

# Table of Contents

## Preface

## Chapter 1: Polymers and Composites

<b>Investigation of Eggshell Powder as Inorganic Filler of Bio-Blended between Polylactic Acid (PLA) and Polybutylene Succinate (PBS)</b> A. Wiriya-Amornchai, K. Jittreetat, M. Champirom and S. Hortha	3
<b>Comparison of the Influence of Carbon Obtained from Kitchen Waste and Synthetic Carbon on the Tensile Properties of Polyolefins</b> A. Pilipović, J. Kováčik, N. Beronská, A. Opálková Šišková, T. Dvůrák and M. Rujnić Havstad	11
<b>Preliminary Investigation on Mechanical Properties of Hollow Glass Spheres</b> R. Sankaran and P.L. Show	17
<b>Machine Learning-Based Research for Material Property Analysis and Prediction of UHPC/CNT Composites</b> D. Kim and S.G. Hong	23

## Chapter 2: Functional Materials

<b>Finite Element Analysis on Comparative Hyperelastic Material for CTSIB Foam</b> T. Toobunterng, C. Suvanjumrat and J. Prinyakupt	31
<b>Change in Material Behavior due to Use of Functional Novel Yarn Compositions</b> G. Čubrić, I.S. Čubrić, V.M. Potočić Matković and I. Katić Križmančić	37
<b>Optimization for Current-Enhanced Solid-Phase Deposition of Multi-Layer Graphene with High Crystallinity and Uniformity</b> R. Tsuchida and K. Ueno	45
<b>Application of the Transition Metal Dichalcogenides in Smart Glass Technology</b> S.W. Tong, J.W. Chai and M.F. Ng	59
<b>Effects of Different Level Changes of Ultrasonic Energy on the Formation of Silver-Aluminum [Ag-Al] Intermetallic Compounds after Thermal Stressing and on the Formation of Kirkendall Voids</b> G.C.M. Miranda and P.A.N. de Yro	67

## Chapter 3: Functional Nanomaterials

<b>Synthesis and Characterization of Silver-Plated Gold Nanostars for Biomedical and Sensing Applications</b> N. Razmi, S. Ngok, M. Willander, X. Liu and O. Nur	85
<b>Synthesis of ZnO Nanoparticles by Wire Explosion for Superhydrophobic Applications</b> M.D.L. Balela and S.L. Cordura	95

## Chapter 4: Materials for Energy Storage Devices

<b>Ultrahigh Electrochemical Performance <math>\text{Co}_4\text{Sb}_{11.2}\text{Sn}_{0.02}\text{Te}_{0.78}</math> for Supercapacitor Cathode</b> Z.P. Li, X.R. He, X. Chen, Y. Niu and J. Jiang	103
<b>Perylene-Tetracarboxylic Diimide (PTCDI) Organic Cathode for Nonflammable K-Ion Batteries</b> J.H. Hu, W. Tang and C. Fan	109

## Chapter 5: Materials and Technologies of Environmental Engineering

<b>The Degradation Rate of Bio Microbeads Derived from Cellulose and Impregnated with Moringa Leaf Flavonoids Extract</b> S. Silviana and T.R. Jannah	119
<b>Isotherm Adsorption Kinetics Study of Methylene Blue on Reduced Graphene Oxide from <i>Borassus flabelifer</i> L Fiber</b> F.A. Prasetya, S.D. Bintang, M.S. Maulana, D. Pratiwi, M.Q. Arba'a, E.F. Nugrahani, Y. Kurniati and A. Taufiq	141
<b>Remediation of Lead and Cadmium Contaminated Soil Using Lime with Nanosilicamaterials</b> S.N. Jihad and K.A. Saeed	149
<b>Environmental Impact of Chitosan Production from Black Soldier Flies Using Life Cycle Assessment</b> A. Riofrio and H. Baykara	163

## **Chapter 6: Additive Manufacturing**

<b>Near-Field Direct Writing of the Photoluminescent Lattice Structures Pattern with RGB Colours Quantum Dots</b> W.C. Ou, J.X. Fang, Z.K. Tan, D.H. Zhan, M.L. Liu and H. Wang	175
<b>Flexural Characterization of Concrete Beams Reinforced with 3D-Printed Formworks</b> M.T. Junaid, M. Alhalabi, O. Mostafa and S. Barakat	181