

# Table of Contents

## Preface

## Chapter 1: Properties and Applications of Advanced Structural Composites and Polymers

<b>Coupon-Level Experimental Material Screening of Carbon Fiber-Reinforced Polymers under Thermal Runaway Conditions for eVehicle Applications</b> M. Etchegaray Bello, Ö. Özsoy, J. Schöberl, T.A.D. Nguyen, L. Heidemann, E. O'Connor, M. Schuhmann and K. Drechsler	3
<b>Sustainable Monocoque Materials for Application in E-Scooter Chassis: Mechanical Properties of Highly Biodegradable Polymer Composites</b> G. Constantinescu, A. Horovistiz, J.P. Santos and M.S. Henriques	11
<b>Enhancing Copper-Graphene Composites for Sustainable Industry Applications</b> M.A. Ahmad, N.I.M. Rasid, N. Muhamad, N.A.S. Feisal and N.H. Jamadon	17
<b>Finite Element Modeling of Tractor Tire Composite Structure to Analyze Inflation Pressure Effects on Compression</b> S. Phakdee and C. Suvanjumrat	23
<b>Modeling the Pinch-Off Zone for the Handle of a Plastic Bottle via Extrusion Blow Molding Process: An Examination of Weld-Line Quality</b> J. Phromjan and S. Sinbunluekul	29
<b>Numerical Investigation on Failure Mechanism of Welding Reinforced Joint for Fiber Reinforced Thermoplastic Pipe</b> J.W. Ren, H.X. Wang, B.H. Song, Y. Zhang and H. Zhang	35
<b>Tensile Property Enhancement by Laying the Continuous Carbon Fiber during 3D Printing Process</b> W. Rattanapreechachai, K. Chansoda and W. Chookaew	41
<b>Pectin and Chitosan Film Composites Enriched with Rambutan (<i>Nephelium lappaceum</i>) Peel Anthocyanins Extracts for Colorimetric Intelligent Food Packaging</b> A.W. Perdani, A.D. Setiowati, B. Purwono and S. Supriyadi	47
<b>Semi-Analytical Solution of Post-Filling Stage in Vacuum Assisted Resin Infusion</b> A. Ouezgan, M. Chahbouni, S. Boutahari, A. Saouab, A. Maziri, E.H. Mallil and J. Echaabi	53

## Chapter 2: Surface Treatment and Coating Technology

<b>Functionalization of MWCNTs and Graphite for Enhanced Composite Properties</b> H. Lee, S. Lee, C. Kim, S. Lee, M. Shin, M. Choi, Y. Noh, S. Choi, J. Park and S. Koh	61
<b>Oxidation Resistance Evaluation at High Temperature of Ni5Al and Fe13Cr Coatings on an AISI 321 Stainless Steel Preparing by Plasma Spray Method</b> S.C. Agnes, D.H. Prajitno and R.H. Mulyani	69

## Chapter 3: Hydrometallurgy and Metal Welding

<b>Ultrasonic Welding of Copper Sheets for Heat Pumps</b> A.B. Pereira, J.D. Batista and B. Mascate	77
<b>Study of Copper Separation from Ternary Black Powder Leaching Solution Using P204 (D2EHPA) Multistage-Extraction</b> E.D.T. Jaya, S.X. Wu, Y.H. Li, D.P. Wei and Y.Q. Zhu	83
<b>Enhanced Purification of Mixed Hydroxide Precipitate Leachates via P<sub>204</sub>: A Study on Process Efficiency</b> R.K. Fariz, Y. Hu and X.Z. Dong	91

## Chapter 4: Special and Functional Materials

<b>Theory for Rotation-Induced Band Splitting in Hollow-Pillar Phononic Metamaterials</b> F. Ge and L.Y. Zhao	101
<b>A Review of Materials for Vehicle Structure Based on Specific Strength and Fatigue</b> O.Y. Kun, G.Y. Wang, Y.Q. Liu, X.C. Li and Y.B. Yan	113
<b>Polymer Composite Based No-Core Fiber Structure as Refractive Index Sensor</b> N.N.H. Saris, N. Mohd Razali, T. Fukui, T. Ishigure, M. Othman, A. Hamzah and N.A. Daud	133
<b>Biochar-Containing Microcapsule/Recycled Polyethylene Composite with Temperature Regulation Capabilities</b> T.J. Yeh, H.H. Chen and Y.F. Shih	139

## Chapter 5: Battery Electrolytes

<b>Influence of Lithium Salts on Solid Electrolyte Interphase Formation and Interfacial Resistance in Silicon Monoxide-Based Lithium Secondary Batteries</b> H. Yun and S.K. Jeong	147
<b>Evaluation of LiPF<sub>6</sub>, LiTFSI, and LiBOB Electrolytes for Cellulose Based Solid Polymer Electrolytes (SPEs)</b> M.W. Andriyan, M.R. Saputra, E.P. Astuti, Z. Alfatinnisa, R. Khoiriyah, P.S. Rinjani, C.I.R. Azzahra and I. Alkian	153

## Chapter 6: Chemical Technologies and Processes

<b>Beta-Cyclodextrin-Maltodextrin Inclusion Complex of Lavender Oil: Preparation and Physical Properties</b> T. Chimsook	163
<b>pH-Dependent Visible Light Photocatalytic Efficiency of Aminophenol-Functionalized ZnO for Brilliant Blue G Degradation</b> R.I. Bautista, M.E.A. Namoro, P.V. Putulin, A.J.L. San Pedro, K.A.S. Usman and Y.D.G. Edaño	171
<b>Effect of Different Operating Conditions on Tobacco Stem Pyrolysis and Impregnation for Further Controlled Release Fertiliser Application</b> M.G. Prasiefa and S. Zullaikah	177
<b>Utilization of Geothermal Waste to Synthesize Janus Nanosilica as an Enhanced Oil Recovery (EOR) Material</b> M.W. Andriyan, Z.S. Nalle, A. Farhannisa, R. Aprianto, N.M. Purba and T. Pratiwi	183
<b>Grapevine Biochar/biodegradable Polymer Composites and its Application in Slow-Release Fertilizer</b> C.W. Chang and Y.F. Shih	191

## Chapter 7: Green Building Materials and Structural Mechanics

<b>Structural Response of Tall RC Systems under Blast Pressure Loading</b> A. Krouma and Z.I. Syed	199
<b>Mechanical, Durability and Thermal Performance of Cementitious Composites with Industrial By-Products</b> A. Kyriakidis, H. Jaber, R. Panagiotou, A. Georgiou, I. Ioannou and A. Michopoulos	209
<b>Investigating the Effects of Partial Replacement with Sewage Sludge, Calcined Clay, and Waste Marble Powder on Cement Paste Properties</b> A.R. Al Umairi and H. Al Kindi	215
<b>Use of Alternative Limestone Fillers as Sand Replacement in Mortars</b> A. Kyriakidis, H. Jaber, G.M. Christodoulou, R. Panagiotou, I. Ioannou and A. Michopoulos	223
<b>Sandwich Panels and Polymer Blends from Recycled Polyethylene Terephthalate (PET) and other Post-Consumer Plastics</b> L. Techawinyutham, K. Somprou, H. Wongsaphak and S.N. Khampol	229

## **Chapter 8: Engineering Design**

### **Design and Analysis of a Composite SACH Foot: Experimental Validation and Finite Element Modeling**

N. Worajinda, J. Phromjan, R. Rugsaj, S. Phakdee and C. Suvanjumrat

239

### **Damping Ratio Estimation of Linear and Non-Linear Viscoelastic Materials Using Hilbert and Wavelet Analysis Techniques**

A. Megahed, A.M.R. Fath El-Bab, H. Elhussieny and M.A. Hassan

245