

Physical Seminar

“Elucidating Photoinduced Processes and Ultrafast Dynamics of Natural Light Harvesting Complexes and Model Systems”

Natural light harvesting complexes drive the first steps of photosynthesis, acting to absorb photons and transfer the excitation energy to reaction centers where charge separation can take place with a high quantum efficiency. Elucidating the mechanism of energy transfer and electron transfer in these complexes is essential to (1) understanding their high quantum efficiencies and subsequently (2) incorporating this information into design principles for artificial photosynthetic systems, photocatalysts, and organic photovoltaic materials. However, given the complexity of natural light harvesting complexes, there are still questions regarding the mechanism of energy and electron transfer in these systems, including the role of the local environment in these processes. In this talk I will discuss our recent studies in this area where we apply ultrafast pump-probe and multidimensional spectroscopies in the visible and mid-IR spectral regions to the natural light harvesting complex, photosystem I (PSI), and structurally simpler model systems that mimic specific properties of light harvesting complexes, including artificial light harvesting chromophores, isolated cofactors, and transition metal complexes. From our studies we gain insight into pathways of energy equilibration among different electronic states, information on solvation dynamics, and insight into how non-covalent interactions and spatial confinement act to alter the properties and dynamics of molecules.



Prof. Jessica Anna

University of Pennsylvania

Date: Tuesday, October 26, 2021

Time: 11:00 am (CT)

Host: Prof. Marty Zanni



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