Special Issue

Concepts for Improvement of Hydrogen Storage Hydride Materials

Message from the Guest Editor

Application of hydride solid state materials is key to solving the problem of hydrogen storage, particularly in the development of small-sized energy devices based on LT PEM FC. To increase the competitiveness of this technology, it is necessary to develop compact hydrogen generators to meet the requirements of light weight, small size, and high power density. Thus, safe hydrogen storage materials with a high hydrogen capacity and improved kinetics of hydrogen generation are required. To solve this problem, different synthetic approaches are applied, such as development of active catalysts and modifiers as components of hydride materials, using nanoscale approaches and nanoconfinements, ball milling, electrospinning, etc. This allows designing hydrogen generation systems via processes of thermolysis or hydrolysis. Theoretical studies and modeling of such materials and processes help to reveal the most important factors determining hydrogen mobility and to predict hydrogen generation by varying the parameters.

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