

This review focuses on the latest progress of HEOs in electrochemical energy storage and conversion including electrochemical energy storage devices, which can be ...

The increasingly severe energy crisis and environmental issues have raised higher requirements for grid-scale energy storage system. Rechargeable batt...

In comparison, the volumetric energy densities of methane and gasoline are 0.04 MJ/L and 32 MJ/L, respectively. High-energy-density hydrogen-storage technology is essential ...

Combined with lithium and beyond lithium ions, these chemically diverse nanoscale building blocks are available for creating energy ...

The service longevity of 321 steels as heat exchangers in concentrated solar power systems highly depends on their anti-corrosion performance against liquefied Al-Si ...

It completes the real-time simulation of energy storage battery pack charging and discharging, realizes the control goal of energy storage power distribution, verifies the accuracy ...

Scope ESST considers the following types of articles for publication: \* Full Length Article: Full length articles (4000-7000 words) are original, high-quality, research papers presenting novel ...

Moreover, the application of LLMs has extended to natural science research, demonstrating promising potential for improving research efficiency. Thus, LLMs are expected ...

The Science and Technology of Al-Ga Alloys as a Material for Energy Storage, Transport and Splitting Water  
Jerry M. Woodall, Jeffrey Ziebarth, Charles R. Allen

The use of electrochemical energy storage and conversion technology is a primary method for addressing energy and environmental problems. The key scientific and ...

Titanium iron (TiFe) alloy is a room-temperature hydrogen-storage material, and it absorbs hydrogen via a two-step process to form TiFeH and then TiFeH<sub>2</sub>. The effect of V addition in ...

Renewable energy integration and decarbonization of world energy systems are made possible by the use of energy storage technologies. As a result, it ...

Lead acid battery is the most preferential option for energy storage application because of its mature manufacturing technology, reliability and high safety. Nonetheless, a ...

Shining WANG, Qiu FANG, Yejing LI, Xuefeng WANG Energy Storage Science and Technology DOI: 10.19799/j.cnki.2095-4239.2025.0648 Accepted: 18 August 2025 Select State of Health ...

Highlights o Recent advances in solid-state hydrogen storage alloys (e.g. V/Mg-based and high-entropy alloys) are comprehensively reviewed. o Progress in crystalline-amorphous composite ...

The advantages of traditional alloy design lie in its simplicity and practicality, allowing for the rapid creation of alloys that meet specific needs [5]. However, as science and ...

Large-scale, long-duration energy storage technologies are vital for achieving the dual-carbon goals. Among them, Liquid Air Energy Storage (LAES) has ...

Herein, we provide a comprehensive review of this new class of materials in the energy field. We begin with discussions on the latest reports on the ...

Hydrogen energy is expected to become the "ideal fuel" in the era of decarbonization; therefore, the discovery, development, and modification of high-performance ...

Supercapacitors, also known as ultracapacitors or electrochemical capacitors, represent an emerging energy storage technology with the potential to complement or potentially supplant ...

High-entropy alloys (HEAs), also known as "multi-principal element alloys", expand the library of advanced materials and demonstrate potential applications in energy ...

With the rapid advancement of contemporary industrial technology, there is an increasing demand for high-performance alloys. Traditional alloys typically consist of one or ...

As a new member in high-entropy materials family developed after high-entropy alloys, high-entropy compounds (HECs) are of particular interest owing to the combination of ...

The task consists of seven working groups, working on porous materials, intermetallic alloys and magnesium-based hydrides as energy storage materials, complex and ...

From mobile devices to the power grid, the needs for high-energy density or high-power density energy storage materials continue to ...

Lithium metal is considered to be the most ideal anode because of its highest energy density, but conventional

lithium metal-liquid electrolyte battery systems suffer from low Coulombic ...

The review provides a comprehensive analysis of recent advances in the most appealing solid-state hydrogen storage alloys (HSAs), with a focus on their de-/hydrogenation properties and ...

It possesses the merits of light-weight, chemically active, recyclable, high hydrogen capacity, and good thermal conductivity, etc. These features make it an ideal ...

Home Science Advances Vol. 8, No. 15 Carbon-free and binder-free Li-Al alloy anode enabling an all-solid-state Li-S battery with high energy ...

1College of Materials Science and Engineering, National Engineering Research Center for Magnesium Alloys, National Innovation Center for Industry-Education Integration of Energy ...

Abstract: Aluminum silicon alloy phase change materials have good density, thermal conductivity, and thermal stability. There is great research value and application potential in energy storage ...

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