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**Dynamics of Polymer Thin Film Mixtures** BRIAN M. BESANCON, Department of Chemical Engineering, University of Texas at Austin, PETER F. GREEN, Department of Materials Science and Engineering, University of Michigan, CHRISTOPHER L. SOLES, NIST Polymers Division — We examined the influence of film thickness and composition on the glass transition temperature ($T_g$) and mean square atomic displacements (MSD) of thin film mixtures of deuterated polystyrene (dPS) and tetramethyl bisphenol-A polycarbonate (TMPC) on Si/$SiO_x$ substrates using incoherent elastic neutron scattering (ICNS). The onset of dissipative motions, such as those associated with the glass transition and sub-Tg relaxations, are manifested as "kinks" in the curve of elastic intensity (or MSD) versus temperature. From the relevant kinks, the $T_g$ was determined as a function of composition and of film thickness. The dependence of the $T_g$ on film thickness exhibited qualitatively similar trends, at a given composition, as determined by the ICNS and ellipsometry measurements. However, with increasing PS content, the values of $T_g$ measured by INS were consistently larger then those measured by ellipsometry. These results are examined in light of existing models on the thin film glass transition and component blend dynamics.

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