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High Capacity Hydrogen Storage on Nanoporous Biocarbon[1] JACOB BURRESS, MIKAEL WOOD, MICHAEL GORDON, Univ. of Missouri-Columbia, PHILLIP PARILLA, NREL, MICHAEL BENHAM, Hiden Isochema, CARLOS WEXLER, FRED HAWTHORNE, PETER PFEIFER, Univ. of Missouri-Columbia — The Alliance for Collaborative Research in Alternative Fuel Technology (http://all-craft.missouri.edu) has been optimizing nanoporous biocarbon for high capacity hydrogen storage. The hydrogen storage was measured gravimetrically and volumetrically (Sievert's apparatus). These measurements have been validated by NREL and Hiden Isochema. Sample S-33/k, our current best performer, stores 73-91 g H_2/kg carbon at 77 K and 47 bar, and 1.0-1.6 g H_2/kg carbon at 293 K and 47 bar. Hydrogen isotherms run by Hiden Isochema have given experimental binding energies of 8.8 kJ/mol compared to the binding energy of graphite of 5 kJ/mol. Results from a novel boron doping technique will also be presented. The benefits and validity of using boron-doping on carbon will also be discussed.

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