

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

The Stationary States of Adsorbed Hydrogen RAINA OLSEN, EERE Postdoctoral Fellow, Oak Ridge National Laboratory, HASKELL TAUB, CARLOS WEXLER, University of Missouri Columbia — In order to investigate the impact of quantum effects on hydrogen adsorption, it is important to understand the stationary states occupied by adsorbed hydrogen molecules. We present experimental inelastic neutron scattering spectra which provide evidence for significant mixing of degrees of freedom which are normally decoupled in free space. Results suggest that simultaneous treatment of translational and rotational degrees of freedom and consideration of the potential corrugation are necessary for improved theoretical understanding of the problem. Numerical calculations of the full five dimensional single body potential are used to understand the origins of the experimentally observed stationary states. In addition, we briefly discuss how our results may be used to understand the shape of hydrogen adsorption isotherms.

Raina Olsen
EERE Postdoctoral Fellow, Oak Ridge National Laboratory

Date submitted: 10 Nov 2011

Electronic form version 1.4