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**Bicontinuous Morphologies in Block Copolymer-Nanoparticle Composites** VICTOR PRYAMITSYN, VENKAT GANESAN, University of Texas at Austin — We present strong segregation approximation based analytical calculations and complementary computer simulation results on the ordering and structural characteristics of block copolymer-nanoparticle mixtures. We consider specifically the case of a symmetric block copolymer organized in a lamella phase, which is mixed with both selective and nonselective nanoparticles. We present results within the strong segregation approximation quantifying the density distribution of nanoparticles and the influence of the nanoparticles upon the lamella thickness and their elastic constants. The case of nonselective nanoparticles is treated in detail to account more accurately for both size effects as well as finite concentrations of nanoparticles. The latter results suggest the possibility of layer instabilities and morphological transitions to bicontinuous phases, resulting from the surfactant-like role of nonselective particles. Qualitative features of our model predictions are in agreement with our computer simulation results and recent experimental results.

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