

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Quantization of Adsorbed Hydrogen for Inhomogeneous Materials Characterization using Inelastic Neutron Scattering¹ R. J. OLSEN, Univ. of Missouri, L. FIRLEJ, Univ. Montpellier 2, B. KUČHTA, Univ. de Provence, P. PFIEFER, H. TAUB, C. WEXLER, Univ. of Missouri — The motion of adsorbed hydrogen is heavily quantized, especially at cryogenic temperatures. Previous theoretical work has taken a mostly classical approach. Using a slit-shaped pore model, we show that quantizing the transverse degree of freedom has a significant effect on adsorption isotherms. The model is also used to create inelastic neutron scattering spectra, which are highly variable for different size slits. When compared with previous experimental work in the literature, the results suggest that while the slit-shaped pore model works well for some materials, it is inadequate for activated carbon. Planned experimental work to probe the structure of inhomogeneous materials is discussed.

¹Support: U.S. D.O.E. (DE-FG02-07ER46411), U.S. D.O.E., B.E.S (DE-AC02-06CH11357).

Raina Olsen
Univ. of Missouri

Date submitted: 20 Nov 2009

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