Polymer adsorption in an attractive sphere

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We analyze the structural behavior of a single polymer chain inside an attractive sphere. Our model is composed of a coarse-grained polymer and an attractive sphere potential. By means of extensive multicanonical Monte Carlo simulations it is shown that the system exhibits a rich phase diagram in the adsorption strength-temperature ($\epsilon - T$) plane ranging from highly ordered, compact to extended, random coil structures and from desorbed to partially or even completely adsorbed conformations. These findings are identified with different energetic and structural observables and compared to the related phase diagram for a polymer adsorbing to a plane, attractive substrate obtained previously.

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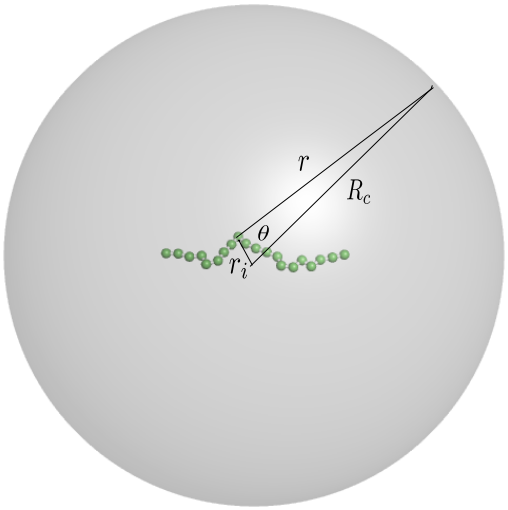

Polymer chain with $N = 20$ monomers circulating freely inside an attractive sphere of radius $R_c = 20$.