Abstract Submitted
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Dynamics of Strongly Associating Polymer Blends Using Broadband Dielectric Spectroscopy[1] KEVIN MASSER, JAMES RUNT — In this study we investigate the dynamics of miscible polymer blends that preferentially form strong intermolecular hydrogen bonds. A random copolymer of p-(hexafluoro-2-hydroxyl-2-propyl)styrene [HFS] and 2,3-dimethylbutadiene [DMB] was synthesized for this study, as was an HFS homopolymer. HFS units are capable of forming strong intermolecular hydrogen bonds with complimentary species on a second miscible polymer, while minimizing the extent of intramolecular associations. The copolymer (or homopolymer) was blended with select homopolymers that form intermolecular hydrogen bonds of varying strength. Broadband dielectric relaxation spectroscopy is used to study segmental and local miscible blend dynamics, which are observed to vary significantly in the presence of hydrogen bonding. Fourier transform infrared spectroscopy was used to determine the degrees and strengths of hydrogen bonding present in the blends.

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