

Table of Contents

Preface

Chapter 1: Properties and Processing of Metal Materials

Effects of Laser Power and Scanning Speed on the Microstructural Evolution and Hardness of AlCrFeNiMn HEAs Fabricated via Laser Cladding P. Mpofu, N. Malatji, M.B. Shongwe and L.R. Kanyane	3
Taguchi Optimization of MRR in Magnesium AZ91 Using EDM with Graphite Electrode P. Nakwong and A. Muttamara	11
Influence of Casting Parameters on the Nodule Count in Ultrafine Spheroidal Graphite Iron W. Boonyarit, W. Waenthongkam, K. Amatachaya, N. Wanmai, K. Worakhut and S. Boonmee	17
Consistency of Microstructure and Mechanical Properties of Carbon Steel Manufactured by Wire Arc Additive Manufacturing with Different Production Systems T. Rautio, M. Hietala, A. Abdelghany and A. Järvenpää	25
Ultrasonic Welding of Copper Sheets for Heat Pumps A.B. Pereira, J.D. Batista and B. Mascate	33

Chapter 2: Fatigue, Fracture and Cracking of Materials

Shape Dependence of Bending Fatigue Strength Shown by Actual Stress and Strength Design Criterion Examination G. Deng, S. Zhu and Y. Bonkobara	41
Investigation of Crack Propagation Behaviors in Thermal Barrier Coatings after Heat Treatment in Hydrogen Environments by <i>In Situ</i> Three-Point Bending Tests J. Cui, H. Saito, Y. Ichikawa, K. Ogawa, M. Nakashima, A. Suzuki and F. Sato	53
Constitutive Modeling of Fibrous Tissues with Non-Symmetric Fiber Dispersion: Application to Extension Behavior of Leather T. Qu and A. Matsuda	59

Chapter 3: Hydrometallurgy

Study of Copper Separation from Ternary Black Powder Leaching Solution Using P204 (D2EHPA) Multistage-Extraction E.D.T. Jaya, S.X. Wu, Y.H. Li, D.P. Wei and Y.Q. Zhu	69
Enhanced Purification of Mixed Hydroxide Precipitate Leachates via P₂₀₄: A Study on Process Efficiency R.K. Fariz, Y. Hu and X.Z. Dong	77

Chapter 4: Magnetic and Electronic Characteristics of Advanced Functional Materials

Multiferroicity in Quasi-One-Dimensional Compound Ca₃NiMnO₆ N. Mufti, I.G.A.I.F. Ramadhani, T. Amrillah, A. Taufiq, S. Sunaryono, M. Diantoro and G.R. Blake	87
Magnetism and Electronics of Pyridinic and Pyrrolic Site in Graphene: A Density Functional Theory Study F.M. Santana, A.J.W.T. Nenohai, R. Arifin, R. Asih and D. Darminto	95
Magnetic Study of LiFe(P,Si)O₄ Probed by SQUID and μSR F. Astuti, M. Zainuri, D. Darminto, M.R. Ramadhan, D.P. Sari and I. Watanabe	105
Synthesis of Fe₃O₄ and Fe₂O₃ Nanocrystal from Iron Sand with Semi-Automatic Coprecipitator A.D. Agustin, A.N.K. Wardani, S.R. Meutuah, I. Sidharta and D. Darminto	111