

Abstract Submitted
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Localized probe of dielectric response of polymer free surface near the glass transition¹ PHILIP CRIDER, NATHAN ISRAELOFF, Northeastern University — Experimental study of length scales in glassy systems can give new insights into the glassy dynamics. Finite size effects are studied in a polymer (PVAc) utilizing UHV non-contact atomic force microscopy (NCAFM) methods. Localized dielectric susceptibility is probed using the electrostatic interaction of a metal-coated AFM tip with a thick polymer film on a metal substrate. The depth probed below the free surface of the polymer is as small as 10 nm. A lockin amplifier is utilized to measure response from the surface in the second harmonic to extract the $\text{Tan}(\delta)$ (C/C) response over frequencies of 0.1 - 100 Hz. Preliminary results for the smallest probed depths show an increase in the frequency of the alpha relaxation peak in $\text{Tan}(\delta)$ as compared with macroscopic measurements. Results for various probed depths will be discussed.

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