Abstract Submitted
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A Generic Fourier-Space Approach for Discovering Ordered Phases of ABC Star Triblock Copolymers[1] FENG QIU, GUOJIE ZHANG, PING TANG, HONGDONG ZHANG, Fudan University, Shanghai 200433, China, AN-CHANG SHI, McMaster University, Ontario L8S 4M1, Canada — We have developed a generic approach to solve the self-consistent field theory (SCFT) equations for block copolymers. In this method, all spatially varying functions are expanded in terms of Fourier series which are essentially determined by computational box parameters. Then, SCFT equations can be cast in terms of expansion coefficients. With this method, we successfully reproduce phases observed in diblock copolymers and ABC linear triblock copolymers. Emphasis has been focused on phase behaviors of ABC star-shaped triblock copolymers, in which noncentrosymmetric phases can be formed. Two groups of star triblock copolymers, with symmetric and asymmetric interaction parameters, respectively, have been studied in detail. Qualitative agreement is reached in terms of phase transition sequence along composition lines between the SCFT calculations and experimental results.

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