

# Table of Contents

## Preface

## Chapter 1: Materials for Biomedical Application

<b>Preparation and Characterization of the Magnetic Layered Double Hydroxide - DNA Delivery System</b>	
G.J. Gou, Q.Y. Pei, H.Q. Yao, Y. Sun, J.H. Yang and R. Wang	3
<b>Recombination of CdHgTe Quantum Dot and “Dextran - Magnetic Layered Double Hydroxide - Fluorouracil” System for Cell Imaging</b>	
Q.Y. Pei, R. Wang, X.Q. Jin and G.J. Gou	11
<b>The Developing Status of High-Throughput Drug Screening Microfluidic Chip by FRET on Medicine</b>	
X.Y. Zhang, Q.H. Huang, M. Yang, X.L. Liao, Z.Y. Shao, J.X. Huang, W.F. Xu and X. Hu	19
<b>Characterization of Porous Hyaluronan/<math>\beta</math>-TCP Scaffolds Prepared through Heterogeneous Crosslinking</b>	
R.M. Zhao, X.Y. Xue and Y.F. Wang	29
<b>Effects of Zr Contents on the Microstructure, Mechanical Properties and Biocompatibility of Ta-Zr Alloys</b>	
L. Chang, J. Liu, H.L. Yang, J.M. Ruan and S. Ji	37

## Chapter 2: Advanced Materials in Energy Storage

<b>Hollow Nitrogen Rich Carbon Nanowire Array Electrode for Application in Lithium-Ion Battery</b>	
Y.T. Liu, X.J. Li, Y.S. Ji, K. Hua, M. Qin, Z.P. Luo and D. Fang	47
<b>Synthesis and Electrochemical Performance of Silicon/Carbon Composite Anodes through Ball Milling and Spray Drying Pyrolysis Process</b>	
Y. Wang, H. Wu, F.M. Xiao, R.H. Tang and T. Sun	56
<b>Effect of Graphite Matrix on Property of Silicon/Carbon Composite Anode Material for Lithium-Ion Battery</b>	
Y. Wang, H. Wu, F.M. Xiao, R.H. Tang and T. Sun	64

## Chapter 3: Rare-Earth Elements in the Functionalization of Materials

<b>Study on Magnetic and Corrosion Properties of Ce<sub>16</sub>Fe<sub>95-x</sub>Co<sub>x</sub>B<sub>8</sub> (x=0-4) Alloys</b>	
C.C. Fang, Q.R. Yao, Y.Q. Xu, H.Y. Zhou, G.H. Rao, J.Q. Deng and Z.M. Wang	73
<b>The Impact of Different Alkali Metal Ions on Photoluminescence Properties of Ca<sub>10</sub>M(PO<sub>4</sub>)<sub>7</sub>:Eu<sup>2+</sup> (M: Li, Na, K)</b>	
J.W. Zhao, J. Dong, J. Zhou, X.Q. Wen, S.Z. Yang, L.S. Luo, D. Wu, W.W. Liu, H.Q. Xiao, Y.C. Zhou, Y.Y. Xiao and F. Yang	80
<b>Co-Precipitation Synthesis and Photoluminescence Properties of Sc<sub>0.88</sub>Lu<sub>0.05</sub>(V<sub>1-x</sub>P<sub>x</sub>)O<sub>4</sub>:Eu<sup>3+</sup><sub>0.07</sub> Red Phosphor for White Light Emitting Diodes</b>	
D. Wu, X.Y. Ye, X.H. Yang, F. Liu, J.W. Zhao and F. Yang	87
<b>Infrared Emissivities and Microwave Absorption Properties of Perovskite La<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub> (0≤x≤0.5)</b>	
J.W. Liu, J.J. Wang and H.T. Gao	96
<b>Enhanced Electrochemical Performance of CoB Amorphous Alloy through the Addition of Lanthanum</b>	
W. Zhao, Y.L. Liao, S.J. Qiu, H.L. Chu, Y.J. Zou, C.L. Xiang, H.Z. Zhang, F. Xu and L. Sun	102

## Chapter 4: High Performance Metallic Materials and Compounds

<b>Spin Injection into Graphene from Heusler Alloy Co<sub>2</sub>MnGe (111) Surface: A First Principles Study</b>	111
Y.X. Wang and T.S. Xia	
<b>Structure and Microwave Absorption Properties of Ho-Fe-Si Alloys</b>	117
J.L. Luo, S.K. Pan, L.C. Cheng, P.H. Lin, Y. He and J.Q. Chang	
<b>Study on Vacuum Tribological Behavior of 9Cr18Mo Bearing Steel by PIII Combined with MS Surface Hybrid Modification Processes</b>	124
J. Zhao, D.L. Tang, X.G. Feng, H. Zhou, L.X. Huo and S. Mikhailov	
<b>Effect of Triple Smelting Process on the Purity and Microstructure of 9Cr18Mo Bearing Steel</b>	132
Q.B. He, D.Z. Wang, A.Z. Zhao, R. Tang, H.D. Liu, D.H. Chen and Y. Mo	
<b>The Martensitic Transformation in Ti-6Al-4V</b>	140
Z.C. Xu and H.P. Kriegel	

## Chapter 5: Functional Materials in Chemical Production

<b>Mechanism of Mn(II) Absorption and Desorption with CFBC Fly Ash Modified by Alkaline Wet Ball Milling</b>	151
Y.H. Xu, Z.H. Xu, Z. Jiang, N. Li, P. Li and L. Zheng	
<b>Effect of Borax on Properties of Potassium Magnesium Phosphate Cement</b>	160
J.B. Wen, L.X. Zhang, X.S. Tang, G.H. Huang and Y.R. Zhu	
<b>Preparation and High Photocatalytic Performance of Spherical BiOCl Photocatalyst</b>	168
J.Q. Chang, Y. Zhong, C.H. Hu, Z.W. Ji, Y.F. Li, L.S. Zhong and J.L. Luo	
<b>Combined Computational and Experimental Study of the Pressure Dependence of the Structural and Vibrational Properties on Solid Naphthalene C<sub>10</sub>H<sub>8</sub></b>	175
L.P. Xiao, L. Zeng and X. Yang	
<b>The Solvatochromic Materials: A Progress Review</b>	182
J. He and J.S. Chen	
<b>A Review: Research into Organic Surface Treatment of Titanium Dioxide Material</b>	193
X.P. Wu, C. Liu, Y. Liu, T.F. Hou and Z. Wu	