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Influence of Asymmetric Chain Dynamics on the Viscoelastic Response of Block Copolymers Near the Order-Disorder Transition ROBERT HICKEY, TIMOTHY GILLARD, TIMOTHY LODGE, FRANK BATES, Univ of Minn - Minneapolis — Composition fluctuations in the disordered state profoundly influence block copolymer phase behavior near the order-disorder transition. Although the first experimental evidence of composition fluctuations highlighted a rheological feature, a complete understanding of the influence of fluctuations on rheology has remained elusive. For example, a rheological fingerprint of fluctuations is absent in many reports in the literature for various diblock copolymer systems. Here, we present work elucidating how differences in the individual block-relaxation times of a block copolymer influence the ability to probe composition fluctuations using rheology. This work resolves a long-unanswered question pertaining to the ability to measure composition fluctuations, and aids in understanding low-frequency scaling for both the dynamic elastic and loss moduli.

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