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The Equilibrium Partitioning of SAW Chains into Pores with Heterogeneous Surfaces JESSE ZIEBARTH, YONGMEI WANG, Department of Chemistry, The University of Memphis, Memphis, TN 38152 — The partitioning of a self-avoiding walk polymer chain into a square channel made up by four heterogeneous surfaces has been examined using lattice Monte Carlo simulations in order to better understand the elution pattern observed in liquid chromatography of polymers. The surfaces of the square channel contain 10% attractive sites and 90% non-interacting sites; this composition was chosen to model polar polymers interacting with free silanols which remain on the surface of end-capped silica C_{18} column packings. The attractive interaction, ε_w, between the chains and the attractive surface sites was varied to find the critical condition, the point where the partition coefficient, K, varied least with chain length for the system. For a 20 x 20 square channel, the critical condition was found at $\beta\varepsilon_w$ = -1.47, which also coincides with the critical adsorption point of the chains above a single planar surface with the same hetegenouse surface composition. The "S"-turn elution behavior, where K decreases with increasing polymer chain length up to some chain length, but, then turns and increases with the increasing chain length, was observed before the critical condition point.

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