1. Record Nr. UNINA9910861090303321

Autore	Khan Raju
Titolo	Electrochemical Exfoliation of Graphene and Its Derivatives : Commercial Applications / / edited by Raju Khan, Neeraj Kumar, Mohd. Abubakar Sadique, Arpana Parihar
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	9789819721283 9819721288
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (350 pages)
Collana	Engineering Materials, , 1868-1212
Altri autori (Persone)	KumarNeeraj Mohd. Abubakar Sadique PariharArpana
Disciplina	530.41 620.19
Soggetti	Condensed matter Biophysics Materials Chemistry Materials - Analysis Carbon Two-dimensional Materials Bioanalysis and Bioimaging Materials Chemistry Materials Characterization Technique Carbon Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. Overview of electrochemical exfoliation approaches -- 2. Advantages of electrochemical exfoliation method over conventional methods -- 3. Graphene and its derivatives: various routes of synthesis -- 4. Structure and electrochemical properties of graphene, derivatives and its nanocomposites -- 5. Electrochemical exfoliation a green approach: Waste to wealth -- 6. Mechanism of synthesis for graphene and its derivatives by electrochemical exfoliation -- 7. Unique characteristics

of electrochemically exfoliated multi-dimensional graphene and its derivatives -- 8. Electrochemistry and energy storage applications of graphene and its derivatives -- 9. Applications of electrochemically exfoliated graphene and its derivatives in the field of Biosensing and Bioimaging -- 10. Electrochemical exfoliation of graphene and its derivatives and its extended applications in therapeutics -- 11. Methodology advancements for bulk production and commercialization of graphene and its derivatives -- 12. Challenges and future opportunities in the field of electrochemical exfoliation techniques.

Sommario/riassunto

The book describes the technique of electrochemical exfoliation, which possesses remarkable ability to bring about transformation. Among various known synthesis methods, the electrochemical exfoliation approach eliminates the use of harsh chemicals and energy-intensive methods commonly linked to the synthesis of graphene. Electrochemical exfoliation utilizes electrical energy to gently remove layers of graphene from its original source, providing a more environmentally friendly method. This precise and careful synchronization heralds a new era in the field of materials science, where the principles of sustainability converge with unmatched performance. Moreover, the benefits extend beyond environmental excellence. This book also examines the complexities of electrochemical exfoliation, highlighting its clear advantage over traditional techniques. The approach demonstrates process in manipulating the structure and properties of graphene, allowing for the customization of specific capabilities to suit a wide range of applications.