Dynamics and Mechanisms of Ultrafast Photoinduced Charge Transfer in Confined Spaces, Interfaces, and Condensed Soft Materials

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Photoinduced charge transfer in redox active molecules occurs on the femtosecond-to-microsecond timescales and plays a critical, functional role in chemistry, biology and materials science. Studying such electron transfer mechanisms have been challenging because the radical pair intermediate states that give rise to cellular or materials function are often short-lived and difficult to measure, identify and quantify. In this presentation, I will discuss the use of broadband ultrafast transient absorption spectroscopy to study the fundamental mechanisms of charge, energy and electron spin dynamics in two recently published systems\(^1,2\): (1) small molecule-amino acid \(\pi\)-stacks in confined spaces and interfaces and (2) new organic materials for light harvesting in condensed soft materials for solar energy conversion. These studies in part (2) will facilitate in a fundamental understanding of the photon-to-electron processes in soft matter to ultimately guide the design of new materials with targeted ultrafast dynamics and optoelectronic properties for 3rd generation solar devices. Unpublished work on these two projects will also be presented.

References


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Time:  11:00 a.m. to 12:00 p.m.
Location: DM– 100, MMC (Live)
Marine Sciences Building Room 105 (MSB-105) – BBC (via Polycom)