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. Random copolymers of p-(hexafluoro-2-hydroxyl-2-propyl)styrene [HFS] and 2,3-dimethylbutadiene [DMB] were synthesized for this study, as was the 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 copolymers/homopolymers were blended with select homopolymers that form intermolecular hydrogen bonds of varying strength. Broadband dielectric relaxation spectroscopy is used to study segmental and local 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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