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**Surface wrinkling of grafted polymer brushes and its effect on interfacial adhesion** CHRISTOPHER M. STAFFORD, HEQING HUANG, JUN YOUNG CHUNG, Polymers Division, NIST — Grafted polymer brushes present a simple and convenient route to generate a rich and diverse parametric space that expresses the chemical complexity found at materials surfaces and interfaces. For example, adhesion at the interface can be tuned by controlling the chemistry, length, and density of the grafted polymer brush. If constructed on a soft elastomer, these polymer brushes can undergo wrinkling at the interface, creating a powerful combination of surface chemistry and topography, both of which play a critical role in interfacial adhesion. Here, we present strategies to control the adhesion strength through changes in brush length and composition, solvent quality, and modulus of the elastomer. A phenomenological model for the development and growth of the wrinkled surface is developed to explain the observed results.

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