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**Dynamics of Thin Film Mixtures from Incoherent Neutron Scattering** BRIAN BESANCON, University of Texas at Austin, CHRISTOPHER SOLES, National Institutes of Standards and Technology, PETER GREEN, University of Texas at Austin — We examined the influence of film thickness on the segmental dynamics of thin film mixtures of polystyrene (PS) and tetramethylbisphenol-A polycarbonate (TMPC) on Si/SiO<sub>x</sub> substrates using incoherent elastic neutron scattering. By fitting the elastic scattering intensities to the Debye-Waller factor, a mean square atomic displacement (MSD) was calculated. The MSD was found to decrease with decreasing film thickness. Dissipative motions, such as those associated with the glass transition, are manifested as “kinks” in the curve of elastic scattered intensity (or MSD) versus temperature. The glass transition temperature was determined to decrease with decreasing film thickness despite the decrease in the segmental mobility with decreasing film thickness. The values of T<sub>g</sub> extracted from the neutron scattering are in quantitative agreement with prior T<sub>g</sub> measurements made using ellipsometry. These results are examined in light of existing models on the thin film glass transition.

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