

Abstract Submitted
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Interdiffusion in a Polydisperse Polymer Blend ANNA C. BALAZS, VICTOR V. YASHIN, Department of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA 15261. — We present a theoretical description of interdiffusion in a binary blend of polymers that exhibit polydispersity in length. The diffusion equations are formulated in terms of the volume fractions and the chain concentrations of the components. This choice of variables is equivalent to the assumption that the local molecular weight distributions of the components are described by the Flory distribution. The Onsager kinetic coefficients are obtained based on the Green-Kubo equation and correspond to the fast-mode interdiffusion theory. As demonstrated by numerical simulations, the resulting equations describe the simultaneous processes of the evolution of blend composition and the relaxation of the local molecular weight distributions of the components. The developed approach can be used to study polymer systems in which the degree of polymerization changes due to interfacial or bulk chemical reactions.

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