

Hydrogen production methods and the materials employed in the FCs challenge meeting energy demand with this technology. The main focus of this article is on the green FCs in ...

This is the first paper that reviews various solar hydrogen production methods including solar electrolysis, solar chemical, and solar biohydrogen and their nexus with various energy storage ...

This review article is emerged out of the multi-national, multi-institutional collaborative research with hydrogen energy experts. The recent developments in artificial intelligence, machine, ...

Hydrogen energy has become one of the most ideal energy sources due to zero pollution, but the difficulty of storage and transportation greatly limits the development of hydrogen ...

To store thermal energy, sensible and latent heat storage materials are widely used. Latent heat TES systems using phase change material (PCM) are useful because of their ability to charge and ...

Through a selection of relevant literature, this article briefly summarizes technology trends in liquid hydrogen storage tanks and their respective applications. A slightly greater emphasis ...

Hydrogen is emerging as a promising energy carrier in the global quest for sustainable and clean energy sources. This chapter provides a comprehensive overview of hydrogen energy ...

Solar still systems often include organic phase change materials (PCMs) because of their remarkable thermophysical characteristics. Numerous innovative PCMs have been developed ...

Leninsky prosp. 31, 119991 Moscow, Russian Federation The review addresses the prospects of global hydrogen energy development. Particular attention is given to the design of materials for sustainable ...

As a clean energy carrier, hydrogen is poised to be a key energy source for the future. Recent advancements in green hydrogen production technology have brought the hydrogen economy ...

These materials can store hydrogen generated from solar energy, addressing future energy needs safely and efficiently. This review consolidates existing research and outlines future developments in ...

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

# Hydrogen energy materials and solar container materials

HydroGEN is a consortium of five U.S. Department of Energy (DOE) national laboratories that will address advanced water splitting materials challenges by making unique, world-class national lab ...

Along with a brief overview of literature data on energy storage technologies utilising hydrogen and metal hydrides, this article presents results of the related R& D activities carried out by ...

Sorption-based materials offer high storage efficiency and safety advantages compared to compressed and liquid hydrogen storage, but their application for large-scale energy storage ...

It summarizes various materials used for efficient hydrogen generation through water splitting and solid storage, and discusses current challenges in hydrogen generation and storage.

This work aims to make significant contributions to the field of hydrogen energy by addressing the challenges of hydrogen production and storage through the innovative use of ...

To achieve these goals, idea-sharing among the scientific community is indispensable. We extend our heartfelt gratitude to all contributors to this collection and hope their contributions will ...

Therefore, the development of green and renewable hydrogen production technologies is crucial for the sustainable advancement of the hydrogen economy. Photocatalytic water splitting ...

Objectives: Introducing effective hydrogen production and storage techniques: This review offers a comprehensive exploration of various techniques for hydrogen production and ...



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