

Abstract

Hydrogen is considered as one of the promising alternative fuels to replace oil, but its storage remains to be a significant challenge. The main hydrogen storage technologies can be broadly classified as physical, chemical, and hybrid methods. The physical methods rely on compression and liquefaction of hydrogen, and currently compressed hydrogen storage is the most mature technology that is commercially available. The chemical methods utilize materials to store hydrogen, and hydrogen can be extracted by reversible (on-board regenerable) or irreversible (off-board regenerable) chemical reactions depending on the type of material. The hybrid methods take advantage of both physical and chemical storage methods. The most prominent hybrid method is the cryo-adsorption hydrogen storage which utilizes physisorption-based porous materials. In this chapter, all of the main hydrogen storage technologies are discussed in detail along with their limitations and advantages.

Citation

DE Demirocak, Hydrogen Storage Technologies, in Nanostructured Materials for

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