

# Table of Contents

## Preface, Committee and Sponsors

## Chapter 1: Materials Science, Processing and Application

<b>Experiment Study on Mixed Combustion of Biomass and Coal</b> P. Cai, L.J. Zhao, K. Wang and S.T. Kong	3
<b>TEM Specimen Preparation of GaN Thin Films</b> C.Y. Li and J. Cao	7
<b>Study of Material Properties for the Multielement in Dipsacus Asper Wall — From Panzhihu with Application of Microwave Assisted Digestion and the ICP-AES Method</b> H.B. Han, Q. Deng, Y. Diao, J.M. Deng and M.J. Li	11
<b>Study of Material Properties for Microwave Assisted Digestion of Fallopia Multiflora for Multielement Analysis by ICP-AES</b> H.B. Han, Y. Zhong, Y. Diao, J.M. Deng and M.J. Li	15
<b>Determination of Metal Elements in Maca from Different Areas by Inductively Coupled Plasma-Atomic Emission Spectrometry</b> H.B. Han, Q. Dong, Y. Diao, H.P. Wei and M.J. Li	19
<b>Research on Material Properties of Engineering Materials with Construct Disaster Preparedness of the Four-Dimensional Space in Hilly Cities' Communities</b> S.R. Qian	23
<b>The Practical Research of Engineering Materials for the Temporary House after Earthquake</b> S.R. Qian	27
<b>Application of New Materials in the Field of Sports Apparel</b> L. Zhang	31
<b>Experimental Study on Dilution Ratio of Laser Cladding of Al<sub>2</sub>O<sub>3</sub>-13 % TiO<sub>2</sub> Ceramic Coating</b> D.S. Wang, G. Qu and J.L. Su	36
<b>Thermal Barrier Effects Comparison of Plasma-Sprayed and Laser-Remelted Al<sub>2</sub>O<sub>3</sub>-13 % TiO<sub>2</sub> Ceramic Coatings</b> D.S. Wang, G. Qu and J.L. Su	40
<b>Beneficiation of Iron with Magnetic Separators</b> K. Hou, X. Tong, X. Xie and B. Yang	44
<b>Decolorization of <i>Limonium bicolor kunze</i> (Bge.) Polysaccharides by Resins</b> L.H. Zhang, P. Zhao, Q.H. Meng and Y.P. Du	48
<b>Influences of Turning Parameters on Surface Roughness in Ultra-Precision Diamond Turning Processing Technology</b> K.L. Xu and Z.W. Tan	52

## Chapter 2: Applied Mechanics, Mechanical and Electronic Engineering Research

<b>Finite Element Analysis of Inclined Double-Roller Enveloping Hourglass Worm Gearing Based on Workbench</b> H. Tang, Z.X. Liu and H. Rong	59
<b>Research on Forward DC-DC Converter with High Power</b> R. Wang, H. Chen, T.F. Lei and Y. Shi	63
<b>The Influence of Electric Vehicles Charging and Discharging on Power Grid</b> P.L. Li	67
<b>Design of an Overvoltage Online Monitoring Device Based on Optical Fiber Voltage Sensor</b> H.C. Guo	72
<b>Fault Diagnosis of Wind Turbines Based on Improved Neural Network</b> Q. Lan, P.D. Zhao and M.L. Wang	78

<b>Study on Mechanical Equipments and Electronic Resources for Improving Interpreting Abilities</b> X.Z. Tian	84
<b>Data Processing for Dynamic Consequences of Prey Refuge in a Predator-Prey System with Stage Structure and Time Delay</b> L. Han	88
<b>Study on Impact Properties of New Hydro-Pneumatic Buffer for a Metro Vehicle</b> Y.P. Li	94
<b>Numerical Calculation on the Influence of Missile Exhaust Plume with Mechanical Properties to the Double-Launch Box</b> J. Li and Y. Jiang	101
<b>Kinematics Analysis of Instep Shot in Different Heights</b> P. Li	106
<b>The Study of the Constant Force Polishing by the Multi-Robot</b> M. Yu and X. An	110
<b>Study on Design Method of Clutch Pressure Plate Based on Thermal Deformation</b> G.B. Yang and T.S. Zhang	114
<b>A Method to Predict Stress Intensity Factor of Surface Crack at Weld Toe of Offshore Structures under Wave Loads</b> X.S. Yan and X.P. Huang	118
<b>A Numerical Study of the Airfoil Aerodynamic Characteristics with Porous Surface</b> X.J. Xiang and J.L. Yang	123
<b>The Study of Aeroelastic Reduced-Order Model Based on CFD/CSD Method and its Application</b> R. Li and C.H. Tang	131
<b>Research on Car-Rail Coupling Dynamics of Ascending Hatchway of Elevator Safety Device Test Tower</b> Q.S. Jiang, J.P. Ye and J.F. Zhang	135
<b>A Laser TV Signal Dynamic Filtering Based on FPGA</b> S.J. Han, Y.Z. Yu and C. Xue	139

### **Chapter 3: Environmental Research and Energy Engineering**

<b>Data Processing in Environmental Performance of Building Systems Applied in Residential Design</b> X.Y. Jia and T. Li	145
<b>Integrated Evaluation of Energy-Saving and Emission Reduction Based on Analytic Hierarchy Process</b> H.L. Shen	149
<b>Application of Ambient-Temperature Argon Plasma Modified PET Fibers with Surface Grafting for Heavy Metal Removal</b> J.E. Chang, Y.K. Chang, M.H. Leu, Y.L. Chen and J.H. Huang	153
<b>Bottlenecks and Countermeasures in Shale Gas Exploration and Development of China</b> R. Huo and K.B. Duan	157
<b>Conditions of Shale Gas Accumulation and Exploration Practices in China</b> R. Huo and K.B. Duan	161
<b>Research Status and Trend of Natural Gas Hydrate in China</b> R. Huo and K.B. Duan	165
<b>Data Processing in Ecological Development and Environment Improvement by Analysis of the Relationship between Tourism Development and Urban Development</b> X.Y. Nie, P.J. Shi and X.M. Wang	169
<b>Research on Microgrid Information Engineering with Probabilistic Optimal Capacity of Energy Storage in Microgrid</b> X.B. Ma	174

### **Chapter 4: Computation and Information Technologies**

<b>Applied Technology in Reality of Knowledge Visualization</b> Q. Liu	181
<b>Applied Technology in Management and Construction of College Students' Entrepreneurial Base</b> J.B. Zhang, K.L. Wang and X.M. Shang	185
<b>Applied-Information Technology and Mathematical Modeling in Arrangement</b> S.Q. Lv	189
<b>Research on Applied Technology in Digital Signal Processor (DSP)</b> X.B. Yu, Y.F. Zhang and Y.G. Fu	193
<b>Applied-Information Technology in Design of Ontology Integration of Clinical Medicine and Diagnosis System Based on Knowledge Management</b> M.E. Zhang and H. Zhang	197
<b>Data Processing and Information Technology with an Iterative Correction Evaluation Model</b> W. Gu	201
<b>Data Processing with Computation in Bayes Reliability Analysis for Burr Type X Distribution under Different Loss Functions</b> H. Zhou	205
<b>An Approach of Process Planning Using Ant Colony Optimization Algorithm</b> J.F. Wang, K.Y. Chu and Q.Y. Wang	209
<b>Research on Information System with Analysis and Exploration of Campus E-Commerce Model</b> H.B. Wang, J. Wang, J. Cui and X.M. Shang	213
<b>FCA in Artificial Intelligence: State of the Art and Perspectives</b> Z.H. Peng, W. Luo and A.S. Deng	217
<b>Data Processing and Modelling with Information Technology in Choosing College Best Trainer</b> P.L. Li	221
<b>Research on RFID Anti-Collision Algorithms Based on Quadtree</b> M. Chen, J. Zhu, Y.X. Zhang, T. Yan, C. Xie and H. Zhao	226
<b>Applied-Information Technology with Different Sub-Grid Models in Large Eddy Simulation</b> X. Chen, Y.Q. Wu, H.Y. Wang and H.Y. Ning	231
<b>Applied-Information Technology in Tourism Management System Research and Design Based on J2EE</b> M.Y. Na	236
<b>Application of Electronic Materials and Information System in Autonomous Learning of Learners</b> C.M. Wu	240
<b>Design and Implementation of E-Commerce Recommendation System Based on Ontology Technology</b> Y. Wang, H.Y. Ou and J.M. Zhang	244
<b>Analysis of Routing Protocols for Wireless Sensor Networks Based on Improved Ant Colony Optimization Algorithm</b> S.M. Duan	248
<b>Application of BP Neural Network and GPRS in Design of Supply Water Management Information System in Campus</b> G.F. Kuang, Y.B. Sun and G.L. Fan	252
<b>The Design of Wireless Sensor Networks and Data Analysis in Smart Grids</b> Y. Zhao, R.K. Li and K.L. Xu	257
<b>Applied-Information Technology with Design and Development of Bluetooth PSTN Gateway and Audio Terminal</b> Y.J. Dong	261
<b>Study on the Application of Real Options in Coal Resources Investment</b> W. Da and W.L. Xing	265
<b>The Application of Predicate/Transition Petri Net in Equipment Information Collect and Manage System</b> C. Peng, P.Q. Wang and Z. Xie	272