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Phase behavior of block copolymer nanocomposites GEORGE PAPAKONSTANTOPOULOS, Arkema Inc., ANALYTICAL AND SYSTEMS, ARKEMA INC. TEAM — Incorporating nanoparticles in block copolymers can allow the creation of a material with tailored properties. In addition, the control of the nanoparticle location in a nanometer scale, can lead to novel applications for these materials. Although, the phase behavior of block copolymers in the bulk is well established, the effects of nanoparticles on their phase behavior, especially under confinement, are not well understood. We carried out a systematic study to investigate the self-assembly of block copolymer-nanoparticle composites using a coarse grain model. These systems are studied in the bulk and under confinement. The dependence of the location and distribution of the nanoparticles within the block copolymer as a function of particle-polymer interaction, size and shape were examined.

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