Table of Contents

Preface

	Chapter 1: P	roperties of	Composites	and Polymers
--	--------------	--------------	-------------------	--------------

Synthesis of Carbon Nitride Intercalation Compound Composite and Study of Visible Light-Induced Photocatalytic Performance L.J. Wan	3
Simulation Study of Composite Materials Directional Pipe Based on Visual Prototype P.Z. Li and Y.L. Yin	9
Numerical Mechanical Analysis of Filled Rubber under Different Deformation States Based on a New Hyperelastic Constitutive Model X.T. Fu, Z.P. Wang and L.X. Ma	15
Effect of Repetitive Recycling on the Optical Properties of Polypropylene Based on Material Value Conservation Paradigm A. Fachrizal, T.V. Yastica and D.S. Gabriel	23
Fracture Behavior of Modified Polymer Materials by Digital Image Correlation Method Q.H. Chen, C.L. Song and C.X. Li	29
Study on Preparation and Properties of Coaxial Electrospun PLGA/Gelatin Fibers J. Li, S. Lin, Y.L. Ma, X.H. Xu, W. Zheng and L.B. Li	35
Chapter 2: Chemical Technologies and Production	
Study on Juice Yield by Compound Enzymolysis in Cloudy Apple Juice T. Cai, P.S. Xi, C.C. Kou, Y.Y. Zhang, X.H. Cao and D.S. Zhu	45
Large Size CH ₃ NH ₃ PbI ₃ Perovskite Microcrystalline with a Capsule-Free Cavity Box Structure Grown by Solvent Thermal Reaction F. Han, X.P. Xi, M. Fan, L.L. Wang, J.M. Shi, Q.L. Jiang, B.H. Chen and H. Yan	51
Synthesis of Lanthanum Orotate and its Application as PVC Thermal Stabilizer M. Juraev, X.Y. Zhou, X.T. Ma, C. Fang, Y.Q. Ge, Q.F. Ye and F. Ye	57
Chapter 3: Nanomaterials and Nanotechnology	
The Effect of 555-777 Defect on Mechanical Properties of Graphene Nanoribbon X.F. Ma, X.M. Sun, R. Wang and S. Li	67
Selective Adsorption of H ₂ S, H ₂ O and SO ₂ over CH ₄ on Graphene Surface Decorated with Alkali Earth Metals: Insights from DFT Study X. Zhang, C. Fu, T.T. Nie, W.L. Cen and M.L. Hou	73
Gold Nanoparticles@Activated Carbon Modified Electrode for the Determination of Luteolin	
L.Y. Dong and G. Wan Fabrication of a Composite Coating by Laser, Nanoparticles Self-Assembly and	78
Electrodeposition O.C. Lin, Y.L. Zhou, J. Li and V. Bunyan	84
Laser Ablation in Liquid Synthesis and Optical Temperature Sensing of YGdO ₃ :Er ³⁺ Nanoparticles Z. Liu, R.X. Wang and D.H. Chen	91
Chapter 4: Special Structural and Functional Materials, Nonconventional Technologies	
Research on Thermal Inkjet Technology Based on CFD Y.F. Wang, Z.D. Shan, H.Q. Yang, Y.X. Ren and L.H. Meng	101

101

Theoretical Investigations for the Defect Structure and the Spin Hamiltonian Parameters of Divalent Cobalt in LiMgPO ₄ X.S. Liu, S.Y. Wu, Y.M. Fan and X.Y. Yu	108
Design and Simulation of Ti6Al4V Cartilage Scaffold Based on Additive Manufacturing Technology	114
H.J. Gao, H. Yuan, J.Q. Xia, H.W. Li and Y.D. Zhang Investigation on Creep Characteristics of Rock-Like with Precast Internal Fissures under Different Temperatures and Confining Pressures P. Du and Y.Y. Wang	120
Chapter 5: Properties and Processing Technologies of Steel and Alloys	
Anisotropy of Microstructure and Tensile Properties of Additive Manufactured ZTC4 Alloy Z.W. Wei, W.J. Xing, B.Q. Chen and T. Jiang	129
Finite Element Simulation Analysis on Residual Stress Relief of 7075 Aluminum Alloy Ring S.F. Wu, X.S. Gao, X.R. Zhang and H.J. Gao	135
Research on Hot Deformation Behaviors of 6061 Al Alloy X.Y. Zhang, R. Wang and X.G. Wang	141
Study on Machinability of Hydrogenated Ti-6Al-4V Alloy Z.X. Ding, J.F. Sun and W.D. Zhu	147
Effect of Annealing Process on Microstructure and Tensile Properties of TC16 Titanium Alloy after Rapid Heat Treatment P. Lei, S.C. Dong, G.Y. Ma, T. Cheng and O.M. Ivasishin	152
Quantitatively Investigate the Effects of Natural Aging on Mechanical Properties and Bake Hardening Behaviors of Al-Mg-Si Alloys Z.W. Gu, Y.T. Han, Z.M. Tang and G. Yu	157
Effect of High-Frequency Induction Carburization on Ti6Al4V Alloy Tissue and Wear Performance	
J. Guan, X.T. Jiang, X. Cheng, F. Yang and J. Liu Research on Finite Element Method of Hot Forming of High Strength Steel Sheet	163
X.D. Li and X.H. Zhan Innovative Casting Methods for Single Crystal Turbine Blades W.Q. Ding	172 178
Numerical Simulation Investigation on Machining Deformation of Aviation Thin-Walled Parts Caused by Residual Stress	170
J. Deng, S.J. Zhou, H.J. Gao, M.H. Lin and X. Li	186
Chapter 6: Corrosion and Corrosion Protection	
Corrosion Behavior on Titanium Alloys as OCTG in Oil Fields X.Y. Wang, S.D. Zhu, Q. Liu, A.Q. Fu and J.L. Li	195
Crack Analysis of Casting Stainless Steel Support Y.Y. Yu, T.J. Song and Z.W. Lu	201
$ \begin{array}{c} \textbf{Law and Fracture Characteristics of Stress Corrosion Cracking for 7B04 Aluminum Alloy} \\ Y.Y.\ Yu,\ T.J.\ Song\ and\ Z.W.\ Lu \end{array} $	207
Effect of Solid Solution Treatment on Corrosion Resistance of Al-Cu-Mg-Ag Alloy Z.H. Cui, X.Y. Liu, Y.Q. Wang, H.R. Yang, Z.J. Cui and M.K. Anvarifard	213
Corrosion Inhibition of Brass by Biochemical Process in Circulating Cooling Water System Y. Yang, Q.Y. Gu and X.T. Yuan	220