

# Table of Contents

## Preface

## Chapter 1: Nanomaterials and Chemical Engineering

|                                                                                                                                                                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Assembly and Optical Properties of Metal Nanoparticles</b><br>E.A. Dawi and A. Abdelkader                                                                                                                                                        | 3  |
| <b>A Study on Lead Adsorption by the Hen Egg Shells from Enshi, Hubei Province, China</b><br>H.H. Gong, T. Li, W.Y. Zhang and Z.J. Liao                                                                                                             | 11 |
| <b>Facile Synthesis and Characterization of Magnetic Nanophotocatalyst for Photocatalytic Degradation of Cyanide</b><br>J.P. Lagare, M.A.M. Lavapieze, J.H. Jorolan, A.C. Alguno and R.Y. Capangpangan                                              | 17 |
| <b>Physical, Mechanical and Chemical Properties of Dewatered Sewage Sludge and Red Gypsum Mix as a Potential Recycling Product</b><br>N.A.B. Rosli, H.A. Aziz, M.R. Selamat and L.L.P. Lim                                                          | 24 |
| <b>Controlling the Growth of Zinc Oxide/ Polyaniline Nanocomposites on Platinum-Coated Substrate for Possible Solar Cell Applications</b><br>A.C. Alguno, K.M. Emphasis, M.J. Potestas, R.M. Veqizo, R.Y. Capangpangan, B.L. Linog and B.A. Basilia | 30 |
| <b>Antibacterial Activities of Zinc Oxide Nanostructures with Different Structures</b><br>R.B.P. Rivera, M.J. Potestas, M.R.S.B. Madamba, R.Y. Capangpangan, B.L. Linog, B.A. Basilia and A.C. Alguno                                               | 36 |

## Chapter 2: Functional Materials and Composite Structures

|                                                                                                                                                                                 |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Infrared Emittance and Electrical Properties of Ce<sup>4+</sup> Doped Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub> Ceramics</b><br>L. Chen, W. Zhan, H.M. Sun and Z.Z. Gu | 45 |
| <b>Characterization and Design of Honeycomb Absorbing Materials</b><br>H.M. Sun, L. Chen and Z.Z. Gu                                                                            | 51 |

## Chapter 3: Biomedical Materials

|                                                                                                                                                                               |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Elution Study of Three Light-Cured Orthodontic Adhesives</b><br>P. Roongrujimek, N. Anuwongnukroh and S. Dechkunakorn                                                      | 59 |
| <b>Cytotoxicity of an Experimental Light-Cured Orthodontic Adhesive</b><br>K. Nimcharoensuk, N. Anuwongnukroh, S. Dechkunakorn, V. Sattabanasuk, P. Sunintaboon and W. Wichai | 65 |
| <b>Study on the Optimization of Process Parameters for Absorbable Bone Plate with In-Mold Heat Treatment</b><br>W.T. Wang and Y.C. Lin                                        | 71 |

## Chapter 4: Alloys and Hydrometallurgical Technologies

|                                                                                                                                                                                |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Correlations between Milling Conditions and B<sub>2</sub>O<sub>3</sub> Activity of Mechanically Activated Boron Concentrate</b><br>Y.Z. Xu, T. Jiang, H.Y. Gao and X.X. Xue | 79 |
| <b>Microwave Roasting and Acid Leaching of Vanadium and Chromium from High Chromium Vanadium Slag with CaCO<sub>3</sub></b><br>H.Y. Gao, T. Jiang and Y.Z. Xu                  | 86 |
| <b>Microstructural and Hardness Evolution of New Developed OPH Steels</b><br>O. Khalaj, H. Jirková, K. Opatová and J. Svoboda                                                  | 92 |

|                                                                                                                                                  |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Temperature-Dependent Plastic Deformation Behavior of Cu-Ni Alloys: Coupled Influence of Stacking Fault Energy and Short Range Clustering</b> |     |
| Y. Wang, D. Han and X.W. Li                                                                                                                      | 98  |
| <b>Thickness-Dependent Tensile Behavior of Cu-Mn Alloys under Different Dislocation Slip Modes</b>                                               |     |
| L.L. Kang, D. Han and X.W. Li                                                                                                                    | 104 |

## **Chapter 5: Metalworking Processes**

|                                                                                                                                          |     |
|------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Study on Control of Corner Cracks in Cast Slabs and its Application to Designing of Continuous Slab Casters of Baosteel Zhanjiang</b> |     |
| X.L. Ding, C.B. Feng, Q. Liu, J.W. Yan, G.Q. Luo and X.Y. Zhu                                                                            | 113 |
| <b>A Study on Experimental Design Methods for the Automatic GMA Welding Process</b>                                                      |     |
| Z.L. Liang, T.J. Yun, W.B. Oh, B.R. Lee and I.S. Kim                                                                                     | 119 |
| <b>The Influence of Technological Parameters on Drawing Force at Cold Drawing of Steel Tubes Using FEM Simulation</b>                    |     |
| M. Kapustova, R. Sobota and M. Necpal                                                                                                    | 124 |
| <b>Experimental Study of Cutting Performance for Inconel 718 Milling by Various Assisted Machining Techniques</b>                        |     |
| S.Y. Lin and B.H. Yang                                                                                                                   | 129 |

## **Chapter 6: Building Materials and Structures**

|                                                                                               |     |
|-----------------------------------------------------------------------------------------------|-----|
| <b>Effect of External Expanded Polystyrene (EPS) Panels on Slabs Subjected to Impact Load</b> |     |
| Y.H. El Maghraby and M.G. Metwally                                                            | 137 |
| <b>Experimental Study on CFRP-PVC Confined RAC under Axial Compression</b>                    |     |
| J.Q. Lu, Y. Tian, J.G. Chen, C.Y. Zhu, F. Zeng, J.C. Yang and W. Wang                         | 143 |