

Abstract Submitted
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Spontaneous asymmetry in coated spherical nanoparticles in solution and at liquid-vapor interfaces J. MATTHEW D. LANE, GARY S. GREEST, Sandia National Laboratories — Nanoparticles in solution are often stabilized with functional coatings to prevent aggregation. We'll present recent simulation results showing that small spherical nanoparticles produce highly asymmetric coating arrangements, when coated with simple polymer chains. These coatings are not symmetric even when extremely uniform grafting arrangements and full coverages are employed. I will also discuss the geometric properties which dictate the coating shape. When particles are placed in an anisotropic environment, such as the liquid/vapor interface, the asymmetric coatings are amplified and oriented by the surface. Particle shape and its responsive behavior is seen to strongly influence interactions. Implications and examples of controlled self-assembly will be presented.

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