

Table of Contents

Preface

Chapter 1: Hydrometallurgy

Role of Cooling Temperature on Impurities Precipitation of Metal Sulfate Solution Derived from Crude Ferronickel Leaching Using MgO

A.A.P. Maulidia, D.Z. Fauzi, F. Abdul, Y. Setiyorini, V.A. Setyowati and S. Pintowantoro 3

Effect of pH on Precipitation of Ferronickel Leaching Solution by Using MgO for Mixed Sulfate Precipitate Synthesis

K.A. Prabowo, F. Abdul, Y. Setiyorini, V.A. Setyowati and S. Pintowantoro 11

Chapter 2: Additive Manufacturing Technologies

A Novel Powder Addition Method for Improving Tensile Strength of Polylactic-Acid Prepared by Using Fused Filament Fabrication (FFF)

J. Pratama, R. Wijaya, U.A. Salim, S. Suyitno, B. Arifvianto, H. Saptoadi and M. Mahardika 23

Effect of Core Material Thickness on the Shore Hardness of the Sandwich-Structured Multi-Material 3D-Printed Parts

A.Z. Adib, J. Pratama, U.A. Salim, S. Suyitno, M. Mahardika and B. Arifvianto 35

Characterization of Extruded Ultra-High Molecular Weight Polyethylene (UHMWPE) Filament Prepared for 3D Printing

B. Arifvianto, C. Irawan, S. Suyitno, U.A. Salim and M. Mahardika 43

Flame Retardant Additives in Polylactic Acid (PLA) Photopolymer Resin for 3D Printing Digital Light Processing (DLP)

S.I. Cahyono, A. Sandi, U.A. Salim, S. Suyitno, B. Arifvianto, H. Saptoadi and M. Mahardika 49

Chapter 3: Design of Structures and Construction Technologies

Analysis and Design of Steel Cement Storage Silo

S.J.J.P. Annie, K.M. Prathiksha, K. Kaviya and P.M. Kavya Dharshini 63

Finite Element Analysis of Castellated Beams with Different Web Openings

P.A. Jacob, S. Aiswarya, B. Johny, B. Joy and T.C. Thomas 77

Determination of Pedestrian LOS for Crosswalks at Intersections - A Case Study in Shivamogga City

S.N. Neeraj, H. Sagar, U. Arun and M.S. Anusha 85

Chapter 4: Machines and Equipment Design

Study on Influence of Core Structure on Catalytic Converter Performance Using CFD

V. Muthukumaran, S. Balaji, K.M. Senthilkumar, M. Navaneethan and D.D.J. Mano 95

Development of Compact Medical Aspirator with IoT Applications

V. Muthukumaran, S. Balaji, K.M. Senthilkumar, A.V. Sivasubramaniyan, K.P. Shiva Kumar and R.T. Bharathi 103

Finite Element Analysis of Solid and Hollow Roller Bearings to Predict the Influence of Contact Factors on Cage Slip

S. Arthanari, C. Manivannan, S. Palanisamy and P. Ponnar 111

Chapter 5: Mechatronics and Automation

Implementation of an Automatic Polishing Process with a Conveyor Mechanism

V.R. Muruganantham, M. Thirumalaimuthukumaran, K. Akila, D. Bhuvanesh and R. Praveen 129

Monitoring of Building Services Using Artificial Intelligence R.S. Sharath and P. Madhan	141
Virtual Laboratory in Mixed Reality with 3D Modelling for Sustainable Design R. Surya, K. Akila and K.M. Senthilkumar	149
Review on Automated Casting Fault Separation Machine M. Muthukumar, S. Bhuvanesh, B. Mahendran, D. Naveen Kumar and R. Priyadarsan	155

Chapter 6: Industrial Engineering

An Approach to Reduce Production Lead Time in the Valve Manufacturing Industry M. Thirumalaimuthukumaran and V.R. Muruganantham	167
Implementation of 5s Concept to Improve Productivity in a Fabrication Industry V.R. Muruganantham, J. Tharun, R.A. Baalaje, M. Thirumalaimuthukumaran and G.R. Dev Darshan	175

Chapter 7: Natural Resource Management

Effect of Wet-Dry Cycling on the Microstructure of Various Weathering Grade Sandstone K.S. Shah, M.H.B.M. Hashim, H. Rehman and K.S. Ariffin	183
Evaluation of Rock Mass Rating in Underground Mine Bukit Kachi Using UAV Photogrammetry Method N.H.A. Nizar, M.A. Ariffin, L.X. Khong and H. Zabidi	189
Characterization of Peat Water Electrocoagulation Flocs from Sarawak Southern Region N.A. Rahman, A.A. Linus, C.J. Jol, N.S.A. Jalal, W.W. Shahanney and N. Baharudin	197
Structural and Geochemistry of Air Piau Gold Mineralisation in Kelantan, North-East Peninsular Malaysia M.I.K. Ahmad Aminuddin, Z. Endut, N.I. Setiawan, I.W. Warmada and K. Yonezu	209
Assessing the Groundwater Quality and Hydrogeochemical Characteristics of Karst Aquifers in Kinta Valley, Perak L.X. Khong, N.H.A. Nizar, S. Ismail, N.A. Saad, M.A. Kamaruddin and H. Zabidi	219