode	
H.X. Li, W. Yao, Q. Wu and W.S. Xia	215
Effects of Compatibilizer on the Properties of Polyoxymethylene/Acrylonitrile-Butadiene-Styrene Blends	
S. Wacharawichanant, P. Amorncharoen and R. Wannasirichoke	220
Study on the Effect of Sodium Polyacrylate and its Compounds on Artificial Warm Fog Dissipation	
T.L. Song, X.H. Xing, Y. Yang, X.D. Li and R.J. Yang	226
Structural Characterization of Natural Rubber Recent Research Advancements	
L.M. Wu, S.Q. Liao, P. Qu, R.J. Zhou and B.X. Wang	231
Research on Performance of Polyimide <i>In Situ</i> Modification Anionic Polymerization Nylon 6	
H.K. Zhao and H.L. Wang	242
Simultaneous Improvement of Mechanical Properties and Thermal Stability of Polyurethane by Polyethylene Glycol Grafted Cellulose Nanocrystals	
Z.J. Dou, M. Cheng, Y.F. Qin, L. Chen and Z.Y. Qin	249
Study on Carbon Fiber Reinforced Chloroprene Rubber Composites	
W.L. Wu and J.K. Li	254
Study on Short Basalt Fiber Reinforced Fluorine Rubber Composites	
W.L. Wu and H.H. Feng	258
Unsaturated Polyesters with Pendant Double Bonds and Investigation of their Self Curable Activity	
H.Y. Li, Y.Y. Chen, F.F. Zhu and C.W. Li	262

Chapter 5: Bio and Medical Materials Engineering, Applications

Inhibition of Potassium Citrate on Aggregation of Nano Calcium Oxalate Crystal in Four Different Systems	
X.L. Wen, C.Y. Tan, J.F. Xue and J.M. Ouyang	273
Aggregation of Nano- and Micro-Crystallites in Urine of Uric Acid Stone Formers and Healthy Controls	
C.Y. Tan, Q.Z. Gan, J.F. Xue and J.M. Ouyang	279
Component, Mobility and Specific Surface Area of Urinary Crystallites with Different Sizes in Urine of Healthy Human and Lithogenic Patients	
Q.Z. Gan, X.L. Wen, J.F. Xue and J.M. Ouyang	285
Study on Storage Conditions of Greening of Garlic Purees	
C.Y. Liang, J. Xiong and J. Ye	290
The Common Approaches to Study Compaction Process of Pharmaceutical Powders	
X.H. Li and D.S. Xu	294
Clean Steam from a Plate-Type Exchanger of a Steam Generator for Medical Facilities	
M. Kubín and J. Hirš	308
The Effect of Natural Light and Ultraviolet Lamp Radiation on Bamboo Surface Discoloration	
B. Nan, L.P. Yin, S.Q. Wang, C.J. Huang and Y.J. Li	312
Comparatives on the Characteristics between Vernicia Fordii(Hesml) and Aleurites Montana	
P. Wan, X.J. Meng and K. Zhou	316
Antimicrobial Activity of Type III Dental Gypsum Incorporated with 3-iodo-2-propynyl-butylcarbamate and its Physical Properties	
S. Thaweboon, P. Nisalak, B. Thaweboon, P. Sawaengkit, P.N. Saksit and R. Kaypetch	322
Preparation and Antibacterial Effect of Nanopalygorskite Supported Nano-Silver Powder	
J.R. Wang, Y.L. Liu, B. Liu and Y.P. Wu	327

Chapter 6: Building and Constructions Materials, Applications

An Experimental Research for Developing Prediction Program for Time to Corrosion Reinforcing Steel D.G. Kim	335
Study on Demolding of Net Shape Formed SB/CF-EP Lining Products Y.S. Sun, Q. Zhang, P. Zhang, Y.Q. Cheng and X.H. Zhou	346
Skid-Resistance and Noise-Reducing Characteristics of Exposed-Aggregate Cement Concrete Pavement J.P. Zhang, G.Q. Liu and P.Z. Wang	352
Investigation on the Tensile Strength of GLARE Laminate with a Hole G.M. Qu, B.R. Li, L. Zhao and X.F. Li	358
Analysis on Chloride Diffusion According to the Change of Physical, Geometric Properties in Concrete D.G. Kim	367
Research and Application of Phase Change Energy Storage Technology in Construction and Buildings Materials M.M. Chen and F.Q. Zhao	377
Microstructure and Temperature Characterization of Compound Crumb Rubber Modified Asphalt L. Wang, J.S. Hu and G. Chen	382
Safe and Eco-Friendly Haze-Eliminating Pavement Coating J.P. Zhang, Y.H. Wang, N. Li, Z.J. Duan, L. He and Y.H. Zhao	387
Application of High Ti-Bearing Blast Furnace Slag in Field of Building Materials L.X. He	392
Application Status Analysis of Biomass Ash in Cement Concrete S.G. Zhou, X.X. Chen and Z. Liu	396
Analysis of Collapse Earthquake Plan and Rescue Technology of Existing Concrete Frame Structure X.X. Chen, S.G. Zhou and P. Xu	401
Status of Feedlot Biomass (Cattle Manure) Ash Concrete S.G. Zhou, X.X. Chen and Y.P. Yang	406
Legs of Ocean Platform in the Gulf of Bohai Ice Load Safety Analysis T.Y. Zhao, F.C. Li and H. Ren	410
Reuse of Sand Disposed of Foundry in Lieu of Sand Natural in the Manufacture of Structural Blocks A.V. dos Santos, M.C. Marchetti, C.L. Ribas and A.R. de Souza	416
The Application of ACF Inorganic Fibers Wool Board as External Thermal Insulation for Energy-Efficient Retrofit Project G.Z. Lu, T.Y. Gao, H. Lv, W.X. Zhao, C.Z. Liu and H.W. Wang	420

Chapter 7: Measurement, Detection and Test Procedures

Measurement of Complex Permittivity of Insulating Substrates with an Open-Ended Coaxial Resonator K.P. Tian, G.F. Guo, J.H. Wang and E. Li	427
Palladium Nanoparticles Modified N-Type Epitaxial Silicon Electrode for Photocurrent Detection of Ascorbic Acid H.X. Li, H. Li, Q. Wu and W.S. Xia	433
The Nonintervention Measurement Technology Research of Hydraulic System H.W. Wang, P. Sun, C. Xu, S.C. Liang and F. Wang	437
Set-Up of a Test Bench for the Investigation of Single Parameter Effects in Abrasive Processes by Force Measurements D. Bähre, S.Q. Fang, J. Gliche and K. Trapp	441
Signal Processing of Fluorescent Optical Fiber Temperature Measurement Based on Hilbert-Huang Transform Y.J. Yang, Z.Y. Wang, X.P. Yang and Y.X. Shao	447
The Development of Submarine Pipeline Full-Scale Fatigue Test Machine D.Y. Tang, Z.T. Fang, Y.H. Hu and H.L. Niu	454

The Design Principles of Small-Molecule Fluorescent Probes for the Detection of Anions R.R. Chu	460
Progress of Small Molecule Fluorescent Probes for Detection of Thiols Y. Gao	464

Chapter 8: Materials Processing and Forming, Surface Engineering, Tools and Equipment

The Influence of the Punch Shape on the Socket Spanner Extrusion Process W.L. Diao and X.P. Hu	471
Deformation Rule of 7150 Aluminum Alloy Thick Plate by Pre-Stress Shot Peen Forming M.T. Wang, Y.S. Zeng, X.P. Bai and X. Huang	477
Study on Injection Molding of Single Polymer Composites J.N. Chen, Q.C. Mao and J. Wang	482
Analysis of Micro-Texture and Grain Size Distributions in Machined Aluminum Alloy 7075 A. Tabei, O. Fergani, H. Garmestani and S.Y. Liang	489
Application of Taguchi Method to the Optimal Parameters of Injection Molding for the Plastic Components of the Braille Display Cell F.H. Yeh, C.L. Li and B.M. Chen	495
Material Phase Transformation during Grinding Z.S. Ding, B.Z. Li, P. Zou and S.Y. Liang	503
Fatigue Behavior of Friction Spot Stir Welding with No-Keyhole of Aluminum Alloy X.J. Wang, X.L. Wang, Z.K. Zhang, L. Wang, Q.S. Zhao and X.B. Deng	509
Ferrous Ball-Milled Powders for the Fabrication of Sintered Diamond Tools J. Konstanty, A. Romanski and D. Tyrala	514
Microstructure and Mechanical Properties a New Iron-Base Material Used for the Fabrication of Sintered Diamond Tools J. Borowiecka-Jamrozek and J. Konstanty	520
Study on the Abrasive Wear of Mo-Alloy Sprayed Piston Ring W.W. Gao, Z. Zheng and Y.J. Wang	524
Study on Pyrolysis Methods and Equipment of the Waste Rubber Z.H. Li, K. Yuan, Y.Z. Yu, F.P. Liu and X.C. Li	529

Chapter 9: Materials Design, Applications of Materials in Industry and Manufacturing

Influence of Liner Yield Strength on Performance of CNG-II Composite Cylinder H.X. You, S. Zhang, Y. Guo and R.J. Liu	537
The Analysis and Design of Electric Cooker H.Y. Jin and Z.W. Zhu	543
The Influence of Matching Flameresistant Materials on the Thermal Protective Performance of Firefighter Uniform H. Zhang, Y. Gao, Z.Q. Wang, M. Tong and J. Zhang	547
Experimental Studies on the Full-Scale Fatigue Performance of X65 Marine Pipeline Y.H. Hu, D.Y. Tang, Z.T. Fang and H.L. Niu	555
Numerical Simulation and Analysis of Carbon Black in Pneumatic Conveying Pipe Z.H. Li, Y.Q. Yang, Y.Z. Yu, G.P. Liu and X.C. Li	561
Water Modeling Study on Dispersed Phase Size Distribution and Interface Areas in Metallurgical Multiphase Reactor R. Chen, Y. Huang, L.L. Li and Z.G. Luo	567
The Technology of High Efficiency Water Purification W.J. Fu	574
Eco-Packaging Solution for Express Service in the Era of Online Shopping J.J. Zhang and S.S. Yang	578
The Research of Internal Corrosion Location Prediction Technology in the Typical Pipeline Components of Natural Gas Gathering Pipeline H.L. Ma, H. Huang, R.Y. He, H.Q. Li, Y. Yang and S.J. Liu	583