Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Surface relaxation in glassy polymers JAMES FORREST, DONG-PING QI, ZAHRA FAKHRAAI[1], University of Waterloo — We have used nanohole relaxation to measure the viscoelastic properties of the first 1-4 nm of the surface of glassy polymer PS and i-PMMA. In both cases we find evidence for complete relaxation of the surface below the bulk glass transition temperature T_g. For the case of PS, the temperature dependence of the relaxation was measured in the range $240K < T < 368K$. Suprisingly, there is still relaxation of the PS surface even at the lowest temperature of 240K. For i-PMMA, we observed surface relaxation that depends on the thickness of the films (up to a thickness of 200 nm), the substrate material, and the M_w value of the polymer. The results are compared to studies of glass transition in thin polymer films.

[1]Now at University of Toronto

James Forrest
University of Waterloo

Date submitted: 17 Nov 2007 Electronic form version 1.4