

Abstract Submitted  
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**Friction between Polymer Brushes**<sup>1</sup> JEFFREY SOKOLOFF, Northeastern University — A polymer brush consists of a surface with a fairly concentrated coating of polymer chains, each one of which has one of its ends tightly bound to the surface. They serve as extremely effective lubricant, producing friction coefficients as low as 0.001 or less! Polymer brushes are a promising way to reduce friction to extremely low values. They have the disadvantage, however, that they must be immersed in a liquid solvent in order to function as a lubricant. The presence of a solvent is believed to result in osmotic pressure which partially supports the load. The density profile of a polymer brush (i.e., the density of monomers as a function of distance from the surface to which the polymers are attached) is well established. What is not understood is how the interaction of polymer brush coated surfaces in contact with each other is able to account for the details of the observed low friction. For example, molecular dynamics studies generally do not predict static friction, whereas surface force apparatus measurements due to Tadmor, et. al., find that there is static friction. This is the topic of the present presentation.

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