

Abstract Submitted
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Dynamic Light Scattering in Strong Glass-forming Liquids DAVID
SIDEBOTTOM, Creighton University — Analysis is presented of photon correlation
spectroscopy (PCS) measurements in several glass-forming liquids of varying fragility
including alkali-modified boron trioxide. The measured dynamic structure factor of
these liquids exhibits a two step relaxation that indicates a bimodal pattern in the
distribution of relaxation times corresponding to regions of the fluid that are fast and
slow, respectively. In a carefully calibrated experiment, the amplitude of the slow
decay in the structure factor obtained by PCS is attributed to the volume fraction
of slowly relaxing material in the liquid. A correlation between this amplitude
and the fragility of the glass-forming liquid is demonstrated. This correlation then
suggests that the distinction between strong and fragile behavior is directly related
to volume fraction of slow material in the liquid; a quantity that should exhibit
systematic trends with respect to network polymerization.

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