

Abstract Submitted
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Volumetric adsorption isotherms of hydrogen on exfoliated graphite¹ OSCAR VILCHES, HAN YE, ALEX PODSCHWIDT, University of Washington — We report volumetric adsorption isotherm measurements of molecular hydrogen on a good quality exfoliated graphite foam substrate (H_2/gr) at temperatures above 20K performed with the goal of understanding the initial stages of adsorption on this two-dimensional (2d) system at temperatures well above the known phase transitions of the monolayer H_2/gr . We obtain the isosteric heat of adsorption of H_2/gr as a function of coverage. On the very low coverage region below 10% of a monolayer we are currently working towards obtaining (1) a measurement of the binding energy of non-interacting H_2 on graphite, (2) the highest coverage at which heterogeneities in the substrate produce deviations from a linear dependence of the equilibrium 3d pressure vs. coverage (Henry's law), and (3) the 2d van der Waals coefficients of the weakly interacting 2d gas of H_2 molecules. We compare our results to the ones obtained with similar measurements using carbon nanotube bundles as the substrate.

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