

River Publishers Series in Power and Energy Systems

New Generation of Lithium-ion Batteries for Renewable Energy Storage

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Description:

This book is a comprehensive analysis of lithium-ion battery (LIB) technologies. LIBs are one of the most advanced rechargeable batteries available and have garnered significant interest while being the preferred mobile power source for portable electronics while also being widely used across various industries. Combining cutting-edge research with practical insights, it provides an analysis of LIB development, including cathode/anode materials, electrolytes, and separators. It covers Li-ion variants such as LCO, NMC, LFP, LMO, NCA and delves into energy density, cycle life, and safety mechanisms. By discussing topics such as solid-state batteries, silicon anodes, and advanced Li-S/Li-air systems as well as thermal management, degradation, and recycling challenges, this book is essential reading for researchers in electrochemistry, materials science, and energy storage engineering. This is a thorough overview of the development of lithium-ion technologies and the many kinds of LIBs. New advancements and technical issues about next-generation secondary battery systems are also discussed.

Keywords: Lithium-ion batteries (LIBs), components of lithium-ion batteries, electrochemical models of LIBs, nanocomposite materials, nanoparticles for environmental remediation nano-enabled approaches for battery recycling

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