

Title: New materials for hydrogen photovoltaic and wind energy storage

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We examine various classes of nanomaterials, with a focus on metal oxides, carbon-based materials, as well as hybrid nanostructures, along with different functionalization strategies and their impact on ...

Published as part of ACS Materials Letters virtual special issue "Materials for Water Splitting". As the world embraces the imperative of significant carbon emission reductions, the ...

This review provides a comprehensive analysis of solar cell technologies and the fundamentals of energy storage systems, with a particular focus on the convergence of materials ...

Three main electrolysis technologies, based on low-temperature alkaline, low-temperature proton-exchange membrane, and high-temperature solid-oxide electrolyte materials, ...

Harnessing sunlight to store hydrogen offers a cleaner, safer, and more efficient alternative to conventional storage methods. This review examines recent advances in materials and reactor ...

In solar cells, new generations of materials such as perovskites and organic photovoltaics are achieving higher efficiencies with lower production costs. These materials exhibit superior light absorption and ...

The review also highlights innovative hydrogen storage technologies, such as metal hydrides, metal-organic frameworks, and liquid organic hydrogen carriers, which address the ...

New research in battery disassembly, hydrogen storage, and perovskite engineering reveals scalable, low-impact solutions for future electrification and energy resilience.

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