

Abstract Submitted  
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**Near Surface Dynamics of Polymers Probed with Nanoparticle Embedding** DONGPING QI, JAMES A. FORREST, Dept. of Physics and Astronomy, University of Waterloo — We use nanoparticle embedding to probe the dynamics of the near surface layer of glassy polymer films. We observe evidence for heterogeneous dynamics in the first 5-10 nm near the free surface of glassy polymers. We observe that the relaxation into the polymer immediately below the free surface is irreversible, even after a period of 1 year. On the other hand, further embedding (5 -10 nm) appears to be reversible. The results are discussed in terms of possible models of near surface mechanical properties.

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