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Viscoelastic Relaxation of Molten Phosphorus Pentoxide[1] DAVID SIDEBOTTOM, Creighton University, JESSICA CHANGSTROM — We report the first ever dynamic light scattering study of the viscoelastic relaxation in anhydrous liquid P_2O_5. Properties of the time decay of the dynamic structure factor, including the average structural relaxation time and the stretching exponent, were obtained for temperatures from 850 $^\circ$C to near the glass transition ($T_g = 419$ $^\circ$C) using photon correlation spectroscopy. Analysis indicates that P_2O_5 is a strong glassforming liquid but one which exhibits an abnormally non-exponential relaxation near T_g. The viscoelastic behavior of P_2O_5 is compared with that of its metaphosphate counterpart to demonstrate how changes in bond connectivity influence both fragility and levels of dynamic heterogeneity.

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