Abstract Submitted
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Glass-Forming Liquids under Extreme Conditions[1] WILLIAM OLIVER[2], KEVIN LYON, TIM RANSOM, University of Arkansas — The nature of glass-forming liquids and the glass transition remain incompletely understood despite intense effort over many years. Though important contributions to our understanding of viscous liquids and glasses at high pressure have been made during this time, the overwhelming majority of studies have consisted of temperature-dependent studies at 1 bar. Recent experimental advances have begun to change this situation in important new ways [see, e.g., A.A. Pronin *et al.*, JETP Letters **92**, 479 (2010)]. Glass-forming liquids can be exposed to record high pressures of several GPa with the diamond anvil cell (DAC); however, sample volumes are tiny (nanoliters) and the DAC is most amenable to optical techniques. Recent methods for probing glass-forming systems in the DAC will be highlighted in this presentation including direct measurement of Tg(P), the combination of depolarized Brillouin and photon correlation spectroscopies to measure the alpha relaxation time as a function of pressure from picoseconds to many seconds, and lastly, in the spirit of recent temperature dependent studies at one bar [see, e.g., Zhang *et al.*, Phys. Rev. E **70**, 011502 (2004)], we can now carry out full spectrum analyses in which depolarized backscattering with forward scattering spectra are combined in a self-consistent way to determine the significance of things such as rotation-translation coupling.

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