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(G*) Lifshitz Critical Point in Diblock Copolymer Blends

Wednesday 8 June 2022 16:00 (15 minutes)

We examine the phase behaviour of blends composed of complementary diblock copolymers, one with composition f and the other with composition 1-f. Self-consistent field theory (SCFT) calculations have predicted a Lifshitz critical point in this system at f=0.21. This is a special point where uniform and modulated ordered phases meet the disordered phase. However, Lifshitz critical points are believed to have a lower critical dimension of four and thus should not exist in three dimensions. The Lifshitz point is predicted presumably because SCFT neglects fluctuation effects. To test this explanation, we evaluate the phase diagram for complementary diblock copolymers using recent advancements in field-theoretic simulations.

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