

Can thermal annealing improve organic solar cell performance?

Thermal annealing is one of the most commonly applied post-processing techniques to improve organic solar cell (OSC) performance. In this work, organic solar cells based on PBDB-T:IT-2F bulk heterojunctions were subjected to thermal annealing at different stages of the fabrication process to investigate their impact on the photovoltaic parameters.

Does thermal annealing improve power conversion efficiency?

According to our findings, both a single-step postprocessing thermal annealing procedure and a two-step thermal annealing procedure improved the device fill factor (FF) and, thus, the power conversion efficiency (PCE), with the latter leading to a more substantial improvement.

What is microwave annealing?

The microwave annealing of semiconductor devices has not been extensively researched and is rarely utilized in industry, yet it has the potential to significantly reduce the time and cost associated with large-volume semiconductor processing, such as the various heating and annealing processes required in the manufacture of photovoltaic modules.

What is the annealing process?

The complete annealing procedure occurred in a tubular vacuum heating furnace, introducing argon gas for protective purposes. After the annealing process, the samples were allowed to cool down to room temperature for further activity experiments and characterizations.

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Discover how solar climatic test chambers simulate UV, heat, and humidity to replicate real sunlight--enabling accurate, accelerated durability testing for critical industries.

This study presents the effect of rapid thermal annealing (RTA) at different annealing temperatures and times on the characteristics of solar cells fabricated by Nd:YAG laser doping of p ...

Developing a rapid, precise, and efficient annealing technique is crucial to overcoming the challenges associated with high-throughput fabrication. We present a nanosecond laser ...

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Tandem solar cells present an efficient way to boost solar energy conversion, potentially advancing performance and widespread photovoltaic technology adoption. This study employed a ...

However, excessively high annealing temperatures may unfavorably lead to the formation of PbI<sub>2</sub>, negatively

impacting photovoltaic performance. Additionally, Sema Kurtaran [19] examined ...

Photovoltaic (PV) technology, as a crucial source of clean energy, can effectively mitigate the impact of climate change caused by fossil fuel-based power generation. However, improper use ...

We hope this study certainly be helpful for the researchers in the field of photovoltaic technology. In this study, we investigated the effect of annealing temperature on the structural, ...

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