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Experimental study of Ar-CH₄ gas mixture adsorption over exfoliated graphite: kinetic reversal of adsorption selectivity¹ MATIAS RAFTI, Instituto de Investigaciones Fisicoquímicas Teóricas y Aplicadas, (INIFTA-CONICET), Universidad Nacional de La Plata, VAIVA KRUNGLEVICIUTE², ALDO MIGONE, Southern Illinois University Carbondale — Adsorption is one of the processes used for achieving the separation of gas mixtures. In this poster we present the results of a combined gas composition and adsorption isotherm study performed to investigate how a mixture of two gases with different binding energies adsorbs on exfoliated graphite at temperatures between 70 and 90 K. In our experiments we observed a very interesting phenomenon: adsorption overshoot. This is a phenomenon that occurs in the initial stages of adsorption when the lower binding energy species adsorbs onto the substrate in a greater proportion than the stronger binding species. As time elapses and adsorption equilibrium is approached, the stronger species starts replacing the weaker species in the adsorbed phase. In principle, this phenomenon would allow the possibility of achieving gas mixture separation by controlling the adsorption time. Our results will be compared with those from recent numerical simulations that predicted similar behavior on a one dimensional uniform substrate.

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