Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Measurements of Hydrogen Spillover in Platinum-Doped Superactivated Carbon NICHOLAS STADIE, CHANNING AHN, BRENT FULTZ, California Institute of Technology — Hydrogen uptake was measured of platinum doped superactivated carbon at 296 K where hydrogen spillover was expected to occur. High pressure adsorption measurements using a Sieverts apparatus did not show an increase in gravimetric storage capacity over the unmodified superactivated carbon. Measurements of small samples (0.2 g) over long equilibration times, consistent with reported procedure, showed significant scatter and were not well above instrument background. In larger samples (3.2 g) the hydrogen uptake was significantly above background but did not show enhancement due to spillover; total uptake scaled with the available surface area of the superactivated carbon. Any hydrogen spillover sorption was thus below the detection limit of standard volumetric gas adsorption measurements. Due to the additional mass of the catalyst nanoparticles and decreased surface area in the platinum doped system, the net effect of spillover sorption is detrimental for gravimetric density of hydrogen.

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Date submitted: 03 Nov 2009 Electronic form version 1.4