

Table of Contents

Preface and Organizing Committee

Chapter 1: Industrial Engineering and Material Science

Research on Melting and Solidification Process of Phase Change Storage Energy Materials L. Qiu, Z. Tan and M. Yan	3
Investigation into Hardness and Young's Modulus of Thin Films of Lead Germanium Telluride B. Li, P. Xie, S.Y. Zhang and D.Q. Liu	8
Efficient Synthesis, Properties of a Novel Unsymmetrical Photochromic Diarylethene Based on Benzothiophene and Thienyl Group D.H. Jiang, G. Liu and W.J. Liu	13
Synthesis, Photochromism and Fluorescence of a Novel Diarylethene Having Thiazole Unit H. Li, S.Z. Pu and S.Q. Cui	17
Synthesis and Property of a New Photochromic Diarylethene Bearing both an Isoxazole Unit and a Methoxy Group H.L. Liu, S.Z. Pu, S.Q. Cui and W.J. Liu	21
Synthesis, Properties and Application in Optical Memory of a New Photochromic Diarylethene Based on a Chlorine Atom Z.P. Tong, G. Liu and S.Q. Cui	25
Synthesis, Photochromism and Optical Recording of a New Diarylethene L.Q. Wang, S.Z. Pu, L.S. Yan and S.Q. Cui	29
Efficient Synthesis and Photochromic Properties of a New Diarylethene Bearing a Condensed Aromatics Moiety R.J. Wang, H.Y. Xia, G. Liu and S.Q. Cui	33
Efficient Synthesis of a New Unsymmetrical Photochromic Diarylethene for Optical Recording Storage T.F. Wang, G. Liu and S.Q. Cui	37
Synthesis, Properties and Application in Optical Memory of a Photochromic Diarylethene Bearing Pyridine Unit M. Liu, G. Liu and S.Q. Cui	41
Modes Excitation by Input Field of Different Positions in Three-Mode Photonic Crystal Waveguides X.Y. Shi, W. Yang, H. Yang and X.Z. Wang	45
Fabrication of Nano-$\text{Al}_2\text{O}_3/\text{Ni}$ Composite Particle with Core-Shell Structure by a Modified Electroless Plating Process H.Z. Zheng, Y. Mo and W.B. Liu	49
Feasible Study of Fire-Resisting Wood Material in Habitability Design of Large Surface Vessels W.B. Zhang, F.H. Wang and B. Liu	55
Study on Mechanism of Molybdenum Concentrate Roasting L.Y. Wang, J.L. Dong and J.J. Cai	60
Impact of Immersion Depth of Ultrasonic Horn on Acoustic Field Distribution Using Thermoelectric Probe H.X. Dong, X.G. Yang, G.J. Yue, J.Y. Tang, Y. Lv and W.X. Liu	65
A Research on Separation Mechanism of Cylindrical Hydrocyclone X.J. Lu and X. Yang	69
Numerical Simulation of Heat and Mass Transfer of Lump Coal Falling in the Freeboard Zone of COREX Melter-Gasifier G. Pan, X.L. Liu, G. Wang and Z. Wen	74
Preparation and Characterization of Cuprous Chloride Catalyst for Direct Synthesis of Triethoxysilane G.J. Wang, F.X. Zhang, G.Y. Liu and X.N. Liu	80

Fabrication of Lignin-Wrapped Carbon Nanotubes and its Dispersion in ABS Resin X.X. Ge, J.H. Qiu, S.S. Xu, F. Yue and P.G. Song	87
Effect of Siderite on Reverse Flotation of Dong Anshan Iron Ore Containing Carbonates L.X. Li, W.Z. Yin, D. Feng and B. Zhang	91
Enhancement of Absorption of Injected Gas in New Type Mechanical Stirring Injection Refine Equipment T.A. Zhang, Y. Liu, Q. Wang, J.C. He and S. Masamichi	97
Some Theoretical Problems Analysis of Melting High Nitrogen Stainless Steels H.B. Li, Z.H. Jiang, Q.F. Ma and D.P. Zhan	103
Synthesis, Characterization and Photocatalytic Activity of Nb-Doped TiO₂ Nanoparticles X.D. Li, X.J. Han, W.Y. Wang, X.H. Liu, Y. Wang and X.R. Liu	110
Preparation and Surface Modification of Fe₃O₄@SiO₂ Composite Microspheres K. Zhou, M. Yang, Q. Sun and Z.Z. Yang	115
A Numerical Study on the Temperature Field of Oscillatory Flow Reactor with Conic Ring Baffles P. Wu, J. Wu and W. Li	121
A Novel Process Employing Dividing Wall Column and Double Effect Distillation X.T. Xia, J. Wu and L.Y. Lin	127
Effects of NaF on Mould Flux Properties for Thin Slab Continuous Casting Y.Q. Lu, G.D. Zhang and X.F. Yu	134
Performance of a Solar Drying System Driven by a Hybrid Power System H. Zhong, Z.M. Li, T. Wu, M.J. Yu and R.S. Tang	139
Study on the Strategy for Failure Diagnosis of Wall-Flow DPF Based on Pressure Drop Characteristics J.G. Bu, G.T. Yao, X.Y. Zi, W.F. Zhang and J.Y. He	147
Molecular Dynamics Simulations of Coupling between Flow and Heat Transfer in a Nanochannel Z.H. Kou and M.L. Bai	155
Frequency and Pressure Characteristics of a Helmholtz-Type Valveless Self-Excited Pulse Combustor Y.Y. Xu, M. Zhai, P. Dong, F. Wang, S.L. Peng and Q.Y. Zhu	161
Research on Permeability of Coal Samples with and without the Effect of Supercritical CO₂ T. Yang, B.S. Nie, D. Yang and R.M. Zhang	168
The Function of Sba-15 over Ni/Mo₂C Catalysts for Carbon Dioxide Reforming of Methane J. Huang, T. Huang, H. Chunluan, W. Huang and R.X. Ma	174
Fatigue Simulation and Analysis on Planetary Gear of Megawatt Wind Power Yaw Reducer J.Q. E, G.M. Li, B. Zhang and J.D. Dong	180
Contact Simulation and Analysis on Planetary Gear of Megawatt Wind Turbines Yawing Reducer J.Q. E, J.D. Dong and G.L. Liu	187
Optimal Design Research of Post-Processing Technology Based on Settlement Control H.F. Tong and L.J. Suo	194
Two-Stage Optimal Design of Small Pile Composite Foundation Based on Consolidation Degree and Bearing Capacity Control H.F. Tong	199
Application of Lodrigues Matrix in Coordinate Transformation of Similar Material Simulation Experiment G. Wang, X.M. Cui, D.B. Yuan, Y.H. Qiu, J.L. Yang and X.G. Guan	204
ADRC Applied in Micro Grid of Wind Turbine with Flywheel Y.N. Zhang, L.Y. Kang, B.G. Cao and J.M. Xu	211
Test System for Mechanical Property of Geotextile Material Based on PCI-1714 Z.G. Liu and Q.X. Sun	217
Castor Capsule Sheller Key Component Design and Experimental Research Y.H. Cao and X.Y. Guo	222
CFD Simulation of Spraying with Air Jet W.D. Jia, C. Li, J. Lu, N. Yang and Z.T. Wang	228
Study on Whole Life Cycle Management of Cutting Tool J.Y. Xu, G.C. Wang and G. Liu	234

The Experimental Investigation and Theoretical Analysis on Transcritical Carbon Dioxide Heat Pump Cycle	240
L.X. Zong, J.L. Liu, X. Shi and Y.B. Xie	
The Internal Resistance Characteristics of Lithium-Ion Battery Based on HPPC Method	246
T.T. Lou, W.G. Zhang, H.Y. Guo and J.S. Wang	
Thermodynamic Analysis of Solar Driven Vuilleumier Cycle Heat Pump	252
J.C. Tang, B. Li, Y. Wu and Y.B. Xie	
Formulation of a New Type of Electrolytes for $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ Cathodes Working in an Ultra-Low Temperature Range	258
C.W. Yang, Y.H. Ren, B.R. Wu and F. Wu	
Preparation and Properties of ZnO/Vermiculite Composite Particles	265
L. Jin and B. Dai	
Kinetic Characteristic of the Dust Particles around the Insulators	271
J. Wang, X.D. Liang and Y. Liu	
Numerical Simulation for Heat Storage Study of the Microencapsulated Phase Change Material Slurry in a Horizontal Rectangular Enclosure	278
Y.L. Zhang, Z.H. Rao, J.F. Xie, H. Zhang and S.F. Wang	
The Energy-Saving Optimization of the Organic Heat Transfer Material Heater	284
W.L. Gu and J.X. Liu	
The Quenching Characteristics of Gas Deflagration Flame in Narrow Channel	289
X.P. Wen, M. Ma, W.C. Sun and Z.C. Liu	
Numerical Study of Performances of Vertical Axis Tidal Turbines	296
Y. Liu, P.F. Zhao, X.H. Su and G. Zhao	
The Speed Coefficient Method Based Nuclear Main Pump Design and CFD Analysis	302
Y. Liu, Q. Wang and P.F. Zhao	
Mechanical Properties of Forged Ti-6Al-4V Structure by Electron Beam Welding	308
H.Y. Qi, J. Xie, S.L. Li and X.G. Yang	
Numerical Simulation of the Nuclear Main Pump in the Sbloca	314
J. Yu, F. Tian, M. Ma and X.F. Wang	
Research on Effects of Diameter and Arrangement of Nozzles on Combustion and Emissions in Cylinder	320
J. Li, Z.R. Lou and W. Hong	
Investigation of Shapes and Extinction Limits of Premixed Flames in Large Centrifugal Acceleration Field	327
J.X. Wu, E.Y. Wang, L.S. Liu and X. Gou	
Numerical Simulation on Small Scale Straight-Blade and Twisted-Blade Vertical Axis Wind Turbine	334
Y.Z. Lv, D.X. Jiang and Y. Jiang	
Effects of Fuel Octane Number on Homogeneous Charge Compression Ignition (HCCI) Combustion with Rapid Compression Machine	339
Y.K. Wang, P. Cheng, Y.K. Wang, H. Li and Y.N. Guo	
Computation of Turbulent Flows in Natural Gas Pipes with Different Rectifiers	344
Z.H. Xiong and Z.L. Li	
Effects of Difference Leading Edge Shapes on Numerical Simulation of Centrifugal Compressor	351
T. Sun, X.F. Wang and Y. Wang	
Numerical Simulation of Flow and Heat Transfer Characteristics in Rectangular Channel with Novel Longitudinal Vortex Generators	356
C.H. Min, Y.J. Qin and C.Y. Qi	
New Shape-Controlled Nanocrystalline SrSiO_3 Photocatalyst: Template-Free Syntheses and Photocatalytic Activity	363
X.W. Wang, S.J. Liang, W.M. Wu, G.D. Liu, S.L. Zhang, H.R. Zheng and L. Wu	
Study on Effect of Hydrogen Environment on Stress Corrosion Cracking of Retaining Ring in Hydrogen-Cooled Generator	369
Q. Zhang, S.F. Tian, L.T. Fang and D.D. Ma	
Numerical Calculation and Simulation on Melting and Solidification Time Periods of a Phase Change Material	374
X.Q. Sun, Q. Zhang, Y.J. Liu, H.X. Yang, L.F. Zhang and S.G. Liao	

Research on Mechanism of Sodium Silicate on Gas Quenching Steel Slag Cement Y. Long, H.W. Xing, Y.Z. Zhang and G.L. Li	382
Aerodynamic Optimization Design of a Turbocharger Compressor Impeller C.J. Ji and X.Q. Li	389
Vibration Characteristics Analysis of Tubing String in Three-High Gas Well M. Yang, Y. Ma and S.G. Li	395
Mechanism Analysis of Jet Drilling Rock by Numerical Simulation and Experiment H.L. Liao	400
Prediction of Hardness in Heat Affected Zone of 9%Ni Steel C.Y. Yan, S.Z. Yang, J.H. Zhao and W.S. Li	406
Diffusion Combustion Characteristics of H₂/Air in the Micro Porous Media Combustor H.L. Cao, J.N. Zhao, K. Zhang, D.B. Wang and X.L. Wei	413
Different Solar Cell Performance under the Concentrator Conditions Y. Zhao and M.Y. Sheng	419

Chapter 2: Applied Chemical Engineering

Influence of Chemical Modification of Activated Carbon Surface on Performance of Supercapacitors M.G. Deng and R.Q. Wang	427
Modeling the Glass Transition Temperature of Polymers via Multipole Moments Using Support Vector Regression J.F. Pei, C.Z. Cai, X.J. Zhu, G.L. Wang and B. Yan	430
Prediction of Glass Transition Temperature of Polymer by Support Vector Regression J.F. Pei, C.Z. Cai, X.J. Zhu, G.L. Wang and B. Yan	436
Expression of Anthocyanin Biosynthetic Genes during Fruit Development in ‘Fengxiang’ Strawberry B. Zhou, S.H. Yan and Y.H. Li	443
Study on the Isolation of High-Quality DNA and RNA from Aloe Y.S. Zhang, J. Li and X.H. Liu	449
Antibacterial Activities of Antibacterial Proteins/Peptides Isolated from Organs and Mucus of Clarias Gariepinus Reared at High Stocking Density X.M. Wang, W. Dai, K.Z. Xing, T.J. Li and X. Wang	455
Study on Properties of Corn Starch-Based Fat Mimics X.Q. Li and Y. Chen	461
Research of Monitoring Deterioration of Milk by Using Surface Tension Coefficient and Viscosity Z.J. Mai, F. Lin and J.M. Fan	467
Screening of a L-Lactic Acid Producing Strain of Lactobacillus Casei by Low-Energy Ion Implantation S.C. Li, Z.Y. Zhu, S.B. Gu, H.X. Liu and D.D. Wang	471
The Research for the Extraction of Yeast’S Nucleic Acid with [BMIM] BF₄-H₂O-KH₂PO₄ Ionic Liquid Aqueous Two-Phase System D.J. Huang and D.C. Huang	477
Comparison of Non-Covalent Interactions between a Series of N-Phosphoryl Dipeptide or Methyl Esters and Cytochrome C by Electrospray Ionization Mass Spectrometry L.M. Qiang, X.R. Dong, M.X. Lu, K. Lu, Y.F. Zhao and S.X. Cao	483
Allelopathic Potential and Chemical Components of Aqueous Extract from Soil-Like Substrate L.Y. Li, B.Z. Xie, W.T. Fu, W.T. He and H. Liu	490
Purification and Fractionation of Natural Petroleum Sulfonates by Liquid-Liquid & Soxhlet Extraction R.X. Niu, B.L. Li and B. Long	496
Experimental Study of Purifying Precipitated Silica Produced from Yellow Phosphorus Slag G.B. Li, H. Lin, Y.L. Ma and Y. Su	503
Electrochemical Degradation Pathway of Phenol on Ti/SnO₂ Anode J.F. Liu, B.Y. Cui and Y.J. Feng	507

Study on Mechanical Properties of Nanocompo-Sites Prepared Using Elastomeric Copolymers and Nano-SiO₂	513
S.B. Zhou, A.G. Xiao, Q.Y. Zheng, K. Wang, Z.G. Chen, W.Q. Zhang and A.P. Hao	
Electrical Conducting Properties of Unsaturated Polyester/Graphite Nanosheet Composite under Electric Field	520
H.Y. Zhang, H.Q. Wang, L.T. Wang and Y.M. Feng	
Structure Characterization of Unsaturated Polyester/Graphite Nanosheet Composite under Electric Field	524
H.Y. Zhang, H.Q. Wang and S.Q. Wang	
Structure Characterization of Polymer/Oriented Graphite Nanosheet Composite by Electric Field-Inducement	528
H.Y. Zhang and H.Q. Wang	
Molar Kinetics in Catalytic Hydrocracking of Asphaltenes	533
S.J. Zhang and Y.X. Zhao	
Kinetics and Selectivity of Cyclohexane Pyrolysis	540
S.J. Zhang and Y.X. Zhao	
Synthesis and Characterizations of Monodispersed Nanotriangle of Gold	549
K.C. Zhang and S.Y. Zhao	
Electrical Treeing Breakdown Properties for Polyimide Nanocomposite Film in Inverter-Fed Motors	553
Y. Cui, G.N. Wu, Y.Q. Zhang, Z.L. Xin and Y. Luo	
An Amphiphilic Acrylic Copolymer/Montmorillonite Nanocomposite	559
M. Gao, D.L. Zhou, X. Hu and P.X. Zhu	
Synthesis and Fluorescence Properties of Pyrazole Oxadiazole Derivatives	565
D.F. Li, Y. Wang, G.C. Yang, X.R. Ma, S. Han, R.G. Song and Z.Y. Xie	
Study on Modified Starch by Glutaraldehyde and its Properties and Application	575
S.H. Lv, G. Rui and J. Hu	
Study on Synthesis and Properties of a Starch-Polyacrylamide Graft Copolymer by HRP	582
S.H. Lv, Y.F. Ma and D. Li	
Preparation and Properties of Modified Starch with Methoxy Polyethylene Glycol Methacrylate	589
S.H. Lv, G. Rui and G.Y. Zhang	
Preparation and Properties of Copolymer of Degraded Starch and CA-HPA Initiated by HRP/H₂O₂/ACAC	594
S.H. Lv, X.L. Yan and F. Wang	
Preparation and Properties of Polycarboxylate Superplasticizer with Hydroxy Terminated Side Chains	600
S.H. Lv, J.P. Duan and F. Li	
Synthesis of Polycarboxylate Superplasticizer with β-Cyclodextrins as Side Chain	606
S.H. Lv, R.J. Gao and D. Li	
Synthesis and Properties of Copolymer of Gallic Acid and Sulfamic Acid Catalyzing by HRP/ H₂O₂	612
S.H. Lv, M.M. Hou and S.L. Lai	
Study of Reactive Precipitation in Vortex Impinging Streams Reactor	617
Y.F. Li, H.Q. Ye, X.D. He and H. Liu	
The Synthesized Principle and Property of Several Extraction Agents for Germanium	624
J. Liang, K. Xu, L.J. Fan and Y. Huang	
Energy-Saving Characteristics of Benzene-Toluene Mixtures in Heat Pump Distillation Column	630
Z.M. Tong, C. Li, J.L. Lu and K. Zhu	
Synthesis of <i>L</i>-Azetidine-2-Carboxylic Acid	635
J.Z. Jin and J. Zhang	
Study on the Precipitation Polymerization of Acrylamide and Methacrylic Acid in Ethanol by Conductimetry: Phase- Separation Prior to Polymerization	639
M. Li and H.M. Ni	
Effects of ZrO₂ Fiber on the Mechanical Properties of Nano-ZrO₂/Al₂O₃ Ceramic Composite	645
H.Y. Ge, J.Y. Liu, X.Q. Hou, H.S. Liu and D.Z. Wang	

Preparation of ZrO₂ Composite Ceramics with High Thermal Shock Resistance H.Y. Ge, J.Y. Liu, X.Q. Hou and D.Z. Wang	650
Efficient Synthesis of Thieno [2,3-<i>d</i>] Pyrimidin-4(4<i>H</i>)-ones by the Aza-Wittig Methodology H. Chen, K. Yan and M.G. Liu	655
Purification of Polyether Polyols Made by Double Metal Cyanide Catalysis W.H. Ma, L. Yang and Q. Zhong	660
A Study of Predominated Pathway of Initial Processes in Chemical Vapor Deposition of Silicon-Carbide from Methyltrichlorosilane and Hydrogen System X. Wang, Y.L. Wang, Y. Liu, K.H. Su, Q.F. Zeng, L.F. Cheng and L.T. Zhang	665
Synthesis and Luminescence Properties of Three Europium Complexes with Phenanthroline Derivatives and β-Diketonates C.L. Yang, J.X. Luo, L.Y. Liang and M.G. Lu	671
Adsorption Properties of Dye onto Mg/Al-CO₃ Layered Double Hydroxide L.F. Zhang and D.Z. Wei	677
Influence of Photoinitiator Sensitometric Characteristic on Light-Thermal Sensitive Microcapsule Materials X.W. Li, X.Z. Li, W.D. Lai and B. Bai	683
Adsorption Behaviour of PEGylated Gold Nanoparticles to Different Surfaces Probed by CV Monitoring D.E. Mustafa, H. Fan, X. Zhou, H.Y. Tu and A.D. Zhang	689
Brilliant Blue-Functionalized Reduced Graphene Oxide with Excellent Stability and Solubility in Water A.L. Yu, M.S. Lin, A. Xie, X. Cai, S.Z. Tan, X.J. Zhang and Z.D. Lin	696
Tm³⁺/Yb³⁺ Codoped YAG Glass-Ceramic Formed in Silicate Glass System X.L. Zhang, J. Zhang, Q. Shen and H. Lin	701
Composition of Hydrogenated Vacuum Gas Oil Analysis by Gas Chromatography Mass Spectrometry R.M. Sardar, Y. Yang, S.J. Du, Y. Wei, L.M. Xue, Y. Guo, Z.B. Zhang and G.Q. Wang	706
Rapid Fabrication of ZnS Thin Film and Microsphere by Microwave-Assisted Chemical Solution Method J.M. Li, L.L. Zhang, L.Y. Li and H.Y. Xu	711
Use Differential Pulse Voltammetry for Determining the 2,6-Ditertbutyl-4-Methylphenol in Jet Fuels Y.G. Shi, B. Su, H.F. Gong and Y. Xue	716
Ultrasound Changes Solid-Liquid Leaching Equilibrium of Glycyrrhizic Acid from Glycyrrhiza Uralensis in Water X.G. Yang, H.X. Dong, G.J. Yue, Y. Lv, J.Y. Tang and W.X. Liu	721
Preparation and Electrochemical Investigation of LiCoPO₄ Cathode Material for Lithium Ion Batteries S.L. Wang, Z.Y. Tang, O. Sha, J. Yan and L. Ma	726
Three-Dimensional Open-Framework Zinc Phosphite: Synthesis and Characterization R.X. Chen, L.Y. Xu and C.F. Sun	730
Two-Dimensional Neutral Framework Generated from Mixed Organic Ligands: Structure and Magnetic Properties R.X. Chen, L.Y. Xu and C.F. Sun	735
Solvent-Free Synthesis and Characterization of the Zn(II) Complexes with Amino Acid Schiff Base W. Zhong, G.Q. Zhong, Y. Zhang and Q. Zhong	740
Synthesis, Crystal Structure and Fluorescence Spectrum Studies of Bromocoumarin Derivants: C₁₀H₅Br₃O and C₁₂H₉BrO₄ Y. Wang, P. Liu, X.L. Li and J.J. Fu	746
Study on Extraction of Shikimic Acid from Pine Needles of Pinus Elliottii Engelm by Means of Microwave Pretreatment J.Y. Xie, J.F. Lan, L. Yu and C.M. Wu	752
Aging Behavior of Polyaspartic Polyurea under Salt-Fog Exposure Studied by Electrochemical Impedance Spectroscopy W.B. Huang, J. Zhang, X.M. Li and P. Lu	760

Studies on Surface Preparation Systems for Polyurea Protective Coating of Beijing-Shanghai High Speed Railway Bridge Concrete Beams W.B. Huang, X.D. Liu, Z. Jing and P. Lu	765
Thermal Stress Influence on Adhesion of Polyurea Protective Coating Base on Substrate Processing System in High-Speed Railway P. Lu, L. Zhu, J. Zhang and W.B. Huang	775
Studies the Properties of Polyaspartic Polyurea Coated Concrete under Coaction of Salt Fog and Freeze-Thaw P. Lu, X.M. Li, X.Q. Ma and W.B. Huang	781
Preparation and Investigation on the Adsorption Behavior of Polyethylene Glycol Modified Sodium Alginate Porous Membrane Adsorbent for Cr(III) Ions J.H. Chen	786
Effect of Support on the Hydrogenation of Ethyl Lactate over Ruthenium Catalysts J. Feng, W. Xiong, Y. Jia, J.B. Wang, D.R. Liu and R.X. Qin	796
Conductomery Properties of Mixed Reverse Micelles with Amphiphilic Ionic Liquids J.Y. Liu, Y.J. Liao and H.C. Li	800
Characterization and Thermal Degradation of Polyimide Derived from 5-amino-2(p-aminophenyl) Benzoxazole Monomer with Pyromellitic Dianhydride X.L. Meng, L. Jiang and Y.D. Huang	806
The Experiment Study on the Void Fraction in PPG Solution Q.Q. Chen, Q. Zhong, L. Qi, Q.Q. Cheng, L. Wang and M. Hu	815
Study on Thermodynamics of MgO Based Desulphurizer X.D. Ren, T.A. Zhang, Z.H. Dou, Y. Liu, G.Z. Lv and J.C. He	820
Tunable Morphologies of Co²⁺-Doped ZnO/ZnAl₂O₄ Composite Films Derived from Co²⁺-Substituted Layered Double Hydroxide Single Source Precursor R. Yin, L. Yang and S.L. Xu	825
ICP-AES Determination of 11 Kinds of Elements in High Grade Pipeline Steel Y.Q. Liu, X. Shao and L.L. Qu	830
The Experimental Study of Fennel Oil Separation and Purification Using Response Surface Analysis W.Q. Tang, S.T. Nie, Y.X. Lv and K.F. Liang	834
Recycling of Lead and Zinc from Gold and Silver Tailings X.M. Zhou, H. Peng and Z.J. Cen	840
Degradation of ABS in ABS/CaCO₃ Composites during Reprocessing X.J. Bai, Z. Wu and N. Feng	845
Fatty Acid-Starch Complex in the Application of Linerboard Surface Treatment J.H. Yan, H.X. Xu and Y. Li	851
Influence of Substrate Load on Polyhydroxyalkanoates (Pha) Accumulation by Unenriched Mixed Cultures from Excess Sludge Fermentation Liquid M.M. Cai, F.Y. Cui, Q.L. Zhao and H. Chua	856
Research on Solvent Extraction Process of Coal for Direct Carbon Fuel Cells W.Y. Bi, H. Yang, J. Miao, Y.G. Zhang and J.F. Wan	862
Liquid-Liquid Equilibrium for (Water + Palm Oil Biodiesel + Methanol) Ternary System at Different Temperatures X.Y. Yan, Y.C. Cheng and X.P. Hu	867
Macro Kinetics of N-Phosphonomethyliminodiacetic Acid Catalytic Oxidation Y. Bao, J. Wu and X.P. Hu	872
Syntheses of a Green Organic Phosphorescence Materials and Studies on their Photoluminescent Properties L.Y. An, Z.G. Zhang and X.Y. Zhao	880
Fast Microwave Synthesis Lithium Vanadium Phosphate Using Peg as a Novel Carbon Source J. Yan, Z.Y. Tang, H.X. Ren and L. Ma	884
Research on Rechargeable Lithium Manganese Battery Material Electrochemical Roasting Performance Analysis Q. Xiang	889
Synthesis of 1-(4-Antipyrine)-3-(3-Nitroaniline)-Triazene and its Color Reaction with Mercury(II) W.B. Chen, W.X. Ma and X.Y. Xu	895

A pH-Sensitive Poly (2-(Acryloyloxy) Propanoic Acid) Hydrogel and its Drug Release Behaviors	
K.L. Deng, C.Y. Huang, X.B. Ren, Y.B. Gou, H.B. Zhong, P.F. Zhang and C.Y. Jiang	901
Preparation of Soluble Chitosan by Mechanochemistry Process	
Z. Xu and Q.Z. Fei	907
Measurement and Correlation of Solubility of LiBr in Binary Solvents Formed by Acetone and Water Using LIFAC Model	
B. Jiang, L.S. Wang and M.Y. Li	911
Study on the Accurate Determination of Polycyclic Aromatic Hydrocarbons in Coal Tar Utilization	
C.M. Zhang, Z.G. Huang, X.H. Zhang, D.M. Huang and L.P. Wu	919
QSPR Studies on n-Octanol/Water Partition Coefficient of Polychlorinated Biphenyls by Using Artificial Neural Network	
L. Jiao	925
QSPR Study on the Soil-Water Partition Coefficient of Polychlorinated Biphenyls by Using Artificial Neural Network	
L. Jiao	930
Preparation and Characrization of Tic/C Composite Fiber by Chemical Vapor Deposition	
H.Q. Wang	935
Adsorption of Phthalate Esters from Aqueous Solution by Mg–Al Layered Double Hydroxide	
L. Wang, X. Gao, J.S. Guo, W. Zhang and Y. Xu	939
Thermodynamic and Kinetic Study on Lithium Bis(Oxalato)Borate Thermal Decomposition Reaction	
P. Ping, Q.S. Wang, J.H. Sun and C.H. Chen	947
The Effect of Na-Ion on the Growth and Hydrogen Generation of Hydrogen-Producing Bacteria Yuan-3	
L.S. Zhang, J. Ding, W.Q. Guo, L. Gao, N.Q. Ren and G.X. Zheng	954
Carbon Dioxide Reforming of Methane over Ni/Mo/La₂O₃-SBA-15 Catalyst	
J. Huang, T. Huang, A. Rongzhang, W. Huang and R.X. Ma	960
Application of Kaolin Solid Acid Catalyst in the Dethiophene from Coking Benzene	
Y.W. Li and H.Z. Ma	966
A Study on Nox Reduction of SCR System in Heavy-Duty Diesel Engine to Achieve the Euro V Emission Limits	
X.Y. Zhi, L.P. Huang, H.L. Pang, C.R. Zhang, H. Li and C.L. Deng	974
Optimization of Preparation of Jujube Juice by Response Surface Methodology	
C. Yuan, B.G. Liu, Y.S. Chen and Y.Z. Chen	981
Role of the Cathode in a Novel Photo-Electro-Chemical Catalytic Reactor	
L. Song, X. Zhang, X.L. Zeng and M.Y. Li	985
The Study on Ionic Liquids Oil-in-Water Emulsion Enhancing Carbon Dioxide Absorption	
H.J. Liu, Y. Zhang, H. Yao, W. Zhao and H.J. Liu	991
Desulphurization of High Sulfur Coal by Mild Pyrolysis Combination with Magnetic Separation	
Q.R. Liu, H. Xia, G.X. Huang, C.X. Zhang, M.J. Ma and C. Wan	998
Numerical Simulation of Interior Flow Field of Reactor Coolant Pump under Station Blackout Accident	
Y.M. Xu and S.M. Xu	1002
Modeling of Thermal Effect of Chemical Reactions in Heap Bioleaching of Chalcopyrite	
Z.Y. Zhang, C. Inoue, T. Kamiya and X. Zhao	1009
CFD Modeling of the Mixing Process in a Curved Baffles Crystallizer	
C.S. Qiao, X. Chen and P. Lou	1013
Performance of Denitrifying Phosphorous Removal Process Employing Nitrite as Electron Acceptor and the Characterization of Dominant Functional Populations	
H.X. Bao, X.P. Ma, J. Wang, K. Jing, M.L. Shen and A.J. Wang	1019
Studies on the Removal of Humic Acid by Electro-Flotation—Photocatalytic Oxidation of Suspended TiO₂	
Y.Q. Guo, C.J. Yao, E.D. Du, C.S. Lei and Y.X. Zhang	1025

Research on Features of Domestic Wastewater Treatment and Mechanism of Denitrification in Anaerobic MBBR Reactor H.Z. Yuan, J.B. Zhao and S.Z. Ke	1030
Study of the Interference between the Diffuser Vanes with the Volute Tongue C.J. Ji and Q. Zhou	1037
Studies on the Integration of 1.5th and 2nd Generation Fuel Ethanol Production from Sweet Sorghum Stalks: Economic Performance, Energy Consumption and Carbon Emissions L.L. Zhao, X.L. Zhang, S.Y. Chang, X.M. Ou and S.Y. Chang	1042
Microstructural of Cr/MWCNT Composites and its Catalysis in Synthesis of Biodiesel X.H. Fan and G.M. Xiao	1053
Synthesis of Ethyl Acetate Catalyzed by Inorganic Salt B.H. Tang	1060

Chapter 3: Mechanical Engineering and Computer Science

The Study on Building Materials' Optimization Based on Fuzzy Technology L.W. You	1067
An Experimental Study of Fatigue Crack Propagation of 16MnR Pressure Vessel Steel in Mode-I Constant Amplitude Loading W.F. Tu, Z.L. Gao and Z.J. Hu	1073
Research on Shear Bearing Capacity of Reinforced Concrete Short Beam in Salt-Fog Environment W.J. Yang, H.J. Huang, W.Y. Jiang and Y.B. Peng	1079
Critical Knock Diagnosis for Gasoline Engines Based on Neural Network with Wavelet Transform and Fuzzy Clustering J.G. Yang, Y.Y. Wang and B. Lin	1084
Simulation-Based Analysis of Articulated Steer Grader with Six Motor-Driven Wheels Y.H. Shen, T.H. Zhang and C. Jin	1090
Model Test and Finite Element Analysis for the Pylon of the Jointed Pylon Cable-Stayed Bridge Z.Y. Xu and R.D. Zhao	1096
Fuzzy Comprehensive Evaluation of Performance of the Natural Gas Driven Vuilleumier Cycle Heat Pump Y.B. Xie, B. Li, S.H. Wang and Y. Liu	1102
Submarine Operation Tool and Intelligent Device H. Jin and M.Q. Xing	1109
Analysis of Vehicle's Kinetic Characteristic after Tire Blow-Out Y.L. Wang and K.H. Guo	1115
Optimization of Process Parameters of U-Shape Sheet Metal Based on Compensation of Geometric Springback Value X.W. Jia and S.G. Hu	1122
Punching Teeth Layout on Steel Belt of the Box Based on Optimized Simulated Annealing Algorithm W.Q. Tian and J.P. Bai	1128
Adaptive Control of Synchromesh Shifting Process for Automated Manual Transmission P. Gong, J.M. Meng and J.Q. Xi	1132
Modeling Heat and Moisture Transfer within Porous Textiles under High Temperature Gradients F.L. Zhu and K.J. Li	1136
Research on Defining Regional Boundary of the COREX Melter Gasifier by Using Image Processing Z.G. Luo, L.H. Han, X. Lei, Z.X. Di and J.J. Sun	1140
Effect of Complex Agent on Copper Dissolution in Alkaline Slurry for Chemical Mechanical Planarization Y.G. He, J.X. Wang, X.W. Gan, W.J. Li and Y.L. Liu	1145
Effect of Colloidal Silica as Abrasive on Low-k Dielectric Materials in Chemical Mechanical Planarization Y.G. He, J.X. Wang, X.W. Gan, W.J. Li and Y.L. Liu	1149

Coupled Heat Transfer Simulations of Air-Cooled Turbines with an Algebraic Transition Model	
Q. Wang, Z.Y. Guo and G.T. Feng	1153
Optimal Design of High Power Linear Permanent Magnet Synchronous Motor for Aircraft Launch	
S.H. Hao, Z.L. Tang, R.Z. Long and M.H. Hao	1160
Gear Fault Diagnosis with Support Vector Machine	
J.L. Tang, C.R. Huang and J.M. Zuo	1169

Chapter 4: Biomaterials Science and Environmental Engineering

Study on the Inclusion Complex of Rutin/Sulfobutylether-β-Cyclodextrin	
C.J. Zhou, L.F. Li, Y. Liu, S.P. Wen, Y.E. Guo and X.G. Niu	1177
A Improved Method for Study on Biodegradation of Castor Based Lubricants	
B. Wu, C.L. Wang, Y.Q. Liu, D. He, M.H. Chen, Y.R. Wang and F.J. Li	1182
Determination of Hydrogen Peroxide Residue in Food Using CdS Quantum Dots as Fluorescence Probes	
Y.L. Zeng, Y.J. Wang, Z.H. Su and C.R. Tang	1189
Determination of Trace Iron in Chinese Herbal Medicine Using CdS Quantum Dots as Fluorescence Probes	
Y.L. Zeng, X.F. Li, C.R. Tang, H.W. Huang, Y.J. Wang, Z.H. Su, H. Zhao, Y.M. Hu and J. Li	1195
Preliminary Evaluation of Antimicrobial and Cytotoxic Activities of Extracts from <i>Actinidia macrosperma</i>	
Y. Lu, Y.P. Zhao and C.X. Fu	1200
Impacts of Uranyl Ion on the Structure and Function of Cytochrome b_5 His39Ser Mutant	
D. Wan, L.F. Liao and Y.W. Lin	1204
Synthesis and Application of a Novel Polymer as an Antimicrobial and Water and Oil Repellent Finishing Agent for Cotton	
Z.R. Li, W.P. Tu, K.J. Fu and J. Zou	1210
Synthesis of Myristyl Sulpho Betaine Type Amphoteric Surfactant	
R.M. Zhang, Z.Y. Zhang, H.M. Shan and Y. Wang	1217
Internalization of DMSA-Coated Fe_3O_4 Magnetic Nanoparticles into Mouse Macrophage Cells	
Y.X. Liu, Z.P. Chen and J.K. Wang	1221
Treatment of Waste Phosphoric Acid Containing Metal Ions by Electrodialysis	
G.F. Sun and J.L. Xu	1228
Separation of Liquiritin by Two-Dimensional Liquid Chromatography	
J.X. Cong, S.Y. Wang and H. Gao	1232
Mathematical Model and Equations of Wash Water Recycling in the Preparation of Layered Double Hydroxides	
Y.J. Lin, Q. Wei, X.F. Jia and D.Q. Li	1239
Cu (II), Zn (II) Complexes Containing Calix [4] Arene Modified by Salicylaldehyde Acylhydrazone - Synthesis, Properties and Application	
X.M. Zhang, G.C. Xu and J.L. Sun	1244
Exergetic Assessment of Biogas Engine-Driven Heat Pump Systems for Using Sewage Resource	
X.M. Li, W.X. Wang, A.J. Wang, Z.Y. Wang and Y. Shi	1251
Bm Lignin Structure and Chemical Compositional Characteristics of Switchgrass	
J.H. Yan, H.X. Xu, Y. Li and X.H. Li	1257
A Novel Application of Combined Bio-Technologies on Chemical Synthesis-Based Pharmaceutical Wastewater	
Z.L. Chen, X.H. Huang, Z.Z. Liu and X.R. Sun	1261
Component Analysis of the Sugar Cane Molasses Stillage Sediment	
H.X. Zhu, R.F. Mao, S.F. Wang, Y.Y. Qin and Y.H. Wang	1267
Modeling of THMs and HAAs Formation in Distribution System upon Chlorination	
R. Ma and X.W. Lu	1273

Review on Dynamic Membrane Reactor (DMBR) for Municipal and Industrial Wastewater Treatment	
X.Y. Sun, H.Q. Chu, Y.L. Zhang and X.F. Zhou	1278
The Progress of Research on Soil Heavy Metals	
Y. Ye, Z. Yang, X.P. Dang and Z.H. Liu	1285
Effects of N/P Atomic Ratio on the Growth of <i>Alexandrium Tamarensis</i> at Various Initial Phosphate Concentrations	
S.Y. Wen, D.Z. Zhao, L.L. Song and H. Long	1289
Character and Model of Anaerobic Granular Sludge Formation in the Sanitary Landfill	
J. Wang, Z.J. Zhang and L.N. Chi	1297
Effects of Herbaceous Plants on Hydrodynamic Characters of Runoff Water, and Runoff-Yielding and Sediment-Yielding Processes on Loessial Earth-Road Surface	
G. Liu, Q. Zhang, S.Q. Zheng and W.N. Xu	1303
Soil Heavy Metal Concentrations and Leaf Accumulation in Four Subtropical Plant Species from South China	
Z.Y. Su, Y.D. Ou, Y.M. Li and Y. Zhou	1310
A Multifunctional Drilling Fluid for Coalbed Methane Drilling	
L.H. Zheng, M.W. Zhang and Y. Lin	1317
Comparing the Influence of Two Different Natural Organic Matter Types on Colloid Deposition in Saturated Porous Medium	
X.Y. Yang, S.H. Deng, F.M. Chen, R. Flynn, F. von der Kammer and T. Hofmann	1324
Study of Device via Combined Filler for Ship Sewage Treatment	
Z.L. Chen, G.C. Chen, K.S. Xiong, W.B. Wang, W.P. Gu and W.T. Zhang	1330
Impact of CuO NPs to <i>Alga Microcystis Aeruginosa</i>: Effect of Dissolved Organic Matter	
J. Li, D.M. Gao and Z.Y. Wang	1334
Photodegradation of <i>p</i>-Nitrophenol Catalyzed by ZnO/MWCNTs Composite Catalyst in Water	
Z.Q. Li and J.Y. Liu	1339
Sulfur Isotope Geochemistry of Sn–Polymetallic Deposits in Dafulou District of Guangxi Province, China	
Y.S. Cheng	1345
Geological Characteristics of the Dafulou Tin–Polymetallic Sulfide Deposits in Guangxi, South China	
Y.S. Cheng	1350
Preparation and Characterization of Nd-Doped Ti/SnO₂-Sb₂O₅ Electro-Catalytic Electrodes Used for Reactive Brilliant Red X-3B Wastewater Treatment	
S.P. Li, H.B. Wang, J.F. Lian and X.Y. Zeng	1356
Comparison of the Temporal Heterogeneity of Soil Moisture of Different Ecosystems at Red Soil Hillside Fields	
X.F. Chen, X. Chen, W.M. Ju, L.L. Ren, D.R. Zhang, Z.C. Zhang, B.H. Guan, J.W. Zheng and C.Y. Liang	1361
Ore Genesis of Caixiashan Pb-Zn Deposit in Middle Tianshan, NW China	
X.F. Cao, X.B. Lu, S.T. Liu, P. Zhang, X. Gao, Y.G. Liu and Q.T. Hu	1366
Experimental Research on Contamination Dissolution-Releasing Characteristic of Coal Gangue in Soaking Operation	
L.P. Xiao, Y. Li and L. Zhang	1371
Study on Treatment and Reuse of Wastewater from Yunnan Huize Pb-Zn Ore Flotation	
X.Z. Chen, C.B. Sun, H.R. Yang and C.Y. Sun	1378
An Analysis of the Distribution of Arsenic Groundwater in Northern Suburbs of Zhengzhou, China	
H.W. Li, J. Liu, G. Wang and J. Gao	1384
The Pb-Zn Deposits and Mineralization during Cambrian in Chongqing Area of Yangtze Platform, China	
M.Q. Xia, G.W. Xu, X.J. Da and L. Chen	1390
Deformation Characteristics and Mechanism of the West Wall of Beiyi Iron Open-Pit Mine in Hainan Province	
Y.X. Cui, X.C. Li, Z.B. Jiang and F.F. Guo	1394

Lead Isotope of Sulfide Minerals from Dachang Ore Field of Guangxi (South China): Characteristic and Implication	
Y.S. Cheng	1399
Impact of T₈ Transgenic Rice Containing an Isopentenyl Transferase Gene on Soil Bacterial Biomass	
L. Song, D.G. Zhao and D.C. Jin	1404
Research on the Migration Characteristics of Organophosphorus in Clay	
H.Y. Li, G.X. Zhang, D.F. Song and X.Q. Li	1410
Research on Attenuation Effects of Plasma to Electromagnetic Waves and Influences to the Spacecraft Communication	
W.S. He, G.W. Mao and M.L. Chen	1414

Chapter 5: Applied Mechanics and Structural Engineering

Experimental Research on Compressive Age Strength of Ceramisite Concrete	
W.J. Yang and P. Wang	1423
Stress Relaxation Damage Analysis for High Temperature Bolting	
J.Q. Guo, X.H. Sun and H.C. Shi	1429
Stress Relaxation Continuum Damage Constitutive Equations for Relaxation Performance Prediction	
J.Q. Guo, W. Zhang and X.H. Sun	1434
Dynamic Characteristics of High Speed Vehicle Passing over Railway Turnout on Bridge	
R. Chen and W. Ping	1438
Strategy of Triangulating Surface of the Hollow Cylinder	
H.L. Li, J.G. Lu, Z.X. Xuan and J.D. Zhang	1444
Comparison Study of Engine Mounts	
W.B. Yan, J. Wang and S.Z. Jiang	1450
Dynamic Properties of Engine Main Components	
W.B. Yan, H.X. Pan and S.Z. Jiang	1454
Analysis of Impact of Tire Tread Groove Depth on Hydroplaning Risk Level	
T.Z. Liu, B.M. Tang and H.Y. Li	1459
Parametric and Controllable Shape Model of the Water-Lubricated Rubber Journal Bearing	
X.P. Pang, J. Chen, J.X. Wang and Y. Hou	1468
Damage Identification of Beam Structures Based on Genetic Algorithm and Sensitivity Analysis	
T.L. Huang and W.X. Ren	1474
The Effect of Centrifugal Force and Coriolis Force on Vehicle-Flexible Bridge Vertical Vibration	
X. Xiao, W.X. Ren and W.Y. He	1480
Research on Design Methods and Aerodynamics Performance of CQU-DTU-B21 Airfoil	
J. Chen, J.T. Cheng and W.Z. Shen	1486
Design Method of the Parameters of Tools for Clinching Technology	
B.J. Shi, Y.Q. Wang, S.L. Liu and H.Y. Tian	1491
Modeling and Predicting Tensile Strength of Tungsten Alloy by Using PSO-SVR	
J.L. Tang, C.Z. Cai, X.J. Zhu, G.L. Wang and D.F. Cao	1497
A Structure Optimization for Hooklift Arm Device Based on the Genetic Algorithm	
H.M. Chen and D.W. Liu	1504
Study on a Pneumatic Automatic-Extendable Crash Energy Absorption System	
L.B. Cao, H.B. Wang, J. Wu and H.Q. Chen	1509
Intelligent Multi-Objective Optimization for High Strength Sheet Metal Forming Process of Body Part	
Z.G. An and Y. Zhang	1515
The Analysis of Factors Affecting Rock Strength of Sandstone	
C. Liang, C. Zhang and N.J. Ma	1521
Study on Duration for Perilous Rock to Form	
H.M. Tang, H.K. Chen and X.Y. He	1525

Viscous Property of Clay J.Z. Li	1532
The Viscoelastic-Plastic Displacement Back Analysis of Rock Mass with Non-Stationary Parameters Q.S. Liu and J.L. Li	1538
Evaluation of Rock Mass Permeability Based on Geometry Measuring Method in a Gold Mine F.S. Ma, H.J. Zhao and J. Guo	1545
Samarium-Neodymium and Strontium Systematics Applied to Calcite Veins in Dabashan Thrust and Fold Belt in China: Dating and Tracing of the Fluid D.Z. Huang, X.Y. Wang, G.M. Li, Z. Liu, Z.H. Peng, S.Q. Huang and S.W. Dong	1552
Stability Analysis of Perilous Rock in Views of Damage and Fracture Mechanics H.K. Chen, H.M. Tang and X.Y. He	1561
Extraction of Gravity Anomalies Associated with Gold Mineralization: A Comparison of Singular Value Decomposition and Bi-Dimensional Empirical Mode Decomposition Y.Q. Chen and B.B. Zhao	1567
The Research of Formation Characters and Bit Optimization of Basalt in Niudong Block of Malang Sag H.M. Wu, Y.S. Lou, Z.H. Li, L. Zhu and Y. Zhang	1578
Mechanical Analysis of Construction Process for Shallow Weaking Surrounding Rock Multi-Arch Tunnel J.X. Lai, G.L. Zhang and X.W. Liu	1583
Research on Modeling Method for Freezing Tunnel with Fractured Surrounding Rock Y.S. Kang, Q.S. Liu, K. Shi and X.Y. Liu	1591
Mechanism and Calculation Research on Excavation Deformation of High Layered Dip Rocky Slope H.Y. He	1596
Determination of Safe Mud Density for Soft Mudstone Formation in KI11-2 Structure Z.H. Li, Y.S. Lou, L. Zhu and C.Y. Zhang	1601
Study and Engineering Practice on Cracks Control Measures for Concrete Face Slab of High CFRD D. Luo and L.Z. Luo	1606
Study on Effect of the Modified Hollow Microspheres on the Foam Ability and Stability of Fire Fighting Foam B.H. Tang	1612
Characteristics of Circulating Fluidized Bed Evaporator with Vapor-Liquid-Solid Three-Phase Flow J.T. Song, J. Chi, H.F. Zhang and Z.Y. Liu	1618
Research on Satellite Platform Vibration Compensation Method Based on Liquid Crystal Steering System X.Z. Li, C.S. Han, M. Wen, Q.L. Zhao, X.N. Jiang and X.Z. Li	1627