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**Polystyrene / Polybutadiene Thin Film Polymer Blends Studied by Atomic Force Microscopy: Dewetting and Copolymer Compatibilization** DEAN WALDOW, LUKE LATIMER, Pacific Lutheran University — Thin film blends of polystyrene and polybutadiene with and without copolymers were studied using atomic force microscopy. The polymer blend system was chosen to match previous bulk measurements where the homopolymers are below their respective entanglement molecular weights. The blends were studied as binary blends and with a low concentration of added diblock, random, and two arm graft copolymers. Initially, the surface morphology relating to dewetting and phase separation of the binary blend was studied as a function of time and film thickness. The film thicknesses ranged from about 10 nm to 100 nm. Surface roughness, lateral domain size, and contact angle were used to characterize the thin film blends as a function of time, initial film thickness, and composition. The thinnest films were very mobile and dewetted much faster than the thicker films. The dewetting results are analyzed in terms of scaling behavior versus time as well as with regard to the thickness dependence of the polystyrene glass transition temperature. The thin films with added copolymers substantially modified the kinetics of dewetting with the diblock copolymer having the greatest effect on reducing film dewetting.

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