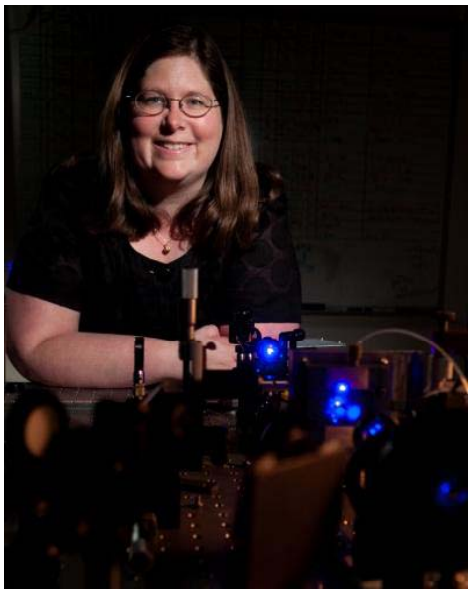
Condensed Matter Seminar

Title: Understanding Aggregation Diseases from Physical Principles



Speaker: **Dr. Lisa Lapidus**

Associate Professor,
Departments of Physics and Astronomy
Biochemistry and Molecular Biology
Michigan State University

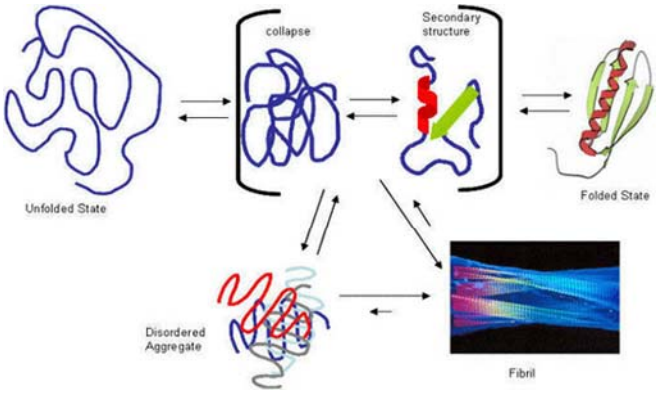
DATE: 12 / 7 / 2012, Friday

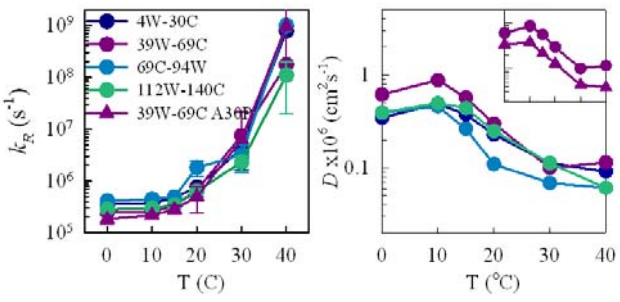
Time: 2:00pm ~ 3:00pm

Place: Room 245, Physics Building

Abstract:

The complexity and dynamics of unfolded protein ensembles may be the ultimate speed limit of folding and play a crucial role in aggregation, misfolding and subsequent disease. In my lab over the past several years we have investigated the reconfiguration dynamics unfolded proteins by measuring the rate of intramolecular diffusion, the rate one part of the chain diffuses relative to another. We have measured diffusion coefficients ranging over three orders of magnitude and observed that aggregation-prone sequences tend to fall in the middle of this range. In this talk I shall present our experiments on alpha-synuclein, the protein that aggregates in Parkinson disease, in which we correlated intramolecular diffusion of the disordered protein with solution conditions that promote aggregation. Finally we have begun measurements on small molecule aggregation inhibitors and found that some can prevent aggregation by shifting intramolecular diffusion out of the dangerous middle range.





Any questions to Takeshi Sakamoto, 313-577-2970 or ee4243@wayne.edu