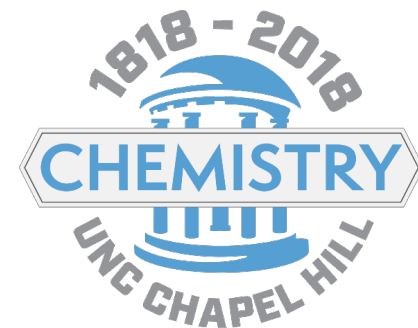


Introduction of Research into a Large Enrollment Organic Chemistry Lab Course

November 2, 2018

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Director of Undergraduate Laboratories



Overview

1. Incorporation of a Research Module (CURE)
2. Utilization of Graduate Research Consultants
3. Collaboration
4. Student Outcomes
5. Student Feedback
6. Future Plans



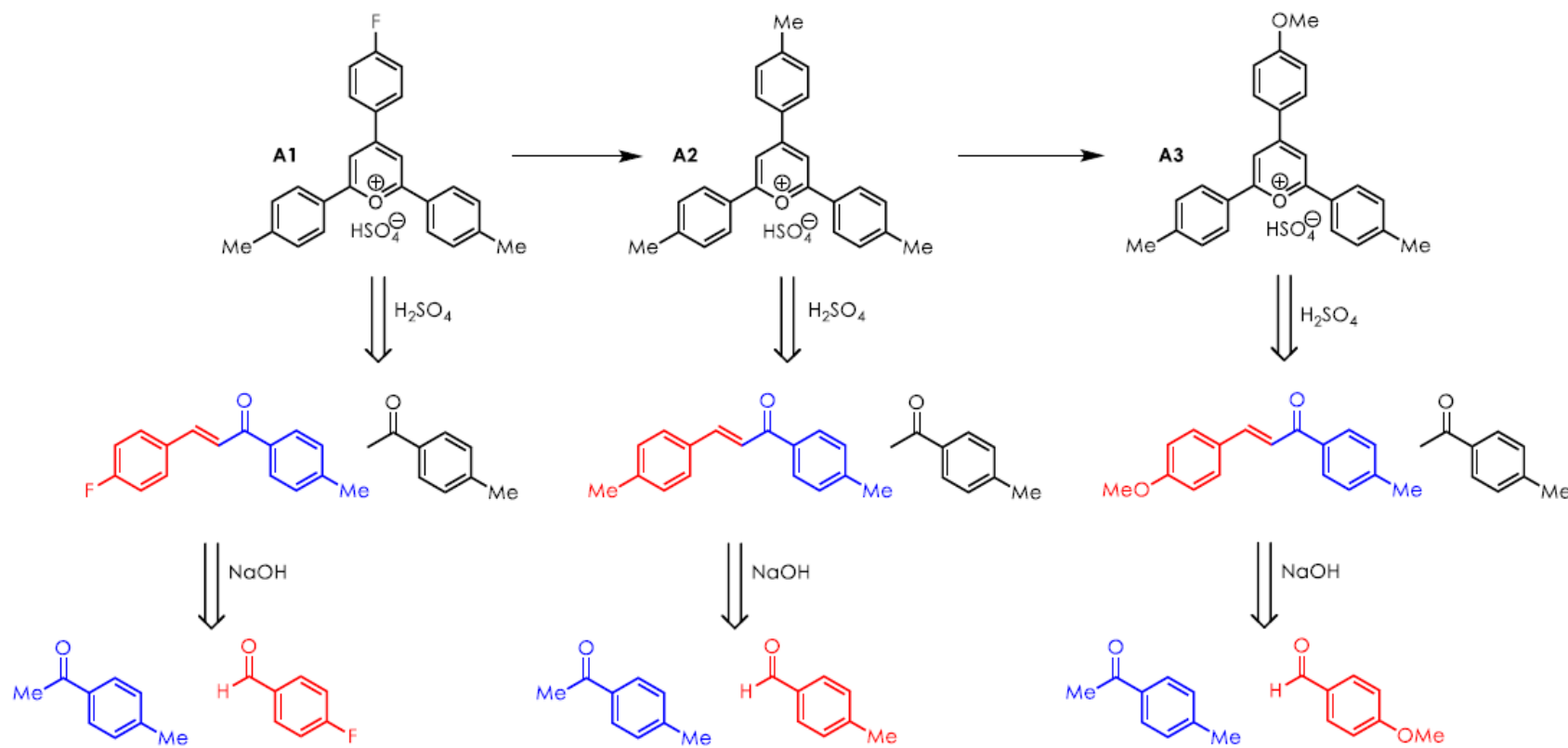
Incorporation of a Research Module (CURE)

- Skills and Objectives
- Project selection – safety, lab period, costs, product library
- Faculty support



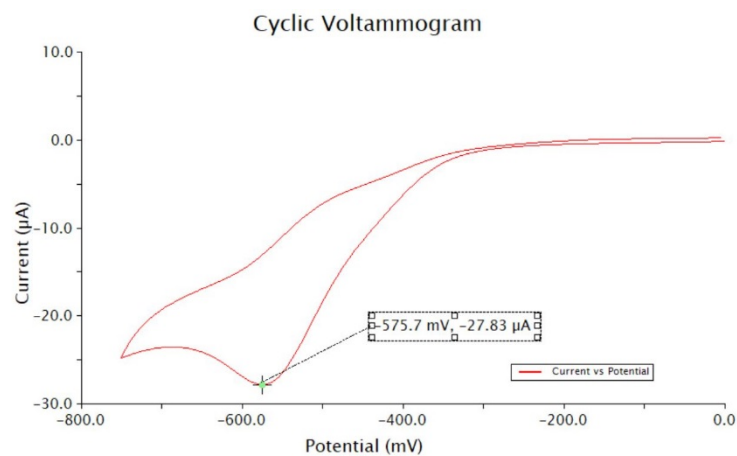
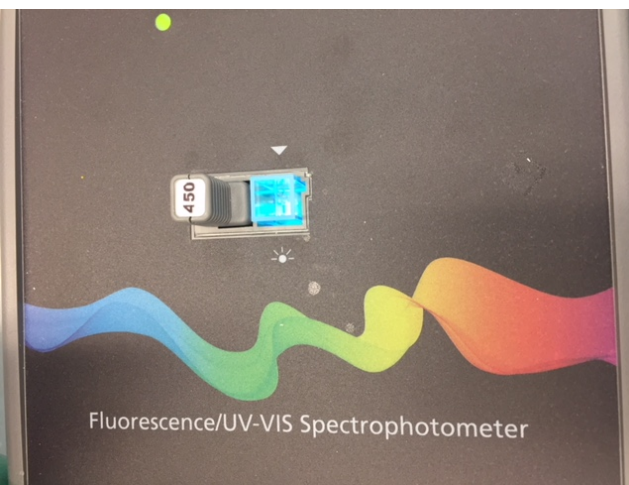
Synthesis of pyrylium bisulfate salts for photoredox catalysis

Series A

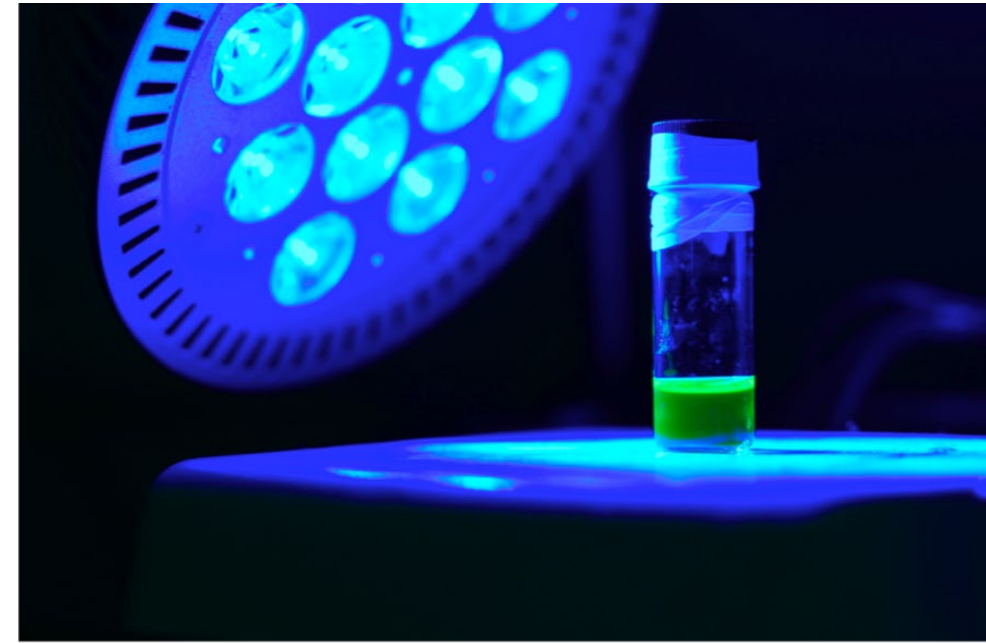
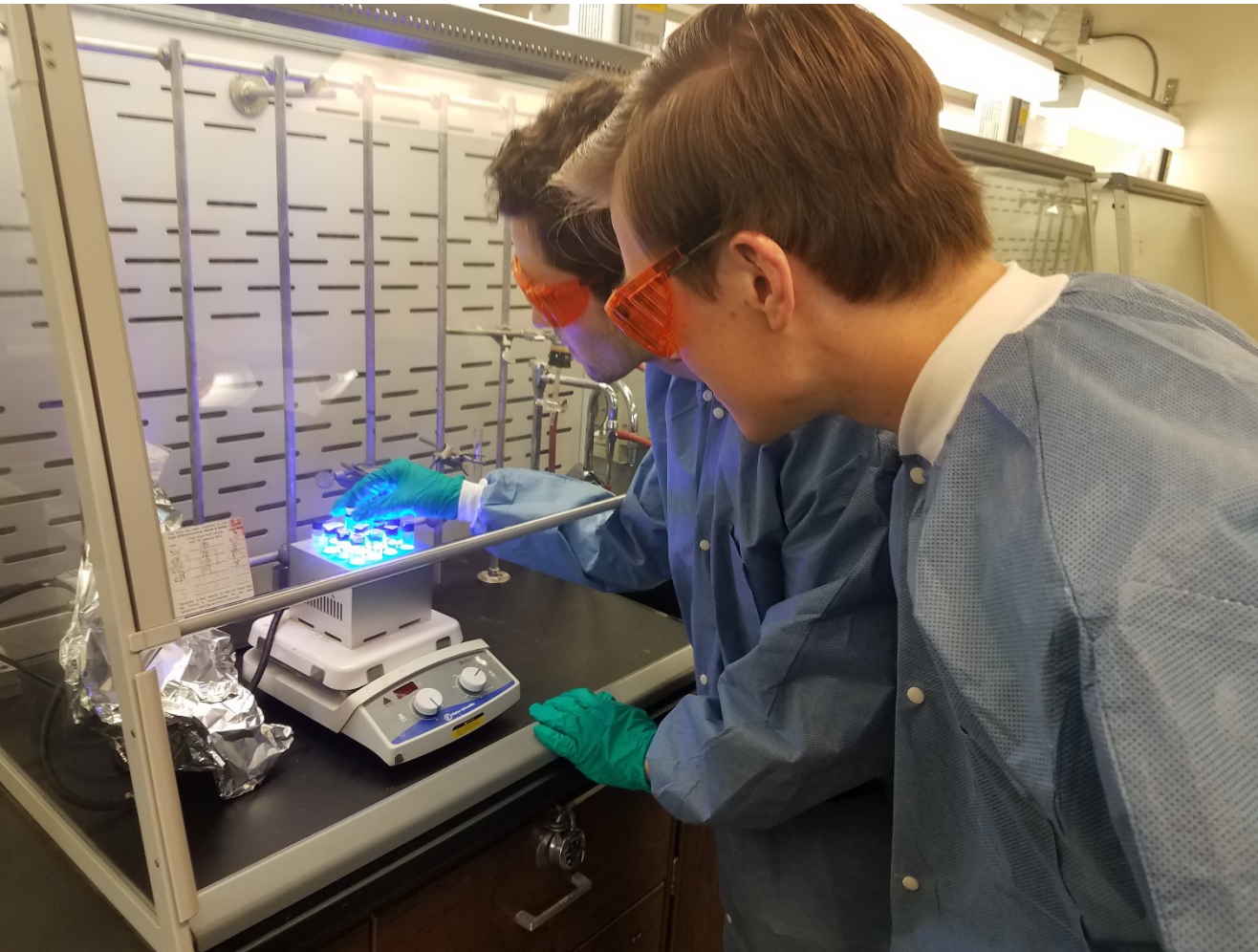
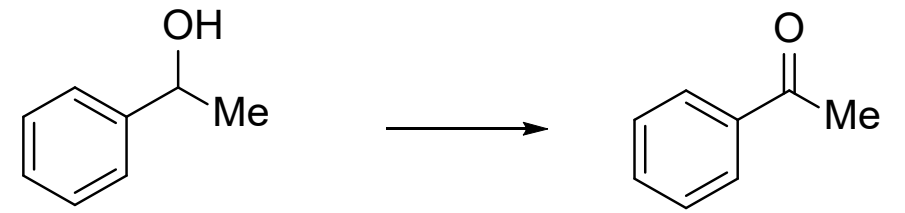


Analyses of products

- NMR
- UV-Vis
- Fluorescence
- CV

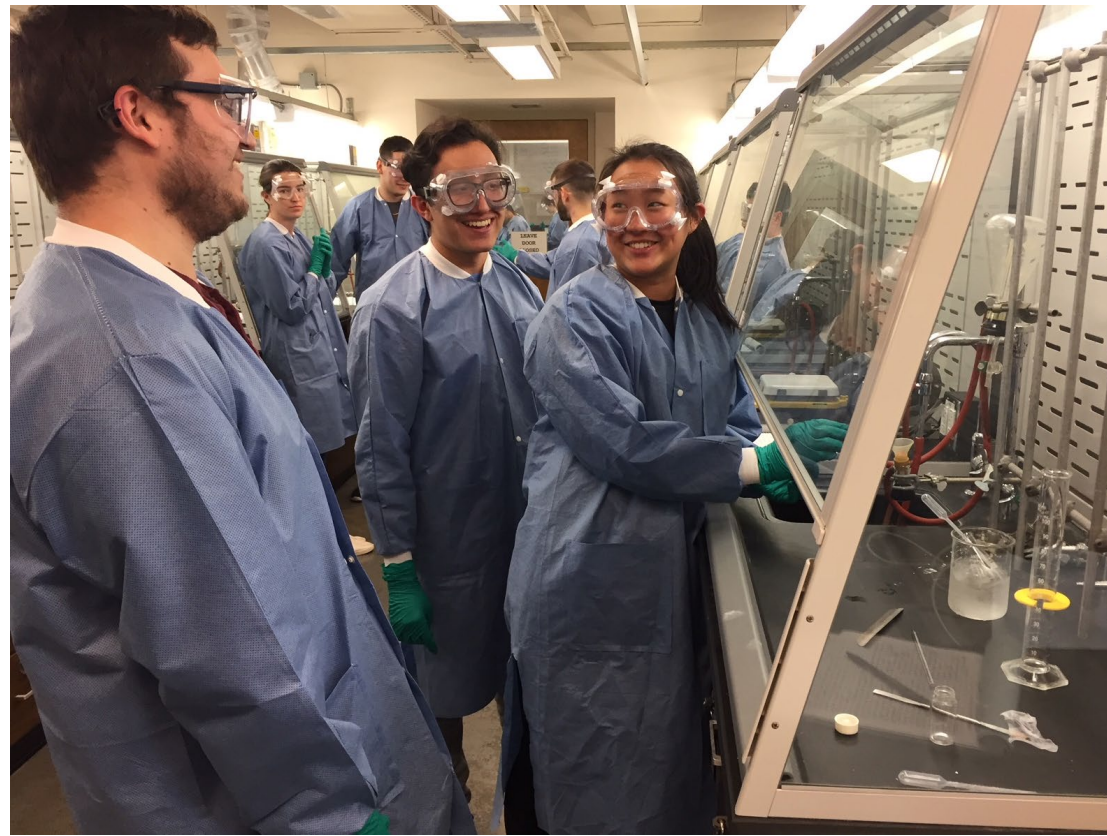


Testing catalytic efficiency



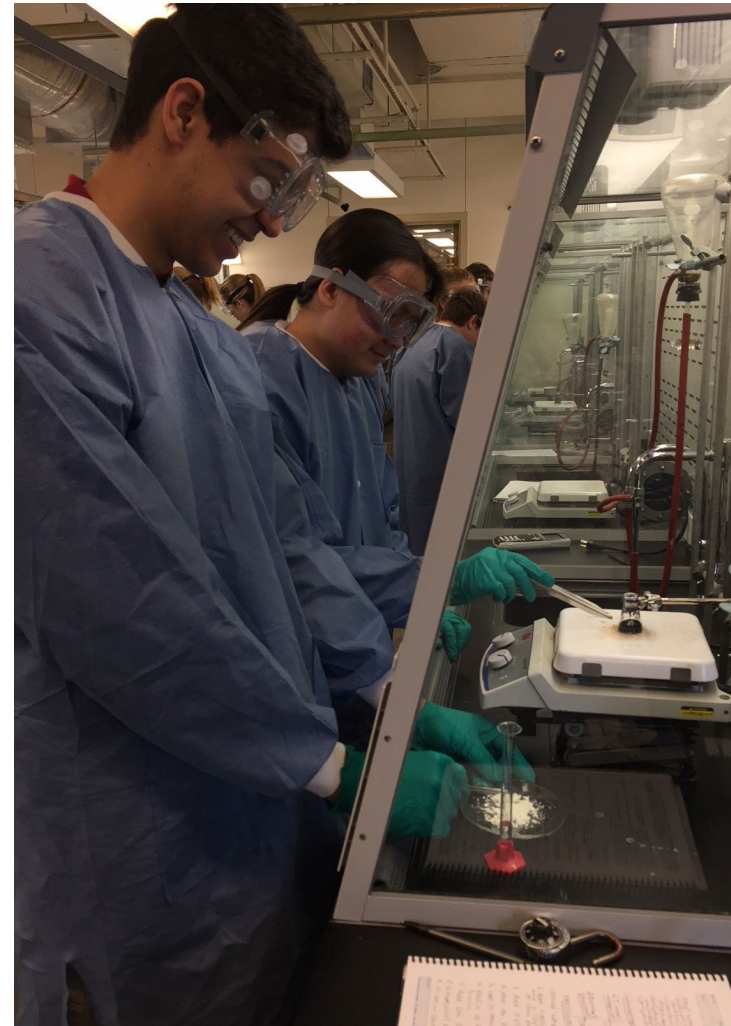
Utilization of Graduate Research Consultants

“It was interesting to work with people who were actually part of the lab that our data was going to.”



Collaboration

“Being able to work with other groups of people towards a common goal”



“A more relaxed and more community-like atmosphere. When we’re doing the lab manual experiments, there’s this pressure to get the “right” outcomes. Here, since we weren’t sure what the right outcomes were or if this procedure was going to get us there, the science experience was more enjoyable.”



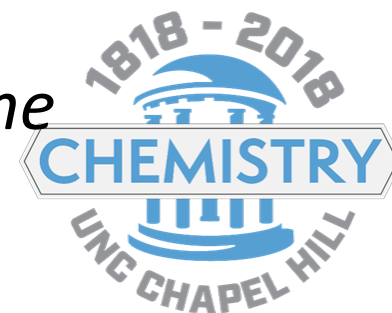
Student Outcomes

- Journal-style research paper
- 3-D printed molecule



“I think the revision process in the research paper was especially helpful. Normally, in labs we turn in a report, get a grade, and never look at it again. I think revision is essential to the learning process for writing and being able to write scientifically is a very important skill for the sciences.”

“The part I enjoyed most about this experience was 3D printing the pyrylium.”



Student Feedback - New discoveries, research

Writing a journal-style research paper

Collaboration

- *Being able to contribute to a project being worked on by a research professor at UNC was really rewarding. I liked feeling like I was a part of something bigger that could have further implications for the synthesis of medicines.*
- *Being forced to make sense and explain results without significant prior knowledge or expectations of what the outcome is “supposed to be.”*
- *I really enjoyed the sense that I was in charge of my own developing research rather than following the lab manual and proving ideas that already existed. The environment of the research project was appealing and it was an area where everyone reached out to help others and share ideas with combined knowledge. I felt like I was contributing and what I had to bring to lab was worth something.*
- *The most rewarding experience in this course was the experience of failing to synthesize the product in our initial attempt. This forced us to problem solve and revise our procedure to better synthesize and create a better yield. My partner and I found it really rewarding when we discovered what we could do better in our procedure to increase our yield.*

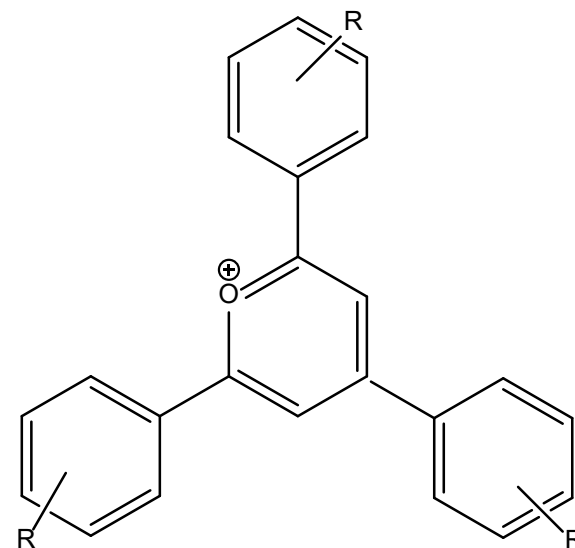


Future Plans

Poster presentations



Expand the library of compounds



Acknowledgements

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- College of Arts and Sciences
- CHEM262L Students
- Lars Sahl

<http://www.chem.unc.edu/people/faculty/nicewicz/group/>

