Structural Effects on the Friction of Tethered PDMS Networks\textsuperscript{1}

CLAUDE COHEN, LUCAS LANDHERR, LYNDEN ARCHER, Cornell University — 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.

\textsuperscript{1}Supported by DOE Grant DE-FG02-07ER46455 and NSF Grant DMR-0705565.