



# 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 H<sub>2</sub> storage materials with superior performance (capacity more than 8 wt.% and 80 kg H<sub>2</sub>/m<sup>3</sup>) for specific fuel cell applications. Building on the results of past and ongoing EC funded projects on H<sub>2</sub> 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 H<sub>2</sub> 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 H<sub>2</sub> 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 H<sub>2</sub>).

## Project Information

**Type of project :** Research

**Timing :** 01/04/2012 > 30/09/2015

**Project website:** <http://bor4store.hzg.de/>

**Project Budget :** 4.070.711 €

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## Funding

European Union through FCH JU: Grant agreement 303428 - [CORDIS link](#)

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## Project partners

**Coordinator :**

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

**Partners :**

**Abengoa Innovación**

**IFE - Institut for energiteknikk**

**University of Turin**

**Empa - Eidgenössische Materialprüfungs- und Forschungsanstalt**

**NCSR Demokritos - INRASTES**

**ZOZ GMBH**

**KATCHEM SPOL SRO**

**AARHUS UNIVERSITET**

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**Sub project(s)**

**Sub project 1**

**Country:** Germany

**Address:**

Max-Planck-Strasse 1 21502 GEESTHACHT

**Sub project categories**

Research

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Project Id: 922

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