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Nanocomposite Microdomain Inversion in Au Nanoparticle/ PS-b-PFOMA Block Copolymer Films LUCIANA MELI, YUAN LI, KEITH P JOHNSTON, The University of Texas at Austin, PETER F GREEN, The University of Michigan, Ann Arbor — We report that Au nanocrystals sequestered within the microdomains of self-assembled aggregates of polystyrene-b- poly(1,1',2,2'-tetrahydroperflurooctyl methacrylate) (PS-b- PFOMA) thin films are capable of following the structure-guiding matrix in a morphological transition from spherical PFOMA aggregates in a PS matrix to the inverse morphology upon supercritical CO2 (scCO2) sorption. Furthermore, the domain size of the aggregates can be finely tuned by adjusting the scCO2 density. By pretreating the particles surface with a host of ligands with different chemical affinities for the constituent blocks, we observe that the Au/diblock co-assembly process is dependent not only on the ligand size and ligand- matrix compatibility, but also on the interaction of the ligands with the interfaces that confine the film.

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