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Strongly segregated polydisperse block copolymer near the order-disorder transition ADAM SCHMITT, MAHESH MAHANTHAPPA, University of Wisconsin-Madison — Newer polymerization techniques afford polydisperse block polymers comprised of functional monomers with interesting potential applications as membranes for selective transport applications. As a result of their molecular chain length dispersity, the melt-phase behavior of these polymeric materials differs from that of well-studied monodisperse block copolymers. Extending our previous work dealing with weakly segregated poly(styrene-b-1,4-butadiene-b-styrene) (SBS) copolymers with a polydisperse middle block, we have examined the morphological consequences of increasing the segmental incompatibility between the copolymer segments. We will specifically outline recent studies of the melt phase behavior of highly segregated poly(lactide-b-1,4-butadiene-b-lactide) (LBL) triblock copolymers with a polydisperse center segment near the order-disorder transition. Comparison of the thermodynamics of SBS & LBL copolymer self-assembly suggests additional order parameters that characterize the phase behavior of these complex polymer mixtures.

Adam Schmitt
University of Wisconsin-Madison

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