



Batteries

an Open Access Journal by MDPI

CiteScore: 6.6

Impact Factor: 4.8

Special Issue Reprint

Advanced Carbon-Based Materials for Next-Generation Batteries and Supercapacitors

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With the development of society and technology, the excessive energy harvested from fossil fuels has brought about resource and environmental issues. The increased exploration of new-energy and the rapid development of the electric vehicle industry have led to the rapid development of electrochemical energy-storage technology. Batteries and supercapacitors offer both a high energy density and a high power density, and have a promising future in the field of energy storage. Carbon-based materials have always been at the forefront of this field due to their unique advantages of low density, chemical stability, good processability, and diverse morphologies. This Reprint will approach the rational design of carbon-based composite materials and their latest uses in rechargeable batteries and supercapacitors, exploring manufacturing processes, the materials used (carbon nanotubes, graphene, biomass carbon, MOF-derived carbon, etc.), microstructural design (porous structures, core/shell structures, hollow structures, three-dimensional structures, etc.), and component optimization, and also report their practical applications in electrochemical energy storage and studying their energy-storage mechanisms in detail. We aim to contribute toward creating a new generation of functional carbon-based materials for rechargeable batteries and supercapacitors. This Reprint aims to play a guiding role in research into functional carbon-based materials and composites, contributing to a broadening of the field's scope and making significant progress in the field.

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