

Abstract Submitted  
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**X-ray Photon Correlation Spectroscopy Measurements of Dynamics within Concentrated Eye-Lens Protein Suspensions<sup>1</sup>** JANA E DEBARTOLO, V. N. C. KARUNARATNE, JUSTIN BERRY, LAURENCE LURIO, Northern Illinois University, GEORGE THURSTON, Rochester Institute of Technology, ALEC SANDY, SURESH NARAYANAN, JOHN WEIZEORICK, Argonne National Laboratory — X-ray photon correlation spectroscopy (XPCS) has been applied in recent years to the study of dynamics within a wide range of soft materials. Its application to protein diffusion has been hindered by the weak scattering and the susceptibility of proteins to damage. We report the first application of XPCS to study the dynamics of concentrated suspensions of alpha and gamma crystallin proteins extracted from bovine eye-lens. The limitations of low flux and x-ray damage were overcome through a combination of a fast, high efficiency CCD, a kinoform lens and by limiting exposures to short intervals. Dynamics were measured both for alpha crystallin suspended in a concentrated matrix of gamma crystallin and concentrated alpha crystallin suspensions, showing time constants of a few tens of milliseconds at length scales corresponding to the protein diameter.

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