

Abstract Submitted
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Investigation of Morphology and Hydrogen Adsorption Capacity of Disordered Carbons LILIN HE, YURI MELNICHENKO, Neutron Sciences Division, Oak Ridge National Laboratory, NIDIA GALLEGO, CRISTIAN CONTESCU, Materials Science and Technologies Division, Oak Ridge National Laboratory — We have applied small angle neutron scattering (SANS) technique to study the morphologies and hydrogen adsorption capabilities of wood-based ultramicroporous carbon and poly(furfuryl alcohol) derived carbon. The Polydispersed Spherical model and chord length analysis of the scattering profiles were performed to obtain morphological parameters such as average pore size and pore size distribution of the dry carbons, which agreed reasonably well with the independent gas sorption measurements. The hydrogen physisorbed in these two carbons at room temperature and moderate pressures was investigated by In-situ SANS measurements. The experimental data analyzed using a modified Kalliat model for decoupling scattering contributions from pores with different sizes indicates that the molecular hydrogen condenses preferentially in narrow micropores at all measured pressures, which supports the theoretical prediction by quantum mechanical and thermodynamical models.

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