

Hydrogen Storage in Carbonized Coconut Meat (Kernel)

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Abstract : Carbons are being widely investigated as hydrogen storage material owing to their light weight, fast hydrogen absorption kinetics and low cost. However, these materials suffer from low hydrogen storage capacity at room temperature. The aim of the present study is to synthesize carbon based material which shows moderate hydrogen storage at room temperature. For this purpose, hydrogenation characteristics of natural precursor coconut kernel is studied in this work. The hydrogen storage measurement reveals that the as-synthesized materials have good hydrogen adsorption and desorption capacity with fast kinetics. The synthesized material absorbs 8 wt.% of hydrogen at liquid nitrogen temperature and 2.3 wt.% at room temperature. This could be due to the presence of certain elements (KCl, Mg, Ca) which are confirmed by TEM.

Keywords : coconut kernel, carbonization, hydrogenation, KCl, Mg, Ca

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