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Anomalous Characteristics of a PVDC Carbon Adsorbant¹

CARLOS WEXLER, MATTHEW BECKNER, JIMMY ROMANOS, TYLER RASH, PETER PFEIFER, RAINA OLSEN, University of Missouri Columbia — Nanoporous carbon produced by the pyrolysis of poly(vinylidene chloride-co-vinyl chloride) shows remarkably high adsorption of molecular hydrogen despite its relatively low surface area. In particular, its room temperature volumetric storage is significantly higher than other carbons with surface areas four times higher. In this talk we will present experimental hydrogen adsorption isotherms (and low-temperature isosteric heats of adsorption), subcritical nitrogen adsorption, real space images (TEM), and inelastic neutron scattering. In all cases, the sample characteristics are quite unusual. Whereas the sample under consideration is quite unusual in its high hydrogen sorption capacity, other samples in the literature also show similar unusual characteristics, suggesting the presence of phenomena not fully understood by standard adsorption theory.

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