

Abstract Submitted
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Nanomechanical Measurements on Ultra-thin Poly(n-butyl methacrylate) Films. SHANHONG XU, GREGORY MCKENNA, Texas Tech University, TEXAS TECH UNIVERSITY TEAM — The mechanical properties of ultra-thin poly (n-butyl methacrylate) (PBMA) films were investigated by the novel bubble inflation technique developed in our lab. Creep experiments were performed at temperatures above the glass transition temperature (T_g) of bulk PBMA. The deflection of the film is large enough to neglect the bending stiffness of the film. Surface effects were observed to play a much more important role in the inflation of the PBMA film, than had been observed for poly(vinyl acetate) (PVAc) and polystyrene (PS) previously investigated in our labs. Estimates of the surface energy contribution to film mechanical resistance for our measurements on PBMA are approximated 50% while those for PVAc and PS were between 8 and 31% depending on the details of the testing conditions including pressure and film thickness.

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