Please set this talk on Mon, Tue, or Wed (March 14-16) just after its accompanying talk, MAR16-2015-000773.
(I have to take off on Thursday).

Abstract Submitted

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Nonlinear Stress Relaxation of "Quasi-monodisperse" Miscible Blends of *cis*-Polyisoprene and Poly(*ptert*-butylstyrene) HIROSHI WATANABE, YUMI MATSUMIYA, Inst. Chem. Res., Kyoto Univ. — Viscoelastic relaxation was examined for entangled miscible blends of *cis*-polyisoprene (PI) and poly(*ptert*-butylstyrene) (PtBS). The terminal relaxation times of PI and PtBS therein, $\tau_{\rm PI}$ and $\tau_{\rm PtBS}$, changed with the composition $w_{\rm PI}$ and the molecular weights $M_{\rm PI}$ and $M_{\rm PtBS}$. This ratio became unity when the $w_{\rm PI}$, $M_{\rm PI}$, and $M_{\rm PtBS}$ values were chosen adequately. For example, in a blend with $w_{\rm PI} = 0.75$, $M_{\rm PI} = 321$k, and $M_{\rm PtBS} = 91$k at $T = 40$C, $\tau_{\rm PI}/\tau_{\rm PtBS} = 1$ and $M/M_{\rm e} = 55$ and 8.3 for PI and PtBS. Under small strains, this blend exhibited sharp, single-step terminal relaxation as similar to monodisperse homopolymers, thereby behaving as a "quasi-monodisperse" material. Under large step strains, the blend exhibited moderate nonlinear damping known as the type-A damping for entangled monodisperse homopolymers. Nevertheless, PI had $M/M_{\rm e} = 55$ in that blend, and homopolymers having such a large $M/M_{\rm e}$ ratio exhibit very strong type-C damping. Thus, as compared to homopolymers, the nonlinearity was suppressed in the PI/PtBS blend having the large $M/M_{\rm e}$ ratio. This suppression is discussed in relation to the slow Rouse retraction of the coexisting PtBS chains (having $M/M_{\rm e} = 8.3$ in the blend).

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