

Abstract Submitted
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Controlling size and patchiness of soft nanoparticles via kinetically arrested co-assembly of block copolymers JOSE SANTOS, MARGARITA HERRERA-ALONSO, Department of Materials Science and Engineering, Johns Hopkins University — Engineering patchy particles from block copolymers provides an effective route for the preparation of nanoparticles with surface heterogeneity and unique properties. In the current work, co-assembly of block copolymers amphiphiles with distinct macromolecular architectures under kinetically arrested conditions was used to control the size and patchiness of polymeric nanoparticles. The block copolymer mixture is composed of linear and linear-dendritic polymeric amphiphiles, the later of which provides pre-assembled “patches” with well-controlled dimensions and chemical functionality. Parameters including but not limited to the molecular diffusivity of the amphiphiles and the kinetics of self-assembly were found to play an important role on the control of the particle size and formation of the patches. The patchy particles are stable for several months and its stability against protein/blood plasma solutions can be tuned. We will also discuss the use of these constructs to probe nanoparticle-cell interactions.

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