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**Responsive Assemblies: Gold Nanoparticles with Mixed Ligands in Microphase Separated Block Copolymers** JINBO HE, ELIZABETH GLOGOWSKI, QIFANG LI, TODD EMRICK, THOMAS RUSSELL, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, XUEFA LI, JIN WANG, Advanced Photon Source, Argonne National Laboratory, Argonne — A simple method for controlling the spatial distribution of gold nanoparticles in a polystyrene-*block*-poly (2-vinylpyridine) (PS-*b*-P2VP) diblock copolymer is shown. By varying the ligand functionality of the gold nanoparticles, as well as the processing and annealing conditions, the distribution of gold nanoparticles in the microdomains of the diblock copolymer was controlled and altered. In addition, the presence of nanoparticles was also found to affect the diblock copolymer morphologies. Subsequent thermal annealing causes a coarsening of the nanoparticles, and a sequestration of the nanoparticles to the P2VP microdomain. Further heating leads to an expulsion of the particles from the microdomains, a modification of the interfacial interactions, and a reorientation of the copolymer morphology.

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