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Low coverage Neon adsorption on HiPCoTM nanotube bundles¹
SUBRAMANIAN RAMACHANDRAN, OSCAR VILCHES, University of Washington, Dept of Physics, Seattle — We present heat capacity measurements of Ne adsorbed on single-walled closed-end carbon nanotube bundles (HiPCoTM) between 2 and 20 K. Limited adsorption isotherms measurements for $17\text{K} < T < 28\text{K}$ allow us to estimate the isosteric heat of adsorption for these films. Particular emphasis is on the results at very low coverage, between 0.02 monolayer to 0.3 monolayer where Ne may form single-line and three-lines of atoms in imperfect adsorption sites and grooves. The specific heat versus temperature at 0.02 – 0.04 monolayer coverage shows qualitative agreement with a model of adsorption of Ne on grooves by Kostov et.al (PRB 68, 245403, (2003)). For 0.06 monolayer and higher coverages, however, the measured low temperature specific heat vs temperature has a T^2 dependence, which yields 2D Debye temperatures in the range of 44 to 47 K.

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