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Sommario/riassunto	This book reviews recent trends, developments, and technologies of energy storage devices and their applications. It describes the electrical equivalent circuit model of batteries, the technology of battery energy storage systems in rooftop solar-photovoltaic (PV) systems, and the implementation of second-life batteries in hybrid electric vehicles. It also considers a novel energy management control strategy for PV batteries operating in DC microgrids, along with the present state and opportunities of solid-state batteries. In addition, the book examines the technology of thin-film energy storage devices based on physical vapor deposition as well as the challenges of ionic polymer-metal composite membranes. Furthermore, due to the novel battery technology in energy storage devices, this book covers the structural, optical, and related electrical studies of polyacrylonitrile (PAN) bearing in mind the applications of gel polymer electrolytes in solid-state batteries. Since energy storage plays a vital role in renewable energy systems, another salient part of this book is the research on phase change materials for maximum solar energy utilization and improvement. This volume is a useful reference for readers who wish to familiarize themselves with the newest advancements in energy storage systems.