

Abstract Submitted
for the NWS14 Meeting of
The American Physical Society

Low-Density Measurements of Gas Adsorption on Carbon Nanotubes¹ BORIS DZYUBENKO, DENISE SCHMITZ, HAO-CHUN LEE, OSCAR E. VILCHES, DAVID H. COBDEN, Department of Physics, University of Washington — We have studied the adsorption of noble gases on suspended individual single-walled carbon nanotubes in the limit of low density (coverage). The coverage, determined from the shift of the mechanical resonance frequency of the nanotube due to mass loading is sensitive to about 30 atoms adsorbed on the entire nanotube. Due to the high homogeneity of the nanotube substrate and the sensitivity of the technique we are able to observe Henry's law, in which the coverage is proportional to the gas pressure. In this limit the adsorption isotherm is determined by single-atom effects, allowing unprecedentedly accurate $\pm 2\%$ determination of the single-particle binding energies of Ar and Kr to a nanotube.

¹Supported by NSF DMR 1206208.

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Date submitted: 21 Mar 2014

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