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Ordering of Triblock Copolymer Surfactants by Blending with a Room Temperature Ionic Liquid[1] DANIEL MIRANDA, JAMES WATKINS, THOMAS RUSSELL, University of Massachusetts Amherst — Well-ordered block copolymer microdomains were obtained by blending Pluronic® PEO-PPO-PEO triblock copolymer surfactants with the room temperature ionic liquid, 1-butyl-3-methylimidazolium hexafluorophosphate. The selective association of the ionic liquid with the PEO blocks increases the segregation strength by increasing the effective interaction parameter between the blocks. The neat copolymer is phase-mixed in the melt whereas the addition of ionic liquid to the copolymer results in phase segregation, forming well-ordered microdomains. The ionic liquid was confirmed to interact with the PEO blocks by a depression in the melting point of the blends with increasing ionic liquid concentration. Further, small angle x-ray scattering experiments show a decrease in the breadth of the first order peak, as well as the appearance of higher order peaks, with increasing ionic liquid concentration. These results confirm the formation of well-ordered microdomains.

[1]MRSEC, CHM

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