

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Measuring the Nonergodicity in Glasses by Ensemble-Averaged Photon Correlation Spectroscopy¹ ERIC SVINGEN, DAVID SIDEBOTTOM, Creighton University — Although dynamic light scattering is used to monitor the dynamics of glass-forming liquids above the glass transition temperature, in the glass phase the absence of ergodicity results in a partial arrest of these dynamics and traditional time-averaged measures fail to monitor the remaining dynamics. Instead, scattering data must be processed in an ensemble-averaged manner by integrating the scattering from multiple regions by slowly translating the sample. We report studies of glass-forming $2\text{Ca}(\text{NO}_3)_2:3\text{KNO}_3$ (CKN) obtained below the glass transition temperature using a motorized translation system. Our findings will be used to assess the temperature dependence of the so-called nonergodic level that is predicted by certain mode-coupling theories to exhibit “cusp” near the mode coupling critical temperature.

¹This work is supported by a grant from NSF (DMR-0906640).

Eric Svingen
Creighton University

Date submitted: 02 Dec 2010

Electronic form version 1.4