

Abstract Submitted
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Temperature Dependent Dynamics and Structure of Soft Colloids PRAVEEN AGARWAL, SAMANVAYA SRIVASTAVA, LYNDEN ARCHER, Cornell University — We have investigated the effect of temperature on the structure and dynamics of a particular class of soft colloids created by densely grafting polymer chains to the nanoparticle surface. These materials are able to display fluid like properties even in the absence of any external solvent and are termed as self-suspended fluids. Temperature dependent rheology of these materials has displayed several interesting features including increased solid like response with increase in temperature. Tethered polymer chain in this particular system is cis 1-4 polyisoprene, which is a type-A dielectric and allows the effect of temperature change on the global dynamics of the tethered chain to be separately investigated with broadband dielectric spectroscopy. Furthermore, we have investigated the effect of temperature change on the nanoparticle structure and dynamics with the help of small angle X-ray scattering (SAXS) and X-ray photon correlation spectroscopy (XPCS). Based on our finding, we have provided an alternative description of the jamming phase diagram applicable to this system.

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