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In-situ Compatibilization of HIPS/PBT Blends via Reactive Blending

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The modification of high-impact polystyrene (HIPS) was accomplished by melt-grafting glycidyl methacrylate (GMA) on its molecular chains. Fourier transform infrared spectroscopy and electron spectroscopy for chemical analysis were used to characterize the formation of HIPS-g-GMA copolymers. The content of GMA in HIPSg-GMA copolymer was determined by using the titration method. The effect of the concentrations of GMA and dicumyl peroxide on the degree of grafting was studied. A total of 1.9% of GMA can be grafted on HIPS. HIPS-g-GMA was used to prepare binary blends with poly(buthylene terephthalate) (PBT), and the evidence of reactions between the grafting copolymer and PBT in the blends was confirmed by scanning electron microscopy (SEM), dynamic mechanical analysis, and its mechanical properties. The SEM result showed that the domain size in PBT/HIPS-g-GMA blends was reduced significantly compared with that in PBT/HIPS blends; moreover, the improved strength was measured in PBT/HIPS-g-GMA blends and results fromgood interfacial adhesion. The reaction between ester groups of PBT and epoxy groups of HIPS-g-GMA can depress crystallinity and the crystal perfection of PBT.