

Ammonia energy storage chen she

Is a hydrogen-ammonia combined energy storage system effective?

Efficient use of these resources has become a critical research focus. Here we propose an intelligent hydrogen-ammonia combined energy storage system. To maximize net present value (NPV), deep reinforcement learning (DRL) is employed for the energy management strategy, dynamically adjusting the priority between hydrogen and ammonia.

Is ammonia a good energy carrier?

Ammonia is a promising energy carrier for long-term and large-scale energy storage due to its high hydrogen content, high energy density, facile storage/transportation, and zero-carbon emission. Therefore, the synthesis, storage, and utilization of ammonia are key components for the implementation of ammonia-mediated energy system.

What are the steps in energy storage and utilization via ammonia?

Hydrogen production, ammonia synthesis and ammonia utilization are the key steps in energy storage and utilization via ammonia. The hydrogen production employ carbon resources and water as feedstocks. The Group VIII metals, such as Ru, Rh, Pt, Ir, Ni, and Co, are active for reforming of carbon feedstocks.

Is ammonia a good carrier for green hydrogen?

Similarly, ammonia (NH₃), due to its stable physical characteristics and cost-effective storage capabilities, makes it an excellent carrier for green hydrogen. Consequently, numerous researchers are dedicated to integrating hydrogen storage and ammonia storage into renewable energy systems.

Can ammonia be used for energy storage?

And provided some perspectives for the future research on ammonia for energy storage. "In order to achieve green ammonia production and high-efficiency ammonia utilization, we should develop novel ammonia synthesis catalysts and methods, as well as new technologies for the conversion of ammonia to H₂, electricity, or power," said Prof. CHEN.

Can ammonia be used for hydrogen storage?

Ammonia is a promising medium for hydrogen storage. It has well-established storage and transportation. Moreover, the notion of green ammonia from renewable energy is an emerging topic. It may open significant markets, and provide a pathway to decarbonize a variety of applications reliant on fossil fuels.

Abstract: To achieve carbon neutrality, hydrogen and ammonia are considered promising energy carriers for renewable energy. Efficient use of these resources has become a critical research ...

Abstract Ammonia thermochemical energy storage is based on a reversible reaction and realizes energy storage and utilization by absorbing and releasing heat. Under different energy flow ...

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