

# **Self-assembled solar power generation system**





## Overview

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Can self-assembled monolayers be used in organic solar cells?

In summary, we have presented the different roles of self-assembled monolayers in state-of-the-art organic solar cells. SAMs have exhibited the potential as an alternative to commonly used electron and hole transport layers such as ZnO and PEDOT:PSS for high-performing organic solar cells.

What is a 3rd generation photovoltaic?

Third-generation novel photovoltaics include dye-sensitized solar cells (DSSCs), organic solar cells (OPVs), quantum dot solar cells (QDSCs), and perovskite solar cells. Low-dimensional systems, such as 1D nanostructures, have attracted significant attention due to their unique optical and electronic properties [2, 3].

Do self-assembly monolayers manipulate power conversion processes in organic photovoltaics?

T. Hu, X. Lv, X. Cheng, L. Huang, L. Zhang and W. Zhou, et al., Self-assembly monolayers manipulate the power conversion processes in organic photovoltaics, *J. Power Sources*, 2019, 409, 66–75 CrossRef CAS.

Are organic solar cells better than Sam based solar cells?

Organic solar cells are lightweight, flexible and have a PCE of around 19–20%, and SAM-based PSCs with a PCE range of 12.60% to 26.54% outperform them on average due to better charge transport and light harvesting.



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Chemical structures of various self-assembled monolayers used as hole transport layer in organic solar cells (the highlighted chemical structures represent recently developed carbazole-based ...

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Fig. 1 (a) Schematic illustration of the energy band diagram elucidating the role of charge transport layers in a conventional donor-acceptor organic solar cell; (b) molecular structure of ...



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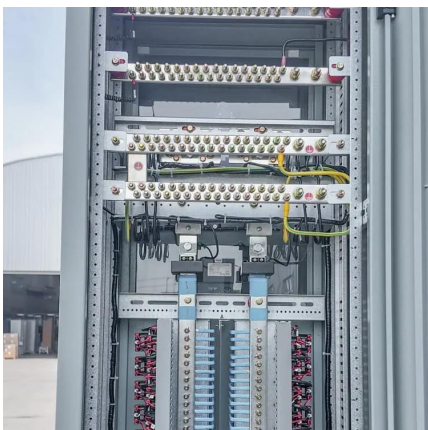
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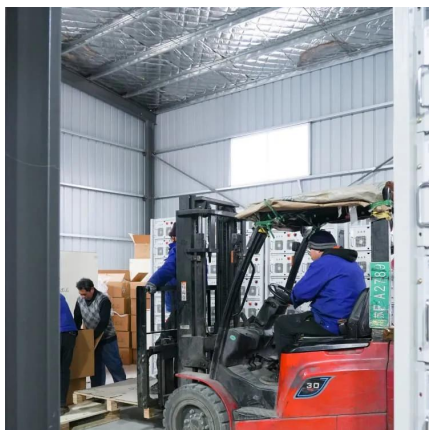


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