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Formation and Properties of Molecular Loops at Polymeric Interfaces J. KEVIN RICE, MARK DADMUN, BRANDON FARMER, HAINING JI, JIMMY MAYS, The University of Tennessee — In this study, we investigate the formation, kinetics, and resultant strength improvements of multiply bound polymer loops at multicomponent polymeric interfaces. We have first studied a model system consisting of a silicon substrate, an epoxy terminated monolayer, and dicarboxy terminated polystyrene to characterize the formation of the surface bound molecular loops. Interfacial strength improvement via loop formation in this model system has also been investigated using asymmetric double cantilever beam (ADCB) analysis. Further, the kinetics of loop formation at a soft interface between polystyrene and poly(methyl methacrylate) has been investigated with neutron reflectivity. This data will then be used to apply the technique to a range of real systems, such as layered-silicate or carbon nanotube filled polymeric systems, with the goal of improving dispersion and desired property enhancement within these systems.

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