Record Methane Storage in Monolithic and Powdered Activated Carbons YUCHOONG SOO, E. NORDWALD, B. HESTER, J. ROMANOS, B. ISAACSON, D. STALLA, D. MOORE, M. KRAUS, J. BURRESS, E. DOHNKE, P. PFEIFER, Dept of Physics, U Missouri — The Alliance for Collaborative Research in Alternative Fuel Technology (ALL-CRAFT) has developed activated carbons from corn cob as adsorbent materials for methane gas storage by physisorption at low pressures. KOH activated carbons were compressed into carbon monolith using chemical binders. High pressure methane isotherms up to 250 bar at room temperature on monolithic and powdered activated carbons were measured gravimetrically and volumetrically. Record methane storage capacities of 250 g CH4/kg carbon and 130 g CH4/liter carbon at 35 bar and 293 K have been achieved. BET surface area, porosity, and pore size distributions were measured from sub-critical nitrogen isotherms. Pore entrances were characterized using scanning electron microscopy (SEM) and transmission electron microscopy (TEM). A prototype adsorbed natural gas (ANG) tank, loaded with carbon monoliths, was tested in Kansas City.

YuChoong Soo
Dept of Physics, U Missouri

Date submitted: 14 Dec 2009

Electronic form version 1.4