

Abstract Submitted
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Molecular Motion in Poly(vinylmethysiloxane) DERRICK STEVENS, North Carolina State University, Physics Department, Raleigh, NC , JULIE CROWE-WILLOUGHBY, JAN GENZER, North Carolina State University, Department of Chemical and Biomolecular Engineering, Raleigh, NC, LAURA CLARKE — Responsive surfaces change their physico-chemical characteristics upon the introduction of external stimuli. Modified poly(vinylmethysiloxane) (PVMS) networks have been shown to exhibit rapid wettability changes due to surface reconstruction upon exposure to water [Crowe, J.A.; Genzer, J., J. Am. Chem. Soc. 127, 17610-17611 (2005)]. We aim to correlate the dynamics of the side and backbone motion within the modified PVMS networks to the observed surface chemistry rearrangement. Polymer samples were placed upon interdigitated electrodes and dielectric relaxation spectroscopy, as a function of temperature, was conducted. This technique allows us to probe the network and see changes in molecular motion as a function of temperature and network composition. Dynamic mechanical analysis (DMA) was also performed and coincided well with the dielectric results. The side chain motion and their effect on the response of the PVMS network will be discussed.

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