

Biomass conversion through thermochemical processes provides practical hydrogen yields at pressures of 0.1-0.5 MPa and temperatures of 773-1173 K. Future research should focus on ...

Abstract This review explores the advancements in solar technologies, encompassing production methods, storage systems, and their integration with renewable energy solutions. It ...

The solar-to-electricity conversion efficiency of this CPV module is as high as 31%. The researchers also reduced energy loss by improving the connection between the CPV modules and ...

In a wider perspective, this work provided an efficient strategy, combining solar energy with electric energy induced by organic flexible piezoelectric PVDF, to remarkably improve activity of ...

Abstract Solar energy-powered electrolytic water splitting represents a promising avenue for hydrogen production. However, current technologies for solar-driven hydrogen generation ...

The choice of the operating point should depend on the maximum overall conversion efficiency to yield the highest hydrogen output at a given solar irradiation and minimized investment ...

Efficient utilization of full-spectrum solar photons is significant for improving the efficiency of solar energy conversion and thus alleviating energy shortage. In this work, a novel concentrated ...

In this study, we present a three-dimension polymeric photocatalyst achieving a solar-to-H₂O₂ conversion efficiency of 3.6% under ambient conditions, including real water, open air, and ...

A bifacial solar PV (bPV) system that incorporates cool roof technology (high-albedo roof coatings) is the primary focus of this research since it has the potential to significantly improve ...

Additionally, tandem or Z-scheme photocatalytic devices, which link multiple photocatalysts with optimal bandgap alignments, utilize a broader solar spectrum and reduce charge ...

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Photothermal catalytic hydrogen production is regarded as an effective conversion of solar energy into clean energy carrier. However, the uncontrollable in-situ photo-thermal effect would ...



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Although current hydrogen production efficiencies remain below the standards required for large-scale applications, a reported solar-to-hydrogen efficiency of up to 9 % opens new avenues ...

The world's energy crisis and environmental problems could be addressed via solar fuel (hydrogen) generation. Thus, the development of non-toxic, inexpensive and high-efficiency ...

We present a record-high solar-to-hydrogen conversion efficiency (STH) for monolithic all-silicon multi-junction solar devices. The device is based on an interdigitated back-contact silicon ...

Solar hydrogen production has attracted widespread attention due to its cleanliness, safety, and potential climate mitigation effects. This is the first paper that reviews various solar ...



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