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3.2.3 Fabrication of Carbon Dots 3.2.3.1 Electrochemical Methods; 3.2.3.2 Combustion, Thermal, Hydrothermal and Acidic Oxidation of Carbon Precursors; 3.2.3.3 Pulsed Laser Irradiation of Carbon Source; 3.2.3.4 Laser Ablation of Graphite; 3.2.3.5 Arc Discharge Method; 3.2.3.6 Plasma Treatment Method; 3.2.3.7 Opening of Fullerene Cage; 3.2.3.8 Ultrasonic-/Microwave-Assisted Synthesis; 3.2.3.9 Chemical Methods; 3.2.3.10 Supported Synthetic Procedure; 3.2.3.11 Biogenic Synthesis; 3.2.4 Applications of Carbon Dots; 3.2.4.1 Sensor Designing; 3.2.4.2 Bioimaging; 3.2.4.3 Drug Delivery
3.2.4.4 Optoelectronics and In Vivo Biosensing Applications 3.2.4.5 Photocatalysis; 3.2.4.6 SERS; 3.2.4.7 Health and Bio-Related Applications; 3.3 Conclusions; 4 Identification and Characterization of Graphene; 4.1 Introduction; 4.2 Microscopic Methods; 4.2.1 SEM, STM and TEM Characterization of Graphene; 4.2.2 AFM Characterization of Graphene; 4.3 Spectroscopic Methods; 4.3.1 Raman Spectroscopic Analysis of Graphene; 4.3.2 FTIR Analysis of Graphene; 4.3.3 UV-Vis Spectroscopic Analysis of Graphene; 4.3.4 XRD Analysis of Graphene; 4.3.5 XPS of Graphene; 4.3.6 NMR Analysis of Graphene
4.3.7 DLS of Graphene 4.3.8 DPI of Graphene; 4.4 Optical Property Analysis; 4.4.1 Optical Absorption and Nonlinear Kerr Effect; 4.4.2 Photoluminescence/Blue-Photoluminescence; 4.4.3 Optical Band Gap; 4.5 Measurement of Mechanical Properties; 4.5.1 Young's Modulus; 4.5.2 Poisson's Ratio; 4.5.3 Bulge Test; 4.5.4 Tensile Testing/Tension Testing; 4.5.5 Gas Leak Rates in Graphene Membranes; 4.6 Thermal Properties and Thermal Effect Analysis; 4.6.1 Thermal Conductivity; 4.6.2 TGA and Thermal Stability; 4.7 Characterization of Electrical Properties; 4.7.1 Electronics; 4.7.2 Electron Transport
4.7.3 Electrochemical Redox

Sommario/riassunto

"Often described as a 'miracle material', graphene's potential applications are extraordinary, ranging from nanoscale 'green' technologies, to sensors and future conductive coatings. This book covers the topic of 'graphene' -- the history, fundamental properties, methods of production and applications of this exciting new material. The style of the book is both scientific and technical -- it is accessible to an audience that has a general, undergraduate-level background in the sciences or engineering, and is aimed at industries considering graphene applications. As the graphene topic is a broad-reaching and rapidly moving field of research, the aim of this book is therefore to provide information about graphene and its current and future applications that are immediately implementable, relevant and concise. After reading this book, the reader will have sufficient knowledge and background to move forward independently into graphene R&D and to apply the knowledge therein. Although the book will be self-contained, each chapter has copious references to enable further reading, research and exploration of the chapter topics"--

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Autore	Combessie Philippe
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