Abstract Submitted
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Polydispersity effects in block copolymer melts[1] MARK MATSEN, Department of Mathematics, Univerisity of Reading — We examine the effects of polydispersity on the phase behavior of diblock copolymer melts using self-consistent field theory (SCFT). The calculations are performed with an efficient spectral-based algorithm that can handle high degrees of polydispersity with only a modest increase (i.e., a factor of 2 or 3) in computational cost over that of monodisperse melts [Matsen, EPJE, **21**, 199 (2006)]. We find that even small degrees of polydispersity can have a significant effect on the domain sizes and the position of the phase boundaries. For large polydispersities, fractionation also becomes important and the phase diagram develops large two-phase coexistence regions [Matsen, PRL, **99**, 148304 (2007)]. As a consequence, the complex gyroid phase becomes unstable with respect to the coexistence of lamellae and cylinders.

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