Eutectic Modeling of Blend Crystallization from the Homoge-
neous Melt  SUDHAKAR BALIJEPALLI, Dow Chemical Company, JEROLD
SCHULTZ, University of Delaware — The morphology and kinetics of binary poly-
mer 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 tempera-
ture 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 pe-
riodicity 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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