

**KREATYWNY ENERGY POLSKA**

# **Efficiency of self-assembled solar cells**



## Overview

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In this review, we explore the diverse roles of SAM in OSCs, highlighting their impact on charge generation, transport, and extraction, particularly in high-efficiency, non-fullerene acceptor (NFA)-based devices. The emergence of high-performing donor and acceptor materials, along with tailored interfacial layers, has enabled efficient and stable organic solar cells (OSCs) that are comparable to other state-of-the-art technologies. With power conversion efficiencies (PCEs) now exceeding 20%, further. NLR maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Access our research-cell efficiency data.

## Efficiency of self-assembled solar cells

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### Recent Advances in Self-Assembled Molecular Application in Solar Cells

With the development of various materials in perovskite solar cells, self-assembled monolayers (SAMs) have rapidly become an important factor in improving power conversion ...

### Organic Solar Cells with 20.12% Efficiency Enabled by ...

Carbazole-derived self-assembled monolayer (SAM) materials as hole transport layers are widely used in organic photovoltaics, yet the role of subtle substituent effects on interfacial structure and device ...



### Robust buried interface by cross-linkable self-assembled monolayers

Self-assembled monolayers (SAMs) have contributed substantially to enhancing the performance of perovskite solar cells. In Nature, Jen and co-workers reported a certified efficiency of ...



### Rational design strategy of co-self-

## assembled monolayers for high

A carefully designed co-assembly strategy significantly improved the uniformity and density of the interface, minimizing leakage current and mitigating device degradation, which enabled ...



## Enhancing efficiency and stability in perovskite solar cells

Perovskite solar cells (PVSCs) show remarkable potential due to their high-power conversion efficiencies and scalability. However, challenges related to stability and long-term performance ...

## Toughened self-assembled monolayers for durable perovskite solar cells

Here we employ a cross-linkable co-SAM to enhance the conformational stability of hole-selective SAMs against external stresses, while suppressing the formation of defects and voids in ...



## Best Research-Cell Efficiency Chart , Photovoltaic Research , NLR

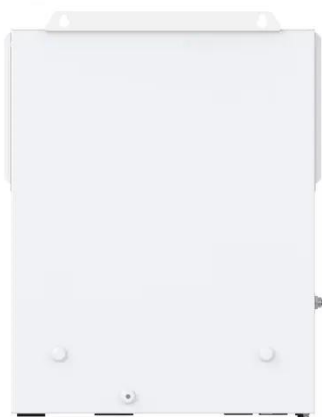
Best Research-Cell Efficiency Chart NLR maintains a chart of the highest confirmed conversion efficiencies for



research cells for a range of photovoltaic technologies, plotted from 1976 ...

### Thiophene-Bridged Conjugated Self-Assembled Hole Transport ...

A new thiophene-bridged conjugated self-assembled hole transport monolayer was designed and synthesized, which exhibit a power conversion efficiency of 25.53% in perovskite solar cells.



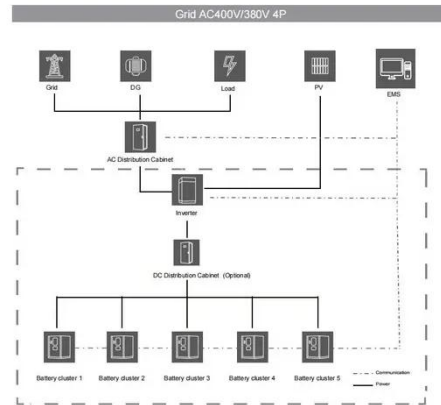
### Anti-aggregation self-assembled monolayers enable high

This study demonstrates that suppressing interfacial molecular aggregation enables highly efficient and scalable perovskite solar cells.

### Advances in self-assembled monolayer-engineered organic solar cells

In this review, we explore the diverse roles of SAM in OSCs, highlighting their impact on charge generation, transport,

and extraction, particularly in high-efficiency, non-fullerene acceptor ...



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