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Adsorption Kinetics of Alkanes on Purified HiPco Nanotubes DINESH RAWAT, MURAT BULUT, ALDO MIGONE, Southern illinois University, Carbondale, IL-62901, USA — We present results for the adsorption kinetics of methane, ethane and butane on purified HiPco SWNTs. We studied the adsorption kinetics by monitoring the evolution of the gas pressure with time from the instant at which a dose of adsorbate is added to the sample, until the moment at which equilibrium is reached. The waiting times for comparable coverages increase with increasing alkane chain length. For methane and ethane, the equilibration time decreases with increasing fractional coverage. For the butane, on the other hand, the kinetic measurements display a reverse trend: the equilibration times increase with increasing fractional coverage. We speculate that this observed increase in the waiting time is due to a possible reorientation of adsorbed molecules in the film. The observed differences in adsorption kinetics suggest the possibility of using adsorption as a means to achieve the separation of gaseous alkane mixtures.

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