

# Table of Contents

## Preface

## Chapter 1: Polymers and Composites

<b>Mechanical Properties and Morphological Analysis of High-Density Polyethylene/Poly(Ethylene Glycol) Methacrylate/Rice Husk Composite</b>	
A.S.E. Arenas, C.M.L. Escutin and P.A.N. de Yro	3
<b>Preparation of Calcium Stearate-Coated Kapok Fibers for Oil Sorption</b>	
A.L.M. Blaquera, M.U. Herrera, R.D. Manalo, M.C. Maguyon-Detras, C.C. Futalan and M.D.L. Balela	9
<b>Influence of Seawater Treatment Duration on Physico-Mechanical Properties of Banana Trunk Lignocellulosic Fibers</b>	
O. Akatwijuka, A. Abdel-Mawgood, M.A.H. Gepreel, M. Yamamoto and A.H. Hassanin	16
<b>Ballistic Testing Simulation of Ultra-High Strength Steel Water Layer Sandwich Structure</b>	
I. Ebo-Quansah, A.H. Hassanin, T. Adachi and M.A. Hassan	22

## Chapter 2: Materials and Technologies for Environmental Engineering

<b>Elimination of Hg (II) in Water by Adsorption through Banana</b>	
G. Espinosa-Garza, I.L. Hernández and E.J.E. Vázquez	31
<b>Synthesis of Poly(O-Anisidine)-Coated Kapok Fibers for Removal of Methylene Blue Dye</b>	
R.J. Bayer Jr., C.L.E. Aquino and M.D.L. Balela	42
<b>Solvothermal Prepared Slag Nanocomposite as a Catalyst for Organic Dye Photodegradation</b>	
K. Safo, H. Noby, M. Matatoshi, H. Naragino and A.H. El-Shazly	50
<b>Mercury Bio Adsorption (Hg) in Aqueous Solution through Mexican Coast's Pelagic Sargassum</b>	
G. Espinosa-Garza, I.L. Hernández and M.G.M. Treviño	56

## Chapter 3: Materials and Technologies for Biomedical Application

<b>Design and Characterization of New Ti-Zr-Nb-(Mn) Medium Entropy Alloys for Biomedical Applications</b>	
N.M. Eldabah, S. Kobayashi and M.A.H. Gepreel	65
<b>Influence of Mo Content on the Microstructure and Mechanical Properties of Ti<sub>6</sub>Al<sub>x</sub>Mo Alloy</b>	
J. Gupta, S. Aravindan and S. Ghosh	71
<b>Physical Assessment of Polyvinyl Alcohol/Polyethylene Oxide Blend Film with Antioxidant or Antibacterial Composite Toward Wound Dressing Application</b>	
Y.T. Lam, R.H. Al-Ashwal and M.H. bin Sani	76
<b>Potential of Biodegradable Magnesium Alloys for Medical Applications</b>	
P.H. Quan, V. Manescu Paltanea, G. Paltanea, I. Antoniac and I.V. Nemoianu	83
<b>Defect Characterization in Gel Phantom Using Ac Impedance Spectroscopy</b>	
A.L.C. Jusi, A.K.G. Tapia, J.L. Reyes, R.A. Lebosada, V.J.L. Belizario and J.P.A. Ramoso	90
<b>Preparation of Crosslinked Alginate-Cellulose Derivative Microparticles for Protein Delivery</b>	
R. Guerrero, P.W.S. Heng and T.P. Tumolva	96
<b>Reduced Glutathione Antioxidant Stability in Polymer Solutions Toward Wound Bioactive Dressing Application</b>	
Y.T. Lam, R.H. Al-Ashwal, M.H. bin Sani and S.M. Al-Hazmy	103
<b>Effect of pH on Hydroxyapatite Formation in Amino Acid Capped Gold Nanoparticles</b>	
Y.W. Sari, A. Tsalsabila, B. Mahardi and Y. Herbani	109

## **Chapter 4: Materials for Photovoltaics, Electronics and Electrical Engineering**

<b>AAO Mould for Fabricating Anti-Reflective Polymer Nanopillar Array on Large Area</b>	
A. Sharma, S. Aravindan and P. Venkateswara Rao	119
<b>Long Term Thermal Performance of Palm Oil and Nano Graphene Filler in Nanofluids Application on Transformer Insulating Oil and Electrical Breakdown Voltage</b>	
K. Wajanasoonthon and A. Suksri	125
<b>Graphene Nanoplatelets Effect on Electrical Tree Inhibition in Epoxy Resin Insulator</b>	
P. Khaibuth and A. Suksri	132
<b>Low Temperature Synthesis of Fluorescent Carbon Dots from Pomegranate Peels</b>	
P. Anagbonu, A. Allam and M. Ghali	139

## **Chapter 5: Computational Materials Science**

<b>Titanium-Decorated Planar Aluminene for Hydrogen Storage Using Density Functional Theory</b>	
G.R. Pedrosa, A.R. Villagracia, F. Emralino and H.L. Ong	149
<b>Finite Element Formulation and Simulation of Gamma Ray Attenuation of Single and Multilayer Materials Using Lead, Tungsten and EPDM</b>	
J.K. Boahen, S.A.E. Mohamed, A.S.G. Khalil and M.A. Hassan	156
<b>Analysis and Optimization of the Properties of High-Strength Austenitic Steels by Approximation of a Primary Database</b>	
N.T. Tontchev, E.H. Yankov, V. Gaydarov and N. Hristov	164
<b>Wax Appearance Temperature Prediction with Wax Inhibitor of Crude Oil from the North of Thailand</b>	
K. Maneeintr, C. Kanokkaew and N. Prasongporn	171

## **Chapter 6: Defects Testing and Structural Integrity Assessment**

<b>High-Accuracy Detection and Classification of Defect and Deformation of Metal Screw Head Achieved by Convolutional Neural Networks</b>	
J.Y. Lai, Y.R. Tsao and C.Y. Liu	179
<b>Qualitative to Quantitative Non-Destructive Evaluation: A Concept for D-Sight Inspections of Aircraft Structures</b>	
A. Katunin and K. Dragan	185