

Table of Contents

Preface

Chapter 1: Preparation and Properties of Composite Materials

Wear Resistance of Bio-Polymer Composite Base on Cotton Post-Harvest Line Residues	3
M. Tichy, P. Valášek and M. Müller	
Antibacterial Efficacy of Non-Copper Polymer Based Composite Enhanced with Metallic Particles Using Fused Deposition Modeling	9
W. Ahmed, A. Al-Marzouqi, T. Rizvi, M. Khan, E. Zaneldin and M. Nazir	
Sintering and Characterization of Alumina Reinforced Tungsten Carbide Cobalt Composite	17
K.Z. Amos, E.N. Ogunmuyiwa, A.U. Ude and N.T. Sithole	
Conductive Filament Composites from Waste Battery Rod-Derived Exfoliated Graphite for Fused Deposition Modeling 3D Printing: A Two-Level Factorial Design Optimization Study	23
J.A. Macalalad, S.F. Robiso, J.M.T. Opiña, V.G.G. Mendoza, A.L.P. de Ocampo and R.D. Maalihan	

Chapter 2: Materials for Biomedical Applications

Synthesis and Characterization of Carbonate Hydroxyapatite from <i>Pinctada Maxima</i> Shell with Short Aging Time for Bone Biomaterial Candidate	31
M. Megawati, D.J. Patty and Y. Yusuf	
Sol-Gel Derived Bioactive Glasses as Synthetic Bone Substitutes	37
P. Naruphontjirakul	
Kinetics Modelling of Vitamin B12 Release in an Agar/κ-Carrageenan Hydrogel Blend	45
M.S.P. Deang, J.M. Fajardo, D. Taña and T. Tumolva	
Chemical and Morphological Analysis of Calcium Oxide (CaO) Powder from Sea Urchin (<i>Diadema setosum</i>) Shell	51
M.A. Jamilludin, I.K.H. Dinatha, A.I. Supii, J. Partini, D.L. Kusindarta and Y. Yusuf	
Characteristics of Bioceramic Hydroxyapatite Based on Sand Lobster Shells (<i>Panulirus homarus</i>) as Sources of Calcium with Optimal Calcination Temperature	59
I.K.H. Dinatha, M.A. Jamilludin, A.I. Supii, H. Wihadmadyatami, J. Partini and Y. Yusuf	
Electrospinning of Ternary Aqueous Solutions of Polyvinyl Alcohol, Chitosan and Salicylic Acid	65
D. Mamani-Rivera, J. Almirón, Y. Ortiz-Valdivia, F. Velasco and D. Tupayachy-Quispe	
The Effect of Antimicrobial Additive on Plastic Deterioration	73
B. Dasdemir, B. Kukcu, K. Kanburoglu, A.S. Vanlı and A. Akdogan	

Chapter 3: Functional and Special Materials and Technologies

The Effect of Polymeric Surfactant on Adhesion and Uniformity of Ag-TiO₂ Coating on Air Filter with Self-Cleaning Capability	81
D. Pranangrong, R. Kraikruan, T. Eksangsri and C. Sapcharoenkun	
Effects of Dual Moderate-Temperature-Grown AlN Interlayers on Structural and Optical Properties of Semipolar (1122) AlN Film	87
X.G. Luo, X. Zhang, R.T. Fang, J. Cui and Y.P. Cui	
Direct Ink Writing of Tubular Al₂O₃ Membrane Support Using Agar-Based Ink in 3D-Printing	93
K. Chaisong, A. Phuruangrat, T. Kanesom, K. Soongprasit and K. Lertwittayanon	
Convective Structure of Nematic Liquid Crystal in Parallelepiped Transverse Cell	101
A.J. Suharli, E.M. Kusumasari, B. Mahendra and Y. Yusuf	
Effect of Ligand Concentration on the Stability and Copper (II) Sensing Performance of Humic Acid-Functionalized Silver Nanoparticles	107
E.C.R. Lopez, M.A. Zafra, J.N.L. Gavan, E.D.A. Villena and J.V.D. Perez	

Chapter 4: Properties and Processing Technologies of Structural Metals

Influence of Tool Eccentricity pin Positioning on AA6061 Aluminium Alloy Friction Stir Welds	
L.H. Ahmad Shah, N. Ramachandiran, W.T. Hou and A. Gerlich	119
Cylindrical Billet Size Optimization for Hot Closed-Die Forging of the Upper Ball Joint	
N. Siripath, S. Suranunthai and S. Sucharitpwatskul	125
Effect of Melting Temperature and Flux on Slag Percentage in Die Casting Process of Zamak3 Alloy	
C. Inpunyo, P. Kongphan, S. Torsakul, S. Waewdee, A. Laohavanich, P. Wirot and S. Vaodee	131
Roughness Test of Aluminum A5052 before and after Forming by SPIF Process	
K.S. Bhandari, S. Aziz, W.N. Chen, S.J. Li and D.W. Jung	139
Modelling of Creep Rupture in Grade 92 Steel Using a Microstructure-Type Finite Element Mesh	
N.A. Alang and K. Nikbin	145
Ag Powder Production Using Wire Arc Spray Technique	
M. Sukkee, S. Wannasri, S. Waewdee and P. Kongphan	151

Chapter 5: Sustainable Building Materials and Construction Technology

The Mechanical Properties and Microstructure of Gypsum Board Manufactured from Water Hyacinth and Coconut Fiber	
P. Nachaisit, N. Ketchat, P. Hankhundt and B. Krattacom	165
Alkaline Activation of Ferrous Foundry Sand: A Look at the Effect of Activator Concentration, Liquid-Solid Ratio and Curing Temperature	
T. Sithole	171
Case Study of Applying 3D Laser Scanning Technology to Spacing Inspection of Rebar Placing Work	
J.Y. Kim, S.H. Jeong, J.W. Kim and G.H. Kim	177
Utilization of Plastic Waste and Waste Rubber Tyres to Modify Bitumen Binder in Road Construction	
M. Tladi, T. Mashifana and N.T. Sithole	191
Chemical, Mechanical, and Durability of Composites Developed from Aluminum Slag	
M. Tladi and T. Mashifana	199

Chapter 6: Mechatronics

Research Effectiveness of Regeneral Brake Energy on Toyota Prius Vehicles by Matlab/Simulink	
M. Le and T.N. Van	209
Low Latency Extended Dijkstra Algorithm with Multiple Linear Regression for Optimal Path Planning of Multiple AGVs Network	
L.W. Chek	217