Abstract Submitted
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Ultrananopores in Carbons by Boron-neutron Capture and Their Effect on Hydrogen Storage[1] J. ROMANOS, D. ROBERTSON, M. BECKNER, M. KRAUS, B. KUCHTA, L. FIRLEJ, P. PFEIFER, Dept of Physics, U Missouri — The Alliance for Collaborative Research in Alternative Fuel Technology (ALL-CRAFT) has been optimizing high surface area activated carbon nanospaces for high capacity hydrogen storage. Boron doped samples have been prepared by vapor deposition of decaborane. Neutron irradiation of Boron doped activated carbon was done at the University of Missouri Research Reactor (MURR). Ultrananopores created by alpha particle fission tracks from Boron-neutron capture alter the surface and the adsorption properties of activated Carbons. A detailed theoretical model of the creation and the structure of defects on graphene sheets was developed. BET surface areas, porosity, and pores size distributions of modified activated carbons were measured using sub-critical nitrogen isotherms. Hydrogen adsorption isotherms of irradiated samples were indicative of record fraction of high binding energies and record fraction of sub-nm pores compared to their unirradiated parent samples.

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