

B2-3

Development of Evaluation Techniques for Solid-State Hydrogen Storage/Release Materials

In this research, various solid-state hydrogen storage materials are evaluated using reliable measurement equipments and these measurement and evaluation procedures, and equipments are standardized.

- Upgrading and analyses of hydrogen storage/discharge evaluation equipments
- Standardization of measurement and evaluation equipments
- Database establishment of various solid-state hydrogen storage materials

Goal

Establishment and utilization of reliable evaluation equipments for solid-state hydrogen storage materials

- Optimization of evaluation equipments and characterization of various hydrogen storage materials
 - Volumetric equipment : temperature range; $-196\text{ }^{\circ}\text{C} \sim 650\text{ }^{\circ}\text{C}$, pressure range; $10^{-5}\text{ Torr} \sim 150\text{ atm}$
 - Gravimetric equipment : temperature range; $-50\text{ }^{\circ}\text{C} \sim 450\text{ }^{\circ}\text{C}$, pressure range; $10^{-5}\text{ Torr} \sim 120\text{ atm}$
- Standardization of measurement/evaluation methods and their equipments (volumetric equipment, gravimetric equipment)
- Database establishment of various solid-state hydrogen storage materials

Objective

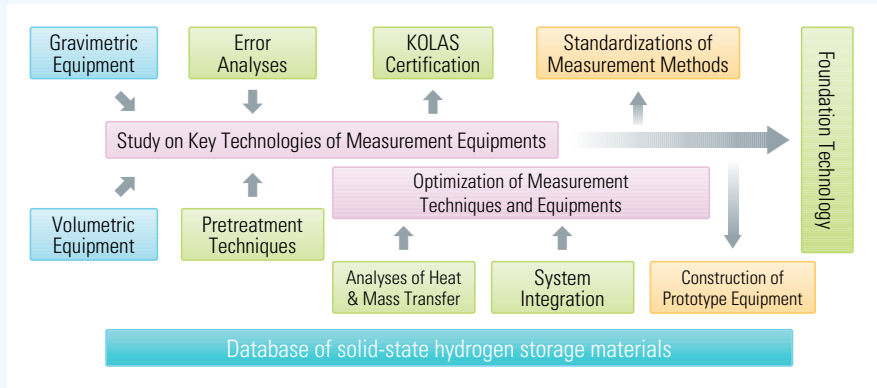
- 1st year
 - Error analyses of measurement equipments
 - Database establishment of solid-state hydrogen storage materials
- 2nd year
 - Upgrading of measurement and evaluation equipments
 - Database establishment of solid-state hydrogen storage materials
 - Literature survey for the standardization of measurement equipments
- 3rd year
 - Evaluation of instruments and parts of measurement equipments and their control programming
 - Database establishment of solid-state hydrogen storage materials
- 4th year
 - Development of a prototype for volumetric measurement system
 - Standardization of measurement/evaluation methods and their equipments (volumetric equipment, gravimetric equipment)
 - Database establishment of solid-state hydrogen storage materials



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Strategy



Outcomes & benefits

- Provision of optimal operation and troubleshooting guidelines of evaluation equipments
- Database establishment depending on the characteristics of solid-state storage material
- Contribution to the screening and selection of better hydrogen storage materials
- Provision of standardized evaluation methods for solid-state hydrogen storage materials
- Commercialization of volumetric evaluation equipment
- Provision of basic data for the optimized hydrogen storage/discharge system

Publications
(2nd stage)

Patent		Theses							Proceedings		
		domestic			foreign			total sum			
domestic	foreign	SCI	Non SCI	sum	SCI	Non SCI	sum		domestic	foreign	sum
1/1					1		1	1	4	2	6

■ Publications

1. Wonchul Cho, Sangsup Han, Chusik Park, "Improvement of Accuracy for Determination of Hydrogen Storage of Sieverts Apparatus", Trans. of the Korean Hydrogen and New Energy Society, 19, 1, 64, 2008
2. Wonchul Cho, et al., "More accurate determinations of hydrogen storage and controlling methods of Sieverts apparatus", 10-2008-0006770, 2008



Volumetric Measurement Equipment



Gravimetric Measurement Equipment