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Evidence of a possible phase transition in ethane adsorbed on purified HiPco Nanotubes[1] MURAT BULUT, DINESH RAWAT, ALDO MIGONE, Southern Illinois University Carbondale — We conducted adsorption measurements for ethane on purified HiPco single-walled carbon nanotubes for coverages in the first layer. In order to obtain the binding energy of ethane, we measured three low-coverage isotherms for temperatures between 220 K and 240 K. The value that we determined, 308 meV, is 1.7 times larger than that obtained for the binding energy of ethane on planar graphite. We measured eight full isotherms between 103 K and 170 K. Evidence of a phase transition in the adsorbed films was investigated by studying temperature dependence of the height of the isotherm substep corresponding to the adsorption of ethane molecules on the external surface of the SWNTs. There is a significant difference in the size of the substeps measured below and above 110 K. This difference suggests that a possible structural phase transition is occurring in the adsorbed film.

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