

# Table of Contents

## Preface, Organizing Committees and Sponsors

## Chapter 1: Chemical Materials and Technologies

<b>Research on Mechanism in the SNCR DeNo<sub>x</sub> Process</b> S.S. Xu, B. Deng, L.J. Li and R.S. Huang	3
<b>Chemical Constituents from <i>Cremanthodium potaninii</i></b> A.M. Yang, W.J. Guo, Y. Zeng, H.F. Gong and R. Wu	8
<b>Investigation of Low Temperature Sintering of Low Voltage Varistor Based on TiO<sub>2</sub></b> D.J. Lan and S.Q. Wan	12
<b>Direct Immobilization of Glucose Oxidase on the Hydrophilic Copolymer Support Containing Oxirane</b> R.R. Li, P.W. Li, D.L. Liu, Q. Hao, Q. Yang and S. Wang	17
<b>Ablation Properties of ZrO<sub>2</sub>-MgO and Mo Nozzle Produced by Plasma Spray Forming</b> J.H. Qu and Y.J. Wei	23
<b>Identification of Unknown Sediment in Water-Reducer</b> S.Y. Si, B.H. Chen, W. Zhang, J.W. Qian and G.Q. Ding	27
<b>Removal Polyacrylamide from Oil Recovery Wastewater by <math>\gamma</math>-Fe<sub>2</sub>O<sub>3</sub> Magnetic Particles</b> Y.X. Liu, X.W. Sui, J.H. Huang, Y.Z. Zhu, G. Cao and Z.K. Wu	32
<b>Zinc Oxide Production Technology of Distillation Twice Based on Scrap Miscellaneous Zinc Materials</b> Q.S. Liu and J.X. Yan	36
<b>Comparison of Cellulose Pyrolysis in Molten NaOH, Ca (OH)<sub>2</sub> and Composite Alkali</b> W.L. Yang, H.T. Jiang, W. Hua, Y.R. Wu, F.W. Yu, D.X. Ji, N. Ai and J.B. Ji	40
<b>Effect of Aluminium Powder Additives upon CO<sub>2</sub> Reactivity of Electrolytic Aluminium Carbon Anode with Calcined Anthracite</b> Y.J. Ren, Z. Sun and G.G. Quan	44
<b>Preparation of TiO<sub>2</sub>-ACF by Electrospinning and its Adsorption Performance for Low Concentration SO<sub>2</sub></b> T.B. Song, Y.B. Wu, P. Sun and J. Bi	51
<b>The Effect of Coating Agent and Preparation on the Thermostability of Coated Potassium Chlorate</b> H.J. Yang, Y. Cheng, W.W. Zhou, X. Hu and Z.Q. Wu	56
<b>Crystal Structure and Synthesis of {[Cu(L)<sub>n</sub>X][X] (H<sub>2</sub>O)<sub>2</sub>} L= benz, n=3</b> Y.F. Li	61
<b>Dynamic Recrystallization Behavior of Pure Titanium</b> J.H. Su, Y.W. Han, F.Z. Ren and Z.Q. Chen	66
<b>Reaction Heat of High Alkali Aluminosilicate Glass Batches in Melting Process</b> Y.L. Tian, J.S. Cheng, J. Zhang, Y.L. Shao and X. Li	71
<b>Nano-Rheology and its Application in Controlled-Release Fragrance Nanocapsules Suspensions</b> Z.B. Xiao, E.Q. Wang, G.Y. Zhu, R.J. Zhou, Y.W. Niu, W.L. Liu, D.H. Lei and C. Liu	76
<b>Optimization of Process Parameters for a Uniform Ultrasonic Spraying through the Taguchi Experimental Design</b> W.L. Liu, H.H. Yang, M.H. Chen and T.H. Hou	81
<b>Review of Advanced Technology of Flue Gas Desulphurization</b> E.W. Wang, S.M. Lei, L.L. Zhong and S.C. Zhang	86
<b>Preparation and Stability Studies of a Desulfurizer Loaded on Porous Silica Gel</b> W. Xu, M.L. Lai, Q. Su, J.H. Guo, Y.Y. Fang and J. Xu	92
<b>Preparation and Properties of Copper Antibacterial Silica</b> G.H. Bai, C.L. He, T.S. Wang and L. Lv	96
<b>Preparation and Microstructure of Exfoliated Graphite with Large Expanding Volume by Two-Step Intercalation</b> J.J. Zhao, X.X. Li, Y.X. Guo and D.Y. Ma	101

<b>Wasted Low Grade Iron Ore with High Phosphorus Reuse for Phosphate Removal from Aqueous Solution by Using a Factorial Design</b> X.L. Yuan, W.T. Xia and J. An	106
<b>University Server Room Creep Corrosion Prevention</b> L.C. Li	111

## Chapter 2: Composite Materials and Technologies

<b>Preparation and Properties of Porous poly(vinyl alcohol)/Powdered Activated Carbon Composite</b> H.P. Wang	117
<b>Dissolution of Tungsten Carbide in Remanufacturing Coating by Plasma Spray Welding</b> X.D. Du, L.Y. Li, G.F. Liu, J. Shen and D. Zhou	121
<b>The Research on Thermal Residual Stress of SiC<sub>p</sub>/Al Composites</b> J. Zou, J.Y. Zhang, D.P. Lu and Q.J. Zhai	127
<b>3-D Framework {[Cu(L)nX][X] (H<sub>2</sub>O)<sub>2</sub>} L= bipy,n=2 Constructed through C-H....Cl Hydrogen Bondings and <math>\pi</math>-<math>\pi</math> Interactions</b> Y.F. Li	132
<b>Research on the Engineering Properties of Fly Ash as Backfill</b> F. Wei	137
<b>Theoretical Analysis on Resistance-Temperature Characteristic of Ni/HCl-PANI Composites</b> S.Y. Qiu, Z.W. Yang and H. Qiu	142
<b>The Impact on the Polypropylene Matrix Composites by the Cutting Size of the Automotive Interior Decoration Scrap</b> H.L. Jin, J.P. Yu, Z.D. Cao, W. Tong, C.H. Yan and M. Zhang	147
<b>Effects of La<sub>2</sub>O<sub>3</sub> on Microstructure and Wear Properties of Thermal Clad NiCoW/ La<sub>2</sub>O<sub>3</sub> Composite Coatings</b> B.N. Liang and Z.Y. Zhang	153
<b>Effect of Pre-Wetting Super-Light Aggregate Reinforced Aerated Concrete</b> J. Dong, X.Q. Liu, M. Zhang and K. Guo	157

## Chapter 3: Alloys, Metal Materials and Technologies

<b>Effect of Niobium on the Morphology of Nodular Graphite in Ductile Iron</b> Y.S. Yan, L. Chang, X.R. Chen, Q. Hua and Q.J. Zhai	163
<b>The Residual Stress after High Frequency Induction Welding with Complex Shapes WC-Co Alloy and Steel</b> J. Ju, F. Xue, J. Zhou and J. Bai	168
<b>Characterization of Recycled Cemented Carbide and the Raw Materials</b> S.X. Li, Z.F. Wang, W.Q. Li, G.Z. Zhou and G.Z. Liu	173
<b>Interface Microstructure and Properties of 304 Austenite Stainless Steel/Low Carbon Steel Clad Plate by Casting and Hot Rolling Process</b> S. Li, D. Tang, H.B. Wu and J.G. Xiong	178
<b>Thermodynamic Optimization Design of Casting Mg-Zn-Cu Alloy</b> L.G. Xu, X.X. Li, J. Ye, X. Ji, H. Qiu, J. Luo and H.G. Yang	183
<b>Microstructure and Hardness Distribution of Ductile Iron by PTA Cr-Ni-Mo-Cu Alloying</b> H.T. Cao, X.P. Dong, Q.W. Huang, Z. Pan, J.J. Li and Z.T. Fan	188
<b>First-Principle Study of Atomic Structures of Fe/TMC (TM=Ti, Zr and Hf) Interface</b> J.C. Li, J. Shen and J.W. Wang	193
<b>First-Principles Study of the Mechanical Properties of ScAl Microalloyed by 4d-Transition Metals</b> S. Huang, C.H. Zhang, R.Z. Li, J. Sun and J. Shen	198
<b>Investigation into the Post-Treatment Process for Titanium Alloy Space-Curve Meshing-Wheel</b> Y.Z. Chen, Y. Zhang and E.Y. He	203

<b>Influence of the Electric Current Pulse with Different Pulse Width on the Eutectoid Microstructure of Hypoeutectic Fe-C Alloys</b>	208
Z.Y. Huang, Q.H. Cen, Z.H. Li, Y. Wu and L. Zou	
<b>Microstructural and Mechanical Properties of Al 7003 Alloy Processed by Dual Equal Channel Lateral Extrusion</b>	214
Z.H. Liu, H.R. Qi, X. Wang, S. Qi and N. Qing	
<b>Tribological Properties of FeNiCr Coatings with the Addition of La<sub>2</sub>O<sub>3</sub> on 1045 Carbon Steel</b>	219
Z.Y. Zhang and B.N. Liang	
<b>Effect of Solution Temperature on Grain Size in a Mg-4Y-3Nd-3Dy-0.5Zr Alloy</b>	223
J.Y. Yi, Z.L. Ning, D.W. Yang, H.X. Zhang, H.C. Sun and J.F. Sun	
<b>Halide Activators Suitable for Low Temperature Pack Aluminisation of Electroplated Nickel on Creep Resistant Ferritic Steels</b>	228
J. Wang, K. Li, C.Y. Zhu and Z.D. Xiang	
<b>Research and Application on Parameter Optimizing of Oxygen Lance Nozzle on Converter for Semi-Steel Making</b>	233
J. Chen, T. Zhang, X.T. Liang and J.H. Zeng	
<b>A Method for Welding Deviation Acquisition Based on Magnetic-Control Arc Sensing for Multi-Pass Welding</b>	239
Y.X. Hong, B. Hong, J. Liu and X.W. Li	
<b>Effect of Wall Thickness of the Billet on 1Cr18Ni9 Stainless Steel Tube Stagger Spinning Process</b>	244
S.H. Yang and X.L. Wang	

## Chapter 4: Biomaterials, Natural Materials and Technologies

<b>Characterization of Calcium Phosphate with an Anodic TiO<sub>2</sub> Nanotube Layer on Titanium Screw for Biomedical Application</b>	251
Y.J. Yan, Y. Huang, Q.Q. Ding and X.F. Pang	
<b>Preparation of Environment-Friendly Epoxidized Corn Oil as a Plasticizer</b>	256
Y.H. Peng and H.D. Lin	
<b>Study on Destroying Enzyme in Chestnuts (<i>Castanea mollissima</i> Blume) by Microwave Heating</b>	262
C.N. Wang, X.X. Yi, J.H. Qi, F. Wang and M.X. Pang	
<b>Determination of Diflubenzuron Residues in Vegetables by UPLC-MS/MS</b>	266
X.F. Wang, C.L. Yang, M.F. Huang, M.Y. Wang, Y.B. Zha, L. Lin and S.D. Zeng	
<b>Determination of Chlorbenzuron Residues in Tea by UPLC-MS/MS</b>	270
Y.B. Zha, M.F. Huang, C.L. Yang, M.Y. Wang, L. Lin, J.X. Liu and S.D. Zeng	
<b>Determination of Imidacloprid Residues in Chinese Cabbage by UPLC-MS/MS</b>	274
Y.B. Zha, M.F. Huang, C.L. Yang, M.Y. Wang, X.F. Wang, L. Lin, J.X. Liu and S.D. Zeng	
<b>Flavonoids and Cytotoxic Activity of <i>Gentiana algida</i> Pall</b>	278
A.M. Yang, X.L. Shi, H. Han, Y. Men and R. Wu	

## Chapter 5: Materials Optical, Magnetic and Electrical Properties and Technologies, Films and Devices Applications

<b>Preparation and Electrical Properties of Multilayer Zinc Oxide Varistor by Gelcasting</b>	285
M.Y. Fan, L.F. Zhang, H. Xiao and T.T. Xie	
<b>Ultraviolet Photodetectors Based on MgZnO Thin Films</b>	291
M. Zhao, D.Y. Jiang, W.J. Liu, G. Yang and D.J. Li	
<b>High Precision Fiber DFB Laser Micro-Accelerometer</b>	296
J.T. Zhang, Y.L. Yu, Y.L. Zhang, K. Li and X.C. Xi	
<b>The Research on Conductive Fibers Configuration of Antistatic Fabric</b>	300
J.F. Liu and X.P. Zeng	
<b>Effect of Electron Beam Irradiation Crosslinking on PVA Films</b>	304
G.L. Dai, H. Xiao, S.F. Zhu and M.W. Shi	

<b>Study on Microstructure and Tribological Properties of Graphite-Like Carbon Films</b> B.J. Shi, S.C. Wu, Y.P. Peng and S.H. Liao	309
<b>Effect of Annealing Temperature on Structural and Optical Properties of (Cu, Al):ZnO Thin Film by Sol-Gel Method</b> Y.X. Yang, Q.N. Shi and H.L. Tan	314
<b>High-Performance Indium Oxide Thin Film Transistor with ITO Source/Drain Electrodes Fabricated by Reactive Sputtering</b> X.A. Zhang, X.K. Yu, J.X. Zhai, Y. Jiao, L.H. Ding and W.F. Zhang	319

## **Chapter 6: Wireless, Sensors, Network and Communication Technologies, Image Technologies Applications**

<b>Soundscape of Public Space and Design Method</b> Q. Shen	327
<b>Research and Application of Information Operation and Maintenance Fault Diagnosis Model for Power Grid Enterprise</b> Z.Y. Qu, X.Y. Bo, Y.L. Diao, L. Wang, P. Xin and J.H. Zhang	332
<b>Software Design Methods Research on Configuration Technology</b> C.H. Yang	337
<b>A Kind of Traffic Light Controller Simulation Design</b> C.H. Yang	342
<b>The Design of Speed Acquisition and Prompt System Based on STC89C52</b> K.Y. Guo, X.J. Chen and B. Ji	347
<b>Music Spectrum Display System Based on MCU</b> L. Jin and Q. Liu	353
<b>Adaptive USB Fast Charger Design Based on Quick Charge 2.0 Protocol</b> H.Z. Cai and Y. Liu	357

## **Chapter 7: Monitoring, Detection and Recognition Technologies**

<b>Study on Micro-Deformation Monitoring Technology of Contacts for Electric Connectors</b> Y.Y. Luo, X.J. Zhang, L.J. Ma, L.X. Wang, K. Li, M.M. Lei, F. Yao, X.N. Li and Y.L. Ren	363
<b>Two-Dimensional Numerical Research on the Ablation Effects of Silver Target Bombarded by TEMP Type Accelerator</b> D. Wu	368
<b>Research on Optical Feature Recognition Technology of Multiple Micro-Holes</b> H.T. Cai and Y. Liu	373

## **Chapter 8: Control and Guided Systems**

<b>Design and Implementation of Gas Stove and Range Hood Integrated Intelligent Control System</b> Q. Zhu, M.Y. Gao, J.J. Xie and Z.W. He	381
<b>Design and Simulation of the Hydraulic Loading Control System of the Rolling Bearing Fatigue Life Testing Machine</b> W.Y. Guo and M.Y. Wu	386
<b>A Robust Adaptive Sliding Mode Control Method for Attitude Control of the Quad-Rotor</b> Y. Gao, Z.Q. Song and X. Liu	391
<b>Principles and Implementations of Three-Level Control SCADA System for Oil and Gas Pipelines</b> R. Xu, C.Z. Wang and T. Hu	396
<b>Study on Unbalance Compensation Control of STATCOM Based on MMC</b> Y. Xie, Y.N. Liao and Z. Mao	401
<b>Variable Frequency and Multi-Pressure Water Supply Control System Based on STM32 Processor</b> J.X. Lou, H.F. Zhang, M.Y. Gao and Z.W. He	406

<b>Fuzzy Control of Z-Source PV Grid-Connected Using Constant Frequency Hysteresis Comparison</b>	
Y. Chen and Y. Zheng	412

## **Chapter 9: Dynamics and Mechanics of Physical Processes and Behavior in Manufacturing and Materials**

<b>Stability Modeling and Analysis of Orthogonal Turn-Milling with Variable Cutting Depth and Cutting Thickness</b>	
Y. Wang, R. Yan, F.Y. Peng and F. Qiu	419
<b>Thermal Stress Compensation of MgO Concrete in Construction of High Arch Dams in Cold Areas</b>	
X.Y. Jing, X.H. Liu and X. Zhang	427
<b>The Study on the Compensation for Displacement of Multi-Way Valve Main Spool</b>	
J.G. Liu, S.Z. Kuang, J.R. Zhu and J.W. Chen	432
<b>Test Research of Vertical Machine Center's Geometrical Accuracy Stabilization</b>	
D.M. Chen, K. Liu, X. Li and Z. Tan	437
<b>Mechanical Properties of Sandstone under Loading and Unloading Conditions</b>	
X.X. Wang, W.J. Ma, J.W. Huang and Z.Y. Liao	441
<b>Finite Element Analysis for the Welding Column of CNC Boring Machine</b>	
Y.F. Yue, Z.B. Xin and J.Y. Wang	447
<b>Comparison of the Bearing Capacity of Dry and Wet Cutting Surfaces</b>	
K. Qiu and Z.H. Long	452
<b>Prediction of Cutting Force in Trochoidal Milling Based on Radial Depth of Cut</b>	
X.H. Zhang, F.Y. Peng, F. Qiu, R. Yan and B. Li	457
<b>Laser Transmission Welding of Thermoplastic: Effect of Process Parameters on Weld Strength</b>	
S.K. Singare, S.G. Chen, J.J. Zou and Y.Z. Lin	463
<b>Dynamic Analysis of Bionic Vibration Isolation Platform Based on Viscoelastic Materials</b>	
H.Q. Lv, W.X. Tang and Q.H. Song	467
<b>The Factors Sensitivity Analysis of Drift Ice Impact Force on the Pier</b>	
S.F. Zhang and T.L. Yu	472
<b>Experimental Study on the Impact of Cutting Speed on Surface Integrity of Ti-10V-2Fe-3Al</b>	
H.C. Yang, Z.T. Chen and M.H. Chen	476
<b>Work Hardening of the Isotactic Polypropylene during Rolling</b>	
J. Jia, S.X. Liu and W.M. Mao	481
<b>Experimental Study on Impact Damper with Activated Carbon Fine Particles</b>	
Y.C. Du, X.L. Wu, Z. Liu and Y.Y. Zhou	485
<b>Experimental Research on the Preparation of Heat-Resistant Concrete Using Normal Portland Cement</b>	
J.Y. Hu, J.B. Xie, S.G. Qian and J.F. Huang	490
<b>The Effect of Air Pressure on the Evolution of Fiber Path in Melt-Blowing Process</b>	
S. Xie and Y.C. Zeng	496
<b>A Numerical Study on Hollow Droplets Impact onto a Solid Substrate</b>	
D.S. Li, X.Q. Qiu and Z.W. Zheng	501
<b>The Research of Hydraulic Characteristics of High Water Cut Crude Oil Pipeline in Sabei Oilfield</b>	
X.Q. Guo, X.R. Zhang, J. Zhao and C. Sun	506
<b>Quantum Discord of Coupling Qubits in Decoherence-Free Subspace and Squeezed Vacuum Reservoir</b>	
J.J. Hu, H.J. Hu and Y.H. Ji	511
<b>The Motion Attitude Analysis of High-Speed Tracked Vehicle Climbing over Vertical Wall</b>	
N. Chen, Y.P. Han, P.P. Liu and S. Yang	515

## **Chapter 10: Advanced Technologies in Manufacturing, Mechanical Engineering and Industry, Design, Modeling, Analysis and Simulation**

<b>Finite Element Simulation and Experimental Research in Insulation Spacer Blanking</b> Q.X. Xia, L.B. Ji, B.H. Cao and Y.X. Li	523
<b>Research of Sled Motorcycle Model Design</b> Q.L. Du, X.W. Jiang and L.A. Pan	529
<b>The Numerical Control Turning Processing Fixture Design U-Shaped Thin-Wall Parts</b> D.Y. Sun	533
<b>Study on the Numerical Simulation of Fillet Radius of V-Shaped Anvil Edge Influencing Quality of TC4 Heavy Long-Axis Forgings in Squaring Process</b> Y.Z. Wu, F. Huang and Q. Liu	538
<b>Vibration Analysis and Research on Air Bearing Block of CMM</b> X.Q. Zhao	543
<b>The Complex Housing Injection Mold Design of Automobile Based on UG and Numerical Simulation</b> Y. Mei, L. Chen and G.Y. Wang	547
<b>Electric Film Based on the Design of the New Electrothermal Furnace</b> Y.N. Song, S.J. E, Z.H. Sheng, Q. Zhang and F.L. Shen	552
<b>Innovative of the Clean Trolley Based on Autodesk Inventor Professional</b> T.C. Yao, Y.C. Yin, J.C. Cai and D.W. Xu	557
<b>Forecast on Upsetting Crack Based on Numerical Simulation</b> Y.B. Fan, Q.X. Xia, M.K. Lv, X.Z. Zhao and Y.L. Du	561
<b>Optimum Design of Remote Controller Back Shell Injection Mould Based on Flow Simulation</b> J.M. Hong	567
<b>Theoretic and Experimental Research of Crankshafts Barrel Finishing</b> J. Zeng and H.Z. Jiang	573
<b>Influence of Wire Grid on the Cone Calorimeter Results of Textile Fabrics</b> B.H. Mao, S.L. Luo, H.L. Zhang, Z.C. Zhan, Z.J. Jiang and Y.R. Yan	578
<b>3D Numerical Analysis about Effect of Seal Clearance on Labyrinth Seal Performance</b> P. Ba, L. Liu and X.H. Zhang	583
<b>The Nonlinear Phenomenon in Modal Analysis of Liquid Tank</b> Y.C. Song and C.M. Huang	588
<b>Study on Main Function and Key Technology of Enterprises Contingency Plan Virtual Drill System Based on Virtools</b> Y.P. Han, J.F. Meng, J.J. Meng and W.S. Zhang	593
<b>Modeling of Direct Current Atmospheric Pressure Argon Discharge in Two-Dimensional</b> X.Y. Huang, T.T. Zhang and X. Zhang	597
<b>Numerical Analysis on Temperature Field of Electric Connectors</b> Y.Y. Luo, Y. Wen, L. Hao, X.W. Liu, Y.J. Wang, L. Liu, F. Yao, Z. Wang and S.M. Zheng	602
<b>Performance Analysis of Chaotic Spread Spectrum Sequences</b> C.G. Liao and P. Liu	608
<b>Computer Simulation of Pore-Water Pressure</b> T.H. Liu and S.J. Meng	613
<b>TQLZ Self-Balance Vibrating Screen Static and Modal Analysis</b> X.Y. Liu, H.B. Cui, P.X. Cao, X.C. Bao and X.Y. Liu	619
<b>Jet Repulsion in Multi-Jet Electrospinning Systems: From Needle to Needleless</b> Y.S. Zheng and Y.C. Zeng	624
<b>Coupled Thermal Analysis on Carbide Anvil of Cubic Press</b> X.J. Zhou, Z.W. Xu, R.Q. Chen and S.P. Li	629
<b>A New Approach to Assemble Tolerance Analysis Based on CE/TOL</b> X.H. Zhang and P. Ba	634
<b>Pro/ENGINEER and 3DS Max Combined with Virtools for Virtual Reality Application</b> S. Yang, J.F. Meng and Z.X. Shi	639
<b>Investigation of Flammable Behavior of Nylon 6 Fabrics with and without Spandex Using Cone Calorimeter Test and Vertical Burning Test</b> S.L. Luo, H.L. Zhang, Z.C. Zhan, B.H. Mao, Z.J. Jiang and Y.R. Yan	644
<b>Chromatic Adaptation and Chromatic Adaptation Transform Issues in Color Appearance Model</b> X.Z. Li, Y. Liu, J.J. Liu, X.L. Li and A. Xu	648

## **Chapter 11: Power Engineering and Drive Systems**

<b>Study on Coordinating Control Strategy of Hybrid Cascade Energy Storage and Bi-Directional Power Regulation Device</b> Q. Miao, J.Y. Wu, H.K. Ai, F. Xiong, D.W. Qi and L.L. Hao	655
<b>Research on Inductive Power Charging Device of Unmanned Ground Vehicle</b> Z.N. Li, J.W. Chen, Y.T. Zhang and G. Yin	660
<b>Design and Simulation on Hydraulic Sleepless Speed Regulation System of Invariable Fertilizing Application</b> J.L. Wu, L.X. Zhang, J.Z. Yu, W.B. Wang and J.H. Zhang	665
<b>Distributed Photovoltaic Power Generation System Design and Grid Research</b> C.Y. Zhang, X.W. Li, M.C. Liu and Z.M. Xi	671
<b>Wide-Area Time-Delay Coordinating Control of Generator Excitations and SVCs Based on Hamiltonian Functional Method</b> G. Hailati, J. Wang and T. Yin	675
<b>The Lagrangian of Analytical Mechanics and its Application in Power System with TCSC</b> T. Yin, J. Wang, G. Hailati and F.X. Xu	681
<b>ARM-Based Speed Regulating System for Asynchronous Motor</b> S.Q. Zhou, C.L. Mei, G.H. Liu, W.T. Huang and D.X. Shu	686
<b>Research on Improved Small-Disturbance Model of Doubly-Fed Wind Generator</b> G. Li, H. Zhang, W. Wei and L. Chang	692
<b>The Design Study on a Novel MW Wind Power Generation Speed-Up Machine</b> L.F. Han, W.F. Ding, S.Y. Zhong and Z.L. Liao	697
<b>Optimization of Smoothing Control in Hybrid Wind and Battery Energy Storage System</b> B.H. Zhang, H.F. Guo, Y.X. Li, M. Chen, Y.Q. Li and J.S. Zhou	703
<b>An Improved Newton's Method and its Application in Power System</b> W.B. Hu, X.S. Li, R. Hu, H.J. Wan and W.W. Yao	708

## **Chapter 12: Automation, Optimization, Algorithms in Manufacturing and Industry, Applications**

<b>Multi-Objective Programming and Time Optimal Algorithm Research</b> C.H. Yang	715
<b>Optimal Planning of Distributed Generation Using Self-Organizing Optimization Algorithm</b> W. Song and Q.Q. Li	720
<b>Design and Analysis of High Availability Power Grid Dispatching Automation System Based on Virtualization Technology</b> Z.X. Ji, F.C. Di, J.H. Lin, R.C. Yuan, Y.P. Huang and T. Xie	725
<b>Optimization of Parameters of Aircraft Landing Gear with Orthogonal Turn-Milling Based on GRA-PSO Algorithm</b> F. Li, F.Y. Peng, Y. Wang, R. Yan and B. Li	730
<b>The Application Base on Frame Optimization Method in the Rectangular Hole Group Position Error</b> R. Zhang	735
<b>The Analysis of Circuit Breaker Health Index and the Characteristic Quantity</b> E.J. Pang, H. Yu, G.J. Tang, Z.K. Liu and C.L. Xu	740
<b>Bath Central Heating and Air Conditioning Systems Economic Analysis</b> J.G. Yang	745
<b>Optimization of Exit Design Based on Evacuation Model for Limited Visibility</b> H.T. Chen, P. Yang and R.C. Yu	749

## **Chapter 13: Recycling Applications, Environmental Research, Alternative Fuel**

<b>Ecological-Economic Values of Lignocellulosic Herbaceous Plant on Contaminated Land</b> X.C. Hou, X.F. Fan, Y. Zhu, J.Y. Wu, C.Q. Zhao and S.S. Zheng	757
<b>Manufacture of RDF (Refuse Derived Fuel) by Carbon Ash from the Waste Tire Pyrolysis Resource Chemical Plant</b> K.W. Chen	764
<b>The Wide-Applicant Feasibility Study of RDF (Refuse Derived Fuel) - Example for Carbon Ash after the Waste Tire Pyrolysis T</b> K.W. Chen	768
<b>The Key-Factor Modulation of Waste Tire Pyrolysis in Resource Chemical Plant for Recovered Fuel Production</b> K.W. Chen	772
<b>The Applicant Feasibility Study of Recovered Fuel after Waste Tire Pyrolysis</b> K.W. Chen	776
<b>Pollutants Concentrations in Ambient Air and their Relationship in the Spring of Beijing</b> J. Liu, P. Yang and W.S. Lv	780
<b>Research on Preparation and Properties of Biodiesel</b> J. Zhu, C.B. Fu, M.Z. Sun and W.T. Wu	785
<b>Two-Phase Mesophilic Anaerobic Co-Digestion of Food Waste and Sewage Sludge: Effect of Hydraulic Retention Time</b> G.H. Wang, L. Wang, X.J. Tan, Y.X. Wang and F. Wang	789
<b>Accelerated Biodegradation of PLA Nonwovens in Soil Bacterial Suspensions</b> P. Zhang, H.X. Ye, R.T. Zhu, Z.C. Zhan, X.S. Lin and Y.R. Yan	797
<b>Characteristics of Particulate Matter about Emissions in a Heavy-Duty Diesel Engine with Biodiesel Blends</b> D.M. Lou, T.Y. Shen, Y. Zhou, Z.Y. Hu, P.Q. Tan and Q. Qiang	802
<b>Influence of Post Injection on Emission Characteristics of a High-Pressure Common-Rail Diesel Engine Fueled with Biodiesel Blends</b> D.M. Lou, C.C. Zhang, Z.Y. Hu, P.Q. Tan and J.J. Lin	808
<b>Study on Construction Technology of Drain Board for Foundation Covered with Thicker Hardpan</b> W. Li, M.H. Huang and M. Li	815

## **Chapter 14: Applied Geological Research**

<b>Study on the Relation between the Deep and the Spontaneous Combustion of Coal Seam</b> J.Y. Di, E.X. Gao, X.L. Sun, C.Q. Sun and Y.L. Chen	821
<b>Model Experiment Study on Anti-Explosion Characteristics of Underground Caverns Reinforced by External Cross-Anchoring</b> J.J. Wang, Y.J. Wang and C.Y. Guo	826
<b>Numerical Simulation of Heat Transfer from Hot Dry Rock to Water Flowing through a Circulation Fracture</b> B. Dou, H. Gao, G. Zhou and L. Ren	831
<b>Application of Numerical Simulation in Reinforcement of Caverns Underground by External Cross-Anchoring</b> J.J. Wang, Y.J. Wang and C.Y. Guo	835
<b>Theoretical Model of Moisture Migration in Frost Soil Material</b> L. Zheng and Y. Shen	840