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**X-ray Photon Correlation Spectroscopy Studies of Dynamics in a Polymer Bicontinuous Microemulsion** KRISTIN BRINKER, WESLEY BURGHARDT, Northwestern University, SIMON MOCHRIE, Yale University — Polymer bicontinuous microemulsions are ternary blends of otherwise immiscible homopolymers that are compatibilized with their corresponding diblock copolymer, leading to an equilibrium spongy interconnected morphology with domain sizes typically on the order of 10 - 100 nm. Recent research has demonstrated that the dynamics of this interconnected structure leads to rich and complicated linear and nonlinear viscoelastic behavior. Direct probing of the equilibrium dynamics of order parameter fluctuations within bicontinuous microemulsion phases has been achieved using dynamic light scattering; however, the range of accessible scattering vector in light scattering is poorly matched to the intrinsic length scale of the microemulsion morphology. Here we report experiments using small-angle X-ray Photon Correlation Spectroscopy, performed using facilties at Sector 8 of the Advanced Photon Source, to make direct measurements of the dynamic structure factor in a polystyrene- polyisoprene microemulsion sample in the vicinity of the Teubner-Strey scattering peak associated with the dominant length scale of the bicontinuous phase.

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