

# Table of Contents

## Preface

## Chapter 1: Functional Ceramics

<b>KNN-Sb Lead-Free Piezoelectric Ceramics Synthesized by Hydrothermal Method</b> W.X. Ma, X.H. Fu, W.H. Tao, L. Yang, G.Y. Cheng and L.P. Zhao	3
<b>Influence of Sintering Temperature on KNN-BF-LS Piezoelectric Ceramic</b> G.Y. Cheng, X.H. Fu, W.H. Tao, Y. Zhang, W.X. Ma and L.P. Zhao	8
<b>Preparation Process of BST Dielectric Ceramics</b> L.P. Zhao, W.H. Tao, X.H. Fu, W.Z. Cao, G.Y. Cheng and W.X. Ma	13
<b>The Influence of Mn Doping on the Dielectric Properties of <math>\text{Ba}_{0.5}\text{Sr}_{0.5}\text{TiO}_3</math> Ceramics</b> L.P. Zhao, W.H. Tao, X.H. Fu, W.Z. Cao, G.Y. Cheng and W.X. Ma	18
<b>The Effect of Excess Sodium Element on KNN-BF Piezoelectric Ceramics</b> D. Zhao, X.H. Fu, G.Y. Cheng, W.H. Tao, Y. Zhao, L.P. Zhao and W.X. Ma	24
<b>Effect of Annealing on Room Temperature Multiferroics of <math>\text{BiFe}_{1-x}\text{Co}_x\text{O}_3</math></b> Y. Wang, D.X. Fu, W.Z. Li, J.H. Wang, W.H. Zhang, Y.T. Li, S.L. Liu, L. Xie and H.G. Zhang	30

## Chapter 2: Polymers and Composites

<b>Mechanical Properties of Modified Epoxy/Rubber Concrete</b> X.W. Shu and Y. Zhang	39
<b>Comparison of Bonding Performance for CFRP-SPCC Single Lap Joint Using Adhesives and Rivets</b> O.H. Lee, I.T. Lee, H.Y. Kang, S.M. Yang, J.Y. Yim, D.S. Kim and H.J. Ahn	45
<b>Fiber Reinforced Structural Insulated Panel Used as Two-Way Slabs</b> M. Jing and W. Raongjant	50
<b>One-Way Slab of Structural Insulated Panel Strengthened with FRP</b> W. Raongjant and M. Jing	56
<b>Preparation and Characterization of Hierarchical Pore Molecular Sieve with Large Pore Size</b> M. Li, D. Liu, Y.L. Wang, Y.D. Zhang, R. Yu and X.S. Cong	62

## Chapter 3: Nanomaterials and Nanotechnologies

<b>Morphology and Mechanical Property of Compressible Graphene Aerogel</b> B. Wu, R.M. Chen, J.H. Jin and G. Li	71
<b>Electrochemical Properties of Multi-Wall Carbon Nanotubes as a Novel Negative Electrode for Calcium Secondary Batteries</b> C.H. Lee, C.S. Kim, Y.T. Jeong, J.H. Kim, S.K. Jeong and Y.S. Kim	75
<b>The Theoretical Investigation on Critical Buckling Stress of Graphene Nanosheets</b> L.J. Zhou, J.G. Guo and B.L. Li	79
<b>A Facile Method towards Carbon Quantum Dots with Strong Photoluminescence</b> R. Lin, G.Q. Ding, P. He and J. Chen	85
<b>Ag-Enhanced Antibacterial Property of MgO Film</b> Z. Alajmi, T. Fu, Y.T. Zhao, S.Y. Yang and J.M. Sun	90
<b>Semiconducting Materials for Photonic Technology</b> D.H. Zhang	96
<b>Nano-Mesh Structured Mn-Based Oxide/Conducting Polymer Composite Electrode for Supercapacitor</b> M.H. Yu, H.M. Meng and Y. Xue	104

## **Chapter 4: Alloys and Metallurgical Technologies**

<b>Effect of Ca Contents on Tensile Properties of Squeeze Cast Mg-Al-Ca Alloys</b> J.X. Zhou, M. Masoumi and H. Hu	111
<b>Analysis of the Influence Factors on High Compressibility Water Atomized Iron Powder</b> G.P. Li, L.B. Guo, L.H. Sun, F.H. Luo, J. Du and Z.L. Liu	118

## **Chapter 5: Technologies and Materials in Chemical Engineering**

<b>Dynamical Modeling and Intelligent Control of Aeration Process for Pollutants Degradation in Technics of SBR</b> H.J. Tao and H. Xu	127
<b>Characteristics and Regeneration Properties of Manganese Oxide Sorbent under O<sub>2</sub> Atmosphere</b> L.P. Liu, S.G. Ju, H.Q. Wang, X.W. Zhao and J. Mi	134
<b>The Regeneration Properties of Manganese Oxide Sorbent under SO<sub>2</sub> Atmosphere</b> H.Q. Wang, S.G. Ju, L.P. Liu, X.W. Zhao and J. Mi	140
<b>Regeneration Kinetics Study of Fe<sub>2</sub>O<sub>3</sub> Desulfurization Sorbents in SO<sub>2</sub> Atmosphere</b> X.W. Zhao, S.G. Ju, H.Q. Wang, L.P. Liu and J. Mi	146
<b>Absorption and Mass Transfer of CO<sub>2</sub> in Monoethanolamine Solution</b> P.C. Chen and S.Z. Lin	153
<b>Ethylene Oligomerization by Novel Iron (II) Diimine Complex</b> M.F. Zheng	158
<b>Dynamic Colour Change of Multifunctional Thermochromic-Fluorescent Pigments</b> O. Panák, M. Držková, M. Kaplanová and M. Klanjšek Gunde	162
<b>Effect of Platinum Particle Size and Oxygen Pressure on Activity of Platinum/Carbon Gas Diffusion Electrodes in High Temperature Acid Medium</b> J. Tang, H.M. Meng and X. Liang	169
<b>Composition and Spectral Investigation for Tetranitro Iron Phthalocyanine</b> S.Y. Li, Z.Y. Zeng and S.S. Du	175