

UNIVERSITY OF CENTRAL FLORIDA & THE SCHOOL OF EECS

present the Spring 2009

## EECS Seminar Series

### Shimon Weiss

*Dept. of Chemistry, University of California, Los Angeles*

**“Single Molecule Probing of Dynamic Conformation, Molecular Interactions and Dynamic Localizations In-Vitro, in Live Cells and in Small Organisms”**

Thursday, March 26, 2009 • 4:00 p.m. • Harris Center (HEC) 101

**W**e applied single molecule spectroscopy using alternating laser excitation (ALEX) to the study of transcription initiation by e-coli RNA polymerase. We found that the transcription factor sigma70 is not obligatorily released in the transition from initiation to elongation and that the mechanism for abortive initiation is governed by DNA scrunching. We also applied ALEX spectroscopy to the study of protein folding. We found that the collapsed state of protein L is not driven by native contacts, while the collapse of Acyl-CoA binding protein (ACBP) is likely to be driven by native contacts, as evident from the presence of residual structure in the denatured state. We demonstrated the use of peptide-coated CdSe/CdS/ZnS quantum dots for the study of lipid rafts in live cells' membranes and the use of peptide-coated near-infrared InAs/CdSe/ZnS quantum dots for molecular imaging in living cells and small organisms.