

Table of Contents

Preface

Chapter 1: Metallurgical Technologies and Metal Materials Processing

Comparison of the Microstructure and Mechanical Properties of Ti-3573 and Ti-3873 Alloys after Cold Rolling and Aging Treatment W.H. Cai, Z. Li, K.Q. Lv and L. Zhang	3
Analysis and Improvement of out of Round Grinding Ball X.H. Xiong, L. Zhu, P.Y. Lin, J.M. Yang, G.X. Wang and Y.K. Liu	9
Effect of Different Cold Rolling Reduction on the Microstructure and Mechanical Properties of Ti-3573 Titanium Alloy W.H. Cai, Z. Li, K.Q. Lv and L. Zhang	14
Fatigue Crack Growth and Precipitation Characteristics of a High Zn-Containing Al-Zn-Mg-Cu Alloy with Various Typical Aging States K. Wen and H.W. Liu	19
Optimization and Prediction of Machining Responses Using Response Surface Methodology and Adaptive Neural Network by Wire Electric Discharge Machining of Alloy-X I.V. Manoj, S. Narendranath and A. Pramanik	28
Molecular Dynamics Simulation Study of the Effect of Ni, Fe, Cu on Cryolite Molten Salt System 78% Na₃AlF₆-9.5%AlF₃-5.0%CaF₂-7.5%-Al₂O₃ H.B. He, Y.S. Wang, Z.X. Luo and J. Zeng	39
Effect of Annealing Temperature on the Microstructure of 2195 Al-Li Alloy Sheet B. Feng and B.Q. Xiong	49
Design and Analysis of Hot Forming Parts with Extra Thick Specification H.L. Liu, Y. Chen, C.C. Li, L. Guan and X.N. Wang	59
Correlation among Microstructure, Texture, and Properties along the Thickness Direction in As-Hot-Rolled and As-Solution-Quenched Al7055 Thick Plates K. Zhu and H.W. Yan	65
Effect of Combined Pre-Straining and Pre-Aging on the Precipitation Behavior and Age Hardening Response for Al-Mg-Si Alloys G.J. Gao, X. Li and L.Z. Yan	74
Mechanical Properties and Microstructure Evolution of Typical Over-Aging State Al-Zn-Mg-Cu Alloy during Thermal Exposure T.Q. Cheng and Z.H. Li	84
DFT and HAADF-STEM Investigations of the Zn Effects on β'' Phase Structure in a Zn Added Al-Mg-Si-Cu Alloy R. Yu and Y.A. Zhang	93
Processing of Agglomerates and Pellets Containing Various Amounts of Titanium Dioxide G.Y. Vitkina, A.N. Dmitriev, R.V. Alektorov and E.A. Vyaznikova	102
Prediction and Measurement of Quenching and Pre-Stretching Stress in 7050 Aluminum Alloy Thick Plate H.L. Cao, J.Q. Wang, Y.X. Tian, G.M. Niu, C. Liu and X. Xiao	109

Chapter 2: Polymers, Composites, Ceramics and Functional Materials

Research on Preparation and Morphology of GO and GO/Fe₃O₄ Composite Z. Miao, R.X. Zhu and L.X. Zhang	117
Study on the Inner-Lined Layers Bonding Strength at Different Temperatures of the Ceramic-Lined Tubing Prepared by the Centrifugal-SHS Method S.Z. Wang, S.C. Wei, Y. Liang, B.S. Xu, Y.L. Yang, L. Dou and G.Y. Dong	122
Degassing Process Influence on Tensile Strength of Neat E132 Epoxy Polymeric Materials D. Wong, M. Anwar, S. Debnath, A. Hamid, S. Izman and A. Pramanik	129

Study on Biodegradability of Xenobiotic Polymer with Numerical Simulation Based on Experimental Outcome	
M. Watanabe and F. Kawai	136
Simulation and Optimization of C₆₀-Based Organic Light-Emitting Diodes	
S. Wang	142
Performance of Graphene Nanopowder with Deionised Water in EDM Process	
K. Paswan, S. Chattopadhyaya and A. Pramanik	147

Chapter 3: Coatings and Tribology

Study on Coating Material and Preparation Technology of Aluminum Alloy Tube by Low Temperature Self-Propagating Molding	
Z.X. Wang, S.A. Zhang, Q. Xing, B.S. Liu and G. Zhang	157
Study on the Microstructure of Anti-Corrosion and Wear Resistant Coating on the Inner Wall of Equipment Pipeline and the Synthesis Mechanism of Ceramic Coating	
H.L. Tian, X.M. Zhang, G. Jin, Y. Liang, S.C. Wei, C.L. Wang, M.Q. Guo and X.X. Du	163
Wear Experiment and Influencing Factors Analysis of 13Cr-L80 Tubing String in High-Pressure, High-Temperature and High-Yield Gas Wells	
X.Q. Guo, J. Liu, L. Huang, A.C. Wei and D.K. Fang	169

Chapter 5: Methods of Properties Measurement and Materials Testing

The Application of Ethyl A-Cyanoacrylate in the Early Stage of Geological Experiment	
L. Yang, L. Jian and L. Shuang	179
Using New Technology Material to Make Inclusion Sheet	
L. Yang and L. Shuang	183
Novel Electrochemical-Emission Spectroscopy of Metals by White Light Interferometry	
K. Habib	189
Synthesis of Alloyed Au-Ag Nanospheres with Tunable Compositions and SERS Enhancement Effects	
B.J. Xu, M.Y. Jiang, X.N. Chen, F. Zhao, S.H. Du and H. Yi	197