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Book of abstracts

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RHEOLOGY OF GLASS-FORMING LIQUIDS AS A PROBE OF THE ENERGY LANDSCAPE

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Atomistic understanding of the dynamical slowdown and strong vs. fragile behavior of super-cooled liquids near glass transition remain one of the most intriguing and unsolved problem in condensed matter physics. Although several theoretical models have been proposed in the literature over the last decades to explain these phenomena, direct experimental tests of the validity and the relative merits of these models have remained rather scant. In this talk I will discuss the ongoing studies in our laboratory of the linear and non-linear rheological behavior of a variety of chalcogenide glass-forming liquids under oscillatory and steady shear. Experiments in the linear regime will be shown to provide important clues into the nature of the free energy landscape that controls the equilibrium dynamic properties of highly viscous liquids near glass transition, while those in the nonlinear regime will shed light on the modification of this landscape, that gives rise to phenomena such as shear thinning.