

Table of Contents

Preface

Chapter 1: Advanced Materials and Technology on Metallurgy

Vibration Analysis and Simulation of Mast Section of Hoist J.M. Luo, Y. Jiang and Z.H. Xing	3
Cleaness of the First Pipeline Steel Slab along with Casting Direction J. Huang, Y. Min, C.J. Liu and M.F. Jiang	10
Microstructure and Properties of <i>In Situ</i> Fabricated Al-5wt.%Si-Al₂O₃ Composites L. Cheng, D.G. Zhu, Y. Gao, W. Li and B. Wang	15
Mössbauer and Magnetic Property Study on Cyano-Bridged Complex [Gu(en)_x]_yM_A[Fe(CN)₆]_z·nH₂O(M_A=K⁺) Z.H. Ye, Q. Lin, H.F. Huang, Y. He and S.H. Chen	21
Synthesis of ZnO Nanoparticle by Solid State Reaction and its Influence on Zinc Electrode H.Q. Wang, R. Li and C.X. Xiang	25
Microstructure Evolution of Ti-9.2Mo-2Fe Alloy C.L. Li, D.G. Lee, W.J. Ye, X.J. Mi and Y.T. Lee	30
A Comparative Study of SHS Synthesis of TiB₂ Cermets Powder by Magnesium Reduction and Aluminothermy Reduction H.B. Wang, X.B. Wang and H. Li	33
Mechanical Characterization of Ti-Mo-Fe Titanium Alloy J.H. Seo, D.G. Lee, C.L. Li, X.J. Mi and Y.T. Lee	37
Preparation of Flowerlike Indium Oxide Films by a Simple CVD Method Z.L. Li, J.Y. Zhou, Z.P. Wang, J.H. Gu, Y.W. Zhang and Y.X. Wei	41
Corrosion Behaviour of Zn-Al Pseudo-Alloy Coating on Carbon Steel in Chloride Environments A.Q. Liu, K. Xiao, C.F. Dong and X.G. Li	45
Mechanical and Microstructural Properties of Al-Added ODS Ferritic Steel J.H. Lee	49
Study of Fatigue Properties of AISI4130 Steel Joined by Upset Welding in Heat Treated Condition H. Mollazadeh and R. Nouruzi	54
Improvement of Abrasion Wear Resistance of Ductile Iron by Two-Step Austempering P. Silawong, A. Panitchagul, S. Inthidech, N. Akkarapattanagoon and U. Kitkamthorn	58
Effect of Basicity on Continuous Casting Mold Flux Properties X.H. Zhu, L.G. Zhu, Y. Liu and P.F. Wang	62
Relationship between Load, Rotation Speed and, Strength in All - PEEK and PEEK Race - PTFE Retainer Hybrid Polymer Bearings under Dry Rolling Contact Fatigue K. Mizobe, T. Honda, H. Koike, E.C. Santos, K. Kida and Y. Kashima	66
The Effect of Isothermal Treatment on the Microstructure and Properties of High Performance Steels X.M. Wang and Y.Q. Zhao	71
Peritectic-Steel Mold Fluxes X.H. Zhu, L.H. Zhu, Y. Liu and T.L. Liu	75
Microstructure and Mechanical Properties in Ultra-High Strength Steel with Tensile Strength 1000MPa Y.X. Ma, B. Guo, L. Zheng, C. Song, C.M. Liu and J.H. Tao	79
Determine Coverlay Thickness According to Air Leakage Characteristics in Open Pit to Underground Overlay C. Chao, D.Q. Gan, L.Q. Zhu, Y.B. Zhang and H.J. Lu	88
Precipitation Behavior of a Maraging Stainless Steel Y. Jiang, Y.Y. Ai and Q.T. Wang	92

Influence of MgO Additive on Fluidized Bed Reduction of Iron Ore Fines under Simulate COREX Reducing Gas	96
J.H. Shao, H.Q. Tang and Z.C. Guo	
Aging Behaviors of Ti-Al-Mo-Fe Titanium Alloy	102
D.G. Lee, C.L. Li, J.W. Seo, X.J. Mi and Y.T. Lee	
Al-Mg Deoxidation of High Nitrogen Steels in VIF	105
G.F. Geng and F.Y. Kong	
Effects of Hot Working and Heat Treatment on Properties of Ti-62A Alloy Plate	112
R. Liu, S.X. Hui, W.J. Ye, Y. Yu, Y.Y. Fu, X.Y. Song and X.G. Deng	
Effects of Processing Technic on Grain Size of Copper Clad Steel Wire	116
Q.M. Wu, D.Q. Wang and Y. Gao	
Microporous Bio-Membrane Materials Based on High Molecular Weight Polylactide and Low Molecular Weight Poly(ethylene glycol)	123
T.F. Shen, M.G. Lu and L.Y. Liang	
Preparation of ZnAl₂O₄ Spinel Directly from Zinc Aluminum Layered Double Hydroxide Precursor	127
J.Y. Song, M.Z. Leng, X.Q. Fu and J.Q. Liu	
Process Mineralogy of an Oolitic Hematite Ore and its Implications for Mineral Processing	131
H.X. Dai, W. Zhao, L.K. Gao and B.X. Song	
Shape Memory Characteristics of NiTi Alloy Wire under Various Constrained Stresses	135
Y.F. Li, X.J. Mi, X.Q. Yin and H.F. Xie	
Simulation of Casting Process for Ductile Iron Wind Generator Rotor Shaft	141
M. You and X.G. Diao	
Study on Automobile Body Performance of Honeycomb Sandwich Composite Material	146
X.M. Fan, J.F. Wang, C.J. Duan, X.X. Xia and Z.H. Wang	

Chapter 2: Materials Engineering and Production Technologies

The Study of SiC Substrate MgB₂ thick Films Growing along C Axis	153
Y.B. Wang, S. Meng, Q. Dai, Z. Yan and Q.R. Feng	
The Study of Microstructure and Electric Resistivity of SiC Thin Films Produced by MF Magnetron Sputtering	158
Y.Y. Li, J.J. Hao, X.J. Wang, R.X. Wang and Z.M. Guo	
Effects of Additives on Semiconduction Transformation in Lead Zirconate Titanate Ceramic Induced by Atomic Hydrogen	162
L.B. Mo, S. Chen, D. Guo and J.L. Cao	
A Method for Predicting the Onset and Expanding of the Damage during CFRP Interference-Fit Joining Process	166
C. Luan, K.F. Zhang, X.G. Li and Y. Li	
Hysteretic Behavior of Steel Members Strengthened with CFRP under Cyclic Lateral Loading in Different Temperature	170
Y.H. Li and Z.G. Li	
Superabsorbent Hydrogel from Sago Starch: The Effects of Crosslinking Agent on Thermal Stability and FTIR Analysis	174
O. Nurizan, A. Zuraida and N. Norhuda Hidayah	
Comprehensive Mathematical Model of Full Oxygen Blast Furnace and its Solution	178
J.L. Meng, Z.C. Guo and H.Q. Tang	
Microstructure and Mechanical Property along 3D Directions of AZ31 Magnesium Joint Welded by FSW	187
S. Lu, S.Y. Xiao, F. Qi and J. Chen	
Computational Aspects in the Elasto/Viscoplastic Material Behavior of Solids	192
F. de Angelis	
Synthesis of Graphene-ZnS Nanosheets Composite by Layer-by-Layer Self-Assembly and Hydrothermal Homogeneous Precipitation Method	192
Z.H. Wang, L.S. Bi, J.F. Xia, F.F. Zhang, Y.Z. Xia and Y.H. Li	
Study of Tungsten Cathode Doped with Rare Earth for Pulsed Xenon Lamp	204
J.J. Liu, H.B. Li, R.H. Wu, R.Y. Shao and B.C. Jiang	

Harmonic Vibration Synchronization Analysis of the Double Motors Based on Equivalent Control Synchronization Strategy	208
X.H. Li and J. Liu	
Effect of Cooling Rate on Tensile Properties of Ti-5Al-5Mo-5V-3Cr Alloy	212
Y.Y. Fu, S.X. Hui, W.J. Ye and X.J. Mi	
Flexural Properties of Kenaf Sandwich Panel	216
Z. Halim and S.K. Abdul Rahman	
Research on the Thermal Performance of New Sandwich Insulation Composite Wall Panel	220
S. Xia, G.H. Xia, J.H. Cui and W.Y. Yin	
Improvement and Function Characteristics of SiC_{CVD}/Al Composite Electric Heating Actuators	224
Y. Lu, L. Hao, F.S. Pan and M. Hirohashi	
Functionalization of ZnO Nanowires for Potential <i>p</i>-Nitrophenol Sensing Applications	228
A. Gupta, B.C. Kim, E. Edwards, C. Brantley and P. Ruffin	
Simulation Study of the Strength of Pick Based on LS-DYNA in Different Hardness of Rock	232
Q. Zhang and S.J. Li	
A Solar Cell Based on a Hybrid Film of P3HT and Magic Cubic-Like PbS	236
P. Wang, A.M. Wang, Z.H. Zhang, L.B. Fan, Y. Lei, M.Y. Yang, Y.G. Zhang and P.J. Li	
Carbide Distribution Effect on Wear Behavior of Cold Work Tool Steels	240
L.H. Chiu, H.C. Liao, S.C. Lin, Y.T. Pan and H.Y. Liou	
Construction of Flow Stress Constitutive Equation for 3Cr1Mo0.25V Steel	244
Y.H. Zhang, G.Y. Tan and S.C. Yang	
Optimal Design of Tooth Profile for Sprocket Wheel on No Arching Sintering Machine	250
S.B. Ren and M.H. Bai	
The Research of Pt Heating Resistor Paste Used for Sensors Based on ZrO₂	254
H.Q. Huang, Y.J. Pan, X. He, G.Y. Xie and Z. Peng	
Magnetic Studies in Mixed-Metal Valency Molecule Magnets NBu₄Fe^{II}_nMn^{II}_{1-n}[Fe^{III}(OX)₃](n=0.03, 0.10, 0.15, 0.97)	259
Q. Lin, S.H. Chen, Y. He, X.G. Li and H.F. Huang	
From Waste to Electronics: Printed Circuit Boards Using Renewable Resources of Oil Palm Empty Fruit Bunch	263
N.A.A. Zawawi, A. Ismail, K. Abdan and M.A. Mahdi	
Numerical Algorithms for J₂ Viscoplastic Models	267
F. de Angelis	
Studying on Shielding Effect in the Sacrificial Anode Cathodic Protection System	275
Y. Huang and Z.G. Fang	
M-T Transformation Control Synchronization Strategy for Single-Mass Nonlinear Harmonic Vibration System	283
X.H. Li and Q.C. Zhao	