

Blends containing amphiphilic polymers. V. Compatibilization of N-alkylitaconamic acid-co-styrene copolymers with interacting polymers

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The phase behavior of blends containing N-alkylitaconamic acid-co-styrene copolymers (NAIA-co-S) with poly(N-vinyl-2-pyrrolidone) (PVP) of two different weight average molecular weights (M_w), poly(2-vinylpyridine) (P2VPy) and poly(4-vinylpyridine) (P4VPy), was analyzed by differential scanning calorimetry and Fourier transform infrared spectroscopy. Copolymers containing 80% S are miscible with PVP10, PVP24, and P4VPy over the whole range of composition. In the case of blends with P2VPy, miscibility is observed only for the first three members of the series, i.e., NEIA-co-S, NPIA-co-S, and NBIA-co-S. For copolymers containing hexyl to dodecyl moieties, phase separation is observed in blends with P2VPy. Copolymers containing 50% S are miscible over the whole range of composition irrespective of the homopolymer and the length of the side chain of the itaconamic moiety of the copolymer. This behavior is interpreted in terms of steric hindrance, in the sense that the copolymers with long