

Table of Contents

Preface

Chapter 1: Processing of Structural Metals

The Effects of MQL Pulse Parameters on Cutting Force, Cutting Temperature and Surface Roughness in Turning Process A.O. Demir, Y.F. Yapan and A. Uysal	3
Effect of Cold Rolling and Annealing on Grain Refinement of β-Type Ti-13Nb-1.5Ta-3Mo Titanium Alloy C. Gama, W. Khair-Eldeen, M. Nakai and M.A.H. Gepreel	9
Effect of Cooling Rate on the As-Cast Microstructure of a High Strength Steel Produced in a Large Size Ingot A. Loucif, D. Shahriari, K. Chadha, C. Zhang, J.B. Morin and M. Jahazi	15
Influence of Solidifying Layer Peeling on Strip Thickness in Roll Casting T. Haga, H. Ochi, H. Fuse, H. Watari and S. Nishida	21
Mechanical Properties of Roll Cast AC2A Aluminum Alloy Strips T. Haga, K. Yamashita, H. Ochi, H. Fuse, H. Watari and S. Nishida	27
Preparation of Functionally Graded Aluminum Alloy Composites with Alumina Dispersant under Gravity Casting G. Sasaki, C. Indo and K. Sugio	35
Microstructural Evolution and Corrosion Behavior of Selective Laser Melted 17-4 pH Stainless Steel R.M. Vaghode, A. Meena and V.K. Meena	41
Magnetic Field-Assisted Ultrasonic Nanocrystal Surface Modification of Titanium Alloy Y.X. Ye, Y. Zhang, C. Tang, L.J. Xu and C. Ye	47

Chapter 2: Alloys and Steel

Stress Corrosion Cracking of Aluminum in Chloride-Containing Solution S. Hastuty, F. Fadhlurrahman, F.K. Nadhor, P. Kadarno, M.A. Barrinaya, A. Arianta, R. Adriana and S. Suharti	57
Fourier Neural Operator for Predicting the Growth of Precipitates in a Binary Alloy G. Gangmei, B. Rolfe, S. Rana, K. Mitra and S. Bhattacharyya	71
Machine Learning-Based Prediction of Hardness in Electrodeposited Nickel-Tungsten Alloy Coatings S. Zhai, K. Sugio and G. Sasaki	79
Effect of Zinc Content and Surface Roughness on the Wettability of Magnesium Alloys K. Park, K. Sugio and G. Sasaki	85
Influence of Magnetron Sputtering Parameters on Speckle Characteristics for Application in Microscale DIC of Maraging Steel W.K. Law, H.L. Wang, C.H. Song, C.S. Lim, Z.Z. Sun and K.C. Wong	91
Effect of Pre-Strain Condition on the Mechanical Properties of Steel Wire and its Aging Behavior S. Qinqi, N.D. Johari, M. Kamarudin and W.F.F. Wan Ali	97
Effect of Lamellae Modification in Eutectic $\text{Al}_{82.70}\text{Cu}_{17.30}$ Alloy on its Electrochemical Performance as Anode Using Symmetric Cell Electrochemical Impedance Spectroscopy N.M. Haruna, G.G. Mohamed and M.A.H. Gepreel	105
Relationship between Yield Strength and Cluster Formation of Multi-Component Aluminum Alloys by Monte Carlo Simulation J. Zhao, T. Matsuda, K. Sugio and G. Sasaki	111

Chapter 3: Functional Materials

Effect of Sintering Conditions on Properties of Assisted Pressure Sintered Tungsten Materials	
H. Hong, S. Lee, K. Sugio and G. Sasaki	119
Influence of Cockle Shell Ash and Lime on Geotechnical Properties of Expansive Clay Soil Stabilized at Optimum Silica Fume Content	
M.S.I. Zaini, M. Hasan, A.R. Suwito and M. Hyodo	125
Photoconversion of Carbon Dioxide to Methanol Using Doped-Carbon Quantum Dots/TiO₂	
M.W. Nugraha, K.C. Hui, N.Y. Harun, D. Floresyona, A. Nugroho, N.A. Kamal and N.S. Sambudi	133
Thermodynamic Stability and Density Functional Theory Simulations of Gold Complexes in Ethaline DES Leaching of Refractory Ores at Varied Temperatures	
J.K. Faigal, C.W.B. Ferrer, L.J.M. Villalobos, Z.G.I. Suaybaguio and G.T. Logrosa	145
On the Selectivity and Self-Diffusion of CO₂ and H₂ in Mixed-Layer Zeolitic-Imidazolate Frameworks	
K. Anand, M.R.A. Hamid, M.F. Ismail, W.A.W.A.K. Ghani and M.A. Razak	151

Chapter 4: Polymers and Composites

Formulation of Dielectric Composite Material from Ananas Comosus Waste for 5 GHz Microstrip Antenna	
N.S.I.D. Aprianto, M.K. Zakarzan, N.A.T. Yusof, N. Hasan and M.S.A. Karim	167
The Effect of Sodium Hydroxide and Oxalic Acid Treatments on Water Absorption, Thickness Swelling, and Hardness of Polyester/Ramie Fiber Composites	
H. Pratiwi, K. Kusmono and M.W. Wildan	175
A Simple and Effective Method for Determining the Shear Moduli of Structural Materials	
V. Zhigun, E. Plume and S. Kristone	183
Investigation of Electro-Mechanical Properties of SR/CNT/SR Flexible Strain Sensor Composites	
M.L. Hakim, M.A. Muflikhun and H. Herianto	193
Electro-Elastic Behavior of Polarized Hydroxyapatite and Barium Titanate Piezocomposite	
E.E. Mensah, A.S.G. Khalil, A.A. El-Moneim and M.A. Hassan	199
Investigation of the Abrasion Resistance of Polymer Yarns	
I. Salopek Čubrić and G. Čubrić	205
Microcrystalline Cellulose Derived from Pineapple Leaf and its Concentration Effect on Polycaprolactone-Based Composite	
E.J.Y. Yeo, P.P. Chung, K.B. Salang and E.Y.L. Yeu	211
Dynamic Elastic Properties of E-Glass Randomly Oriented Fiber Reinforced SR GreenPoxy Composite - Experimental and Numerical Analysis	
A. Ramalho, M. Gaspar, M. Correia, J. Vasco, C. Capela and R.B. Ruben	219
Effect of Heat Treatment on the Mechanical Properties of Electrospun Polymeric Nanofibrous Membranes	
Z.H. Lau, A.B. Chai, K.Y. Tshai, S.Y. Ch'ng, E. Verron and S.C. Koay	227

Chapter 5: Additive Manufacturing

Optimization of Infill Parameters for Fused Filament Fabrication (FFF) of Polyether Ether Ketone (PEEK) Using Adaptive Neuro-Fuzzy Inference System (ANFIS)	
H.L.C. Bongao, G.P. Tan and P.A.N. de Yro	235
Peanut Hull as an Alternative Biocomposite for Polylactic Acid Filament in Fused Filament Fabrication 3D Printing	
M.J.B. Enojas, H.L.C. Bongao, R.S. Adizas, R.M.G. Buban, I.G. Dayag, G.A. Lutero, M.V. Quimora, D.M.J. Rodelas, J.E. Morgado, R.G. Arribas and C.B. Parmis	243
Effect of Rigid Body Motion in Phase Field Simulation of Sintering during Preheating at the Powder Bed Fusion with Electron Beam Conditions	
G. Rizza, L. Gardello, M. Galati and L. Iuliano	253

Chapter 6: Machines Research and Design

Development of Small Punch Creep Test Rig, Testing and Validation I.U. Ferdous, N.A. Alang, J. Alias and N.A. Razak	261
Trial Production of Disk Caster for Thin Bar T. Haga, K. Yamashita, H. Ochi, H. Fuse, H. Watari and S. Nishida	269
Melt Drag Twin Roll Caster T. Haga, Y. Ioto, H. Ochi, H. Fuse, H. Watari and S. Nishida	275
Design and Properties Analysis of Coating Removal Actuator by Abrasive Water Jet Q.B. Wang, F.R. Zhang, C. Zhou, J.Y. Hou, D.Y. Ning and Y.J. Gong	281
Exhaust Emission Analysis of Spark Ignition Engine with Modification of Exhaust Gas Recirculation (EGR), Air Intake Tank, and Swirl Generator N.H. Badrulhisam, A.M.I. Mamat, I.M. Yusri and M.H. Mat	289

Chapter 7: Computational Mechanics

Turbulent Flow Analysis in an Annular Diffuser Having a Rectangular Twisted Hub E.S.S. Askari	299
Dynamic Response of a Tube of Heat Exchanger with an Axial Load B.W. Huang, H.K. Kung, Y.C. Lin, C.H. Lin and L.C. Wang	305
Numerical Considerations on Design Parameters of Diffuser Vane Slit D. Iwasaki, S. Ejiri and M. Miyabe	311
Investigation of Stress and Delamination Behaviors of a Bonded Beam Having Orthotropic Inclusion in Adhesive Layer under Tensile Loading M.U. Uysal	317
Modal Analysis of Flax Fiber Reinforced Composite Bridge Using FEA to Support the Design of the Target Bridge Made of Innovative Material A. Shahmirzaloo and F. Moonen	323