Abstract Submitted
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A Light Scattering Study of Solvent Solidification in Colloidal Suspensions MELISSA SPANNUTH, Dept of Geology and Geophysics, Yale Univ, SIMON MOCHRIE, Dept of Physics, Yale Univ, JOHN WETTLAUFER, Dept of Geology and Geophysics and Dept of Physics, Yale Univ — Intermolecular forces between a solid and a foreign substrate can lead to the formation of a thin film of liquid between the two surfaces at temperatures below the solid's bulk melting temperature. These forces also result in fluid flow towards colder regions of the interface when a temperature gradient is present. When the fluid component of a colloidal suspension solidifies, the particles become encased within the ice both individually and in clusters. Near the melting temperature, a premelted layer bathes the particles, providing a restricted, but finite volume of liquid that facilitates Brownian motion through the background solid. We will present the results of our X-ray Photon Correlation Spectroscopy experiments by which we can characterize the dynamics of the particles in a solidifying colloidal suspension and thereby extract information about the amount of premelted liquid.

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