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Collana	Springer Series in Materials Science, , 0933-033X ; ; 303
Disciplina	621.38152
Soggetti	Materials science Force and energy Optical materials Electronic materials Nanotechnology Quantum optics Ceramics Glass Composites (Materials) Composite materials Energy Materials Optical and Electronic Materials Characterization and Evaluation of Materials Quantum Optics Ceramics, Glass, Composites, Natural Materials
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Photo-electroactive perovskite quantum dots: technologies and prospects -- Physical and Optical properties of perovskite quantum dots -- Synthesis of perovskite quantum dots -- Origins of the instability of perovskite quantum dot -- Strategies towards improving the stability of perovskite quantum dots -- Perovskite quantum dots based solar cell -- Perovskite quantum dots based light-emitting diode -- Perovskite quantum dots for photo-electroactive memories and neuromorphic computing systems -- Other perovskite quantum dots

based phototransistor -- Device challenges, possible strategies and Conclusions.

Sommario/riassunto

This book addresses perovskite quantum dots, discussing their unique properties, synthesis, and applications in nanoscale optoelectronic and photonic devices, as well as the challenges and possible solutions in the context of device design and the prospects for commercial applications. It particularly focuses on the luminescent properties, which differ from those of the corresponding quantum dots materials, such as multicolor emission, fluorescence narrowing, and tunable and switchable emissions from doped nanostructures. The book first describes the characterization and fabrication of perovskite quantum dots. It also provides detailed methods for analyzing the electrical and optical properties, and demonstrates promising applications of perovskite quantum dots. Furthermore, it presents a series of optoelectronic and photonic devices based on functional perovskite quantum dots, and explains the incorporation of perovskite quantum dots in semiconductor devices and their effect of the performance. It also explores the challenges related to optoelectronic devices, as well as possible strategies to promote their commercialization. As such, this book is a valuable resource for graduate students and researchers in the field of solid-state materials and electronics wanting to gain a better understanding of the characteristics of quantum dots, and the fundamental optoelectronic properties and operation mechanisms of the latest perovskite quantum dot-based devices.