

2 ???· Carbon Capture, Utilization and Storage; Electrochemical Energy Storage; Energy Efficiency; Energy Storage; Fuel Cells, Electrolyzers and Membrane Reactors; Hydrogen ...

Hydrogen is emerging as a highly promising energy carrier due to its high energy density and potential for sustainable energy applications. Extensive research and development efforts are ...

Most energy storage and utilization methods involve multiple energy conversion steps, leading to low energy utilization efficiencies. ... The study pointed out that the option of ...

This Topical Collection aims to spotlight recent advances in hydrogen-related fields, including production methods, storage technologies, distribution infrastructure, utilization, integration ...

Hydrogen can play a role in a circular economy by facilitating energy storage, supporting intermittent renewable sources, and enabling the production of synthetic fuels and chemicals. The circular economy concept ...

Hydrogen storage technologies play a crucial role in the effective utilization of hydrogen as an energy carrier by providing safe and reliable means for preserving hydrogen ...

In the utilization site, the energy from ammonia can be harvested directly as fuel or initially decomposed to hydrogen for many options of hydrogen utilization. This review describes several potential technologies, in ...

This work provides an overview of hydrogen economy as a green and sustainable energy system for the foreseeable future, hydrogen production methods, hydrogen storage systems and mechanisms including ...

However, its energy-to-volume ratio, exemplified by liquid hydrogen's 8.5 MJ.L⁻¹ versus gasoline's 32.6 MJ.L⁻¹, presents a challenge, requiring a larger volume for equivalent ...

Hydrogen energy technology is pivotal to China's strategy for achieving carbon neutrality by 2060. A detailed report [1] outlined the development of China's hydrogen energy ...

Energy efficiency: One of the primary challenges in hydrogen energy systems is ensuring energy efficiency throughout the entire life cycle. The production, storage, and ...

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