West Virginia University

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Obvious Facts and Deceptions of Photoredox Chemistry

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Photoredox catalysis is transforming modern synthetic chemistry. Expensive, hard to handle stoichiometric reagents can be replaced by short-lived excited states using a visible light absorbing photocatalyst. While the scope of photoredox methods has grown at an exceptional pace, mechanistic and kinetic understanding has lagged behind. An overarching goal of research in the Swierk group is to provide a solid mechanistic foundation for reactions that are successful but poorly understood. This talk will describe how a combination of transient absorption spectroscopy, electrochemical methods, steady state photochemical measurements, and kinetic modeling can be used to map out the reaction mechanisms and kinetics of photoredox reactions, using prototypical examples involving cyanoarene coupling partners. Finally, the talk will discuss how factors unrelated to the kinetics of the coupling kinetics can serve to limit efficiency in photoredox reactions.

Students, meet the speaker after the seminar in a student/postdoc session from 4:45-5:15 pm

Date: Friday, Sept 23, 2022
Time: 3:30-4:30 pm
Location: Clark Hall 112