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Thermodynamic studies of one and two dimensional Neon adsorbed on single walled carbon nanotube bundles[1] SUBRAMANIAN RAMACHANDRAN, GREGORY DASH, OSCAR VILCHES, University of Washington — In this study we report heat capacity measurements between 2 and 20 K for films of Neon adsorbed on single-walled closed end carbon nanotube bundles. The heat capacity of the adsorbed layer is measured from $1/60^{th}$ (2 scc) of a monolayer to $\sim$ 1.2 monolayer (155 scc). The heat capacity is used to identify if the phases are solid, liquid or gaseous. The heat capacity at a fixed coverage (less than 12 scc) as a function of temperature reveals some agreement with the values predicted from a 1D solid model by Kostov et.al **(**Phys. Rev. B **68,** 245403 (2003)**)** between 2 and 4 K. For coverage higher than 24 scc, the heat capacity at low temperature shows a clear T^2 dependence. The calculated 2D Debye Temperatures are in the range of 50-60K and are in good agreement with what has been measured by G.B. Huff and J. G. Dash **(**JLTP **24,** 1 / 2, 1976**)** for Neon adsorbed on Grafoil. The specific heat values are greater than 2 for temperatures greater than $\sim$ 14 K. There is no evidence of first order phase transition due to melting.

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