Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Structural Effects on the Friction of Tethered PDMS Networks[1]
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— The interfacial properties of dry, surface-tethered end-linked polydimethylsiloxane (PDMS) films on silicon are examined. Thin network films (approximately 10 microns thick) were synthesized over a self-assembled monolayer supported on a silicon wafer. By systematically increasing the concentration of mono-functional PDMS chains in a mixture with telechelic precursor chains during cross-linking, structures ranging from near model elastic networks to very poorly cross-linked networks dominated by a preponderance of dangling/pendent chains were synthesized. Lateral force microscopy (LFM) employing a PE bead probe was used to quantify the effect of network structure and the role of viscoelasticity on the interfacial friction coefficient.

[1]Supported by DOE Grant DE-FG02-07ER46455 and NSF Grant DMR-0705565.

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Date submitted: 23 Nov 2010 Electronic form version 1.4