

1. Record Nr.	UNINA9910254048703321
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Titolo	Surface Chemistry and Macroscopic Assembly of Graphene for Application in Energy Storage // by Cheng-Meng Chen
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2016
ISBN	3-662-48676-8
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	546.68142
Soggetti	Nanotechnology Energy storage Chemistry, Inorganic Surfaces (Physics) Interfaces (Physical sciences) Thin films Energy Storage Inorganic Chemistry Surface and Interface Science, Thin Films
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Sommario/riassunto	This PhD thesis presents the latest findings on the tunable surface chemistry of graphene/graphene oxide by systematically investigating the tuning of oxygen and nitrogen containing functional groups using an innovative carbonization and ammonia treatment. In addition, novel macroscopic assemblies or hybrids of graphene were produced, laying the theoretical foundation for developing graphene-based energy storage devices. This work will be of interest to university researchers, R&D engineers and graduate students working with carbon materials, energy storage and nanotechnology.