Table of Contents

Preface and Committees

Chapter 1: Research on Material Science, Processing and Technologies

Mechanism of Material Application Mechanism of Material Application	
C.F. Zhang, M.P. Wu and J.H. Yu The Simulation of Photocotal via Deposit of Francold should Hair a New Tio. Boundary	3
The Simulation of Photocatalysis Degradation of Formaldehyde Using Nano-TiO ₂ Based on the Diffusion Model	
B. Li, K.X. Zhang, C.Y. Feng, X.B. Zheng, K. Xie and Y. Li	8
Compressive Properties of Mg-3Al-2Zn-2Y Alloy at Different Strain Rates H. Liang, Y. Tan, F.J. Zhang and K. Zhang	13
Preparation of Impact Resistance Epoxy Resin Encapsulating Materials K. Zhang, J.H. Fan and Y. Ma	18
Alpha Hemihydrate Gypsum Preparationed by Atmospheric Pressure Salt Solution Method Process Route	22
Z. Luo, F.L. Han and X.H. Huang	23
Preparation of FGD Gypsum-Fly Ash Plaster Material J. Zhu, G.Z. Li and C.W. Du	28
The Preparation and Performance Research of the Desulphurization Gypsum Plaster Material	
H.Q. Zhao and G.Z. Li	32
The Study of the Red Mud Foam Lightweight Insulation Materials L. Ma and G.Z. Li	36
Study on the Preparation and Properties of Fiber Reinforced Foamed Cement Material X.L. Li and G.Z. Li	40
Different Electrodeposition Behaviors of Ni-Co Binary Coatings in Sulphate and Chloride	
Baths L.L. Tian and Y.Y. Su	44
Properties of Vanillin Modified Poly(vinyl Alcohol)/Gelatin Composite L. Cheng, Q. Zou, L.K. Zou, Y. Luo, L.Q. Kan and Y.B. Li	48
Synthesis and Microwave Absorption Characteristics of Polyaniline D.G. Li, W.H. Lu, C. Chen, W. Rao and Y.H. Xiong	53
Study on Photochromic Perfluorocyclopetene Containing Six-Numbered Unit as Optical	
Recording Materials H.B. Wang, C.B. Fan and G. Liu	58
Study on Photoresponsive Functional Materials with Efficient Synthesis, Properties of a Novel Unsymmetrical Photochromic Diarylethene	
H.J. Jia and S.Z. Pu	63
Study on Photochromic Materials with Photochromic and Optical Storage Composite Properties of a Novel Diarylethene LL Song G. Livend H. Li	68
J.J. Song, G. Liu and H. Li Study on Photochromic Materials with Synthesis, Properties and Application of	08
Photochromic Diarylethene Bearing Fluorine Atoms F.X. Sun, S.Z. Pu and S.Q. Cui	73
Study on Photochromic Materials with Synthesizes and Properties of a Novel Unsymmetrical Photochromic Diarylethene	
Z.Y. Sun, X.D. Zhang, S.Q. Cui and S.Z. Pu	78
Study on Material Properties with Synthesis and Properties of a Photochromic Diarylethene with Acetal Unit S.S. Wei, R.J. Wang and G. Liu	83
Material Properties with Syntheses and Properties of a Novel Unsymmetrical Photochromic Diarylethene	
S.J. Žia, G. Liu and S.Q. Cui	89

Study on Material Properties with Synthesis and Property of a Novel Unsymmetrical Photochromic Diarylethene	
H.Y. Xu, S.Z. Pu and R.J. Wang	94
Study on Biological Materials with the Dehydration Technology and Equipment of Banana Stems	0.0
S.Y. Xu, Z.P. He, W. Tan and Y.C. Zhang A Novel High Entropy Alloy AlMgZnSnPhCuMnNi with Low Error Correction Potential	99
A Novel High-Entropy Alloy AlMgZnSnPbCuMnNi with Low Free Corrosion Potential Z.H. Gan, L.M. Xu, Z.H. Lu, H.H. Zhou, C.H. Song and F. Huang	103
Synthesis and Thermoelectric Properties of Nano Ca _{2.6} Bi _{0.4} Co ₄ O ₉ Ceramics Z. Chen, L.Q. Zhang, Z.Y. Zhao, M.M. Wang, Z.H. Shan and J.H. Zhang	108
Numerical Simulation of Bulging Process of Aluminum Alloy Sheet M.T. Li, Y. Zhang and C.Y. Kong	112
Effect of Aging Process on Organization and Performance of Cu-Cr-Zr-Mg Alloys B. Hou, L.F. Zuo, F.Y. Tao, D. Fang, X.H. Chen, H. Zhang and Z.D. Wang	117
Study of Nano-Precipitate in High Strength Low Carbon Steel during Tempering by TEM L.F. Zuo, L.L. Qiu, B. Hou, X.H. Chen, M.W. Chen and Z.D. Wang	123
Synthesis and Electrochemical Properties of Rechargeable Battery Electrolyte Lithium Bis(heptafluoroisopropyl)tetrafluorophosphate A.H. Guo, S. Feng, Y.T. Mi and H.Z. Li	128
Research on Synthesis of Mullite Whiskers by Kyanite A.H. Guo, L.N. Tian, F.S. Niu and L.J. Yin	132
Research on the Microstructure and Tribological Properties of the Electroless Ni-P-PTFE Composite Repairing Coating on Gears N. Jiang, C.Q. Fu and Z. Wang	136
Quantitative Determination on Fiber Textured Materials Derived by Particle Swarm	130
Optimization D.P. Wang, D.Z. Wang, F. Wang and Z.D. Liang	140
Effect of the Er on Resistivity and Spreading Properties of Bi5Sb8Sn Solder Alloy S. Li, Y.F. Yan, L.F. Feng and H.N. Wang	147
The Influence of Fe on the Strength and Ductility of Cu-10Sn-2Zn Based Alloys D. Ding, K. Wu, L.L. Wang, X.H. Chen and Z.D. Wang	151
Correlation between the Geometric Parameters of Corrosion Pit and Stress Concentration Factor	
W. Zhao, Y.F. Huang, X.B. Ye, B.R. Hu, J.Z. Liu and L.J. Chen	156
Applications of Fractal Theory in Selecting Bridging Materials in Jilin Oilfield H.H. Luo, Z.H. Wang, Y.X. Sun and J.Z. Sun	161
Chapter 2: Building, Environment and Energy Saving Materials and Technologies	
Research on Application of Phase Change Materials in the Field of Building Energy-Saving C.Q. He	169
Study on Energy Materials with the Impact of Using Chilled Water Storage Systems on the Performance of Air Cooled Chillers J. Li and Y.Q. Luo	173
Study on Environmental Materials with Review of the Environment and Refrigerant Developments J. Li and Y.Q. Luo	177
Study on Paraffin/Expanded Perlite Composite Phase Change Energy-Storage Materials Q.J. Li, G.Z. Li and C.C. Jiang	181
Study on the Application of Fluorgypsum Plaster H. Pan and G.Z. Li	185
Preparation and Study on the Properties of Gypsum Whiskers Reinforced Resin Matrix Composites	
C.W. Du and G.Z. Li	189
Study on Building Wall Materials System by Using Association Rule Mining H.S. Xu, Q. Tan and C. Li	193

The Novel Model of Construct Materials Science and Information Based on Association	
Rule Mining G.F. Kuang and Y.C. Cao	197
Experimental Study of Bending Toughness on Hybrid Fiber Reinforced Concrete J.S. Shi, B. Yuan, D.Z. Wang and Z.A. Lu	201
Chapter 3: Design Science, Dynamics Systems and Applied Mechanics Applications	
Study on Production Design with the Evolution of Manufacturers' Sustainable Product Development Behavior in Remanufacturing X.L. Zong	207
Mechanical Industrial Design with Exploration on Practice Training Reform X.C. Cheng and X.W. Jiang	211
Design and Study on Mortar Pump's Impeller Based on Bezier and Mechanical Mechanics M.X. Chen, L.F. Tang, G. Zhou, Z.Y. Dou, X.L. Yang and X.Y. Du	215
Hydromechanics Research of Pump Flow Control System Based on BP Neural Network PID X.S. Zhao, J. Hu and P.C. Shi	222
Review of Coupled Research for Mechanical Dynamics and Fluid Mechanics of Reciprocating Compressor X. Wu and L.F. Tang	227
Study on Mechanical Mechanics with the Application of an Anti-Aliasing Wavelet Packet Algorithm in Fault Diagnosis of Rotating Machine X.T. Jiao	233
Study on Theoretical Mechanics with Mechanics Properties in Exercise Class J.H. Huang	237
Study of Interfacial Stiffness by Using the Structural Interface Model Based on Elastic Mechanics	241
Z.M. Xie, D.L. Chai, Y.Y. Weng and S.C. Chen Helicopter Aerodynamic Parameter Identification via Flight Dynamics X.M. Yu, A.P. Zhao and X. Li	241 246
Simulation on Computational Fluid Dynamics of Flow Field and Pollutant Dispersion in Block of Buildings	
R. Huang, K.H. Li and B. Wang The Effects of Swimmers Posture and Swimsuit on the Hydrodynamic Performance during Underwater Swimming Z.F. Chen, H.S. Fang and J. Tian	250 256
Analysis of Torsion Vibration with Safety Navigation Countermeasures under the Condition of Rough Seas and Storms	262
X.B. Liu and W.Z. Ai Research on the Effects of Pulse-Pressure on Orifice Plate Cavications Z.B. Zhang, Y.L. Li and W.Z. Ai	263 267
A Relative-Stress Based Method for Structural Shape Optimization Z.X. Wu	271
Vibration Analysis of Aeroengine Turbine Blade-Disc Coupling System W.Q. Zhao and Y.X. Liu	276
Vibration Characteristics Analysis of an Aeroengine Compressor Disc W.Q. Zhao and Y.X. Liu	280
Analysis on Wind-Induced Vibration Dynamic Responses of Transmission Tower-Line System X.G. Hu, J.B. Yang and F.L. Yang	284
Longitudinal Aerodynamic Modeling Based on Support Vector Machine X.S. Gan, J.S. Duanmu and J.G. Gao	290
Research on Optimal Operation of Raw Water Pumping System Based on Hydromechanics in Waterworks	2,0
S.F. Huang, F. Wang, H. Xu and X.X. Wei	294
Prestressed Modal Analysis of the Wind Turbine Rotor Based on ANSYS Workbench Z.Q. Xu	301

Research on Lateral Aerodynamic Modeling Based on Relevance Vector Machine X.S. Gan, J.S. Duanmu and J.G. Gao	306
Research on Manufacturing Materials with Footwear Nesting System Based on AutoCAD W.L. Peng, H.Y. WANG and L. Lu	310
Modeling Tension-Compression Asymmetry of Shape Memory Alloys Based on Finite Elastoplasticity Model X.M. Wang and H. Xiao	314
Parameters Optimization Method for Hot Forming Panels Based on the Crashworthiness and Lightweight P. Hu and K. Hu	318
Chapter 4: Related Topics	
Study on Simulation Processing and Engineering Experiment of Spinneret Hole Bottom Based on Material and Mechanics Properties with Different Transition Angles Q.C. Zhao, N. Shi and C.C. Yang	325
The Study on Machine Vision Technology of the Detection of Spinneret Micro-Holes Finishing Tool Based on Material Properties P. Feng, H. Fu and C.C. Yang	329
The Study of the Development of the Spinneret Automatic Fine Machine Based on Properties of Mechanical Materials P. Feng, S.Y. Liu and C.C. Yang	333
Deformation and Failure Features of Surrounding Rock for Combining Mining in Steep and Close Seam J.F. Zhang and W.G. Shi	338
Study on Energy Materials with Energy Level Width of 2DEG in Triangular Well G. Xu and Y. Sun	342
Study on Electrical Materials with the Circulation Control of STATCOM Based on MMC Y. Xie, S.F. Li and Z. Mao	346