

## Hydrides: A compact and efficient hydrogen storage method

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### Abstract

The use of hydrogen as an energy vector has been under discussion for a long time. At present, however, due to the twin challenges of air pollution and climate change, hydrogen is considered more and more as a viable alternative to fossil fuels, as a complement to energy storage in batteries and together with renewable energy generation.

Storing hydrogen is, however, a challenge in itself, since even under pressures of 700 bar or liquefied at cryogenic temperatures, it still takes up a volume several times greater than traditional liquid fuels. An alternative is the use of metal or complex hydrides, which are solid compounds or mixtures capable of storing between 1.2 and 11 % hydrogen in weight. In the best cases, the materials can store double the amount of hydrogen in the same space as liquid hydrogen.

In this Keynote Lecture, the principles, types and applications of hydrides for hydrogen storage and other applications will be shown.

### Biography

José M Bellosta von Colbe completed his PhD in 2006 from the Ruhr University Bochum. He is a senior scientist at the Helmholtz Zentrum Geesthacht, Germany, after completing a postdoc at the Institute for Energy Research in Kjeller, Norway. He has over 30 publications that have been cited over 200 times, his publication H-index is 10 and he has been serving as a reviewer for several journals in the field of hydrogen storage in hydrides, as well as expert in Tasks 30 and 32 of the International Energy Agency Hydrogen Implementation Agreement (IEA – HIA).

### Publications

1. Materials for hydrogen-based energy storage – Past, recent progress and future outlook
2. Energies cover for V13, I11 I am pleased to inform you that your issue cover and its short story are on line now (<https://www.mdpi.com/1996-1073/13/11>). Kind regards, Veakie Jia Marketing Assistant
3. Designing an AB 2 -Type Alloy (TiZr-CrMnMo) for the Hybrid Hydrogen Storage Concept
4. Effect of the Process Parameters on the Energy Transfer during the Synthesis of the 2LiBH<sub>4</sub>-MgH<sub>2</sub> Reactive Hydride Composite for Hydrogen Storage
5. Magnesium based materials for hydrogen based energy storage: Past, present and future
6. Application of hydrides in hydrogen storage and compression: Achievements, outlook and perspectives
7. Scale-up of milling in a 100 L device for processing of TiFeMn alloy for hydrogen storage applications: Procedure and characterization
8. Applications of Hydrides in hydrogen storage and compression: Achievements, outlook and perspectives
9. Engineering Solutions in Scale-Up and Tank Design for Metal Hydrides

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