

NES07-2007-000034

Abstract for an Invited Paper  
for the NES07 Meeting of  
the American Physical Society

**a-Synuclein interactions with model membranes**

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a-Synuclein (a-S) has been identified as the major protein component of Lewy body deposits found in the brain tissue of persons suffering from Parkinson's Disease (PD). The interaction of a-S with membranes may be relevant both to its normal function as well as to the pathology of PD. While there have been numerous *in vitro* studies of a-S binding to lipids, much of the existing literature regarding these interactions is contradictory. Fluorescence correlation spectroscopy (FCS) allows for rapid, equilibrium characterization of solutions of fluorescently labeled molecules and thus is a powerful technique for quantifying protein-lipid interactions. We use FCS to characterize the binding of a-S to large unilamellar vesicles (LUVs) as a function of lipid composition and phase, vesicle curvature, and charge density.