

# Table of Contents

## Preface

## Chapter 1: Material Physics and Thin Film Technology

<b>Growth and Characterization of (E)-1-(5-Chlorothiophene-2-Yl)-3-(4-Dimethylamino)Phenyl)Prop-2-En-1-One, Novel NLO Single Crystal</b> C. Shruthi, V. Ravindrachary, K. Byrappa, B. Guruswamy, D.J. Prasad, K. Kumara and N.K. Lokanath	3
<b>Synthesis, Optical and Thermal Properties of 1-(4-Methoxyphenyl)-2-((5-(1-(Naphthalene-1-Yloxy)Ethyl)-[1,3,4]-Oxadiazol-2-Yl)Sulfanyl)Ethanoic - A Novel Heterocyclic Compound</b> C. Shruthi, V. Ravindrachary, K. Byrappa, B. Guruswamy, J. Goveas, K. Kumara and N.K. Lokanath	10
<b>Strong Hole Self-Doping in LaMnO<sub>3</sub> Thin Film on a-SiO<sub>2</sub> Substrate Produced by Metal Organic Decomposition Method</b> H. Kobori, T. Kitamura, T. Taniguchi and T. Shimizu	17
<b>Preparation, Structure, Optical and Morphological Properties of Co, Ga<sub>2</sub>O<sub>3</sub> Co-Doped ZnS/Se</b> Y. Pan, L. Wang, D.W. Gao, S.F. Li and X.W. Han	22
<b>Effects of the Inclusion of Armchair Graphene Nanoribbons on the Electrical Conduction Properties of NN-Heterojunction 4H-6H/SiC Diodes</b> M.H. Rashid, A. Koel and T. Rang	29
<b>Green Carbon Dots for Metal Sensing</b> L.C. Sim, J.M. Khor, K.H. Leong and P. Saravanan	36
<b>Artificial Neural Networks Estimation for Thicknesses of Multilayer Nano-Scale Films</b> T.D. Wu, J.S. Chen, C.P. Tseng and C.C. Hsieh	41

## Chapter 2: Nanomaterials and Powder Engineering

<b>Comparative Studies on the Synthesis of Copper Oxide Nano-Structures</b> K.Y. Hwa and P. Karuppaiah	51
<b>Green Synthesis of Spherical Shaped Silver Nanoparticles Using <i>Allium cepa</i> Leaves Extract and its Photocatalytic Activity</b> R. Jusoh, N.H.N. Kamarudin, N.S. Kamarudin and N.F. Sukor	57
<b>Rapid Pyrolysis of Pulverized Coal for the Preparation of Nanostructured Powder Activated Coke</b> J.P. Fu, Z. Zhang, B.X. Zhou, T. Wang and C.Y. Ma	63
<b>Synthesis, Characterization and its Photocatalytic of Copper Oxide (CuO) Powder</b> P. Pookmanee, P. Sangthep, J. Tafun, V. Kruefu, S. Kojinok and S. Phanichphant	70
<b>Surface, Temperature and Optical Properties Pd-TiO<sub>2</sub> Doped PVA Nanocomposite</b> B. Guruswamy, V. Ravindrachary, C. Shruthi, M. Mylarappa and G.O. Obaiah	77
<b>Effect of SnO<sub>2</sub> Nanoparticle Doping on Structural, Morphological and Thermal Properties of PVA-PVP Polymer Blend</b> B. Guruswamy, V. Ravindrachary, C. Shruthi and M. Mylarappa	82

## Chapter 3: Materials Chemistry and Chemical Engineering

<b>The Effect of Nitrogen Bubbles on Microstructure of Natural Rubber Foams Produced by Bubbling Process</b> K. Katkeaw, B. Nooklay, R. Kokoo, K. Kooptarnond and M. Khangkhamano	91
<b>Rubber Foam Processing via Bubbling Technique</b> S. Sirikulchaikij, B. Nooklay, R. Kokoo and M. Khangkhamano	96

<b>Investigation on the Performance and Durability Behavior for the Anode-Supported Solid Oxide Fuel Cell with Composite Cathodes</b> T.N. Lin, Y.C. Chang, M.C. Lee and W.X. Kao	101
<b>Recovery of Precious Metals from Discarded Mobile Phones by Thiourea Leaching</b> S.H. Chang and S.F. Abdul Halim	112
<b>Kinetics of Humic Acids Photodegradation in Aqueous Solution Using TiO<sub>2</sub>/ ZnO/Co Composite Photocatalyst</b> M.A. Zulfikar, D. Irnameria and M. Nasir	117

## **Chapter 4: Materials for Biomedical Application**

<b>Fabrication of Bioscaffolds Using Bubbling Technique for Bone Tissue Engineering</b> T. Parivatphun, B. Nooklay, R. Kokoo, J. Meesane, K. Kooptarnond and M. Khangkhamano	125
<b>Characterization of Gelatin/CMC Scaffold Fabricated by Using Salt Leaching Technique</b> Y. Morpara and F. Wiwatwongwana	129
<b>Electrocatalytic Study of Low-Cost Bimetallic Cobalt/Iron Catalyst on Carbon for Non-Enzymatic Glucose Sensor in Human Urine</b> M. Janyasupab and C.W. Liu	137
<b>Effect of Anodizing Time on Morphology and Wettability of TiO<sub>2</sub> Nanotubes Prepared by Carbon Cathode</b> N. Thaik, K. Kooptarnond, J. Meesane and M. Khangkhamano	145
<b>Fabrication and Mechanical Property Evaluation of ASD Occluders Made from Shape Memory Alloys</b> T. Rueangmontree and A. Khantachawana	151

## **Chapter 5: Materials Forming Technologies**

<b>Increasing the Dimensional Accuracy of U-Bend Product of High Strength Steel Sheets by Pressure Pad</b> P. Leetrakul and K. Lawanwong	159
<b>Increasing the Hole Expansion Ability of High Strength Steel Sheet by Improving the Pre-Hole Shearing Process</b> P. Saengkhiao, K. Lawanwong and P. Chumrum	167
<b>Research on Springback Compensation Method of Cylindrical Parts in Multi-Point Forming</b> L. Zhang, W.Z. Fu, M.Z. Li, Y.P. Zhou and C.X. Zheng	175
<b>Defect Reduction in the Manufacturing Process of In-Mould Decoration of Injection Moulded Components</b> J. Supapan and P. Chutima	181
<b>Preventing Casting Defects of Stainless Steel Flanges Using a Water-Soaking Method</b> P.H. Huang, W.J. Huang and C.S. Chou	189
<b>On the Development of a Space Satellite Mirror with Intrinsic Self-Healing Properties</b> I.S. Vintilă, M.R. Condruz, C. Sandu and H. Serbescu	194

## **Chapter 6: Mechanical Properties of Structural Materials and Structural Health Monitoring**

<b>Single Edge Precrack V-Notched Beam (SEPVNB) Fracture Toughness Testing on Silicon Nitride</b> T.G.T. Nindhia and T. Lube	205
<b>The 3-D Finite Element Analysis on Elastic-Plastic Micromechanical Response of the Particle Volume Fraction</b> Y.M. Guo and N. Fukae	210
<b>Piezoelectric Based Lamb Waves Generation and Propagation in Orthotropic CFRP Plates: I. Influence of Material Damping</b> M. Shevtsova, E. Kirillova, E. Rozhkov, V. Chebanenko, S. Shevtsov, J.K. Wu and S.H. Chang	218

<b>Piezoelectric Based Lamb Waves Generation and Propagation in Orthotropic CFRP Plates: II. Influence of Interfacial Stress Distribution</b>	
M. Shevtsova, E. Kirillova, E. Rozhkov, V. Chebanenko, S. Shevtsov, J.K. Wu and S.H. Chang	227
<b>Mechanical Characterization of Resin Concrete Subjected to High Temperatures by Vibration Analysis</b>	
B. Imane, L. Boudjemaa and I. Benoudjafer	236
<b>Mechanical Properties of Graphene Nanoplatelets-Reinforced Epoxy Grout in Repairing Damaged Pipelines</b>	
L.K. Sing, L. Zardasti, N.M. Noor and N. Yahaya	242