Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Fragility, spatially heterogeneous dynamics, and enhanced translational self-diffusion in low molecular weight glassformers**[1] MARIE K. MAPES, STEPHEN F. SWALLEN, M.D. EDIGER, University of Wisconsin, Madison — Recent measurements of self-diffusion coefficients in prototypical small molecule glassformers reveal behaviors believed to be universal for low molecular weight fragile glasses. These behaviors include enhanced translational motion and a self-diffusion controlled crystallization regime. Similar enhancements in self-diffusion relative to the Stokes-Einstein relation have been found for two glassformers of similar fragility: *o*-terphenyl with around 100 times faster self-diffusion than expected at $T_g$ +3 K, and *tris*-naphthylbenzene, with around 400 times faster diffusion at $T_g$. The temperature range of enhanced motion also overlaps a range of self-diffusion controlled crystal growth. The origin of enhanced diffusion is often attributed to spatially heterogeneous dynamics thought to exist in fragile glassformers. Relaxation time distributions in the literature for *o*-terphenyl and *tris*-naphthylbenzene, and their relationships with enhancement of self-diffusion, fragility, and heterogeneous dynamics are discussed.

[1] The authors acknowledge support for this work from NSF Chemistry (NSF-CHE 0245674).

Marie K. Mapes
University of Wisconsin, Madison

Date submitted: 11 Jan 2006

Electronic form version 1.4