Table of Contents

Preface and Conference Organization

Chapter 1: Chemical Materials and Technologies

A Concise Approach for the Synthesis of 4-Nitrophenyl-β-D-ribofuranoside Z.W. Gong, Z.D. Sun, Z.Z. Ruan, Y.L. Wu and Q. Xiao	3
A Facile and Effective Route to the Synthesis of Sulfonyl Azides Q.Y. Chen and Q. Wang	7
An Application of Electron Beam Irradiation for Improving the Peptide Antioxidant Activity and Changing the Microcosmic Surface Morphology X.F. Li, S.Y. Lin and Z.Z. Wang	11
Catalytic Hydrolysis of Hydrogen Cyanide on Cu-Al Catalyst L.X. Yan, S.L. Tian and Q.L. Zhang	15
Selective Formation of Herbicides by Selenium-Catalyzed Oxidative-Reductive Carbonylation of CO J.T. Mei, X.L. Bai and Z.G. Mu	20
Preparation of Skin Care Lotion with the Substrate of Insect Wax and Camellia Oil J.J. Ma, L.Y. Ma, Z.Q. Zhang, Y.Q. Wang and H. Zhang	23
Study of the Catalytic Activity of Acidic Ionic Liquid in the Synthesis of Methyl Oleate Y. Bo	31
Synthesis and Characterization of a Cascaded Chromogenic Enzyme Substrate H.X. Ding, Z.Z. Ruan, Q. Xiao and X.J. Wang	37
Synthesis and Characterization of a Dumbbell-Shaped Polyrotaxane Based on Polytetrahydrofuran bis(3-aminopropyl) Terminated and α-Cyclodextrins Using Polyamidoamine (PAMAM) Dentrimers as Bulky Stoppers R.M. Cong, H.Q. Yu, Y.G. Yang, S.Y. Yang, J. Li and W.M. Si	41
Synthesis of an Isomeric Nucleoside Enantiomers of 1,3-bis(1'-deoxy-β-ribofuranose-2'-yl)-thymine	40
Z.D. Sun, Z.W. Gong, C. Hu, H.Y. Huang, X. Chen and Q. Xiao Synthesis of Carbohydrate-Conjugated Flavone Derivatives R.C. Yang, T. Hu, X.J. Wang and Q. Xiao	49 53
The Improved Process for the Preparation of Iloperidone Z.H. Shang, Q.Q. Chu, J. Ha, C.H. An and P. Wang	57
Preparation of Sulfur-Free Exfoliated Graphite in the Graphite-HClO ₄ -CH ₃ COOH Systems	
G.J. Zhou, X.T. Feng and G.C. Lv	61
Preparation of Chitosan Nanospheres by Miniemulsion Crosslinking Method Q.S. Liu, Q.F. Yan and X.Y. Yin	68
Kelvin Probe Force Microscopy Study of the Photogeneration of Surface Charges in Polymer Photovoltaic Film S. Shen, P.P. Zhang, C.X. Zhang and B.N. Kang	72
Gold Catalysts on TiO ₂ -Modified Silica Gel for the Selective Cyclopentane Oxidation to Cyclopentanone L.X. Xu, C.F. Sun, J. Li and G.Y. Chen	76
Study on Preparation of Carbonaceous Pelletizing in Industrial Silicon Production N. Yang, X.H. Yu, G. Xie, C.J. Bao and X.C. He	82
Preparation and Visible-Light Catalytic Activities of Fe-TiO2 Loaded on Activated Carbon Fiber Felts	0.6
M. Li, W.X. Zhao, H. Kang and J. Liu Effect of Grafting Conditions on NR-s-g-HFMA Copolymer and its Thermal Stability F.C. Zhao, S.Q. Liao and C.P. Wu	86 91
Polypropylene/Wood Flour Composites Prepared by Solid State Shear Milling H. Shi, L. Guo, Y. Zeng, Y.B. Liu and J. Zhu	96

Preparation and Crystallization of Modifed Talc/Poly(L-Lactic Acid) Composites L.N. Wang and F.J. Deng	100
Preparation and Properties of Wood Flour/HDPE Microcellular Foamed Composites H.L. Jiang, J.L. Zhou, J. Dong, Y.M. Wang and J.Y. Ruan	105
Preparation of WPU Wet-Rubbing Fastness Improver S.L. Cui	109
Progress on Preparation and Application of Calcium Carbonate Whisker H.H. Qiu, K.B. Luo and H.P. Li	113
The Tween-60-Assisted Preparation of Pd/C Catalyst and its Application in Suzuki Coupling Reactions	110
X.F. Bai and H.Y. Wang Application of Atomic Force Microscopy Characterization Technology in MgAl-CO ₃ ²⁻ -LDH Exfoliation Behavior	118
J. Zhang, X.L. Xie, C.J. Li, H. Wang and L.J. Wang The Effect of Different Colloidal Silica Binders on Strengths of Corundum-Mullite	122
Castables W.J. Yuan, Q.Y. Zhu, C.J. Deng and H.X. Zhu	127
	12,
Chapter 2: Chemical Technologies in Energy	
Heat Treatment of the Hesigewula Lignite and Moisture Adsorption Experiment of its Solid Products	
M. Wu, D.M. He, S.Y. Chang, J. Guan, F. Nie, T. Meng and Q.M. Zhang	133
In Situ Growing of Co ²⁺ Doped TiO ₂ Film on the Surface of Ti Plate and its Photo-Catalytic Hydrogen Production X.F. Bai and K. Zhang	137
New Energy Development and Energy Chemical Engineering (Topic Field) Released of Alkali Species under High Pressure Gasification of Pakistani Coal G.E.R. Jaffri and S.A.R. Shah Jaffri	141
Properties of LaNi _{4.3} Al _{0.7} Applied in Separating Hydrogen from Coke Oven Gas X.Y. Chen, X.X. Ma, L. Zhou, F.S. Yang and Z.X. Zhang	146
Pyrolysis of Hesigewula Lignite and Identification of Aromatics in the Pyrolysis Tar by Gas Chromatography-Mass Spectrometry X. Duan, D.M. He, S.Y. Chang, J. Guan, F. Nie, T. Meng and Q.M. Zhang	151
Synthesis, Structure and Electrical Properties of Pr-Doped Apatite-Type Lanthanum	131
Silicates L.P. Tian and Z.H. Ren	155
Chapter 3: Properties and Performance of Materials	
Study on Acoustic Emission Signal Frequency Analysis for Diamond Growth Process L. Liu, G.P. Sun and M.S. Li	163
Towards an Atomic-Scale Understanding of the Adsorbate-Driven Formation of High-Index Faces	
X.E. Ren, J.H. Zhang, X.D. Lv and Q.D. Chen	168
Study on the High-Speed Analysis of Coal Qualities by FT-NIR Method Based on Improved Successive Projections Algorithm Z.B. Xu, X.B. Si, C. Li and F. Chen	174
Determination of the Interface Roughness between Ni-Coated Layer and Cu Substrate by Glow Discharge Optical Emission Spectroscopy Depth Profiling Y. Liu, W.X. Lin, W.B. Ye, H.S. Li, J. Li, W.H. Yu and J.Y. Wang	181
Orientation Evolution in the {0001}-Oriented Hexagonal Crystal during Channel Die	101
Compression F. Zhang, X. Chen and Y.H. Sha	188
Deposition Model of Sodium (Potassium) Fluorosilicate Fouling in Wet - Process Phosphoric Acid Production	
P.Y. Song, R.Q. Deng and D. Zhu	194

Chapter 4: Semiconductors and other Materials and Technologies for Solar Cells, Power Sources and Electronics

The Solar Cell Research of Particles Irradiation and Damage Effect Z.G. Peng, H.L. Liu, H. Li, Y.M. Song and Z.K. Cai	201
Effects of PTFE and PEDOT:PSS Double Buffer Layers on Flexible Polymer Solar Cells D. Ma, C.X. Zhang, P.P. Zhang, L.X. Zhang, Y. Dang, X. Chen and B.N. Kang	205
Improving Safe Properties of Pp13TFSI Based Electrolyte for High-Voltage Graphite/Li[Li _{0.2} Mn _{0.54} Ni _{0.13} Co _{0.13}]O ₂ Battery	• • •
H.F. Li, G.B. Sun, Q. Wang, L.N. Sun and F.B. Jiang Optically-Enhanced Polymer Bulk Heterojunction Solar Cells by Addition of Gold	209
Nanostructures L.X. Zhang, P.P. Zhang, D. Ma, Y. Dang, X. Chen, C.X. Zhang and B.N. Kang	214
Structures and Optical Properties of Sm-Doped CuInTe ₂ Semiconductor X.M. Nie and Y.Q. Guo	218
Synthesis of Three Dimensional Graphene/Multiwalled Carbon Nanotubes Nanocomposites Hydrogel and Investigation of their Electrochemical Properties as Electrodes of Supercapacitors	210
L. Zhou, D.W. He, H.L. Wu and Z.H. Qiu	222
The Effect of Ge on the Electrochemical Performance of Sn/C Nanocomposite Anode Materials for Lithium Ion Batteries	
J.Q. Deng, J. Pan, T. Chen, H.Q. Qin, W.P. Liu, Q.R. Yao, Z.M. Wang and H.Y. Zhou The Effect of N Doping Amount on Zn/N-Codoped Composite Films by Vacuum Deposition	229
S.J. Zhang, M.S. Li, Y. Duo and S.Q. Zeng	234
Synthesis and Optical Properties of Strontium Aluminate with Industrial Sodium Aluminate Solution	•••
H.W. Wang and K.Y. Ma	238
Chapter 5: Preparation, Properties and Performance of Building Materials	
Experimental Study on Seismic Performance of Circular Steel Self-Compacting Concrete Elements	
M.T. Zhang, W.J. Zhao, Z.R. Zhang and Q.L. Wang Moisture Demogra Panga in Gradation of Asphalt Mixture ATP 25	245
Moisture Damage Range in Gradation of Asphalt Mixture ATB-25 P. Tian, G.F. Zhan and L. Nai	249
Research on Microstructure and Low Temperature Properties of Polymer Modified Asphalt L. Wang, Y.J. Jia and L. Feng	253
Research on Ultrasonic-Rebound-Strength Curve of Polypropylene Fiber Concrete in Chloride Environment	
C.Z. Sun, Y.D. Lin and F.F. Zhu	261
Sodium Sulfate Corrosion of Polypropylene Concrete Strength Curve of Impact Study C.Z. Sun, F.F. Zhu and Y.D. Lin	265
Influence of Modified Organosilicon Waterproofing Agent on Durability of Concrete Y.Y. Hu, T.S. He and X.F. Song	269
Micro-Analysis of Sulfate Salt Attack Destruction on Autoclaved-Curing Concrete Y.Y. Hu, T.S. He and X.Z. Zhang	273
Discussion on Formula for the Flexural Capacity of Concrete Beams Strengthened with FRP	
X.J. Chen, Q. Yang and J. Guo	278
Chapter 6: Properties and Performance of Cast Iron, Steels and Alloys	
The Effect of Milling Parameters and Nickel Content on Ni-Al-TiO ₂ -B ₂ O ₃ System during Mechanical Alloying Q. Liu, S.J. Dong, X. Guang, S.X. Sun and P. Luo	20-
	285

285

Research on Corrosive Wear Properties of Super High Chromium Cast Iron B.Y. Li, H.B. Guo, L.J. Xu, S.Z. Wei, K. Wu, X. Yang and G. Du	292
Effect of Yttrium Addition on Cyclic Oxidation Behavior of Co-10Cr-10Al Alloys at 1073K J. Wang, X.C. Xu, Y. Wang, C. Wang, F. Xie, Y.Q. Li, C.L. Luo, J.H. Xiang and H.H. Zhang	296
Microstructural Evolution of Cr-Ta Powder in the Process of Mechanical Alloying J. Yao, S.Q. Lu and X. Xiao	300
Jointing of Zirconia Ceramic and Titanium Alloy X.F. Hu	305
Effect of V, Ti, and Ce on Structure and Performance of NM400 J. Peng, L. Niu, Y. Guo, L.X. Liu and S.L. An	311
Equivalent Circuit for EIS Study on Rusted Marine Cast Iron Artifacts W.Z. Ouyang	316
High Current Pulsed Electron Beam Effect on Micro-Arc Oxidation Film of Ti Alloy H. Zhao, C.Y. Du, J.H. Yang and X.H. Wang	320
Effect of Al ₂ O ₃ and CaF ₂ on Melting Temperature of High Calcium Ladle Desulfurization Slag	
W. Fan, J.Z. Zhang, W.Z. Ao and J. Huang	325
Chapter 7: Developing and Researching of Technologies of Material Processing	
Temperature Field Simulation of Electron Beam Cladding W Coating on Cu Substrate L. Wan, Y.P. Huang, R.B. Zhang, H.H. Yu, H. Li, J.W. Duan and H.L. Liu	331
A New High Precise Powder Feeder for Fabricating Functionally Gradient Metal Component H.P. Zou, M.W. Chen and Y. Li	335
Experimental Study on Ultrasonic Shot Peening Forming and Surface Properties of	333
AALY12 C.X. Liu, S.H. Lu, W. Miao, P.F. Song and T.R. Wu	339
Study on New Extrusion Route of Equal Channel Angular Processing in High Purity	
Aluminium C.Y. Ban, Z. Yao, H.T. Gao, S.X. Zhu, Y.P. Guo and J.Z. Cui	343
Study on Surface Processing of Non-Rotational Symmetry E.H. Zhang and H.L. Zhang	348
Study on the Modification of Blast Furnace Smelt Slag and Crystallization Behavior in the Solidification Process	
J. Li, K. Zhao, Y.Z. Zhang, W.X. Liu and A.M. Yang	352
The Causes Analysis for the Surface Wrinkle Defects of Cold-Rolled Strip and the Control Measures	2.60
G.L. Li, X.L. Chen, Z.Y. Hu, F.X. Wang, G.P. Shang and A.C. Shi The Present Situation and Developing Trends of Hot Closed-Die Forging	360
Q. Liu, X. Guang and S.X. Sun	365
The Analysis of Process Information Characteristics for Wire-Sheet Spot Welding H.B. Li, B. Cao and X.Y. Cui	369
The Effect of Dry Granulating Machine Spindle Eccentricity on the Granulation N.X. Wu, T.T. Zhan and D.H. Liao	374
Chapter 8: Technologies in Mining and Mineral Processing	
Experimental Study of a Lead-Zinc Sulfide Comprehensive Recovery J.Y. Li, X. Tong and X. Xie	381
Gas Seepage Law in Condition of Bound Water of Low Permeability and Tight Sandstone Gas Reservoir Q. Li, L.Y. Ye and W.G. An	385
Investigation on Copper Flotation from a Complex Copper Ore, Yunnan Province C.F. Cui, Y.J. Xian, S.M. Wen and Y.J. Wang	389

Leaching Experiment Study on Silver Ore in Yunnan Province	202
D. Liu, J.L. Li, S.M. Wen and Y.J. Wang Research on Exploration of Mineral Processing for a Iron Ore	393
X. Xie, Z.X. Yang, X. Tong and J.Y. Li	397
Research Progress of Adsorption Capacity-Enhancing Modified Natural Manganese Mineral H.J. Yu	401
Study on Abutment Pressure Distribution Law of Fully-Mechanized Sublevel Caving Face in Extra-Thickness L. Yu	405
Study on Numerical Simulation of Fully Mechanized Top Coal's Caving Property of Tang Gong Ta Coal Mine	
Q.M. Liu Study on the Pretreatment Leaching of a Micro-Disseminated Gold Ore Deposited in Yunnan	410
F.W. Wang, Y.Q. Cui, X. Tong and D.D. Xie	415
The Application of BOP During Oil Well Drilling G.Y. Han, X.S. Zhang and X.H. Du	419
The Research of Geochemical Characteristics and Indicative Significance for the Source Springs - A Case of Huanglong Valley in Sichuan Province K.G. Zhang, H.J. Wang and M.T. Ba	423
The Study of Top Slag Reforming in the RH Refining Process	
B. Zhang and X.P. Hu The Technology Limits for Stratified Injection of Polymer Flooding	428
Q. Sun, J. Yang, L.Y. Sun and X.L. Dong	433
Using Microorganisms to Facilitate Phytoremediation in Mine Tailings with Multi Heavy Metals X.F. Cao and L.P. Liu	437
Efficient Application of Automation Technology in Thickener Process D.D. Xie, X. Tong, X. Xie, K. Hou and J.Y. Li	441
High-Efficiency Cut Blasting with Shell Radial Shaped Charge in Laboratory-Scale Blasting W. Chen, H.H. Ma, Z.W. Shen and D.B. Wang	445
Chapter 9: Material Strength and Structural Design	
Comparison of Affecting Factors on the Shear Stress Output of Cylinder-Typed MRF Clutch	
H.F. Ji, C.F. Gao, X.S. He and G. Zhang	453
An Exact Analytical Solution for Star-Shaped Cracks Z. Chen	458
Frame Strength and Stiffness Analysis Based on ANSYS J.F. Shen, Y.J. He and Y.C. Yu	464
Spray Car Workbench Racks of Modal Analysis	
Y.J. He, J.F. Shen and X.F. Li Strength Analysis and Construction Optimization of Cab of Smart Sprayer	469
Y.J. He, J.F. Shen and Y.C. Yu Computer Simulation on the Dynamic Buckling of Initial-Defect Plates under Axial Step	475
Load Y.P. Zong, Z.J. Han and G.Y. Lu	482
Research on Vibration Stress Relief for Cured SU-8 Photoresist Layer Q.F. Yang, J.Y. Zheng, J.Q. Wang, X.N. Zhao, D.Y. Wei and G.F. Zheng	487
Dynamic Response of the Pipe Conveying Fluid with the Pressure Pulsation H.B. Zhai, J.J. Su, X.M. Yan and W. Liu	491
The Computer Simulation of the Dynamic Buckling of Cyclindrical Shells under Pulse Load Y. Liu, X.J. Wang, Z.J. Han and G.Y. Lu	495
Numerical Simulation of Lamb Wave Propagation in Isotropic Materials with Different Plate Thicknesses	.,0
H.M. Elgamal, Z.L. Yang and J.W. Zhang	500