

Abstract Submitted
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Brillouin scattering study of glass-transition dynamics in glycerol at pressures up to 60 kbar¹ WILLIAM OLIVER III, TITUS MORRIS, University of Arkansas, TAYLOR BYRUM, Oklahoma Baptist University — Isothermal pressurization data for glycerol, a prototypic intermediate glass-forming system, will be presented. Brillouin scattering studies were performed at constant temperature to pressures as high as 60 kbar. An equal-angle forward scattering geometry is used for which the pressure dependence of the refractive index is not required to convert Brillouin frequency shift data to sound velocities. Through a careful optical setup acoustic mode frequencies and linewidths are measured, and from data analysis methods that include convolution with the instrument function, both pressure-dependent sound velocities and true linewidths are extracted from these data. Further analysis allow us to model the relaxation time of the glass-forming system as a function of pressure and to calculate the equation of state for this important system to previously unexplored regions of the pressure-temperature phase space.

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