

Abstract Submitted
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Comparison of the Physical Aging Behavior of a Colloidal Glass after Shear-Melting and Concentration Jumps XIAOGUANG PENG, GREGORY MCKENNA, Texas Tech Univ — We have prepared a thermosensitive core-shell PS-PNIPAM/AA particle system and have investigated the aging response of its colloidal dispersions subsequent to both shear-melting and temperature (concentration)-jump perturbations using sequential creep experiments to probe the response of the system. The experiments were performed in the vicinity of the glass concentration or temperature as evidenced by the strongly varying relaxation time with decreasing temperature. The colloidal glass displays aging behavior after both types of perturbation, but the kinetics of the aging are different, demonstrating that the structural changes induced by the mechanical perturbation are different from those induced by the temperature or concentration jump. We find that time-aging time superposition is valid in both cases and that the aging rate, as measured by the double logarithmic slope of the aging time shift factor vs. aging time, decreases with increasing temperature, similar to what is seen in aging of molecular glasses.

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