Studying Ultrafast Spectral Diffusion and Excitation Energy Transfer Processes with Two-Dimensional Electronic Spectroscopy

Howe-Siang Tan, Nanyang Technological University, Singapore (howesiang@ntu.edu.sg)

www3.ntu.edu.sg/home/howesiang/

We report on our recent efforts in using 2DES to A) Unravel the complex excitation energy transfer network of plant photosynthetic light harvesting complexes. We observe multiple low lying excitonic states, only weakly coupled to the terminal state. This implies that these states rely on uphill energy transfer processes to channel its energy to the terminal state. B) Measure the spectral diffusion dynamics of molecules. We identify spectral diffusion components that arose from dative bond fluctuation dynamics of the metal center-solvent ligand interactions in chlorophyll molecules.