

Physical Chemistry Seminar

Tuesday,
April 13, 2010

11:00 a.m.

Room 1315
Chemistry Building

Controlling Excited-State Energy Conversion in Metal Complexes and Solar-Cell Materials through Phase-Shaping and Molecular Structure



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The Damrauer group is broadly interested in controlling photochemical transformations by exploiting nuclear degrees of freedom to alter electronic coupling and reorganization energy between reactants and products. We approach this in our efforts to manipulate excited-state dynamics using adaptively and rationally phase-shaped broadband laser fields as well as in our design of chromophores for visible-light driven electron transfer photochemistry. In this talk I will highlight recent efforts to interrogate and control photochemical pathways in novel coordination complexes wherein internal motions modulate rates of electron transfer reactions and corresponding energy wasting back-reactions. I will also discuss efforts to use laser-pulse phase to manipulate photoproduct formation in polyacene films believed to participate in singlet fission reactions. Such materials are important candidates for third-generation solar cell materials. In this part of the talk I will explore new open-loop control strategies we have designed and I will discuss results from adaptive femtosecond pulse shaping methods.

Refreshments will be available prior to the seminar at 10:45 a.m. outside room 1315

Graduate Students may meet with the speaker at 1:15 p.m. in Room 8305f