

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Adsorption of Ar on individual carbon nanotubes, graphene, and graphite BORIS DZYUBENKO, JOSHUA KAHN, OSCAR VILCHES, DAVID COBDEN, Department of Physics, University of Washington — We compare and contrast results of adsorption measurements of Ar on single-walled carbon nanotubes, graphene, and graphite. Adsorption isotherms on individual suspended nanotubes were obtained using both the mechanical resonance frequency shift (sensitive to mass adsorption) and the electrical conductance. Isotherms on graphene mounted on hexagonal boron nitride were obtained using only the conductance. New volumetric adsorption isotherms on bulk exfoliated graphite were also obtained, paying special attention to the very low coverage region (less than 2% of a monolayer). This allowed us to compare the degree of heterogeneity on the three substrate types, the binding energies, and the van der Waals 2D parameters. Research supported by NSF DMR 1206208.

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Date submitted: 14 Nov 2014

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