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### **Component Dynamics in Miscible Blends of PEO and PMMA**

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We investigate component dynamics in miscible blends of PEO and PMMA as determined from quasielastic neutron scattering combined with deuterium labeling. This blend has many unusual features. The glass transition temperatures of the two components are widely separated leading to extreme differences in the timescales of component mobility. This, in addition to the weak interactions in this system, makes it more likely than other blends to be influenced by concentration fluctuations. The chain connectivity picture does not appear to provide an adequate description of this blend for those cases in which it has been tested, and the small relaxation times of PEO have interesting consequences in the coupling model. We present results for the segmental dynamics of both components, in blends of 10-30 percent PEO by weight, the composition range where PEO remains amorphous. Incoherent measurements, which provide an estimate of self mobility, are discussed within the framework of each model, using molecular simulation to provide additional information where needed.