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Polymer blends containing Linear Telechelic Supramolecular Polymers MITCHELL ANTHAMATTEN, University of Rochester, Dept. of Chemical Engineering, MICHELLE WRUE, University of Rochester, Dept. of Chemical Engineering — We are studying a new class of polymer blends: linear polymers blended with end-to-end associating supramolecular polymers (unimers). Since the degree of unimer association depends on concentration and temperature, we expect unusual phase behavior that differs greatly from traditional blends of two linear polymers. Low molecular weight polybutadiene unimers that bear strong hydrogen-bonding, ureidopyrimidinone end groups were synthesized. These polymers were systematically blended with monodisperse polystyrene polymers, and the resulting blends were studied using a combination of optical microscopy and light scattering techniques. Results are compared to predictions made using a simple lattice association model. Inputs include the lengths of the unimers and polymers, the free energy of forming supramolecular bonds, and a Flory-Huggins interaction parameter.

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