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Thermodynamic Properties of A/B/A-C Polymer Blends from SANS and USANS NISITA WANAKULE, University of California Berkeley, MEGAN ROBERTSON, DAVID LOHSE, NITASH BALSARA, University of California Berkeley — We have studied the thermodynamic properties of blends of two homopolymers and a block copolymer (A/B/A-C blends) by small angle neutron scattering (SANS) and mean field theories. The binary A-C interactions demonstrate an upper solution critical temperature, B-C interactions show a lower solution critical temperature, and A-B interactions exhibit entropic behavior. We have demonstrated that as little as 1% of the A-C block copolymer is adequate for stabilization of 50/50 A/B mixtures. It is however, difficult to quantify the structure of blends with very low copolymer concentrations alone because the periodic length scales obtained are in the 100s of nanometers. We are thus embarking on ultra-low angle SANS (USANS) experiments to elucidate the properties of these systems. A comparison of SANS and USANS data obtained from these blends will be presented at the meeting.

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