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Adsorption Enthalpies of Hydrogen on Chemically Enhanced Carbon Nanospaces[1] ANDREW GILLESPIE, ELMAR DOHNKE, JOSEPH SCHAEPERKOETTER, DAVID STALLA, PETER PFEIFER, University of Missouri, Columbia MO — Chemical functionalization of carbon nanopore spaces has been shown to significantly increase the differential enthalpy of adsorption of hydrogen (ca. 9kJ/mol). This improved surface interaction corresponds to an increased density of the adsorbed film. Functionalized carbon samples have been produced through KOH activation, deposition of decaborane, and high temperature annealing. Hydrogen sorption measurements have shown significant improvements to stored film densities and binding energies. In this talk, a systematic study of the effect that boron concentration has on the samples' pore structures, binding energies, surface excess concentrations, and volumetric storage capacities is presented.

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