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**Adsorbed monolayers on suspended single-walled carbon nanotubes** ZENGHUI WANG, JIANG WEI, ROBERT DORMAIER, OSCAR VILCHES, DAVID COBDEN, University of Washington — A monolayer of adsorbates on a single-walled carbon nanotube presents the possibility of extending earlier studies of two-dimensional monolayer systems on graphite to the quasi-one-dimensional regime, by effectively imposing cylindrical boundary conditions. The monolayer can be detected either via its effect on the nanotube's conductance or by using the nanotube itself as a vibrating microbalance. Many adsorbates are known to affect the conductance, through a variety of mechanisms. Amongst these are O<sub>2</sub> and the noble gases Xe and Kr, whose phases and ordering on 2D graphite are well known. Our experiments so far have indicated that the presence of an O<sub>2</sub> layer on a nanotube close to liquid nitrogen temperatures can be detected using a threshold shift. We are now fabricating individual suspended nanotube devices with the initial aim of studying cylindrical commensurability effects on the phases of noble gases using the microbalance technique.

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