

Development of mass-production technology of Ti-based AB₂ metal hydride with high capacity

In this research, the effective H₂ storage technologies for alloy design and mass-production will be developed by using titanium based materials.

- Development of Ti-based hydrogen storage material with high capacity for room temperature
 - Characterization of alloy design factors for Ti-based AB₂ metal hydride with high capacity
 - Manufacturing technology of optimized Ti-based AB₂ metal hydride
 - Evaluation of hydrogenation properties of Ti-based AB₂ metal hydride
 - Characterization of Ti-based composite hydride with high capacity
- Development of mass-production technology for Ti-based AB₂ hydride
 - Characterization of manufacturing factors for mass-production
 - Achievement of reliability for mass-production of Ti-based AB₂ hydride with high capacity

Goal : Development of Ti based AB₂ metal hydride with high capacity for room temperature application



- ▶ Hydrogen storage material for room temperature application
 - max. H₂ storage capacity : 2.1 wt.%
 - rev. H₂ storage capacity : 1.8 wt.%
 - operating temperature : < 50 °C
 - plateau pressure : < 50 bar
 - Durability : 300 cycles

Objective

- ▶ **1st year**
 - Development of based technology for composite powder synthesis
 - Development of composite metallic hydride by SHS(Self high temperature propagation synthesis) (1)
- ▶ **2nd year**
 - Technology for high storage capacity by nano and composite technology
 - Development of composite metallic hydride by SHS (2)
- ▶ **3rd year**
 - Development of Ti-based AB₂ metal hydride with high H₂ capacity
 - Research of large scale manufacturing technology
- ▶ **4th year**
 - Development of Ti-based AB₂ metal hydride with high H₂ capacity by feed back and process optimization
 - Technology for mass-production of Ti-based AB₂ metal hydride with reversible high H₂ capacity

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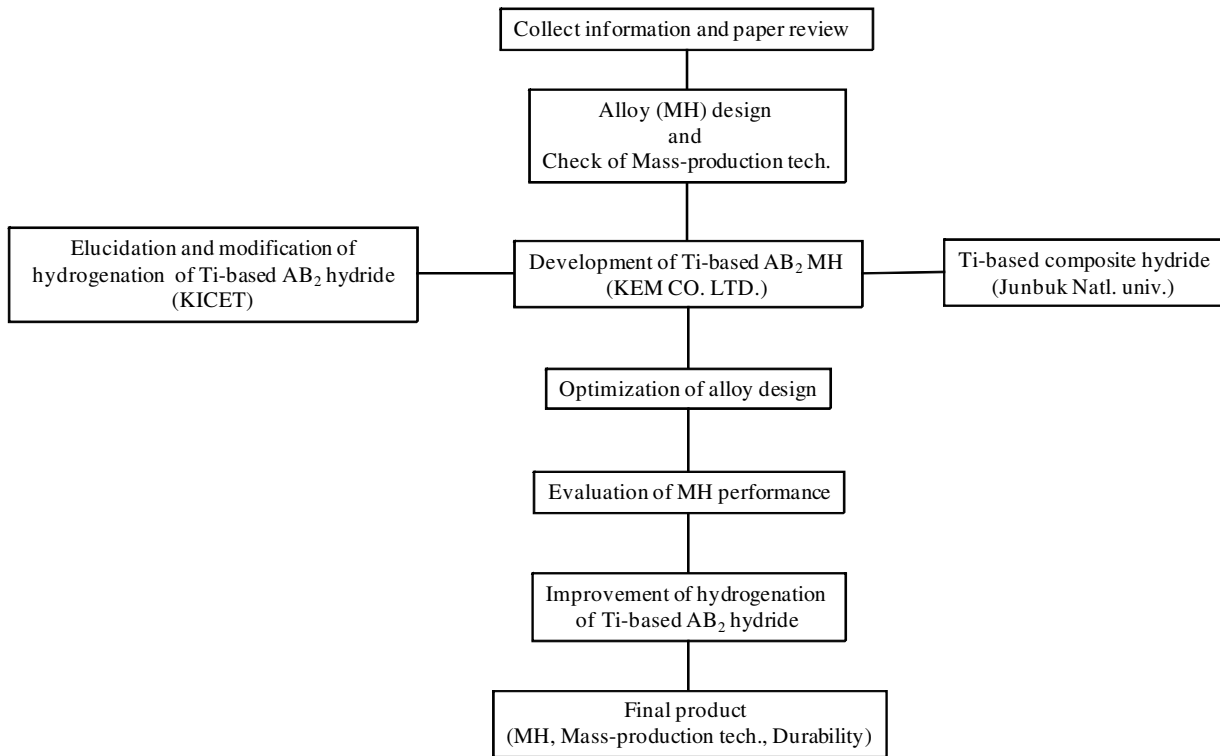
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Strategy



Outcomes & benefits

- Establishment of fundamental technology of Ti-based AB₂ hydride with high storage capacity
- Establishment of domestic fuel cell and H₂ supplying market
- Achievement of global competitiveness on effective H₂ storage technology
- Invigoration of industries related to H₂ storage materials and fuel cell BOP