

Abstract Submitted
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Adsorption of annealed branched polymers on curved surfaces

JEF WAGNER, Lawrence University, GONCA ERDEMCI-TAN DOGAN, ROYA ZANDI, University of California Riverside — Annealed branched polymers play important roles in many biological and industrial systems, notable among them single stranded RNA (ssRNA) that in solution takes on a branched secondary structure. Using a mean field theory, we both perturbatively and numerically examine the adsorption of annealed branched polymers on surfaces of several different geometries in a good solvent. Independent of the geometry of the wall, we observe that as branching density increases, surface tension decreases. However, we find a coupling between the branching density and curvature in that a further lowering of surface tension occurs when the wall curves towards the polymer, but the amount of lowering of surface tension decreases when the wall curves away from the polymer. This work was inspired by the idea of using functionalized gold nano-particles to bind RNA for gene delivery. Understanding the mechanisms involved with the adsorption of annealed branched polymers onto different surfaces will play a critical role in many biomedical technologies.

Jef Wagner
Lawrence University

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