

Abstract Submitted  
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**Effect of Casting Solvent on the Morphology of Block Copolymer / Maghemite Nanoparticle Mixtures** KOOKHEON CHAR, MOON JEONG PARK, Seoul National University — We investigate the effect of casting solvent on the morphology of block copolymer / magnetic nanoparticle (NP) mixtures. Monodisperse maghemite NPs with surfaces modified with oleic acids have been synthesized and PS-*b*-PI, PS-*b*-PB, PS-*b*-PEO, and PS-*b*-P4VP, diblock copolymers showing cylindrical morphology were used as structure-directing matrices for the NPs. Four different solvents, hexane, toluene, THF, and CHCl<sub>3</sub> were used to prepare film specimens by static casting and the interaction between mesophase-forming copolymers and nanoparticles, which can be tuned by casting solvent, leads to remarkably different hybrid morphology. With casting with good solvent for both blocks, with the increase in NP concentration, domains of NP aggregates were observed while the NPs were selectively incorporated into the minor domains of block copolymer under selective solvent condition. The interplay between magnetic NPs and block copolymers was also tested with different size of magnetic NPs and also with different molecular weight of block copolymers. In order to characterize the structural change of block copolymers associated with different NP loadings small-angle x-ray scattering was performed and the structural information is in good agreement with transmission electron microscopy images and differential scanning calorimetry results.

Moon Jeong Park  
Seoul National University

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