

Abstract Submitted
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Phase Behavior of Polymer Blends Containing End-Associating Polymers MICHELLE WRUE, MITCHELL ANTHAMATTEN, University of Rochester — Polymer blending is an important route to the creation of new polymeric materials with superior processing and tunability. We are studying the effects of strong, site-specific, hydrogen-bonding groups on the phase behavior of traditional polymer blends exhibiting upper critical solution temperature (UCST) behavior. Ureidopyrimidinone (UPy) functional groups self-associate through the formation of four hydrogen bonds. We have synthesized telechelic ureidopyrimidinone (UPy) functionalized polystyrene (PS) and poly(4-methyl styrene) (P4MS). We have used these materials in ternary polymer-polymer-solvent systems to investigate the miscibility of blends containing UPy-functionalized polymers. Polymer pairs studied include PS/polybutadiene (PB) and PS/P4MS. Phase behavior and end-association were studied using laser light scattering and dilute solution viscometry. Data from PS/PB/toluene blends containing only one functionalized polymer, PS, indicate a reduction in miscibility relative to the corresponding parent blend. PS/P4MS blends in which both polymer components contain the UPy functional group are also being studied.

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