## Abstract Submitted for the MAR06 Meeting of The American Physical Society

Relaxation Behavior of Acrylic Triblock Copolymer Gels MICHELLE SEITZ, KENNETH SHULL, WESLEY BURGHARDT, Northwestern University — When dissolved in alcohol, poly(methyl methacrylate)-poly(n-butyl actylate)-poly(methyl methacrylate) triblock copolymers form physical gels by the aggregation of the PMMA blocks into sperhical domains. Shear rheometry was used to study the relaxation behavior of gels formed in 2-ethylhexanol with different block lengths and polymer concentrations. Master curves were used to determine relaxation times at different temperatures. The relaxation time given by zero shear viscosity divided by the plateau modulus were in good agreement with the low frequency limit for a system with a single relaxation time. By increasing the PMMA block length from 9k to 25k or increasing polymer concentration from 5 to 30 vol. percent, the relaxation time increases by five orders of magnitude at a given temperature. The effect of block length and concentration on the aggregation number of the PMMA domains was determined by small angle X-ray scattering. Relaxation behavior is of practical importance because these gels are used for thermoreversible gelcasting of ceramics.

> Michelle Seitz Northwestern University

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