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Dependence of adsorption kinetics on the geometry of substrate[1] DINESH RAWAT, SAIKAT TALAPATRA, VAIVA KRUNGLEVICIUTE, ALDO MIGONE, Department of Physics, Southern Illinois University at Carbondale, IL-62901, USA, DEPARTMENT OF PHYSICS, SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE, IL-62901, USA TEAM — We report on the results of an adsorption kinetics study of linear alkanes on planar graphite and on aligned multiwalled carbon nanotubes. The kinetics study was performed by monitoring the equilibration times for methane, butane and pentane adsorbed on these two substrates as a function of fractional coverage. For methane, the time required to reach equilibration was found to decrease as the surface coverage increased. However, for butane and pentane, a systematic increase in the equilibration time with increasing fractional coverage was observed. Although similar results were found for both substrates, the waiting times for longer alkanes adsorbed on multiwalled carbon nanotubes, were found to be longer than the ones obtained for planar graphite. We speculate that the observed increase in the equilibration time with coverage for the longer alkanes is due to the rearrangement of the adsorbed molecules. Results of the current study will also be compared to our previous study of adsorption kinetics of linear alkanes on single-walled carbon nanotubes.

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