Table of Contents

Preface

Chapter 1: Polymers and Composites

with Polydopamine C.H. Cao and Y.Z. Wang	3
Study on the Influence of Different Pressurization Times on the Mechanical Properties of Carbon Fiber Reinforced Epoxy Resin Composite Materials J.Q. Zhang	9
Study on the Influence Factors of Mechanical Properties of PPTA Fibers in Microscale Simulation	
Y.Y. Gao, S.H. Li, J.L. Xu, H.Y. Zhang, Y. Liu, G.W. Liang and K.Y. Sun	15
Study on Mechanics and Aging Resistance of Glass Fiber Reinforced Epoxy Resin Z.H. Feng, Y.F. Wu, M.M. Dai, L. Fan, C.C. Wu and Z.Q. Fan	23
Chapter 2: Materials and Technologies	
Study of Weldability of FSPR Joints in Steel/Al Alloy Hybrid Body L.J. Han, G.J. Li and R. Wang	31
Influence of Oxygen-Argon Ratio on ZrO ₂ Thin Films Deposited on Transparent Conductive ITO Substrates	
R.H. Xiao, W.R. Sun, N. Gan, Z.F. Liu and Z.F. Tong	43
Preparation of a Graphene Oxide/Cellulose Thermal Conductive Adhesive and its Application on Cut Tobacco L. Lu, Q.H. Huang, H.Y. Wang, D. Li, Y. Wu, Y.M. Xia, Z.H. Hu and J.L. Liu	49
Application of Bacterial Revertant Mutation Test in Hair Dye Research B.Y. Li and W. Di	55
Chapter 3: Environmental Engineering	
Enhanced Adsorption of Cr (VI) on Manganese Dioxide - Modified Montmorillonite Composites	
M. Li, C.Y. Su, L.F. Wang and J.N. Yang Distribution of Pb and Cd in Soil and Rice Systems of Se-Rich Area of Hainan Island	63
X.H. Wang, H. Wang, C.C. He, H.D. Feng and T.Z. Wang	69
Speciation of Selenium in Stagnic Anthrosols of Se-Rich Area in Hainan Island H. Wang, H.J. Huang, H.D. Feng and D.F. Wang	75
Chapter 4: Industrial Engineering	
Numerical Analysis of Blast Furnace Taphole Stream Effect on the Slag-Metal Separation B. Zhang, T.T. Deng, Y.Z. Chen, Z. Li and X.W. Xiao	83
Computer Numerical Simulation and Optimization of Gravity Dust-Catcher B. Zhang, Y.Z. Chen, T.T. Deng, C. Xu and X.W. Xiao	89
Carbon Emission Calculation Method for Automated Melt-Casted Aluminium Production Considering Global Power Consumption C. Zhang, H. Gao, Y.B. Sui, L. Chen and X. Xu	95
	95

Study on Bidding Optimization Model of Virtual Power Plant with Demand Response Participation	
W.F. Yao, G.L. Huang, T. Mao, J.N. Li, W.M. Zhao, T. Wang and J.R. Jiang	109
Chapter 5: Reliability and Durability of Engineering Structures	
1219mm X90 Gas Pipeline Fracture Propagation and Crack Arrest Full Scale Test Q.R. Ma	119
Structural Stability Analysis of Phoenix-Shaped Pipe Truss of Shaohuashan Upper Station Building J.P. Ju, S.F. Yan, Q. Tang and H.Y. Li	125
Seismic Response Analysis of Phoenix-Shaped Tube Truss Structure of Shaohuashan Upper Station Building	
L.Z. He, K. Yang, H.L. Ren and H.Y. Li	131
Chapter 6: Engineering Research and Design	
Research on Evaluation Methods for Particle Emission Levels of Retrofit DPF in	
Engineering Machinery J. Liu, Y. Li and J. Wang	137
Experiment and Data Analysis of Spheres Falling in Bounded System R.Y. He and C. Jiang	143
Computer Simulation Techniques on the Distributions of Current and Charge on Circular Waveguide Wall Y.K. Yang and Y. Jin	151
Simulation and Experimental Study of the Explosion of A Small High-Light Detonation Bomb Y.Z. Ma	159
Numerical Simulation Analysis of Dynamic Performance of Magnetically Coupled Monostable Piezoelectric Energy Harvester Device	
J.X. Jiang and L. Ke	167
Chapter 7: Big Data and Artificial Intelligence	
Research on Mine Gas Over-Limit Alarm Data Based on Big Data Technology Y.Q. Chen	177
Research on a CNN Based Clinical Electrocardiogram Classification Model J.L. Lin, J.Y. Xia and X.L. Li	183
Extreme Learning Machine-Autoregression Integrated Moving Average Composite Model Z.W. Yin and C. Jiang	193
Auto-Lithology Identification Based on KNN W.X. Ji, W. Dai, K.L. Zhang and X.P. Han	201