Simulation of Stress Induced Polymer-Polymer Interfacial Slip
ANDREW GUSTAFSON, DAVID MORSE, University of Minnesota — The phenomena of stress-induced tangential slip at polymer-polymer interfaces is studied via a slip-link simulation technique. Simulations combine a slip-link model of entanglement with a self-consistent field description of the chemical potential landscape near an interface. We consider how the slip velocity depends upon shear stress, interfacial entanglement density, and polymer chain length. Our model is based on the idea that the strongly non-linear shear thinning of the interface observed in experiment is a result of stress-induced convective release (pulling-out) of entanglements across the interface.