

# Table of Contents

## Preface

## Chapter 1: Properties and Processing Technologies of Structural Metals

### **Microstructure Evolution and Hardness Properties of Nodular Cast Iron for Varying Tempering Time**

H. Oktadinata, M.S. Dafi and D.H. Prajitno 3

### **Microstructure Refinement by Austenizing and Tempering in Low Alloy Carbon Steel Casting**

M. Chamim, Haikal, M. Vendy and N.H. Fatimah 11

### **Analysis of the Effect of Time on Tensile Strength and Hardness of Electroplating Method Using Nickel on Aluminum 7075**

F. Setiawan, D. Walikram, Sehono, T. Ariebowo and I.R. Putra 17

### **Comparison of Microstructure, Yield Strength, Tensile Strength, and Modulus of Elasticity between Gray Cast Iron and Nodular Cast Iron**

A.S. Darmawan, A.D. Anggono, A. Yulianto, B.W. Febriantoko, Masyrukan and A. Hamid 25

### **Corrosion Resistance Analysis of Al-Cu, Al-Zn and Al-Cu-Zn Alloys**

W. Suprapto, Zuliantoni, P.H. Setyarini, F. Gapsari, Sudjito and Y.S. Irawan 33

### **Hydroxyapatite Effect on the Corrosion Rate of AMC Al-Zn by Powder Metallurgy**

Zuliantoni, W. Suprapto, P.H. Setyarini and F. Gapsari 41

### **Aluminum Oyster Mushroom Frying Surface Quality Improvement through Anodizing**

A. Rachmawati, P.H. Setyarini, V.I. Mahendra, A.M. Wati, S. Fajriani, M.A. Ambayoen and S. Azizah 49

### **Secondary Material Casting of Al-Si for Making Handle Brake in Variation of Duct**

P. Partono, N. Hidayat, Masyrukan and M.R. Pangaribawa 55

### **The Effect of Finishing Allowance and Milling Methode on Surface Roughness in the Finishing Process of Al5052 and Al7075**

Burhanudin, Margono, E. Suryono, N.T. Atmoko and Zainuddin 63

### **Mechanical Properties and Microstructure Evolution of Double-Sided Friction Stir Welding AA6061-T6**

Hendrato, Jamasri, Triyono and P. Puspitasari 73

### **Optimization of Quench Polish Quench (QPQ) Coating Process Using Taguchi Method**

M. Saravanan, M. Vasanth, S. Boopathi, M. Sureshkumar and V. Haribalaji 83

### **Study of the Effect on Friction Welded Surface on Copper Aluminium Juncture**

M. Senthilkumar, L.K. Singh, S. Lakshmanan, A.M. Shanawaz and M. Selwin 93

### **Wear Behavior and Wear Worn Surface Analysis on Hardox Steel**

G. Harinarayanan, V.K. Krishnan, M.P. Natarajan, V. Surender and J. Gowthaman 99

### **Optimization and Performance of Laser Machining on Domex Steel**

B. Manikandan, G. Harinarayanan, V. Surender, D. Ravi and A.K. Vishvakarma 105

## Chapter 2: Cryogenic Treatment of Metals

### **Investigation of Cryogenic Thermal Conductivity of AA7115 Subjected to Various Heat Treatments**

K. Arunprasath, M. Muthumalai, S. Kavitha and T.R. Vijayaram 115

### **Impact of Single and Duplex Cryogenic Jets on Mechanical and Physical Characteristics in Turning of Titanium Superalloys**

A. Shanmuga Vadive, P. Selvakumar, P. Mathan and P. Ramkumar 125

### **Influence of Cryogenic Behaviour on Copper Electrode for Non-Conventional EDM**

V. Manikandan, Y. Varuvel Antony, P. Mohemedsharifkhan, P. Yuvannarasimman and K. Senthilnathan 139

### **Stir Casting and Successive Rolling of Aluminium Alloy 2218 MMCs Reinforced by High-Entropy Alloy Particles**

M. Vijayakumar, M. Pradeep Rai, M. Muthukrishnan and N. Gnanakumar 151

## **Chapter 3: Biomaterials and Wastewater Treatment**

### **Removal of Mercury (II) by Adsorption in Aqueous Solutions with Pomegranate Husks**

N.L.T. Ruiz, G. Garza, I.L. Hernández and M.G.M. Treviño

163

### **Production of High Carbon Composite from Catalytic Pyrolysis of *Pisum sativum* Peels for Methylene Blue Dye Decolorization**

N.O. Rubangakene, A. El Wardany, M. Fujii, H. Sekiguchi and H. Shokry

171

### **Insights into Drug-Loading Capacity of Bio-Zirconium Metal-Organic Frameworks**

#### **Nanoparticles for Tetracycline Hydrochloride**

A.A. Hanafi, M. El-Kady and M. Ayad

179