Environmental impact assessment of perovskite photovoltaic panels

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Purpose This article provides a comprehensive sustainability assessment and impact analysis of introducing perovskite solar cells into the energy sector by 2050.

Evaluating the long-term demand for critical materials and the environmental impacts of perovskite PV is essential for guiding the transformation of the PV industry toward a circular, perovskite solar ...

To effectively pinpoint the layers or processes that most significantly impact environmental performance and to develop targeted measures for reducing these impacts, a ...

Therefore, the main objective of this research was to assess the environmental impact of the construction materials of monocrystalline and perovskite photovoltaic power plants toward their ...

A comparison of the possible range of environmental impact indicators for perovskite solar modules with existing mature PV technologies is also presented to highlight the future prospects of ...

We perform holistic life cycle assessments on the energy payback time, carbon footprint, and environmental impact scores for perovskite-silicon and perovskite-perovskite tandems ...

Evaluating the environmental sustainability of perovskite solar cells (PSC) as an emerging functional material (FunMat) requires upscaling scenarios to assess environmental impacts ...

The environmental impacts of the perovskite silicon tandem PV panel and the single crystalline silicon PV panel were quantified with the environmental footprint (EF) impact assessment method (Fazio et ...

This study highlights unique opportunities of perovskite PVs for holistic recycling and paves the way for a sustainable perovskite solar economy.

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