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Measured Enthalpies of Adsorption of Boron-Doped Activated Carbons[1] M. BECKNER, J. ROMANOS, E. DOHNKE, A. SINGH, J. SCHAEPERKOETTER, D. STALLA, J. BURRESS, S. JALISATGI, G. SUPPES, M.F. HAWTHORNE, P. YU, C. WEXLER, P. PFEIFER, University of Missouri — There is significant interest in the properties of boron-doped activated carbons for their potential to improve hydrogen storage.[2] Boron-doped activated carbons have been produced using a process involving the pyrolysis of decaborane ($B_{10}H_{14}$) and subsequent high-temperature annealing. In this talk, we will present a systematic study of the effect of different boron doping processes on the samples' structure, hydrogen sorption, and surface chemistry. Initial room temperature experiments show a 20% increase in the hydrogen excess adsorption per surface area compared to the undoped material. Experimental enthalpies of adsorption will be presented for comparison to theoretical predictions for boron-doped carbon materials. Additionally, results from a modified version of the doping process will be presented.

[1]This material is based on work supported by the US Department of Energy under Award No. DE-FG36-08GO18142.
[2]Multiply Surface-Functionalized Nanoporous Carbon for Vehicular Hydrogen Storage, P. Pfeifer et al. DOE Hydrogen Program 2011 Annual Progress Report, IV.C.3, 444-449 (2011).

☒ Prefer Oral Session
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