

Two-hole interface for solar panels

What is hole transport layer (HTL) in two-dimensional perovskite solar cells?

The hole transport layer (HTL) plays an irreplaceable role in the charge carriers' transport and interface effects in two-dimensional perovskite devices. This review starts with the structural characteristics of two-dimensional perovskite solar cells.

Can hole-transporting bilayer engineering improve power conversion efficiency in carbon-based perovskite solar cells?

In an article published in *Joule*, Tian Du et al. developed a hole-transporting bilayer engineering approach for improved power conversion efficiency in fully printed carbon-based perovskite solar cells. Importantly, this method retains the extended lifetime stability of the reference cells.

Which 2D structure enables efficient and stable perovskite solar cells?

Zhang, F. et al. Metastable Dion-Jacobson 2D structure enables efficient and stable perovskite solar cells. *Science* 375, 71-76 (2022). Tan, Y., Cheng, H., Zhao, Y., Wan, L. & Wang, Z.-S. Indolocarbazole-core linked triphenylamine as an interfacial passivation layer for perovskite solar cells. *J. Mater. Chem. A* 10, 7173-7185 (2022).

Do two-dimensional perovskite solar cells have a conflict of interest?

The authors declare no conflict of interest. Although currently in the nascent stages of research and development, two-dimensional perovskite solar cells have showcased remarkable promise as the robust and efficient solar cell technology. Ant...

One of the primary challenges in commercializing perovskite solar cells (PSCs) is achieving both high power conversion efficiency (PCE) and sufficient stability. We integrate wafer ...

In an article published in *Joule*, Tian Du et al. developed a hole-transporting bilayer engineering approach for improved power conversion efficiency in fully printed carbon-based ...

In this work, we demonstrate the successful application of two-dimensional (2D) materials, i.e., graphene and functionalized MoS₂, in perovskite solar cells (PSCs) by interface ...

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Here we demonstrate the manufacturing of large-area (0.5 m²) perovskite solar panels, each containing 40 modules whose interfaces are engineered with two-dimensional materials ...

The power conversion efficiency of thin film solar cells using organic-inorganic hybrid lead halide perovskite as an absorber has achieved over 25%. An augment of the output voltage can ...

Performance enhancement strategies for 2D heterostructure solar cells such as light-trapping technique, charge

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carrier dynamics, and interface engineering have been summarized in ...

Abstract The energy loss (Eloss) caused by inefficient charge transfer and large energy level offset at the buried interface can easily restrict the performance of p-i-n perovskite solar cells ...

Perovskite solar cells have reached a power conversion efficiency over 25%, and the engineering of the interface between the perovskite and hole transport layer (HTL) has been crucial ...

Dual-interface passivation to improve the efficiency and stability of inverted flexible perovskite solar cells by in-situ constructing 2D/3D/2D perovskite double heterojunctions

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