Hydrogen energy alloy hydrogen storage

The development of alloys with substantial hydrogen storage capacities is a potential solution to the demand for hydrogen storage in a future hydrogen-based energy ...

Since the first two methods of hydrogen storage involve high pressure and low temperature, energy consumption is greatly increased, and safety is low [[12], [13], [14]]. In ...

An efficient and safe hydrogen storage method is one of the important links for the large-scale development of hydrogen in the future. Because of its low price and simple design, Ti-based ...

We underlined different essential aspects for the future development of HEAs as hydrogen storage materials. This review article discusses and describes the perspectives of ...

The application of hydrogen energy in real life is closely related to the efficient storage technology of hydrogen. As a typical representative of AB-type hydrogen storage alloys, TiFe-based alloys ...

At present, the development of new energy storage materials and systems is concerned with environmental protection and achieving the target carbon neutrality [1, 2]. Rare ...

Subsequently, an in-depth analysis is conducted to examine the relationship between crystal structures and hydrogen storage properties specific to BCC-structured alloys, ...

Recently, a new class of alloys, namely, high-entropy alloys (HEAs), started to be investigated for hydrogen storage as they can form metal hydrides. Considering that the ...

The selection process minimized reliance on time-consuming experimental methods. Hydrogen is a clean energy carrier and has potential applications in energy storage, ...

Development of new materials with high hydrogen storage capacity and reversible hydrogen sorption performances under mild conditions has very high value in both ...

Hydrogen has huge potential for utilization as an alternative fuel if it can be stored safely and efficiently. One option is to use the proper metals or alloys to store hydrogen as a ...

Ti-Mn-based hydrogen storage alloys are considered to be one of the most promising hydrogen storage alloys for proton exchange membrane fuel cell applications, ...

An extensive exploration of the chemical space was conducted to design and identify promising

multicomponent cubic alloys with appropriate enthalpy of reaction for ...

Crystal structure and hydrogen storage properties of a novel equiatomic TiZrNbCrFe high-entropy alloy (HEA) were studied. The selected alloy, which ha...

Given the benefits of low price, fast hydrogen storage and release rate, and long cycle life of Ti-based hydrogen storage alloy, it is considered to be one of the most likely hydrogen storage ...

This paper reviews the methods to improve the hydrogen storage performance of TiFe-based alloys: (1) High energy ball milling leads to the formation of microcrystalline, ...

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