Abstract Submitted
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Alkanes adsorbed on carbon nanotubes: specific surface areas and isothermal adsorption kinetics[1] DINESH RAWAT, TOYOHISA FURUHASHI, ALDO MIGONE, Department of Physics Southern Illinois University, JOSE ANTONIO RAMIREZ-PASTOR, FEDERICO ROMA, JOSE LUIS RICCARDO, Departamento de Fisica Universidad Nacional de San Luis, Argentina — We measured the specific surface area of single-wall carbon nanotube substrates using methane, ethane, propane and butane adsorption isotherms. The monolayer capacity for each gas was obtained from the BET equation. We found that the specific surface areas measured decrease as the length of the alkanes used to measure them increases. This trend may be explained by the fact that an increasing fraction of the substrate's surface should be left uncovered as longer adsorbates are used. We also studied the isothermal adsorption kinetics of these alkanes. We monitored the evolution of the gas pressure with time, from the instant at which the gas is added to the sample cell up until the time at which equilibrium is reached. Equilibration times for comparable fractional coverages increase with increasing alkane length. While the equilibration times decrease with increasing fractional coverage for methane and ethane, they increase with increasing coverage for propane and butane (this increase may be due to reorientation of the adsorbed molecules in the film).

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