

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Component Terminal Dynamics in PEO / PMMA Blends TIMOTHY LODGE, ILAN ZERONI, SAHBAN OZAIR, University of Minnesota, FRED COLLABORATION — As our understanding of the linear viscoelasticity of linear homopolymers improves, miscible blends of linear homopolymers constitute model systems at the next level of complexity. PEO / PMMA miscible blends are remarkable in that the disparity between the component glass transitions and monomeric friction factors is immense. We are exploring this system further by obtaining component terminal dynamics for linear PEO/PMMA miscible blends of various compositions using two different methods: forced Rayleigh scattering, providing tracer diffusivity of a labeled component, and tracer rheology, examining the relaxation of a few long chains in lower molecular weight blend matrices of varying composition. Results obtained by the two methods agree well. Furthermore, results show that the mobility of PMMA is strongly affected by the presence of PEO, its monomeric friction factor dropping precipitously upon addition of small amounts of PEO. The mobility of PEO, on the other hand, is not as greatly affected by the presence of PMMA, although still much more than indicated by published measurements on PEO segmental dynamics. These results will be discussed in the context of current models.

Timothy Lodge
University of Minnesota

Date submitted: 02 Dec 2005

Electronic form version 1.4