

### **Synthesis of Nano-Meter Sized Core/Shell Bimetallic Clusters and Their Hydrogen Uptake Capacity**

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#### Abstract

In the proposed project the hydrogen solubility in different metallic clusters with discrete sizes should be investigated. Ideal candidates to be researched are surfactant stabilized clusters, which are tension-free stabilized and have a narrow size distribution.

In this work the preparation of bimetallic of Mg/Pd - core/shell nano-particles will be performed by salt reduction-electrochemical combine technique which considered simple and cheap technique. As well as the nano-particle sized can be controlled by varying the preparation's parameters (size selective method).

These bimetallic clusters are expected to have a large capacity to store hydrogen atoms. Because both of magnesium and palladium metals have a very high ability to uptake hydrogen atoms and forming hydride metals.

The influence effecting at the hydrogen storage on these bimetallic clusters and how we can able to promote the adsorption/desorption processes will be investigated isothermally throw volumetric solubility measurements.