



## Inter-University Chemistry Symposium

**Friday, September 25, 2020 @ 4:00 pm EST (1:00 pm PST)**

Please join to hear student talks from both the University of Michigan and the University of California Los Angeles! This is a great way to connect with and hear science from other departments!

**Zoom Meeting Registration:** <http://tiny.cc/UMICH-UCLA-symposium>

**UCLA**



**Stasik Popov – Nelson Lab** (15 minute talk)

### **C–C Bond Forming Reactions of Vinyl Carbocations Paired with Weakly Coordinating Anions**

Vinyl carbocations have been the subject of extensive experimental and theoretical studies over the past five decades. Despite this long history in chemistry, the utility of vinyl cations in chemical synthesis has been limited, with most reactivity studies focusing on solvolysis reaction. Here, the generation and reactivity of vinyl cations in non-polar media will be presented. Specifically, the C–C bond forming reactions of these reactive intermediates will be discussed under a few different catalytic systems. Mechanistic studies of these systems will also be examined. Important advancements from the fundamental reactivity to broader applications will be presented and some current/future efforts will be highlighted.

**Kierstyn Anderson – Spokoyny Lab** (15 minute talk)

### **Elucidating the photophysical properties of halogenated $anti\text{-B}_{18}\text{H}_{22}$**

Boron-containing compounds have been established as an indispensable class of luminescent compounds with excellent photophysical properties and versatile application. Triarylboranes and borate dyes have been intensely investigated, but only recently has this research extended into boron cluster-based molecules. Specifically, our work focuses on elucidating the factors governing the photophysical properties of  $anti\text{-B}_{18}\text{H}_{22}$ , which is an inherently luminescent, 18-vertex boron cluster. It exhibits intense blue fluorescence accompanied by a high quantum yield of 0.97. Despite these promising properties, its chemical reactivity has yet to be thoroughly investigated, and only a few  $anti\text{-B}_{18}\text{H}_{22}$  derivatives have been reported since its discovery in 1962. This project focuses on contributing to the underdeveloped synthetic foundation of  $anti\text{-B}_{18}\text{H}_{22}$  by producing a library of halogenated  $anti\text{-B}_{18}\text{H}_{22}$  compounds and assessing their photoluminescent properties. From this, guiding principles on how to control the luminescence profile and quantum yield of these unique boranes can be formulated.



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**Hannah Vonesh – Schindler Lab** (30 minute talk)

### **Interrupted Carbonyl-Olefin Metathesis of Cyclic, Aliphatic Ketones**

Functionalized pentalenes, indenenes, naphthalenes and azulenes represent common structural motifs in many compounds of biological importance. We herein describe a new iron-catalyzed synthetic strategy that enables access to these central scaffolds in two steps from commercial material. This method complements established transformations between carbonyl and olefin moieties, such as carbonyl-ene, Prins, and carbonyl-olefin metathesis (COM) reactions as a fourth reactivity mode. Experimental and theoretical investigations support a mechanism that interrupts the carbonyl-olefin metathesis reaction pathway through the distinct fragmentation of intermediate oxetanes resulting in the direct formation of functionalized pentalenes, indenenes, naphthalenes, and azulenes. The scope of this new iron-catalyzed transformation between carbonyl and olefin functionalities is demonstrated with 19 examples proceeding in up to 99% yield.



**Join us again on October 9, 2020 for another joint symposium between UMICH and UCLA!**

Contact Katie ([krykacze@umich.edu](mailto:krykacze@umich.edu)) or Evan ([romeroev@umich.edu](mailto:romeroev@umich.edu)) if you would like to present at future symposia!