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Relationship of Structural and Stress Relaxation in Disordered Diblock Copolymer Melts TAHER GHASIMAKBARI, DAVID MORSE, University of Minnesota — We use molecular dynamics simulations to study the relationship between the relaxation of composition fluctuations and the relaxation of stress and birefringence in simple models of disordered block copolymer melts. Simulations of different simulation models of in corresponding thermodynamic states of unentangled melts are shown to exhibit equivalent dynamical behavior, thus confirming dynamic universality for unentangled systems. Structural relaxation is characterized by measuring the van Hove dynamic structure function S(q*, t) at the critical wavenumber q* at which the static structure function is maximum, and measuring how the associated relaxation time depends on distance from the order-disorder transition. The behavior of this quantity is compared to that of the dynamic viscoelatic modulus G(t), which is obtained by computing autocorrelations of stress fluctuations. Relationship to relevant experiments is also briefly discussed.

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