

Table of Contents

Preface

Chapter 1: Functional Nanomaterials

Characteristics of Mesoporous Silica Nanoparticles-Benzotriazole (MSN-BTA) Using Rice Husk as an Environmentally Friendly Precursor L. Rumiyan, S. Garcia, M.M.F. Syamsuri, R. Marjunus, N.I. Istiqomah, C. Chotimah and E. Suharyadi	3
Optical Absorption of TaS₂ and TaSe₂ Transition-Metal Dichalcogenides T.N. Do, P.H. Shih and G. Gumbs	9

Chapter 2: Highly Efficient Alloys

Microstructure and Super-Elasticity of Fe-33Mn-17Al-8.5Ni (at. %) Alloy for Structural Applications P. Kamugisha, M.F.M. Fahmy, A.A.A. Nada and M.A.H. Gepreel	17
Phase Formation of Novel Al-Mg-Zn-Cu-Si Lightweight High Entropy Alloy G. Nyaforkpa, M. Emam and M.A.H. Gepreel	23

Chapter 3: Properties and Processing of Polymers and Composites

Green Bionanocomposites of Poly(Lactic Acid) (PLA) and Linear Low-Density Polyethylene (LLDPE): Fabrication and Properties M. Bijarimi, T.J. Yee and L.O.M.Z. Mulkiyan	31
Laboratory Investigation and Empirical Modelling of Polymer Solution Viscosity Y.F.F. Hussein, A.A. Pakeer, R. Muneer, M.R. Hashmet and Y. Alblooshi	39
Effects of Gamma Irradiation on the Tensile Properties of 3D-Printed Polycarbonate Acrylonitrile Butadiene Styrene R.N.M. Delda, R.L.B. del Rosario, B.J. Tuazon, G.S. Robles, M.V. Villablanca, M.T. Espino and J.R.C. Dizon	47
Investigation on Layer Thickness on Mechanical Properties and Dimension Accuracy in Fused Deposition Modelling 3D Printing M.Y. Chen, R. Pang and M.K. Lai	53
Effects of Thermal Cycling on the Mechanical Strength of TPU 3D-Printed Material M.T. Espino, B.J. Tuazon and J.R.C. Dizon	59
Analyzing the Sound of Materials: Application of Acoustic Emission Technique for Monitoring Material Behavior C.R. Rios-Soberanis, T. Sakai and S. Wakayama	65

Chapter 4: Materials and Technologies in Biomedical Practice

Study of Abaca/Carbon/Epoxy Hybrid Composite Properties as an Alternative Prosthetic Socket Material H. Sosiati, A.L.A. Afif, A. Hudiatma, R.K. Adi and A. Pamasti	75
Properties of Carbonated Hydroxyapatite-Based Scaffold from Oyster Shells Compositing with Honeycomb and Polyethylene Oxide for Bone Tissue Engineering Applications N. Cahyati, M. Sari and Y. Yusuf	83
Synthesis and Characterization of Carbonate Hydroxyapatite from Pokea Clam Shells (<i>Batissa Violacea</i> Var. <i>Celebensis</i>) by Precipitation and Hydrothermal Methods L. Ardan and Y. Yusuf	89
Optimization of μ-WEDM Parameters for MRR and SR on Ti-6Al-4V S. Omarov, N. Nauryz, D. Talamona and A. Perveen	95

Chapter 5: Building Materials

Engineering Properties of Concrete Incorporating Water Purification Sludge C.H. Wu, W.T. Lin and S.T. Hu	105
Effect of Recycled Waste PET Bottle Fibers on Mechanical Properties of Geopolymer Mixtures Containing Crushed Waste Glass Sands D. Ualiyev, A. Galymzhankyzy, I. Manap, Z. Omarova, D. Temirbekov, A. Tukaziban, Z. Artyk, C.S. Shon and D.C. Zhang	111
Analysis of the Behavior of Bricks Using Finite Elements A. Zúñiga-Suárez, B. Zúñiga-Torres, G.G. Gualpa-Guzmán and F. Hernández-Olivares	119