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Supercapacitors -- Carbon Nanofiber as Electrode Material for Supercapacitors -- TMO/Carbon Nanofiber based Composite as Electrode Material for Supercapacitors -- Carbon Nanotube as Electrode Material for Supercapacitors -- Transition Metal Oxide/Carbon Nanotube Based Composite as Electrode Material for Supercapacitors -- Graphene/Reduced Graphene as Electrode Material for Supercapacitors -- TMO/Graphene/Reduced Graphene Oxide Based Composite as Electrode Material for Supercapacitors -- Polymer as Electrode Material for Supercapacitors -- TMO/Electronically Conducting Polymer Based Composite as Electrode Material for Supercapacitors -- Transition Metal Oxides Based Ternary Composite as Electrode Material for Supercapacitors -- Applications and Future Trends of Supercapacitors.

Sommario/riassunto

This book covers the performance aspects of nanocomposite supercapacitor materials based on transition metal oxides, activated carbon, carbon nanotubes, carbon nanofibers, graphene and conducting polymers. It compares the performance of simple electrode materials versus binary and ternary composites, while highlighting the advantages and challenges of different supercapacitor electrode materials. This book is part of the Handbook of Nanocomposite Supercapacitor Materials. Supercapacitors have emerged as promising devices for electrochemical energy storage, playing an important role in energy harvesting for meeting the current demands of increasing global energy consumption. The handbook covers the materials science and engineering of nanocomposite supercapacitors, ranging from their general characteristics and performance to materials selection, design and construction. Covering both fundamentals and recent developments, this handbook serves a readership encompassing students, professionals and researchers throughout academia and industry, particularly in the fields of materials chemistry, electrochemistry, and energy storage and conversion. It is ideal as a reference work and primary resource for any introductory senior-level undergraduate or beginning graduate course covering supercapacitors.