1. Record Nr. UNINA9910788032603321

| | |
|---|---|
| Autore | Ray Sekhar Chandra |
| Titolo | Applications of graphene and graphene-oxide based nanomaterials / / Sekhar Chandra Ray |
| Pubbl/distr/stampa | Waltham, [Massachusetts] : , : William Andrew, , 2015<br>©2015 |
| ISBN | 0-323-37522-7 |
| Descrizione fisica | 1 online resource (93 p.) |
| Collana | Micro and Nano Technologies Series |
| Disciplina | 546.681 |
| Soggetti | Nanostructured materials |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references. |
| Nota di contenuto | Front Cover; Applications of Graphene and Graphene-Oxide Based Nanomaterials; Copyright Page; Contents; Acknowledgments; 1 Application and Uses of Graphene; 1.1 Introduction; 1.2 Preparation/Synthesis of Graphene; 1.3 Properties of Graphene; 1.4 Potential Application and Uses of Graphene; 1.4.1 Graphene in Hydrogen Storage Devices; 1.4.2 Graphene as a Battery; 1.4.3 Application of Graphene Thin Film as Transparent Conductor (Electrodes); 1.4.3.1 Graphene as Transparent Conducting Electrodes; 1.4.3.2 Flexible Electronics; 1.4.3.3 Touch Screen; 1.4.4 Solar Cells and OVPs<br>1.4.4.1 Organic Photovoltaic Cells1.4.5 Fuel Cells; 1.4.6 Microbial Biofuel Cells; 1.4.7 Enzymatic Biofuel Cells; 1.4.8 Organic Light-Emitting Diodes; 1.4.9 Graphene as a Super-Capacitor/Ultra-Capacitors; 1.4.10 Spintronics; 1.4.10.1 Many Challenges and Opportunities Await for Spin and Magnetism in Graphene; 1.4.11 Integrated Circuits; 1.4.12 Transistors; 1.4.13 Ballistic Transistors; 1.4.14 Radio Frequency Applications; 1.4.14.1 Nano Antennas; 1.4.15 Sound Transducer; 1.4.16 Graphene as Sensor; 1.4.16.1 Electrochemical Sensor; 1.4.16.2 Gas Sensors; 1.4.16.3 Biosensors 1.4.17 Composite Materials1.4.18 Liquid Crystal Displays; 1.4.19 Graphene Quantum Dots; 1.4.20 Frequency Multiplier; 1.4.21 Optical Modulator; 1.4.22 Infrared Light Detection; 1.4.23 Graphene Photodetectors; 1.4.24 Piezoelectricity; 1.4.25 Graphene as Purification |

of Water; 1.5 Conclusion and Perspectives of Graphene; 1.6 The Present Challenges and Future Research in Graphene Nanomaterials; References; 2 Application and Uses of Graphene Oxide and Reduced Graphene Oxide; 2.1 Introduction; 2.2 Preparation/Synthesis of GO/rGO; 2.3 Surface Functionalization of GO and rGO
2.4 Properties of GO and rGO2.5 Applications of GO and rGO; 2.5.1 GO/rGO in Electronics Devices; 2.5.2 GO/rGO as Energy Storage Device; 2.5.3 GO/rGO as Biosensors; 2.5.4 GO/rGO as Biomedical Applications; 2.5.5 GO as Water Purification (Filter); 2.5.6 GO/rGO as Coating Technology; 2.5.7 GO/rGO Composites and Paper-Like Materials; 2.6 Conclusion and Perspectives of GO/rGO; 2.7 The Present Challenges and Future Research in GO/rGO Nanomaterial; References; 3 Graphene-Based Carbon Nanoparticles for Bioimaging Applications; 3.1 Introduction; 3.2 Preparation Process of Carbon Nanoparticles
3.2.1 Synthesis of CP from Oxidation of Burning Candle Soot3.2.2 Synthesis of Carbon Nanoparticle from Carbohydrate Carbonization Method; 3.2.3 Functionalization of FCN; 3.3 Properties of Carbon Nanoparticles; 3.3.1 Physical and Structural Properties; 3.3.2 Chemical and Bonding Properties; 3.3.3 Optical-Luminescence Properties; 3.4 Application of Carbon Nanoparticles in Bioimaging Process; 3.5 Cytotoxicity of FCN; 3.6 Discussion; 3.7 Conclusion and Perspectives of Carbon Nanoparticles; 3.8 Present Challenges and Future Research in Carbon Nanoparticles; References

Sommario/riassunto

Carbon nanomaterials have a unique place in Nanoscience owing to their exceptional electrical, thermal, chemical and mechanical properties and have found application in areas as diverse as composite materials, energy storage and conversion, sensors, drug delivery, field emission devices and nano-scale electronic components. Conjugated carbon nanomaterial covers the areas of carbon nanotubes, fullerenes and graphene. Graphene is the newest of the carbon nanomaterials and promises to be a very active field. Already since its isolation in 2004 it has grabbed the attention of the chemistry, materi