Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Stable Glasses of a Low Fragility Organic Liquid M. TYLINSKI, A. SEPULVEDA, Univ of Wisconsin, Madison, A. GUISEPPI-ELIE, Clemson University, R. RICHERT, Arizona State University, Y.Z. CHUA, C. SCHICK, University of Rostock, M.D. EDIGER, Univ of Wisconsin, Madison — We have created stable glasses of the low fragility liquid methyl-*m*-toluate (MMT, $m = 60$). The MMT stable glass films are prepared by physical vapor deposition and characterized *in situ* with AC nanocalorimetry and dielectric spectroscopy. Stable glasses of MMT have lower heat capacities and increased kinetic stability compared to the liquid-cooled glass. The films transform into the supercooled liquid via two mechanisms. A propagating front controls the transformation of thin films while a bulk mechanism dominates the transformation of thick films. This behavior is similar to other stable glass systems and shows that stable glasses can be prepared from liquids with a very wide range of fragilities ($60 < m < 147$). In one respect MMT stands out from previously studied systems. When a stable glass of MMT is annealed above T_g the surface-initiated-front propagates 5 μm into the sample before the bulk mechanism dominates the transformation. This 5 μm length scale is significantly larger than what has been observed in other stable glass systems.

Michael Tylinski
Univ of Wisconsin, Madison

Date submitted: 14 Nov 2014 Electronic form version 1.4