

Abstract Submitted
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Collapse transition of a chain in the bulk and next to adsorbing surfaces¹ I.A. BITSANIS, A.N. RISSANOU², S.H. ANASTASIADIS, FORTH-IESL — We performed lattice MC simulations of single, flexible, self-avoiding chains in bulk solution*, or adsorbed onto a surface, under poor solvent conditions. Our simulations spanned a wide range of chain lengths ($N=20-10000$) and cohesive energies. The chain length dependence of the chain size in poor solvents was characterized by a wide plateau of almost null growth. This plateau was related with the development of the incipient constant density core. The “volume approximation” regime and genuine power law dependence ($1/3$) was not reached even for the longest chains and poorest solvents studied. Sufficiently long chains became more but not fully spherical and underwent a 2^{nd} order phase transition. Conformations of the adsorbed chains onto attractive surfaces are not controlled by the bulk Θ -temperature, but by a new temperature Θ' which depends strongly on the interactions with the surface. The adsorption-desorption transition width is determined by the N -dependence of the bulk radius of gyration, for every solvent quality. In poor solvents and strongly attractive surfaces, the coil-to-globule transition turns into a coil to “pancake” transition. * Rissanou *et al. J. Polymer Sci. :Part B : Polymer Phys.*, **44**, p.3651 (2006)

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