

# Table of Contents

## Foreword, Committees and Sponsors

## I. Research and Processing of Materials

<b>The Preparation and Performance of LC4 Aluminum Alloys Ceramic Coatings with Trace Loose Layer Treated by Micro-Arc Oxidation</b> J. Zhao, J.J. Xi, C.P. Zhao and Y.J. Sun	3
<b>Effect of Pulse Electrical Parameters on Performance of Deposited Copper Coatings with Citrate System at Room Temperature</b> J.J. Xi, J. Zhao, Z.G. Wang, C.P. Zhao and M.P. Xue	8
<b>Study of Copper Electroplating Films Made by Four Power Modes and Magnetic Field on 20# Steel</b> J.J. Xi, J. Zhao, Z.G. Wang, C.P. Zhao and M.P. Xue	14
<b>Tribological Behavior of New Titanium Alloys – A Comparative Study</b> N. Crisan, A.M. Trunfio, G. Stoica, T. Bajenescu and H. Gheorghiu	19
<b>Effects of Yttrium on Cyclic Oxidation Resistance of Co-10Cr-5Al Alloy at 700 °C</b> L.Y. Bai, X.C. Xu, J.H. Xiang, Y.X. Zheng and J. Wang	25
<b>Preparation and the PL Properties of Er<sup>3+</sup> - Ce<sup>3+</sup> Co-Doped TiO<sub>2</sub> Powders</b> L.Y. Bai, L.F. Jiang and J.H. Xiang	30
<b>Cutting Forces Numerical Analysis and Research in Dry Turning of 1.4301 with Wiper Coated Carbide Insert</b> R. Dubovská, J. Majerik and H. Chochlikova	34
<b>Influence of High Temperature Processing on the Substructure of Laser Shock Processed Titanium Alloy</b> Y.Q. Hua, Y.C. Bai, Y.X. Ye, Q. Xue, H.X. Liu, R.F. Chen and K.M. Chen	44
<b>Parameter Identification of a New Metal Rubber Damper System</b> Y.L. Li, H.B. Bai and Z.B. He	54
<b>SHPB Test on Dynamical Mechanical Behavior of Concrete with High Temperature</b> B. Jia, F. Yang, K.L. Sun and R.H. Wang	61
<b><i>In Vivo</i> and <i>In Vitro</i> Studies of Biodegradable WE43 Stent</b> C.L. Lu, H.Y. Dong, W. Wang and G. Yang	70
<b>Improving Properties of Rubberized Mortar with Polyacrylamide</b> C.K. Lu, C.H. Lee and I.F. Wang	77
<b>Influence of Dynamic Mechanical Parameters on the Sound Insulation Properties of Underwater Acoustic Materials</b> X.W. Wang, Y.F. Sun, B. Wang and W. Cheng	83
<b>Recycling and Synthesis of Li(Ni<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>)O<sub>2</sub> from Used Power Battery by Electrolytic Method</b> Y.H. Xie, H.J. Yu, Y.N. Ou and C.D. Li	87
<b>Dynamics Analysis of Steel-Concrete Composite Box Beams</b> L.Z. Jiang, X. Kang and C.Q. Li	94
<b>Research of Artificial Neural Networks in the Al<sub>2</sub>O<sub>3</sub> Ceramic Laser Milling Application</b> Z.M. Xu, Z.H. Hong, G. Yang and Q.G. Wang	101
<b>Water Model on Fine Inclusion Removal by Bubble Flotation in RH Refining Process</b> C.J. Yang, F.P. Tang, T. He and Q. Fu	107
<b>Rapid Fabrication of Large-Area SiO<sub>2</sub> Nanoparticle Monolayer Films Via Water-Induced Interfacial Assembly</b> C.R. Li, H. Yang and J. Li	112
<b>The Preparation of High Alumina Content Alumina Sol</b> J.J. Yin, M. Li, Z.D. Zhang, D. Wang, S. Shao and X.H. Gao	118
<b>Study on Performance of Paste Filling with Urban Construction Waste</b> Y. Liu, H.Q. Zhang, Q.F. Wang and H.Y. Zhang	127

<b>First-Principles Study on the Corrosion Mechanism of Degradable Medical Mg Alloys in the Medium Containing Cl-</b>	
G.Y. Zhang, Z.C. Luo, J. Tang, Y.S. Liu and C.M. Liu	132
<b>Effect of Active, Slow-Releasing Sterilization Packaging on Kyoho Grapes at Low Temperature</b>	
J.Y. Zhang, D.L. Li, W.C. Xu and Y.B. Fu	138
<b>Influence of Adhesives to Mg/PTFE Pyrotechnical Composition Performances</b>	
X. Chen, J. Zhao and G.P. Pan	144
<b>Niobium-Alloyed Steel Treated by Quenching-Partitioning-Tempering</b>	
H. Zheng, K.M. Wu, S.F. Sun and G.W. Hu	149
<b>Internal Structure Changes of Nylon 12 in Balloon Forming Process</b>	
Z. Li, L.X. Xu, C.L. Lu, G.Z. Liu and X.Y. Li	153
<b>Qualitative Study on Mechanical Environment Affecting the Degradation of the Magnesium Alloys</b>	
L.M. Dong, X. Li, S.H. Han, J.D. Ye, Y.C. Ma, Y.L. Gao and C.Q. Zhang	162
<b>Influences of Heat Treatment on A95 Polycrystalline Alumina Fibers Preparation</b>	
Y.Z. Zhang, H.X. Li, K.M. Geng and A.J. Wu	168
<b>The Moisture of Ceramic Powder and the Importance of Monitoring this Parameter during Drying in the Spray Dryer</b>	
I. Orlovský, M. Hatala and J. Duplák	175
<b>Synthesis of Imidazole Ionic Liquid and its Intercalation for Sodium Montmorillonite</b>	
S.J. Li and S.Y. Bai	181
<b>Research of Process Parameters of Screw Thin-Walled Part with Coaxial Inside-Beam Powder Feeding Accumulation</b>	
Y. Liu, G.Y. Fu, S.H. Shi and M.J. Wu	185
<b>Prediction of Cutting Temperatures in Milling Stainless Steels Using Sharp Worn Tools</b>	
C.S. Chang and C.H. Chen	191

## II. Mechanical Science and Engineering

<b>The Research of SVPWM Control of Shunt Active Power Filter Based on the Inner Relationship between Current and Voltage</b>	
M.H. Zhang, X.G. Cheng and X.J. Zong	201
<b>Research on Shearer Rocker Gearbox Fault Location Based on Wavelet Envelope Demodulation</b>	
Z.Q. Wang, H.W. Ma, M.H. Tao, X.H. Zhang and Q.H. Mao	210
<b>Study on Control System and Precision Positioning Table Identification Technology of Universal Joint Performance Testing Table</b>	
J.B. Chen, L. Shi and X.Q. Qin	217
<b>Evaluation of Health State of Mining Equipment by Dynamic Weighted Fuzzy Grey Method</b>	
X. Qian, J. Li, W.T. Liu, T.Z. Wang and X.F. Fan	222
<b>Mechanism and Control of Eccentric Wear of Sucker Rod</b>	
H. Jin, J. Zhang and Y.Y. Zhang	232
<b>High-Speed CNC Grinding Process Optimization of Non-Circular Rotary Parts Based on Particle Swarm Optimization</b>	
Y. Huang, W.Y. Ming, J.W. Guo, M.Z. Li and J. Li	237
<b>Seismic Design Approach for Self-Centering Highway Bridges with SMA Isolators</b>	247
<b>Research of Power System for Hydrogen-Electric Hybrid Fuel Cell Vehicles</b>	
H.J. Ni, S.S. Lv, Y. Pei and L.F. Chen	258
<b>Design of a Mechanical Oil Kneader Based on Ergonomic Studies of the Traditional Kneading Process</b>	
M.A. Ali and I.W. Muhammad	264
<b>Non-Linear Finite Element Analysis of Biologically Inspired Robotic Fin Actuated by Soft Actuators</b>	
M.R. Muhammad Razif, N. Elango, I.N.A. Mohd Nordin and A.A. Mohd Faudzi	272
<b>Multidisciplinary Computer Simulation of Transient Electromagnetic-Thermal Phenomena in a Turbogenerator Rotor</b>	
M.G. Pantelyat, M.G. Shulzhenko and E.K. Rudenko	278

<b>Influences of Fracture Angle on the Ultrasonic Compressional Wave Velocity</b> X. Shan, Z.Z. Wang, R.H. Wang, Y. Fan, Y.H. Bu and T.Y. Li	285
<b>Vibration Analysis of Cylindrical Shell with Different Circular Angle</b> Y.C. Song, C.M. Huang and H.L. Yu	291
<b>Design on Double Axial Steering Mechanism of Vehicles and Research on its Steering Error Properties</b> H.X. Wang and E.H. Dai	297
<b>Partial Matching of 3D CAD Models with Attributed Graph</b> H.S. Wang, L. Zhang and Y.G. Zhang	302
<b>Force Analysis for Working Unit of Mini Tracked Truck</b> Z.Q. Wang, X.L. Bian, C.Y. Bian and F.B. Du	310
<b>Study on Fault Diagnosis Technologies of Vibration Signals of Gearbox</b> C.M. Huang, Z. Bo, J. Wang and P.H. Liu	317
<b>Optimization Design on Covering-Soil Machine for Grape Vines</b> S.W. Huo and F.Q. Zhao	323
<b>Transmission Design Based on Sonic Drilling Parameter</b> C.W. Zhang, X.G. Zhou, X.C. Qu and G.F. Hu	328
<b>Upper Control System Design of CPP Based on MCGS</b> C.W. Zhang, X.G. Zhou, P. Zhang and L.P. Zhang	334
<b>Automated Implementation from Modeling to FPGA of Vehicle Autopilot</b> G.M. Zhao, T. Feng and L.Q. Liang	339
<b>Review of Noncontact Ultrasonic Nondestructive Testing for the Solid Materials</b> L. Cui, Y. Zhao, P. Zhao, J.C. Sun and Z.Q. Jia	346
<b>Models of Two-Axle Driving Vehicle Used for Dynamometer Test Bench</b> Y. Yang, X.J. Zhou and C.L. Yang	353
<b>Method about the Authentication Process on the Air Interface of the Tag and the Reader in the Radio Frequency Identification System</b> D.B. Liu, J.B. Hu and C.C. Wu	359
<b>Control Strategy of the Dual Motors Coupling Propulsion for Battery Electric Buses</b> G.W. Han, C.N. Zhang, S. Zhang and X.H. Wu	364
<b>Determination of Energy Storage Capacity for a Hybrid Renewable Power Generation System</b> J.B. Li, Y. Yao, T. Xia and X.J. Zheng	371