

Table of Contents

Preface, Committees, Sponsor

Chapter 1: Metals and Alloys, Properties, Metallurgical Technology and Processing Technology

Mechanical Behavior of AZ31B Magnesium Alloy Sheet at Different Strain Rates and Stress States C.S. Ma, H.L. Fu, H. Li, X. Luo, Y. Li and Y. Zhou	3
Composition, Microstructure and Properties of Ultra-High-Strength Steel for Offshore Structural Application X. Wang, X.L. Li, H.J. Yin, L.Q. Wang and H.X. Gong	8
Heat Treatment of a Slurry Squeeze-Cast ZA-27 Alloy at 150 °C S. Vongcharoenpon, S. Janudom and T. Plookphol	14
Solution Heat Treatment of 7075 Aluminum Alloy Affected on Anodic Oxide Layer I. Iewkitthayakorn, S. Janudom and N. Mahathaninwong	19
Effect of Boron and Chromium on Hardenability in 0.33% C Cold Heading Steel S.P. Ruan, A.M. Zhao, Y.C. Li, M.Y. Guo and Z.Y. Song	24
Experimental Characterization of the Dynamic Compressive Properties of Railway Wheel Steel L.L. Han, L. Jing, H.C. Wei and Y.Z. Yan	29
The Effect of the Addition of Nano-SiC and Nano-TiN in the ZGMn13Cr2 Alloy on the Microstructure and Mechanical Properties Q. Wu, J.J. Guo and Y.B. Wu	34
Kinking Behavior of S-N Curve for Ti6Al4V Alloy Notched Specimen under a Load-Controlled High Cycle Fatigue Test A.T. Htoo, Y. Miyashita, Y. Otsuka, Y. Mutoh and S. Sakurai	39
Research of the Continuous Annealing Process to Eliminate the "Band" Feature of Dual Phase Steels J.L. Chen, G.H. Zhu, J. Zhang, Y.G. Liu and H.B. Pan	45
Effect of Austenite Grain Size on Hardenability and Impact Toughness of SCM435H J.L. Chen, S.P. Ruan, L.J. Wang, J.P. Zhai and C. Liu	50
Observation of Retained Austenite Amount of Repeatedly Induction Heated SUJ2 Bearing Steels I. Yoshida, K. Yamamoto, K. Domura, K. Mizobe and K. Kida	55
Effect of Repeated Quenching on Rolling Contact Fatigue Properties of JIS SUJ2 Bearing Steel T. Kamiya, Y. Hashizume, K. Mizobe and K. Kida	60
Influence of Air Flow Rate and Immersion Depth of Designed Flotation Cell on Barite Beneficiation N. Demeekul, L. Sikong and M. Masniyom	66
Plasma Spraying of Al-Si and Silicon on Magnesium Alloy under Protective Atmosphere T. Kubatík, J. Stoulil and M. Janata	71
Rheological Characterizations of Copper - Palm Stearin Based Binder System for Metal Injection Moulding N.A. Nordin, M.D. Kamal Bahrin, N. Wahab, M.A. Omar and M.H. Ismail	77

Chapter 2: Nanomaterials and Applied Nanotechnologies

Finite Element Modelling of CNT-Filled Magnesium Alloy Matrix Composites under Microwave Irradiation A.D. Akinwekomi, M.T. Choy, W.C. Law and C.Y. Tang	83
Synthesis of Thermochromic Mo-Doped VO₂ Particles P. Phoempoon and L. Sikong	88

High Performance of Rutile Titanium Dioxide Whiskers/Epoxy Resin Composites Y. Feng, Z.Z. Weng, W.H. Xu and Z.X. Xiong	93
Multi-Elements Doped in Mn-Ferrite by Detonation Method X.H. Wang, X.J. Li, D. Wang and H.H. Yan	98
Holographic Storage Properties of Photochemical SiO₂-Nanoparticles Material for Visualization News Features Y. Feng	103

Chapter 3: Polymers and Composites

Chemical Synthesis and Characterization of Conducting Poly(2-Aminothiazole) P.F. Lv, X. Wang and H. Zou	111
Multivariate Optimization of Fiber Reinforced Laminate Using Ant Colony Optimization Algorithm M.M. Imran, F. Mazhar and R. Ahmad	116
Preparation of Coated Type Al-Al₂O₃ Cermet Composite Powders via the Calcination Oxidation Method J.G. Song, Y.J. Zhou, R.H. Wang, S.B. Li, S.Y. Yu, Y.Q. Li, N. Wang, X.Y. Huang and Z.W. Wang	121

Chapter 4: Materials and Technologies for Environmental Engineering

Synthesis and Characterization of CTA/CA-Based Forward Osmosis Membranes with Hydrophilic Nano-Titanium Dioxide X.J. Wang, X.L. Shi, S.F. Hou, J.H. Yang, K.L. Zhou, Z.P. Wang and L.G. Wang	127
Antibacterial Polysulfone Membranes: The Effect of Eugenol and Zinc Oxide as Additives Z. Harun, K.N. Yusof, M.Z. Yunus, M.F. Shohur and M.R. Jamalludin	132
Experimental Measurement and Prediction of Heating Values of Municipal Solid Waste X.L. Chen, Z. Tian and J.P. Ding	139

Chapter 5: Materials for Buildings and Structures

Mechanical Analysis of Three Kinds of Beams on Non-Linear Elastic Foundation Materials X.L. Chen, Z. Tian and J.P. Ding	147
Mechanical Characterization of Beams on Tensionless Foundation Materials X.L. Chen, Q.H. Yang and J.P. Ding	152
Experimental Study on the Comprehensive Application of Steel Slag in Concrete S.R. Zhao, K.F. Zhang, G. Meng, Y. Yao, N. Wang, F. Geng and W.L. Li	157
Mechanical Analysis of Glass Plates for Wall Construction Materials X.L. Chen, J.P. Ding and Z. Tian	162