Hydrogen Europe:
European Hydrogen & Fuel cell Project Database

Project BOR4STORE

Fast, reliable and cost effective boron hydride based high capacity solid state hydrogen storage materials

BOR4STORE proposes an integrated, multidisciplinary approach for the development and testing of novel, optimised and cost-efficient boron hydride based H2 storage materials with superior performance (capacity more than 8 wt.% and 80 kg H2/m^3) for specific fuel cell applications. Building on the results of past and ongoing EC funded projects on H2 storage, BOR4STORE aspires to tackle the S&T challenges that still hinder the practical use of the extremely attractive boron hydrides. The technical objectives of the project reflect an innovative and carefully designed strategy involving (a) new methods for the synthesis and modification of stable and unstable boron hydrides, as well as their combinations resulting in Reactive Hydride Composites and eutectic mixtures, (b) systematic and rationalised investigation of the effect of special catalysts and additives, and (c) adaptation of scaffolding concepts, in an attempt to use all possible ways for understanding and tailoring the key aspects of boron hydrides H2 storage performance (storage capacity, reaction pathways and enthalpies, hydrogenation/dehydrogenation kinetics, cycling stability). The most promising material(s), to be indicated by rigorous a downselection processes, will be used for the development of a prototype laboratory H2 storage system that will be integrated and tested in connection with a 1 kW SOFC (representative for fuel cell applications e.g. for stationary power supply). Special attention will be given, practically for the first time, to significant cost reduction by pursuing cost efficient material synthesis and processing methods (target material price <50 EUR /kg) but also by investigating the level of tolerable impurities of the new materials (target system price 500 EUR /kg of stored H2).

Project Information

Type of project : Research
Timing : 01/04/2012 > 30/09/2015
Project website: http://bor4store.hzg.de/
Project Budget : 4.070.711 €

Funding

European Union through FCH JU: **Grant agreement 303428** - **CORDIS link**

Project partners

Coordinator :

HZG - Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research GmbH

Partners :

Abengoa Innovación
IFE - Institutt for energiteknikk
University of Turin
Empa - Eidgenössische Materialprüfungs- und Forschungsanstalt
NCSR Demokritos - INRASTES
ZOZ GMBH
KATCHEM SPOL SRO
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Sub project(s)

Sub project 1

Country: Germany
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Sub project categories
Research

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