Abstract Submitted
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Stabilization of PS/PLA cocontinuous blends by interfacial graphene[1] LIAN BAI, Department of Chemical Engineering and Materials Science, University of Minnesota, SIYAO HE, Department of Chemistry, University of Minnesota, JOHN FRUEHWIRTH, Department of Chemical Engineering and Materials Science, University of Minnesota, ANDREAS STEIN, Department of Chemistry, University of Minnesota, XIANG CHENG, CHRISTOPHER MACOSKO, Department of Chemical Engineering and Materials Science, University of Minnesota — Reduced graphene oxide (r-GO) is known to be effective in increasing the conductivity of cocontinuous polymer blends with a lower electrical percolation threshold. However, little is known regarding the localization and dynamics of r-GO along with morphology change during annealing. In this study, we develop a facile method to stabilize the polystyrene (PS)/polylactic acid (PLA) cocontinuous blends with r-GO jammed at interface. In this method, the non-functionalized GO is premixed with PLA via solvent method, and then reduced in-situ at 210oC to obtain a PLA/r-GO polymer composite. This composite is further mixed with PS via batch melt compounding. We observe the migration of r-GO from the PLA phase to the interface during annealing. The interfacial r-GO suppresses the coarsening of cocontinuous morphology and increases the conductivity of the filled polymer blend. Moreover, we systematically investigate the relationship between r-GO localization, rheological and conductivity change during annealing of r-GO filled PLA/PS blends.

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