1. Record Nr. UNINA9910819043903321

Titolo	Carbon nanomaterials for advanced energy systems : advances in materials synthesis and device applications / / edited by Wen Lu, Jong-Beom Baek, Liming Dai
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2015 ©2015
ISBN	1-118-98102-2 1-118-98101-4
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""

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"--