Phase Behavior of Binary Homopolymer/Diblock Blends: Temperature and Chain Length Dependence

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Abstract

The phase behavior of binary blends of A homopolymer and symmetric AB diblock copolymer is studied within mean-field theory. The occurrence of lamellar, hexagonal, and body-centered-cubic phases is examined in the weak to intermediate segregation regime, and over a wide range of homopolymer length relative to that of the diblock. This ratio is found to be a crucial parameter for the topology of the phase diagram. Several different classes of behavior are established and comparisons are made with experiment.