



River Publishers Series in Power and Energy Systems

## New Generation of Lithium-ion Batteries for Renewable Energy Storage

### Authors:

G.K. Prashanth, Department of Chemistry, Sir M. Visvesvaraya Institute of Technology, Bengaluru, India

Hemantkumar N. Akolkar, Department of Chemistry, Abasaheb Marathe College, Rajpur, India

A. K. Haghi, Research Associate, Department of Chemistry, Institute of Molecular Sciences, University of Coimbra, Coimbra, Portugal

Srilatha Rao Professor, Department of Chemistry at NittenMeenakshi Institute of Technology, Bengaluru, India

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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

#### Denmark Head Office

Alsbergvej 10  
9260 Gistrup  
Denmark  
[www.riverpublishers.com](http://www.riverpublishers.com)  
Email: [info@riverpublishers.com](mailto:info@riverpublishers.com)

#### USA Office

Indianapolis, IN  
USA  
Tel.: +1-3176899634  
Email: [rajeev.prasad@riverpublishers.com](mailto:rajeev.prasad@riverpublishers.com)

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