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High Density Methane Storage in Nanoporous Carbon TYLER RASH, ELMAR DOHNKE, YUCHOONG SOO, BRETT MALAND, Univeristy of Missouri, PLAMEN DOYNOV, MRIGlobal, YUYI LIN, PETER PFEIFER, Univeristy of Missouri, ALL-CRAFT TEAM, MRIGLOBAL COLLABORATION — Development of low-pressure, high-capacity adsorbent based storage technology for natural gas (NG) as fuel for advanced transportation (flat-panel tank for NG vehicles) is necessary in order to address the temperature, pressure, weight, and volume constraints present in conventional storage methods (CNG & LNG.) Subcritical nitrogen adsorption experiments show that our nanoporous carbon hosts extended narrow channels which generate a high surface area and strong Van der Waals forces capable of increasing the density of NG into a high-density fluid. This improvement in storage density over compressed natural gas without an adsorbent occurs at ambient temperature and pressures ranging from 0-260 bar (3600 psi.) The temperature, pressure, and storage capacity of a 40 L flat-panel adsorbed NG tank filled with 20 kg of nanoporous carbon will be featured.

Tyler Rash
Univeristy of Missouri

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