

Abstract Submitted
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Predicting the Positions and Breadths of the Glass Transitions in Polymer-Diluent Mixtures J.E.G. LIPSON, Dartmouth College, S.T. MILNER, ExxonMobil — When a plasticizer is added to a polymer the effect is to lower and broaden the glass transition of the polymer. Less frequently studied is the opposite range of the concentration scale, which presumably raises and broadens the diluent glass transition. In fact, although the default assumption is that this miscible combination will exhibit only one transition, we expect two transitions on theoretical grounds, one for the polymer and one for the diluent. Both should be visible at intermediate compositions unless the pure component glass temperatures are rather close. The development of our theory has been stimulated by the appearance of recent experimental data on polystyrene dibutylphthalate; the results presented in the talk will focus on its application to a series of polystyrene-diluent mixtures. Finally, the ability of our approach to predict both the transition temperatures and breadths, as well as the conditions under which two transitions may be observed, will be discussed.

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