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Brownian dynamics simulations of tethered polymers on curved surfaces MARGARET LINAK, MARTIN KENWARD, KEVIN D. DORFMAN, Department of Chemical Engineering and Material Science, University of Minnesota — Surface tethered polymers are an important component in many physical systems, including coating applications, microfluidic devices, drug delivery vehicles and molecular targets in DNA microarrays. The recent renewed interest in low-density tethered polymers (i.e., below the characteristic surface density of a polymer brush) is partially attributed to their applicability in the latter circumstances. We present a study of an isolated polymer chain tethered to a curved, impenetrable surface, where the radius of curvature is varied from highly convex, through flat, to highly concave. Utilizing Brownian dynamics simulations, we examine the equilibrium properties of the polymer as a function of its stiffness and molecular size, as well as, the degree (and sign) of the surface curvature. Our results for curved surfaces have potential implications in a number of microfluidic and biological systems.

Margaret Linak
Department of Chemical Engineering and Material Science, University of Minnesota

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