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Aging in Colloidal Glasses: a comparison between micro and macrorheology[1] XIAOJUN DI, XIAOGUANG PENG, GREGORY MCKENNA, Texas Tech University, TEXAS TECH UNIVERSITY TEAM — The analogy between colloidal dynamics and the dynamics of molecular glasses remains an important area of study. Of particular interest to our team is the aging responses of the two systems. We have been investigating the dynamics of colloidal systems composed of thermosensitive particles that change diameter upon change of temperature and comparing the behavior to what is expected in molecular glass-formers. In particular, we have found that concentration jumps in these systems mimic three important behaviors of molecular glasses: the intrinsic isotherm, the asymmetry of approach, and memory effect. In our early work, we were able to show, using multi-speckle diffusing wave spectroscopy, that although the three signatures are observed in the concentration jump conditions, they are not identical to the observations in molecular glasses. In the present work, in order to get better resolution for the temperature dependent properties, we are employing PNIPAAM/PS particles with core-shell structure to lessen the temperature sensitivity of the system. A series of different particles with different PNIPAAM fractions (different thermal sensitivity) is being investigated and a comparison of the aging between the microrheology and the macrorheology will be made.

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