

## Hydrogen Absorption Property of Pd-Doped Porous Materials

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In electrochemical loading of Pd with deuterium, it has been known that attaining a D/Pd value larger than 0.88 is necessary for triggering excess heat effects [1]. It has been reported by Arata and Zhang that the heat arising from D-D nuclear fusion reaction in solid is observed simply by pressurizing nano-Pd/ZrO<sub>2</sub> system with deuterium gas [2]. It seems that nano-scale Pd particles absorb more hydrogen than Pd bulk and use of nano-Pd is advantageous to induce anomalous heat effect in gas loading experiments.

We have reported that the isotope effect for heat generation upon pressurization with hydrogen isotope gases was clearly observed in a reproducible manner for both Pd-doped zeolite with a pore size of ~1.1nm and Pd-doped FSM (Folded Sheet Mesoporous silica [3]) with a pore size of 1.5 ~ 2 nm [4].

In the present study, we have measured hydrogen absorption capacity for Pd-doped zeolite and Pd-doped FSM using the volumetric method. The results are compared with those of non-doped materials. The measurements were conducted repeatedly in order to separate the apparent capacity arising from the reducing reaction of oxidized Pd.

The results of hydrogen absorption capacity of Pd-doped porous materials will be discussed based on the contribution from the hydrogen adsorption capacity of the matrices.

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