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Eutectic Modeling of Blend Crystallization from the Homogeneous Melt SUDHAKAR BALIJEPALLI, Dow Chemical Company, JEROLD SCHULTZ, University of Delaware — The morphology and kinetics of binary polymer blends crystallizing from the homogeneous melt is similar to that of eutectic crystallization in small-molecule or metal systems. While analyses of the small molecule case exist, extension to the polymer blend case requires accounting for (a) large deviation from equilibrium and (b) growth velocity dependence on temperature and composition. Such analytical modeling has been performed, assuming low Peclet numbers. The model and results are presented here and compared with the crystallization of a blend of high and low molecular weight fractions of poly(ethylene oxide). The analysis shows a sharply peaked relationship between growth arm periodicity and velocity of growth. An assumption that the operating condition is the maximum growth velocity appears to hold. A satisfactory correlation between analysis and experiment is found.

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