Chemistry and Biochemistry
Spring 2022 seminar

Please join us for the following seminar!

Putting molecules in their place: geometries for making and managing triplet excited states

Speaker:

Justin Johnson

Researcher VI

When:

Friday, March 25th
1:00 pm

Where:
GLNN 314

Many light-absorbing molecules change their properties when placed in close proximity to other molecules, and this collective effect can be used for advantage. For optoelectronics purposes, transfer of energy or charge amongst properly situated molecules must occur quickly and efficiently. In the emerging field of singlet fission, the excited state pathways can be manipulated to produce triplet-pair states, which have interesting properties. I will outline the various ways in which we juxtapose molecules to produce triplet-pair states through singlet fission, and then how we consider the subsequent fate of the triplet pair. Ultraefficient solar light harvesting is one potential outcome of singlet fission that relies upon these species dissociating such that separated charges are produced from each component triplet. Often this requires the introduction of a nanoscale interface, provided by mesoporous oxides or semiconductor quantum dots. The femtosecond to nanosecond dynamics probed optically after pulsed photoexcitation are important to track for understanding these processes mechanistically. From another perspective, preserving the triplet pair as a species with unique spin properties is intriguing for quantum information science applications. There, the spin state must be specifically monitored, and we use magnetic resonance tools to observe the initial state following triplet-pair formation, and its evolution toward a mixed state.

Department of Chemistry and Biochemistry
CSU, Chico
400 West First Street
Chico, CA 95929-0210
(530) 898-5259
www.csuchico.edu/chem/seminars
chem@csuchico.edu