

Abstract Submitted
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Universal phenomenology of the order-disorder transition in symmetric diblock copolymers PAVANI MEDAPURAM, University of Minnesota, JENS GLASE, University of Michigan, DAVID MORSE, University of Minnesota — The order-disorder transition (ODT) in melts of symmetric diblock copolymers has been precisely identified by a free-energy based technique in several simulation models over a wide range of experimentally relevant values of the invariant degree of polymerization \bar{N} . To compare results of different models, we determine the parameter dependence of χ for each model from a fit of disordered phase data for the structure function $S(q)$ to the renormalized one-loop theory. The value of χN at the transition obtained using this estimate of χ is found to exhibit a universal dependence on \bar{N} . Simulation results for the both the ODT and strength of order appear to slowly converge above a crossover value of \bar{N} of order 10,000. This value corresponds to a crossover between strongly segregated low-N regime, in which the center of each domain is nearly pure even at the ODT, and the beginning of the more weakly segregated regime for which the FH theory was originally designed.

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