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**Stable Bicontinuous Polymer Blend Films by Jamming Nanoparticles at the Interface** RUSSELL J. COMPOSTO, HYUN-JOONG CHUNG, MSE and LRSM, U. of Pennsylvania, KOHJI OHNO, TAKESHI FUKUDA, ICR, Kyoto U. — Polymer blends containing nanoparticles (NP) are attractive functional material for optoelectronic devices, chemical sensors, and nanoreactors. Because structure governs performances of these devices, a self-regulating, stable structure is highly desirable for many applications. Adding surface-modified silica NP to dPMMA:SAN (50:50) films (550 nm), we demonstrate that directed interfacial segregation of NP stabilize either three dimensional (3D) interpenetrating or 2D discrete structures at high and low volume fractions of NP, respectively. A simple interfacial energy argument provides a general guideline for predicting whether the NP are directed into one phase or to the interface between phases. If NP partition into one phase, the structural evolution slows down, but phase coarsening continues resulting in a roughened film [Europhys. Lett. (2004) **68**, 219]. However, if NP are driven to the interface between phases, phase coarsening ceases when NP jamming occurs at the interface. The final morphology and domain size can be predicted from the volume fraction of NP, film thickness, and NP size [Nano Lett. (2005) **5**, 1878]. These studies show that wetting and domain coarsening in polymer blend films can be controlled by the judicial addition of surface modified NP.

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