

Abstract Submitted
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Compatibilization of Polymer Blends via Reactive Processing with Telechelic Copolymers¹ EARL ASHCRAFT, MARK DADMUN, University of Tennessee — Blends of polystyrene and polyisoprene are reactively compatibilized using telechelic polystyrene and polyisoprene additives. A blend of PS/PI and telechelic polymers is melt mixed at 180 ° C, resulting in the in-situ formation of multi-block copolymers during mixing by the reaction of telechelics at the interface, which compatibilize the phase-separated homopolymer blend. The conversion of telechelic polymer into copolymer is quantified using GPC with fluorescence detection. In this project, the effect of using high and low reactivity end-groups is examined. The effect of the telechelic molecular weight on copolymer formation and blend properties is also examined. The results show that the anhydride/amine pair yields approximately 30% - 50% conversion after 10 minutes of mixing, with no further conversion after this time period. The epoxy/COOH pair shows much slower conversion. The stability of the blend morphology is quantified by determining the coarsening constant of the phase-separated blend from SEM. Preliminary DMA data suggests that the multi-block copolymers improve the interfacial adhesion of the blend, supporting the GPC and SEM results.

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