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CO_2 adsorption on carbon nanotubes ALDO MIGONE, BRICE RUSSELL, SHREE BANJARA, Department of Physics Southern Illinois University, Carbondale — We measured adsorption isotherms of CO2 on a 0.1106 g sample of purified HiPco SWNTs at six temperatures between 147 and 207 K. Plots of the amount of CO2 adsorbed as a function of the logarithm of the equilibrium pressure do not reveal any resolvable substeps in the adsorption data. We measured the effective monolayer capacity of the sample using the point B method. We found a specific surface area of 380 m2/g, significantly lower than that determined from a N2 isotherm measured on the same sample. We determined the isosteric heat of adsorption as a function of the amount of CO2 loaded onto the SWNTs. The values for the isosteric heat are lower than the latent heat of sublimation for most sorbent loading values below the saturated vapor pressure. Only for sorbent loadings in the lowest 5 % (relative to the sorbent loading present when the saturated vapor pressure is reached) does the isosteric heat exceed the bulk sublimation value. Our results will be compared with others reported in the literature, as well as with results obtained for CO2 on related sorbents. This work was supported by the NSF through grant DMR-1006428.

Aldo Migone
Department of Physics Southern Illinois University, Carbondale

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