Special Issue

Heterogeneous Catalysts for Electrochemical Hydrogen Storage

Message from the Guest Editor

In recent years, the development of hydrogen storage materials and their applications in renewable energy systems have developed rapidly. Reversible chemical hydrogen storage and release based on various carbon-based hydrogen carriers has received extensive attention. The practical application of the reversibility of catalytic hydrogenation–dehydrogenation and its reaction conditions in the reaction system provide a reference for the rational design and efficient utilization of the catalyst, and finally enable the industrial application of this technology in the field of chemical hydrogen storage. In the future, research on the electrochemical hydrogen storage system of multiphase catalysts will focus on the development of new chemical hydrogen storage media with a high hydrogen content, low cost, non-flammability, low toxicity, long-term stability, easy operation and transport, and compatibility with existing energy infrastructure. It will also focus on the rational design of catalysts, and ameliorate the harsh reaction conditions in the dehydrogenation step in order to realize the long-term stable operation of the reaction system.

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