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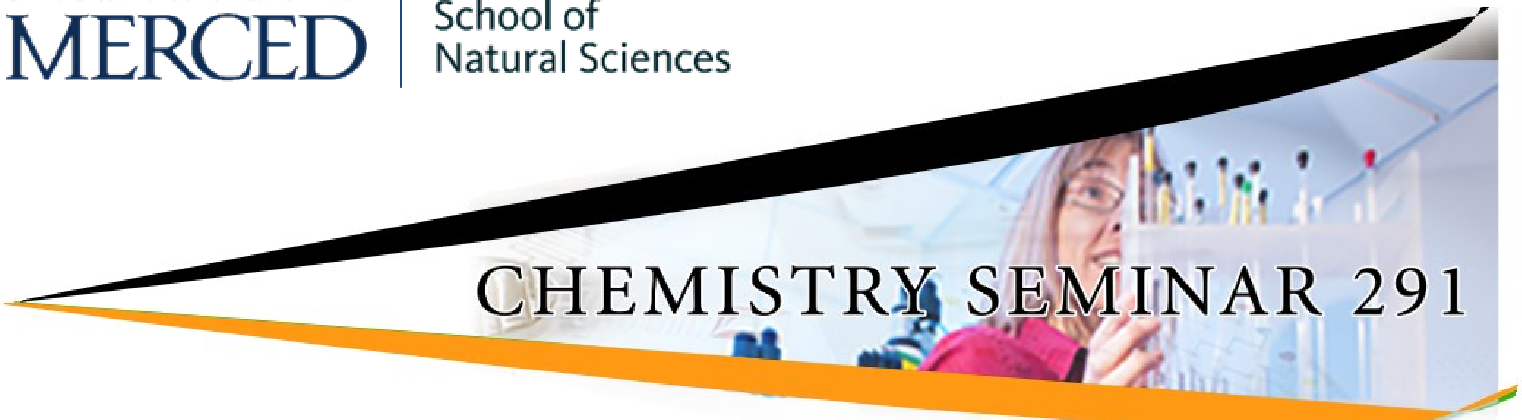

Single-Electron Transfers: From Synthetic Methods to Electroresponsive Materials

Date: **9/6/2019**

Time: **3:00 PM**

Location: **COB1 267**

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Abstract

Single-electron transfer is often a critical first step to many radical-chain processes of synthetic importance. A recent surge of interest in radical chemistry has led to advances in controlling the rate and efficiency of radical initiations that occur via single-electron transfer. Our lab has focused on Lewis acid/base interactions that affect the redox potential of radical initiators (both metal- and organic-based). We've utilized analytical electrochemistry to design reaction systems that efficiently promote C–H fluorination, alkylation, arylation, and amination. Recently, we have used a similar analytical strategy to study quasi-reversible electron transfers in purely organic small molecule frameworks. This work has led to the development of organic ligands that are capable of conferring their electron transfer properties to a variety of nanoparticle and quantum dot materials. These materials can be used to form three dimensional structures of various sizes that respond to electrochemical stimulus that varies depending on the organic ligand characteristics. These metal/organic nanomaterials have potential utility as capacitors or small molecule delivery systems using electricity as the stimulus for delivery.

About the Speaker

Professor Baxter received his PhD in 2010 at the University of Michigan studying nickel-catalyzed reductive couplings with professor John Montgomery. He was a Ruth Kirschstein NIH postdoctoral fellow with Professors Donna Blackmond and Phil Baran until 2013 working on radical difluoromethylation and the kinetics of metal-catalyzed C–H activation.

He's been an assistant professor at the University of California, Merced since 2014 focusing primarily on radical additions to aromatics and the mechanism of single-electron transfers.

Professor Baxter is the recipient of an ACS PRF and Hellman Foundation award, and recently received the National Science Foundation's CAREER award to study the mechanism of novel radical initiations via single-electron transfer.