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Adsorption of polymers on colloid particles[1] DADONG YAN, SHUANG YANG, CHARLES C. HAN, Institute of Chemistry, Chinese Academy of Science, AN-CHANG SHI, Department of Physics and Astronomy, McMaster University, Canada — The adsorption of homopolymers on spherical particles with a strong attractive potential has been studied within the self-consistent field theory. The particles are immersed in concentrated polymer solutions and the structure of the adsorbed polymer layer has been examined as a function of the particle size, focusing on the average loop and tail length at different bulk concentrations and solvent qualities. The scaling relationship between the average tail/loop length and the degree of polymerization has also been investigated. It is found that the average loop length is insensitive to the particle size, while the average tail length depends strongly on the particle size. In particular, tails become longer for smaller particles or larger surface curvatures. It is argued that this size effect may provide a mechanism for the excess entanglements induced by adding nanoparticles to polymer solutions.

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