

From chlorophylls to photosynthetic complexes – studies of vibronic mixing using polarization-controlled 2DES

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Electronic-vibrational (vibronic) coupling or mixing seems to be ubiquitous in chlorophyllides and has been suggested to play an important role in photosynthetic processes, such as energy transfer and charge separation. It is, however, a highly elusive phenomenon to investigate. Polarization-controlled 2DES can extract signals from coherences, which correspond to superpositions of states excited via two transitions with different orientations of their dipole moments. This allows for exclusively studying electronic and vibronically mixed coherences, and therefore enables to directly detect the presence of vibronic mixing. In the talk I will discuss our studies of vibronic mixing in chlorophyll molecules in solution and in photosynthetic complexes.