

# Table of Contents

## Preface and Committees

## Chapter 1: Material Science Engineering and Materials Machining

<b>Phase Field Model for Grain Growth with Second-Phase Particles of Stick Shape</b> W.Q. Zhou, Y.J. Gao, Y. Liu, Z.R. Luo and C.G. Huang	3
<b>Effects of EVA on the Weathering Resistance Performance of Wood Plastic Composite</b> D.F. Li, F.R. Xing, L. Li and J.Z. Li	7
<b>Orientation Control and Dielectric Properties of Ba<sub>0.6</sub>Sr<sub>0.4</sub>TiO<sub>3</sub> Thin Films on Pt/Ti/SiO<sub>2</sub>/Si Substrates with PbO Seeding Layer</b> X.H. Sun, Y.X. Qiao, S. Hou, Y. Yang and C.H. Huang	11
<b>Analysis on Magnetoelectric Effect of Terfenol-D/PMNT/Terfenol-D Laminate Magnetoelectric Composite Material</b> H. Yang, W. Chen, Y. Xia and G.L. Xiang	18
<b>The Effect of Various Catalysts on Transesterification in Reactive Blending PC/PLA Blends</b> Y. Chen, Y. Peng, W.Y. Liu, G.S. Zeng, J.H. Yang and X.H. Yan	24
<b>Study on the Mechanical Properties of PPC/PLA Blends Modified by POSS</b> Y. Chen, Y. Peng, W.Y. Liu, G.S. Zeng, X.G. Li and X.H. Yan	28
<b>Planarization of 2" Sapphire Wafer Using Magnetic Abrasive Polishing Process</b> S.O. Kim and J.S. Kwak	33
<b>A Study on Deburring Process of Micro Channel Using Ep and MAP Hybrid Process</b> C.G. Park, B.H. Son and J.S. Kwak	39
<b>Modification of Retarder on Desulfurization Gypsum Wall Material</b> F.S. Niu, A.H. Guo, X.W. Feng and Y. Meng	45
<b>Compressive Strength Properties of Fly Ash-Based Geopolymer Concrete</b> G.S. Ryu, G.H. Ahn, K.T. Koh and J.H. Lee	49
<b>Study for Absorption Heavy Metals by Pickled Diatomite</b> W.L. Luo	55
<b>Thickness Dependent Direct Current Electrical Conduction in Plasma Polymerized Pyrrole Monolayer Thin Films</b> M.M. Kamal and A.H. Bhuiyan	59

## Chapter 2: Nanoscience and Nanotechnology Applications

<b>Improving Tribological Characteristics of Hip Prostheses Using Biocompatible Nanocoatings</b> G.I. Gheorghe and L.L. Badita	67
<b>Advancement in Correlation Study between Cell Apoptotic Stages and its Morphological Variations via Single-Cell Techniques</b> K.Y. Chen, D.C. Wang, C.H. Tsai, C.H. Chen and G.Y. Chen	73
<b>Molecular Dynamics Simulation of Tensile Properties of Nano-Layered Materials</b> T. Uehara	79
<b>Synthesis and Structure of Titania Nanotubes For Hydrogen Generation</b> S. Wantawee, P. Krongkitsiri, T. Saipin, B. Samran and U. Tipparach	84
<b>Study on the Superabsorbent Hydrogels Consisting of Crosslinked Acrylic Acid and Nanosized SiO<sub>2</sub> Sphere</b> Y. Chen, Y. Peng, W.Y. Liu, G.S. Zeng, X.G. Li and X.H. Yan	90

## Chapter 3: Miscellaneous Themes

<b>Performance Analysis on Solar Assisted CO<sub>2</sub> Vapor Compression Heat Pump Cycle with an Ejector</b>	
J.H. Zhao and J.H. Ning	97
<b>Design of on Line Car Battery Monitor System Base on FPGA</b>	
F. Yu, Z. Jie, J.X. Wang and L. Li	104
<b>The Methods Research of Advance Detection in Tunnel Geological Disasters under Complicated Geological Condition</b>	
Y. Chen, B.X. Liu, Z.L. Shu and J.Z. Huang	108
<b>Design and Implementation of Interactive Landscape Based on Video Stream</b>	
Y.P. Gao	112
<b>Relaxed Parallel Modulus-Based Matrix Multisplitting Iterative Methods for Linear Complementarity Problem</b>	
B.X. Duan, D.H. Zeng and A.M. Yu	117