

Abstract Submitted
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Nucleation in Polymer Blends EDWARD FENG, NITASH BALSARA,
University of California, Berkeley — Balsara and co-workers used small angle neutron scattering experiments on binary homopolymers blends to determine the size of the critical nucleus during phase separation. This suggests measuring the size of a single critical nucleus through a measurement of total density fluctuations. We carefully analyze this idea through kinetic Monte Carlo simulations of the Ising model, performing simulations of phase separation that conserve and do not conserve the magnetization. Calculations of the structure factor and spin-spin correlation function reveal clear differences in the nucleation mechanism for these two dynamics. Simulations that conserve the magnetization qualitatively agree with the experimental results on binary blends. Moreover, we calculate the cluster distribution during nucleation to determine the critical nucleus size of the Ising model. Comparing this result with the value determined from the structure factor shows qualitative agreement with increasing supersaturation.

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