

Abstract Submitted
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Rich Phase Behavior of Sphere-Forming Asymmetric ABA'C Block Copolymer Melts¹ SID CHANPURIYA, AKASH ARORA, KYUNGTAE KIM, KEVIN DORFMAN, FRANK BATES, Univ of Minnesota - Twin Cities — Motivated by self-consistent field theory simulations, the effect of ABA' corona block length asymmetry on the phase behavior of ABA'C-type tetrablock terpolymers has been examined. The chosen model system, poly(styrene)-*b*-poly(isoprene)-*b*-poly(styrene)-*b*-poly(ethylene oxide) (SIS'O), has been characterized using a combination of small-angle X-ray scattering, transmission electron microscopy, and dynamic mechanical spectroscopy. Asymmetric SIS'O tetrablocks reveal a rich variety of sphere-forming phases over compositions and molecular weights where symmetric SISO polymers formed only hexagonally oriented cylinders. These include FCC, HCP, and complex symmetries such as the Frank-Kasper σ and A15 phases.

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