

Abstract Submitted
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Osmotic Properties of Acrylic Triblock Copolymer Gels RAFAEL

E. BRAS, KENNETH R. SHULL, Northwestern University — Triblock copolymer solutions are of interest both practically and scientifically. This interest stems largely from their ability to self assemble into soft elastic solids. Acrylic triblock copolymers solvated in alcohols are of particular interest as they exhibit a rapid thermo-reversible transition from a viscous liquid at elevated temperatures (but still less than 100 C) to a strong elastic solid at room temperature. The rapid transition is a result of the increasing interaction parameter between the polymer endblock and solvent upon cooling, resulting in self assembly and the eventual stabilization of endblock aggregates below the endblock glass transition temperature. Several methods, including vapor pressure osmometry, small angle x-ray scattering, and rheometry, were used to examine the properties of semidilute PMMA-PnBA-PMMA acrylic triblock solutions in the temperature regime near the critical micelle temperature. The measured osmotic pressure is controlled by contacts between the well solvated midblocks, the solvent-endblock interaction energy, and the elasticity of the triblock network.

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