

Dual Fluorescence Project

We are currently using our shaped femtosecond laser pulses to excite molecules such as DMABN and HPTS in order to observe their dual fluorescence. In each case, the excited state molecule can be involved in a charge transfer (intramolecular or solvent-mediated), which is accompanied by an intersystem crossing and a shift in the fluorescence wavelength. We are investigating the effects of spectral phase shaping on the population ratio between the two excited states. Charge transfer states are typically proposed for optical switches, and are usually involved in the conversion of photon energy to electricity. Our project aims to determine if pulse shaping is capable of manipulating the yield of charge transfer that results from single and multiphotonic excitation.

-Christine Kalcic