Abstract Submitted
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Nanoparticle interfacial assembly in liquid crystal droplets[1] MOHAMMAD RAHIMI, TYLER ROBERTS, JULIO ARMAS-PEREZ, Institute for Molecular Engineering, University of Chicago, Chicago, Illinois 60637, USA, XIAOGUANG WANG, EMRE BUKUSOGLU, NICHOLAS L. ABBOTT, Department of Chemical Engineering, University of Wisconsin - Madison, Wisconsin 53706, USA, JUAN J. DE PABLO, Institute for Molecular Engineering, University of Chicago, Chicago, Illinois 60637, USA — Controlled assembly of nanoparticles at liquid crystal interfaces could lead to easily manufacturable building blocks for assembly of materials with tunable mechanical, optical, and electronic properties. Past work has examined nanoparticle assembly at planar liquid crystal interfaces. In this work we show that nanoparticle assembly on curved interfaces is drastically different, and arises for conditions under which assembly is too weak to occur on planar interfaces. We also demonstrate that LC-mediated nanoparticle interactions are strong, are remarkably sensitive to surface anchoring, and lead to hexagonal arrangements that do not arise in bulk systems. All these elements form the basis for a highly tunable, predictable, and versatile platform for hierarchical materials assembly.

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