

# Table of Contents

## Preface

## Chapter 1: Steel and Alloys

<b>Phase Precipitation Prediction in the X65 Steel Grade and Modified UNS N06625 Alloy</b> R.G. Tayactac, M.C. Manuel, J. Honra and T.B. Kaspary	3
<b>Evaluation of the ACDR Forming Uniformity for Large-Size Titanium Alloy Heads Based on FEM and RSM Methods</b> J.G. Nan, D. Liu, J.G. Wang, J.H. Zhao, Y.H. Zhang, Y.H. Yang and J. Wu	11
<b>Deformation Characteristics and Microstructure of Nickel-Based Alloy Combined under Compression and Torsion</b> J.G. Wang, J.G. Nan, Y.H. Zhang, D. Liu, Y.J. Yuan and Y.H. Yang	27

## Chapter 2: Thin Films

<b>Effect of Cold Isostatic Pressing on the Thermal Stability of PMMA Interlayer-Encapsulated MAPbI<sub>3</sub> Perovskite Films</b> Y.H. Soo, M. Choong, C.Y. Ng, H.K. Jun and F.W. Low	43
<b>Enhanced Dielectric Performance of Titanium/Graphene Oxide/Nanocellulose Composites for Advanced Capacitor Applications</b> H.R. Lu, J.Y. Lin, J.H. Liao, Y.H. Chang and C.Y. Lee	49
<b>NiCo Electroforming Research on Ru/c Multilayer Film for Mirror Production</b> H.X. Chen and K. Wang	55
<b>Revealing the Broadband Terahertz Faraday Rotation Mechanism in Rare-Earth Doped Yttrium Iron Garnets</b> Q.D. Xie, Z.C. Bin, T.Y. Zhang, M. Hu, Q.H. Yang and P.H. Zhou	61

## Chapter 3: Composites

<b>Wear Mechanisms of a Kevlar-Zirconia-Epoxy Composite Casing Lining</b> Y. Fouad, N. Merah and A. Shaarawi	71
<b>The Mechanical Properties of Vanillin-Incorporated Surgical Obturator Resin</b> S. Thaweboon, P. Chirachoenporn, P. Iamteerapaiboon, P. Quanprasert, A. Tripaththaranan and P. Churnjittapirom	79
<b>Optimizing Fiber Orientation GFRP Composite Wraps for Enhanced Burst Pressure Performance of Corroded API 5L X42 Pipelines</b> M.D. Abdul Shahid, M.H. Mohd Hashim, M.K. Kamarudin, S.A. Kudus, N.M. Fadzil, A. Jamadin and M.F. Muda	85
<b>Effective Refractive Index Estimation of Composite Structures Using the Mie Theory and Layer Transmissivity Approach</b> J.P. Bijarniya, M.M. Rehman and A. Seppälä	91

## Chapter 4: Advanced Nanomaterials

<b>Film Property Enhancement of Bacterial Nanocellulose Suspension Using High-Pressure Homogenization Parameters</b> R. Lueangkrathok, K. Pacaphol and D. Aht-Ong	101
<b>Strategic Development of Nanoemulsion Bases for Versatile Active Ingredient Incorporation</b> S. Thepwatee, A. Pinket and S. Rangauthok	107
<b>Synthesis of Iron-Doped Carbon Nanodots from Waste Expanded Polystyrene and its Application in Carbon Monoxide Gas Detection</b> N.F.B. Vidal, E.A. Tolentino, F.J.F. Lacsá and R.V.D.C. Rubi	115

<b>Tropine-Based Deep Eutectic Solvents (DES) Applied in the Alcoholysis of Polyethylene Terephthalate (PET) for Preparation of Nano Carbon Dots</b> G.J. Zhou, C. Chen and S. Yao	123
<b>Evaluation of Bismuth Oxide Nanoparticles (BiONPs) as a Potential Contrast Agent in Computed Tomography (CT) Imaging</b> M.H.Z. Husri, S.M. Tajudin, J. Mohd Radzi, N.S. Mohamed, W.N. Wan Abdul Rahman, K.A. Razak and N.H. Mohd Zainudin	129
<b>Stable and Tunable Photoluminescence Emission of Functionalized Carbon Dots for Heavy Metal Ion Detection</b> G.G. Edilo and R.T. Candidato Jr.	137

## **Chapter 5: Green Building Materials**

<b>Dynamic Behaviour of Geopolymer Concrete with Varied Compositions and Equivalent Compressive Strengths</b> M. Aown and S. Al-Deen	147
<b>Flexural Characteristics of Eco-Friendly Self-Compacting Concrete with Rice Husk Ash</b> M.H. Mohd Hashim, M.F. Muda, M.H. Mohd, N.M. Fadzil, M.D. Abdul Shahid, H. Ahmad and N. Pujirahayu	153
<b>High-Volume Fly Ash Concrete for Road Pavement: Integrated Laboratory and Field Study</b> T.P. Le, D.T. Nguyen, T.K. Lam, H.P.D. Ninh and T.P. Huynh	159

## **Chapter 6: 3D Printing**

<b>Effect of Infill Density on Electrical Sensitivity of 3D-Printed Flexible Pressure Sensors Using Ultrasonication Cavitation-Enabled Treatment and Thermal-Assisted Method</b> S. Wu, C. Aumnate, P. Potiyaraj and P. Kungsadalpipob	167
<b>Morphology and Deviation Dimension of Hydroxyapatite/Collagen Composite after Printing with Three-Dimensional Bioprinting</b> N. Nurbaiti, M.K. Herliansyah, A.E. Tontowi, M.G. Widiastuti and H.V. Hoten	173
<b>Study of the Factors on Controlling Cured Layer Thickness in DLP 3D Printing</b> C.S. Shin, C.Y. Lu and C.L. Lin	179

## **Chapter 7: Structural Health Monitoring Technologies**

<b>Study on the Mechanical Properties and Monitoring of Castable Polyurethane Elastomeric Bearings</b> X.T. Yu and Y. Yuan	187
---	-----