

What are perovskite-based solar cells?

Perovskite-based solar cells are solar cells based on perovskites, a class of materials with similar crystal structures that are remarkable absorbers of solar light.

Are perovskite solar modules cost-effective?

Perovskite solar modules, or those using perovskite solar cells (PSCs), are promising candidates for the next generation of solar cells due to their ease of fabrication and high power conversion efficiencies. However, there has been no detailed analysis of the cost of these PSC modules.

What are perovskite solar cell patents?

These patents comprise new perovskite solar cell device designs, such as interdigitated back-contact perovskite solar cell devices, that capitalize on the unique properties of the perovskite layer to create low-cost devices with improved efficiency and reliability.

Are perovskite solar cells good candidates for the next generation?

Perovskite solar cells (PSCs) are promising candidates for the next generation of solar cells due to their ease of fabrication and high power conversion efficiencies. However, there has been no detailed analysis of the cost of PSC modules. We selected two representative examples of PSCs and performed a cost-performance analysis.

What is perovskite research?

Presents a thorough overview of perovskite research, written by leaders in the field of photovoltaics. The use of perovskite-structured materials to produce high-efficiency solar cells is a subject of growing interest for academic researchers and industry professionals alike.

How can perovskite minerals be commercially viable?

The book focuses on traditional and novel electronic operations, such as solar cells, LEDs, lasing, photodetectors, X-ray detectors, transistors, and more. It also investigates ways to make the use of such materials more environmentally friendly, which in turn can make perovskite minerals more commercially viable.

Perovskite solar cells. \$16.00. ... \$170.00. Add to cart. Buy full book access Checkout View options PDF ...
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Photovoltaic device modeling: a multi-scale, multi-physics approach. Next. Open in viewer. Go to.

This chapter discusses the major components of perovskite solar cells (PSCs): supporting conducting substrate, electron transport layer, hole transport layer, halide perovskite light ...

Perovskite absorber layers play a decisive role in the realization of high-power conversion efficiency in

perovskite solar cells (PSCs). This book systematically and comprehensively discusses device structures, working principles, and optimization strategies of perovskite absorber layers for PSCs to help foster commercialization of these environmentally friendly power sources.

The a-to-d phase transition and lattice defects pose significant challenges to the long-term stability of methylammonium (MA)/bromide (Br)-free formamidinium (FA)-based perovskite solar cells (PSCs). Here we propose an ...

Perovskite solar cells have been of great interest over the past decade, reaching a remarkable power conversion efficiency of 26.7%, which is comparable to best performing silicon devices. Moreover, the capability of perovskite solar cells to be solution-processed at low cost makes them an ideal candidate for Chemistry for a Sustainable World - ...

These books are covering perovskite material properties, fabrication techniques, efficiency improvements, stability challenges, hybrid perovskite structures, ...

Perovskite Solar Cells: Materials, Processes, and Devices provides an up-to-date overview of the current state of perovskite solar cell research. Addressing the key areas in the rapidly growing field, this ...

By combining fundamental knowledge with cutting-edge methods, this book equips researchers, students, and professionals with valuable insights, fostering innovation and progress in the ...

In general, photovoltaic performance of the perovskite solar cells is ascribed from their intrinsic properties like high absorption coefficient [23], tunable band gap [24], large carrier diffusion-length [25], ambipolar carrier-transport ability [26] and carrier mobility [27]. Especially, organic-inorganic hybrid-perovskite (OHIP) materials are the favorable candidates for ...

Perovskite Solar Cells: Prospects of Commercialization considers the challenges, technological barriers, and opportunities facing the commercialization of perovskite solar cells. First, the book provides a brief overview of the history of perovskite solar cells in the context of the rise of photovoltaics, and an overview of materials systems being considered for these technologies.

Solar cells based on monovalent alkali or organic A-cation, divalent metal B-cation and monovalent halide anion (ABX₃) perovskite semiconductors are emerging as a fast-growing research area with substantial ...

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