Table of Contents

Preface and Committee

Chapter 1: Properties and Processing Technologies of Structural Steel and Alloys

S.Y. Zhang, Y.D. Chen, Y.H. Shi, J.C. Li and X.C. Huang	3
Molecular Dynamics Study on the Influence of Ti-Al-V Phase Interface Characteristics on Deformation Behavior and Mechanisms G.Y. Liu, J.Y. Li, P. Liu and D. He	9
Effect of Weld-Pass Morphology and Molten-Pool Flow on Lack of Fusion Formed in the Fully Automatic Welded Joint at 6 o'Clock Direction D. Yang, Z.Z. Li, L.H. Han, C. Yan, Z. Xin and D.Y. Feng	16
Strengthening and Toughening Simulation Analysis of the Two-Phase Microstructures with Different Patterns	22
L.T. Zeng, Z.W. Ma and Y.J. Wei Effect of Cu Additive on the Microstructure and Magnetic Properties of Fe-6.5wt%Si High Silicon Steel by Induction Melting Method Z.Q. Dong, E.B. Pan and X. Zhang	32
Effect Cu and La on the Solidification Structure and Magnetic Properties of Fe-6.5wt.%Si Alloy under Arc Melting	
Z.Q. Dong, E.B. Pan and X. Zhang Measurement of Dynamic Mechanical Property Parameters of 12X18H10T at High Strain Rates	39
Q. Niu, X.S. Zhang and Y.X. Zhang Cooling, Microstructure and Properties of Permanent Steel Mold Cast Wrought AZ80 Alloy	45
with Varying Casting Wall Sizes L. Ying, W.T. Shen, A. Hu and H. Hu Study on Technical Properties of Low Yield Strength LY225 Steel Plate for Seismic	52
X.S. Wang, B.J. Zhao, H.L. Wang and P. Zhang Design and Experiment of Cryogenic Steel Used for Liquid Cargo Tank of Carbon Dioxide	61
Carriers X. Yan, P. Zhang, Z.N. Yang and X.S. Wang	67
Development of 420 MPa Grade High-Performance Steel Plate for Wind Power J.T. You, F.C. Zhang, P. Zhang and Z.N. Yang	72
Research on Welding Process and Performance of Prefabricated Girth Welded Joints for Double-Connected Pipes of X80M Pipeline T. Ren, J.M. Zhang and X.W. Niu	78
Chapter 2: Corrosion, Protective Coatings and Surface Treatment	
Fracture Failure Analysis of Compressor Valve Spring X.W. Li, Y.C. Xin, X.L. Tan and C.Y. Du	91
EIS Method to Study the Corrosion Resistance of Three Arc Spraying Composite Coatings in 3.5% NaCl Solution S.S. Li, H.Y. Zhao, Y.F. Lu, K. Wang and C.B. Lu	97
The Influence of Microstructure on Corrosion Resistance of B10 Copper Tube L.M. Zhang and C. Li	108
Effect of Trisodium Citrate on the Electro-Crystallization of Electrodeposited Ni-Cu-Mo Alloy Coatings Z.W. Peng and C.Z. Peng	116
Simulation for the Influence of Energy-Shaping Laser on the Geometry of the Phase Change Zone during Laser Quenching of AISI 1045 Steel	
D.W. Xia and S.Y. Wang	125

Preparation and Coating Properties of Core-Shell Silicon-Acrylic Emulsions K.X. Zhu and Y.M. Wu	132
Research on Corrosion Resistance of Plasma Nitriding Modified Layer on Stainless Steel Metal Bipolar Plate L. Shan, Z.F. Isri, S. L. Mira, J. H. Shan, A. P. Shan, Z. F. Isri, S. L. Mira, J. H. Shan, Z. F. Shan,	127
L. Shen, Z.F. hui, S.J. Miu, J.H. Sui and P. Sun The Impact of Sunface Treatment Processes on the Festigue Life of Festioners	137
The Impact of Surface Treatment Processes on the Fatigue Life of Fasteners H. Xu, H.Y. Liang, H.S. Li, R. Ma, X.F. Liang and W. Gao	142
Influence of Strip Entry Temperature on Spangle Size of Hot-Dip 55%Al-Zn-Si Coated Steel Sheets	
Y.P. Li, P. Liu, S.M. Jiang, J. Zhang and Q.F. Zhang	150
Chapter 3: Polymers and Composites	
Durability of China Jute Fiber/Polylactide Composite in Indoor Environment: A 15-Year Follow-Up Study Q. Ren and R.H. Hu	159
Ring-Opening Polymerization of ε-Caprolactone with Anhydrous Iron (III) Chloride as	137
Catalyst J.B. Zhang	164
Life Assessment of the Fluoro-Rubber Sealing Gasket Based on an Accelerated Degradation	101
Test D.S. Ma, H.Y. Huang, Z.Q. Shao and M. Zhu	170
Chapter 4: Materials for Pollutants Absorption	
Study on the Adsorption Performance of Lead Ions in Water by Phosphate Base Polymer with Different Ratio	
X. Jiang, X.M. Jiang, N. Li and Z.G. Hu	181
Study on Lead Adsorption Properties of Metakaolin/Red Mud Geopolymer X. Jiang, X.M. Yuan, N. Li and Z.G. Hu	187
Polyvinylidene Fluoride Nanofiber Murray Membrane for Quick Oil Absorption K.X. Li, G.N. Feng, G.M. Li, Z.B. Zhang, J.H. Xiang, T. Chen and H.L. Zhao	194
Chapter 5: Green Chemistry	
Construction of a Binary Organocatalytic System Based on Urea-Based Hydrogen Bond Donors and Polyether Ionic Liquids and its Application to CO ₂ Cycloaddition Reactions Y.Y. Wang and X. Jin	207
Supercritical CO ₂ Extraction Pretreatment for Polyester/Nylon Microfiber Towel	
J. Ŷan, Y.T. Chen, Y.L. Gao, H.M. Zhang, H. Li and Y.P. Liao	213
Chapter 6: Materials for Micro- and Optoelectronics	
One-Pot Hydrothermal Synthesis of N-Doped Carbon Quantum Dots Using the Shrimp Powder for Highly Sensitive and Rapid Detection of Fe ³⁺	221
Y. Wang, C.X. Li, X.X. Hu, F. Wen, A.W. Yu, H. Qiu and J.Y. Shen Application of Sb ³⁺ -Doped Cs ₂ ZnCl ₄ Single Crystals in Near-Infrared Imaging	221
M. Wang and C. Yin	227
Preparation and Stability Improvement of Intercalated Black Phosphorus Single Crystal G.C. Qin, Z.W. Jiao, Y.H. Wu, S.C. Liu, A.L. Sun, Y.Q. Gao and W.J. Huo	235
Chapter 7: Functional and Special Materials	
Performance Comparison of the Hexagon and the Overexpanded Honeycomb Z. Jia, Y.M. Liu, T. Su and X. Wu	245

Influence of Alumina Bubble as Pore Former on the Vitrified Bond Diamond Grinding Wheels	
C.C. Wang, Q.N. Tan, Y.J. Huang and J.Q. Zeng	250
The Model is Designed Based on TPMS and Verified by Simulating Mechanical Properties L. Li	255
Preparation of Zinc Ferrite by High-Temperature Mechanochemical Method and its Microwave Absorption Properties M.Z. Liv, B. Wong, Y. L. Wong, L.S. Chen, B.C. Liv, S.C. Wei and O. Hon	260
M.Z. Liu, B. Wang, Y.J. Wang, J.S. Chen, B.C. Li, K.R. Liu, S.C. Wei and Q. Han	200
Study on Preparation, Structure, and Properties of Flexible Shape Memory Epoxy Resin T. Wan, S.C. Wei, Y.J. Wang, Q. Han, J.S. Chen, B.C. Li, L. Guo, D.X. Fu and B. Wang	267
Chapter 8: Building Materials	
Flow Degree and Mechanical Properties of PVA/Basalt Fiber Composite Gentil Material under Different Complex Ratios	
J. Chen, L.Q. Liu, J.S. Wang, G. Zhao, M. Jiang, K.X. Guo and Y. Cui	275
Effect of Antifreeze on the Low-Temperature Properties of Magnesium Phosphate Cement	
Concrete Z.J. Wang, W.J. Li and M.L. Zhao	282
Optimization of Tensile Strength in PVA Fiber Reinforced Toughness-Concrete for Reinforcement Applications	
B.Y. Shi and M.F. Xiong	290
Study on the Mechanical Properties of High-Toughness Concrete Hollow Wall Panels Prepared with POM Fiber	
B.Y. Shi, B.J. Cheng, M.F. Xiong, F.T. Wang and F. Ao	298