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A Comparative Study of Interfacial Slip in Polymer Blends with Nanoparticles and Diblock Copolymer Compatibilizers JOSEPH ORTIZ, DILIP GERSAPPE, Department of Materials Science and Engineering, Stony Brook University — The interfacial region in polymer blends has been identified as a low viscosity region in which considerable slip can occur when the blend is subjected to shear forces. Here we use Molecular Dynamics simulations to establish and compare the roles that added nanoparticle fillers and diblock copolymers play in modifying the interfacial rheology. By choosing conditions under which the fillers and diblocks are localized, either in the two phases or at the interface, we can look at the interplay between their strengthening capabilities and the change in the interfacial slip behavior. We examine particle size, attraction between the particle and the polymer component, and the amount of filler in the material and compared this to systems including diblock copolymers at the same volume fraction. Our studies are performed, for a variety of shear values, both above and below the point at which the filler particles form a transient network in the blend.

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