

The Online Meeting on Perovskite, Organic Photovoltaics and Optoelectronics will bring together the pioneers of the perovskite solar cell. The main protagonists of the next generation perovskite photovoltaics will review the achievements and the challenges ahead at the Online Meeting IPEROP22 on January 24th.. The outstanding panel of speakers is formed by ...

Wide-bandgap perovskite solar cells suffer from severe open-circuit voltage loss with increasing bromine content. Here, authors tackle this issue through homogeneous halogen-phase distribution ...

Nowadays, the soar of photovoltaic performance of perovskite solar cells has set off a fever in the study of metal halide perovskite materials. The excellent optoelectronic properties and defect tolerance feature allow metal halide perovskite to be employed in a wide variety of applications. This article provides a holistic review over the current progress and future ...

Abstract Metal halide perovskite solar cells (PSCs) have gained tremendous attention due to their high power conversion efficiencies (PCEs) and potential for low-cost manufacturing. ... In the past few years, perovskite grown from the 2-step sequential deposition of organic and inorganic components has intensively studied.

Suppressing surface Cs⁺ accumulation in methylammonium-free a-FA1-xCsxPbI3 perovskite with an intermediate phase-assisted strategy enables high-efficiency and thermally stable photovoltaics.

The wafer-based first-generation photovoltaic devices have been followed by thin-film solid semiconductor absorber layers sandwiched between two charge-selective contacts and nanostructured (or ...

Most of the large-organic-spacer-involved 2D perovskites present more of a p-type nature than do their 3D counterparts. This makes inserting this layer most favorable at the interface of perovskite and p-type CTL, specifically on top of the perovskite layer for n-i-p cells and buried underneath the perovskite for p-i-n cells.

Owing to promising optical and electrical properties and better thermal and aqueous stability, chalcogenide perovskites have shown a wide range of applications. Chalcogenides belong to the 16th group of periodic tables and could be potential materials for the fabrication of efficient and stable (chalcogenide perovskite) solar cells. Generally, metal halide perovskites ...

Celebrating 175 Years of Perovskite Research: A Tribute to Roger H. Mitchell. Phys. Chem. Minerals 41 (6), 387-391. 10.1007/s00269-014-0678-9 [Google Scholar] Chen H. (2017). ... Perovskite Solar Cells with a Planar Heterojunction Structure Prepared Using Room-Temperature Solution Processing Techniques. Nat.

Celebrating 10 years of perovskite photovoltaics

This review first revisits the key milestones in the development of monolithic perovskite/silicon tandem solar cells over the past decade. Then, a comprehensive analysis of the background, advancements, and challenges in perovskite/silicon tandem solar cells is provided, following the sequence of the tandem fabrication process.

efficiencies in the range of 10% were reported in 2012.²⁻⁴ The early developments in the field can be followed through published reviews [Perovskite Solar Cells: The Birth of a New Era in Photovoltaics (10.1021/acseenergylett.7b00137)] and virtual issues [Lead-Free Perovskite Solar Cells. ACS Energy Lett., 2017, 2, 904-905 (10.1021 ...

An international team of researchers has demonstrated a technique for producing perovskite photovoltaic materials on an industrial scale, which will reduce the cost and improve the performance of mass-produced perovskite solar cells. The technique is low-cost, simple, energy-efficient, and should pave the way for creating perovskite solar cells.

Integrating perovskite photovoltaics with other systems can substantially improve their performance. This Review discusses various integrated perovskite devices for applications including tandem ...

We report a low-cost, solution-processable solar cell, based on a highly crystalline perovskite absorber with intense visible to near-infrared absorptivity, that has a power ...

ACS Journals Celebrate 10 Years of Perovskite Photovoltaics What started as a curiosity, exploring the photo-sensitizing property of a metal halide hybrid material in a liquid junction ...

Although perovskite solar cells (PSCs) are promising next generation photovoltaics, the production of PSCs might be hampered by complex and inefficient procedures. This Review outlines important ...

Over the past few years, solar cells based on metal-halide perovskite absorbers, and in particular organic-inorganic hybrid compounds, have sprung to the forefront of photovoltaic research ...

At present, the best perovskite solar cells have an ERE of 1-4%³, and photon recycling has been suggested to occur in these devices¹². ... Over the past few years, the cost of mainstream PV ...

Few minerals have experienced as radical a makeover of their image in less than two hundred years as perovskite. From an obscure accessory phase found in equally obscure silica-undersaturated rocks (<100 research papers in the first 90 years of its recorded existence), perovskite and its related phases have risen to an unprecedented level of scientific popularity ...

Some authors dated back to the early 1990 for the beginning of concerted efforts in the investigations of perovskite as solar absorber. Green et. al. have recently published an article on the series of events that lead to the current state of solid perovskite solar cell [13]. The year 2006 regarded by many as a land mark towards

achieving perovskite based solar cell when ...

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The operating temperature for solar cells ranges from 300 K to 400 K; hence, the newly fabricated perovskite solar cells must be able to tolerate high-temperature conditions. Previous research has shown that the MAPbI₃ active layer has a very low thermal conductivity [87] and also degrades at a temperature of 85 ± 176;C (K) even in an inert ...

Perovskite solar cells (PSCs) emerging as a promising photovoltaic technology with high efficiency and low manufacturing cost have attracted the attention from all over the world. Both the efficiency and stability of PSCs have increased steadily in recent years, and the research on reducing lead leakage and developing eco-friendly lead-free perovskites pushes forward ...

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