
Contents

Preface.....	ix
Editors.....	xi
Contributors	xiii

SECTION I Biomaterial

Chapter 1 Design and Applications of Graphene- and Biomolecule-Based Nanosensors and Nanodevices	3
<i>Ke Xu, Preeti Pratap, Mitra Dutta, and Michael Stroschio</i>	
Chapter 2 Graphene-Based DNA Sensors	13
<i>Hatef Sadeghi</i>	
Chapter 3 Antimicrobial Perspectives for Graphene-Based Nanomaterials	27
<i>Archana Ramchandra Deokar, Madhulika Sinha, Ganesh Gollavelli, and Yong-Chien Ling</i>	
Chapter 4 Biomedical Applications of Graphene	41
<i>Maria Caffo, Lucia Merlo, Daniele Marino, and Gerardo Caruso</i>	
Chapter 5 Graphene Biodevices.....	57
<i>Xiaochen Dong, Beibei Zhan, and Wei Huang</i>	
Chapter 6 Antibacterial and Antifungal Activities of Graphene Nanosheets.....	71
<i>Montree Sawangphruk</i>	
Chapter 7 Applications of Graphene in Biosensing.....	81
<i>D. P. Nikolelis, Z. H. Ibupoto, G.-P. Nikoleli, and M. Willander</i>	
Chapter 8 Graphene-Based Biosensor Technologies	91
<i>Arzum Erdem, Ece Eksin, and Mihrican Muti</i>	
Chapter 9 Graphene-Based Laser Desorption/Ionization Mass Spectrometry for Bioanalytical Applications	105
<i>Suresh Kumar Kailasa, Hui-Fen Wu, and Jigneshkumar V. Rohit</i>	
Chapter 10 Richness of Graphene-Based Materials in Biomimetic Applications.....	125
<i>Bhaskar Garg and Yong-Chien Ling</i>	

SECTION II Nanocomposites

Chapter 11 Graphene-Based Polymer Nanocomposites	145
<i>S. Chatterjee and B. T. T. Chu</i>	

Chapter 12 Preparation of Cellulose/Graphene Nanocomposites.....	161
<i>Nguyen Dang Luong and Jukka Seppälä</i>	
Chapter 13 Straightforward Routes for the Preparation of Graphene-Based Polymer Nanocomposites	175
<i>Giulio Malucelli and Alberto Mariani</i>	
Chapter 14 Polymer Devices with Graphene: Solar Cells and Ultracapacitors.....	191
<i>Agnieszka Iwan, Bronislaw Szubzda, and Andrzej Sikora</i>	

SECTION III Electrical/Sensor Devices

Chapter 15 Graphene-Based Sensors: Current Status and Future Trends	211
<i>Goutam Koley, Amol Singh, and Ahsan Uddin</i>	
Chapter 16 Effect of External Electric Fields on the Multifunctional Applications of Graphene	235
<i>Zhimin Ao, Qing Jiang, Sean Li, Shixue Dou, and Guoxiu Wang</i>	
Chapter 17 Impact of the Structural Properties of Graphene on SiC Surfaces on Their Electronic Applications: An Assessment	255
<i>Jolanta Borysiuk and Jakub Sottys</i>	
Chapter 18 Resistive Nonvolatile Memories Based on Graphene-Related Materials: State of the Art.....	269
<i>P. Bondavalli, D. Ihnatov, D. Pribat, and P. Legagneux</i>	
Chapter 19 Applications of Graphene-Based Materials in Electronic Devices.....	279
<i>Gaurav Gupta, Minggang Zeng, Argo Nurbawono, Wen Huang, and Gengchiao Liang</i>	
Chapter 20 Graphene- and Graphene-Oxide-Based Gas Sensors	299
<i>Vladimir Aroutiounian</i>	

SECTION IV New Applications

Chapter 21 Graphene-Based Materials for Fuel Cells: Approaches and Applications.....	313
<i>Junrui Li and Haolin Tang</i>	
Chapter 22 Chemistry and Applications of Supramolecular Graphene Derivatives	337
<i>Hugo Bares, Jean-Baptiste Verlhac, and Dario M. Bassani</i>	
Chapter 23 Applications of Graphene in Tissue Engineering	353
<i>Eoin Murray, Brianna C. Thompson, and Gordon G. Wallace</i>	
Chapter 24 Graphene in Space.....	365
<i>Domingo Aníbal García-Hernández and Franco Cataldo</i>	

Chapter 25 Graphene Materials in Energy Storage Applications.....	377
<i>Grzegorz Lota, Krzysztof Fic, Ilona Acznik, and Katarzyna Lota</i>	
Chapter 26 Applications of Graphene in Fuel/Propellant Combustion	391
<i>Bruce Chehroudi</i>	
Chapter 27 Fabrication of Graphene-Based Porous Materials and Their Applications in Environmental Fields.....	399
<i>Zhu-Yin Sui, Ding Zhou, and Bao-Hang Han</i>	
Chapter 28 New Energy Material: Graphene	419
<i>Hongying Hou, Xianxi Liu, and Jinhui Peng</i>	
Chapter 29 Potential Applications of Graphene in Polymer Electrolyte Membrane Fuel Cell.....	439
<i>Avijit Ghosh and Anil Verma</i>	
Index	463