

3 days ago; Monolithic perovskite/silicon tandem solar cells have achieved promising performance. However, hole transport layers that are commonly used for the perovskite top cell suffer from defects, non ...

Tandem perovskite-silicon solar cells, in which the perovskite layer is tuned to absorb the higher-frequency end of the solar spectrum to complement absorption of the silicon cell, can surpass the power-conversion efficiency of the best single-junction silicon cells.

Nature - An independently certified power conversion efficiency of 32.5% for perovskite/silicon tandem solar cells is achieved through improved charge transfer at the amorphous indium zinc...

We constructed perovskite/silicon tandem devices on a double-textured Czochralski-based silicon heterojunction cell, which featured a mildly textured front surface and a heavily...

We fabricated monolithic perovskite-silicon tandem solar cells from silicon heterojunction bottom cells using crystalline silicon (c-Si) wafers with double-side texture to reduce the front reflection and improve light trapping in our devices (8, 16).

In perovskite/silicon tandem solar cells, the utilization of silicon heterojunction (SHJ) solar cells as bottom cells is one of the most promising concepts. Here, we present optimization strategies for the top cell processing and their integration into SHJ bottom cells based on industrial Czochralski (Cz)-Si wafers of 140 mm thickness. We show that combining the self-assembled monolayer [4 ...

A question about which type of silicon solar cell is the most suitable subcell in tandem devices emerges. Herein, three attractive silicon solar cells are summarized, including passivated-emitter rear-cell (PERC), tunnel oxide passivated contact (TOPCon), and heterojunction (HJT) cells.

Here, in this review, we will (1) first discuss the device structure and fundamental working principle of both two-terminal (2T) and four-terminal (4T) perovskite/Si tandem solar cells; (2) second, provide a brief overview of the advances of perovskite/Si tandem solar cells regarding the development of interconnection layer, perovskite active ...

Chin et al. report the uniform deposition of the perovskite top cell on the micropylamids of crystalline silicon cells to achieve high photocurrents in tandem solar cells. Two different phosphonic acids improved the perovskite crystallization process and also minimized recombination losses.

Organic-inorganic hybrid perovskites have been widely used in silicon-based tandem solar cells for their advantages of tunable bandgap, high light absorption coefficient, and high power conversion efficiency (PCE).

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Perovskite on silicon tandem solar cells

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