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Titolo	Carbon nanomaterials for advanced energy systems : advances in materials synthesis and device applications // edited by Wen Lu, Jong-Beom Baek, Liming Dai
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Descrizione fisica	1 online resource (600 p.)
Classificazione	TEC027000
Disciplina	621.31/2420284
Soggetti	Electric batteries - Materials Energy harvesting - Materials Fullerenes Nanostructured materials Carbon nanotubes
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 at the end of each chapters and index.
Nota di contenuto	""TITLE PAGE""; ""TABLE OF CONTENTS""; ""LIST OF CONTRIBUTORS""; ""PREFACE""; ""PART I: SYNTHESIS AND CHARACTERIZATION OF CARBON NANOMATERIALS""; ""1 FULLERENES, HIGHER FULLERENES, AND THEIR HYBRIDS: SYNTHESIS, CHARACTERIZATION, AND ENVIRONMENTAL CONSIDERATIONS""; ""1.1 INTRODUCTION""; ""1.2 FULLERENE, HIGHER FULLERENES, AND NANOHYBRIDS: STRUCTURES AND HISTORICAL PERSPECTIVE""; ""1.3 SYNTHESIS AND CHARACTERIZATION""; ""1.4 ENERGY APPLICATIONS""; ""1.5 ENVIRONMENTAL CONSIDERATIONS FOR FULLERENE SYNTHESIS AND PROCESSING""; ""REFERENCES""; ""2 CARBON NANOTUBES"" ""2.1 SYNTHESIS OF CARBON NANOTUBES""""2.2 CHARACTERIZATION OF NANOTUBES""; ""2.3 SUMMARY""; ""REFERENCES""; ""3 SYNTHESIS AND CHARACTERIZATION OF GRAPHENE""; ""3.1 INTRODUCTION""; ""3.2 OVERVIEW OF GRAPHENE SYNTHESIS METHODOLOGIES""; ""3.3 GRAPHENE CHARACTERIZATIONS""; ""3.4 SUMMARY AND OUTLOOK"";

""REFERENCES""; ""4 DOPING CARBON NANOMATERIALS WITH HETEROATOMS""; ""4.1 INTRODUCTION""; ""4.2 LOCAL BONDING OF THE DOPANTS""; ""4.3 SYNTHESIS OF HETERODOPED NANOCARBONS""; ""4.4 CHARACTERIZATION OF HETERODOPED NANOTUBES AND GRAPHENE""; ""4.5 POTENTIAL APPLICATIONS""; ""4.6 SUMMARY AND OUTLOOK""  
""REFERENCES""PART II: CARBON NANOMATERIALS FOR ENERGY CONVERSION""; ""5 HIGH-PERFORMANCE POLYMER SOLAR CELLS CONTAINING CARBON NANOMATERIALS""; ""5.1 INTRODUCTION""; ""5.2 CARBON NANOMATERIALS AS TRANSPARENT ELECTRODES""; ""5.3 CARBON NANOMATERIALS AS CHARGE EXTRACTION LAYERS""; ""5.4 CARBON NANOMATERIALS IN THE ACTIVE LAYER""; ""5.5 CONCLUDING REMARKS""; ""ACKNOWLEDGMENTS""; ""REFERENCES""; ""6 GRAPHENE FOR ENERGY SOLUTIONS AND ITS PRINTABLE APPLICATIONS""; ""6.1 INTRODUCTION TO GRAPHENE""; ""6.2 ENERGY HARVESTING FROM SOLAR CELLS""; ""6.3 OPV DEVICES""; ""6.4 LITHIUM-ION BATTERIES"" ""6.5 SUPERCAPACITORS""""6.6 GRAPHENE INKS""; ""6.7 CONCLUSIONS""; ""REFERENCES""; ""7 QUANTUM DOT AND HETEROJUNCTION SOLAR CELLS CONTAINING CARBON NANOMATERIALS""; ""7.1 INTRODUCTION""; ""7.2 QD SOLAR CELLS CONTAINING CARBON NANOMATERIALS""; ""7.3 CARBON NANOMATERIAL/SEMICONDUCTOR HETEROJUNCTION SOLAR CELLS""; ""7.4 SUMMARY""; ""REFERENCES""; ""8 FUEL CELL CATALYSTS BASED ON CARBON NANOMATERIALS""; ""8.1 INTRODUCTION""; ""8.2 NANOCARBON-SUPPORTED CATALYSTS""; ""8.3 INTERFACE INTERACTION BETWEEN Pt CLUSTERS AND GRAPHITIC SURFACE""; ""8.4 CARBON CATALYST""; ""REFERENCES""  
""PART III: CARBON NANOMATERIALS FOR ENERGY STORAGE""""9 SUPERCAPACITORS BASED ON CARBON NANOMATERIALS""; ""9.1 INTRODUCTION""; ""9.2 SUPERCAPACITOR TECHNOLOGY AND PERFORMANCE""; ""9.3 NANOPOROUS CARBON""; ""9.4 GRAPHENE AND CARBON NANOTUBES""; ""9.5 NANOSTRUCTURED CARBON COMPOSITES""; ""9.6 OTHER COMPOSITES WITH CARBON NANOMATERIALS""; ""9.7 CONCLUSIONS""; ""REFERENCES""; ""10 LITHIUM-ION BATTERIES BASED ON CARBON NANOMATERIALS""; ""10.1 INTRODUCTION""; ""10.2 IMPROVING LI-ION BATTERY ENERGY DENSITY""; ""10.3 IMPROVEMENTS TO LITHIUM-ION BATTERIES USING CARBON NANOMATERIALS""  
""10.4 CARBON NANOMATERIALS AS CONDUCTIVE ADDITIVES""

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Sommario/riassunto

"With the proliferation of electronic devices, the world will need to double its energy supply by 2050. This book addresses this challenge and discusses synthesis and characterization of carbon nanomaterials for energy conversion and storage"--

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2. Record Nr.	UNINA9910741149303321
Autore	Musser George
Titolo	Emergence in Condensed Matter and Quantum Gravity : A Nontechnical Review / / by George Musser
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2022
ISBN	9783031098956 9783031098949
Edizione	[1st ed. 2022.]
Descrizione fisica	1 online resource (104 pages)
Collana	SpringerBriefs in Physics, , 2191-5431
Disciplina	530.41 539.754
Soggetti	Condensed matter Gravitation Topological insulators Condensed Matter Classical and Quantum Gravity Topological Material
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	1. Just a Phase They're Going Through—Landau's Theory of Phase Transitions. 2. Tipping the Scales -- 3. Quantum Physics -- 4. Frozen Yet Mobile—Superconductors, Bose-Einstein Condensates and Strange Metals -- 5. 'Twistronics'—Graphene's Magic Angle.
Sommario/riassunto	This book surveys the science at a semipopular, Scientific American-level. It is even-handed with regard to competing directions of research and philosophical positions. It is hard to get even two people to agree on anything, yet a million billion water molecules can suddenly and abruptly coordinate to lock themselves into an ice crystal or liberate one another to billow outwards as steam. The marvelous self-organizing capacity of matter is one of the central and deepest puzzles of physics, with implications for all the natural sciences. Physicists in the past century have found a remarkable diversity of phases of matter—and equally remarkable commonalities within that diversity. The pace of discovery has, if anything, only quickened in recent years

with the appreciation of quantum phases of matter and so-called topological order. The study of seemingly humdrum materials has made contact with the more exotic realm of quantum gravity, as theorists realize that the spacetime continuum may itself be a phase of some deeper and still unknown constituents. These developments flesh out the sometimes vague concept of the emergence—how exactly it is that complexity begets simplicity.

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