

Table of Contents

Preface

Chapter 1: Properties and Synthesis of Materials

The Sintering and Electrical Properties of $\text{La}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.96}\text{Ni}_{0.04}\text{O}_{3-\delta}$ Ceramics with B_2O_3-CuO Addition	
Y.C. Lu, Y.X. Li, R. Peng, D.M. Chen, Q.H. Yang and S.J. Zhang	3
Relationship between the Different Amount of LMZBS Glass and Dielectric Properties of $\text{Li}_2(\text{Mg}_{0.96}\text{Ni}_{0.04})\text{SiO}_4$ Ceramics	
R. Peng, Y.X. Li, H. Su, Y.C. Lu, X.Y. Wang, G.W. Gan and G. Wang	10
Mechanical Study of Carbon Fiber Reinforced Plastic and Thin-walled Metal Liner in Bi-Material COPV Based on Grid Theory Optimization	
B. Yu, J.J. Zhang, J.P. Zhao and T.J. Ma	15
Research Progress in Physical Properties and Structural Design of Metamaterials	
Q.M. Wan	22
Heusler Compounds and their Topological Semimetal States	
Y.J. Teng	33
Lithium Dendrite Growth Process and Research Progress of its Inhibition Methods	
H.R. Zheng	42
Effects of Synthesis Conditions on the Performance of SiO_2 Aerogel Prepared by CO_2 Supercritical Drying	
J. Dai, T.F. Zeng and Y.H. Hu	48
Study on the Treatment of Ischemic Stroke Based on Poly(lactic-co-glycolic acid) (PLGA) Nanotechnology	
R. Liu, G.J. Zhu and P. Qing	58
First-principles Investigation on the Electrical and Structural Characteristics of VO_2 (M) and VO_2 (R)	
W. Wei, K. Xu and N.B. Liao	64
Recent Progress of Anode and Cathode Materials for Lithium Ion Battery	
R.Y. Liu	69
Enhanced Photocatalytic Activity of GO-Ag@CoCN Composite for RhB Degradation under Visible Light Irradiation	
M.F. Ma, L.F. Qiu, P. Li and S.W. Duo	76
Fabrication of $\text{In}_2\text{S}_3/\text{In}_2\text{O}_3$ by the Sulfurization of In-MOFs Derived In_2O_3 for Efficient Photodegradation of Methyl Blue	
T.T. Liang, L.F. Qiu, P. Li and S.W. Duo	81
A Method for Identifying Transverse and Thickness Compressive Modulus of Glass Fiber Reinforced Composites Based on DIC	
Z.Y. Liu, C. Liu, D. Li and T.R. He	86
Research Progress in the Preparation of Flexible Substrate Barrier Films	
L.X. Guan, Z.Y. Zhou and Y.J. Huang	91
Influence of Load Interaction between Creep and TMF on the Life of Single Crystal Nickel-based Superalloy	
Z.Y. Song	99
Selection of Switching Layer Materials for Memristive Devices: from Traditional Oxide to 2D Materials	
Y.D. Wang	107

Chapter 2: Materials Processing Technologies in Mechanical Engineering

Effect of Cutting Fluid on Milling of Additively Manufactured Inconel 738LC	
G.H. Ren, C. Zhou and B. Zhang	117

Graphene-based Composites for the Thermal Decomposition of Energetic Materials Y.H. Liu, J. Zheng, G.B. Yu, J. Qia, Q.Q. Xu, C.M. Zhang and X. Zhang	123
Study on Fabrication of Grinding Wheel in Selective Laser Melting S. Li, B. Zhang and C. Zhou	130
Hybrid Metal 3D Printing for Selective Polished Surface S.Y. Mak, K.L. Tam, C.H.B. Yung and W.F.E. Yau	136
Validating Continuum Model for Onset of Adiabatic Shear Banding during High Speed Cutting by Finite Element Method J.Q. Zhang, B.B. He, C. Zhou and B. Zhang	141
Microstructural Characterization and Tensile Behavior of TA1 Titanium Alloy Sheet Welded by Electron Beam Welding S.D. Gu, J.P. Zhao, R.J. Ouyang and Y.H. Zhang	149
An Study of Nanoscale Mechanical Twins in GH4169 Alloy by Laser Shot Peening Processing Q. Wang	155
Effect of Titanium Addition on Cracks of Fe-Cr-C Coating by Reactive Plasma Cladding J.B. Liu, L.M. Wang and J.H. Liu	163
Influence of Process Parameters on Microstructure of Reaction Plasma Cladding TiC-Fe-Cr Coating L.M. Wang, J.B. Liu and J.H. Liu	170