



## Chemistry Newsletter

*Spring 2019*

### CLENNAN GROUP RESEARCH

The Clennan research group currently consists of one postdoctoral associate, Shambhavi Tannir, and three undergraduates, Jewel Jackson, Taylor Weddle, and Cameron Clay. Our current research is designed to synthesize heli-acenes and to explore their electrochemical and photophysical behavior. Heli-acenes are helicenes tethered to the end of an acene. These beautiful molecules are being explored as possible surrogates for the very popular semiconductor, pentacene. The ultimate goal of our research is to construct a circularly polarized organic light emitting diode (cpOLED) with our new heli-acenes as the emitters. The National Science Foundation provides support for this project.

Jacob Weber was a graduate student in the research group until the end of March when he completed his Ph.D. He is currently a postdoctoral associate at Northwestern University. Jake was a co-author on a paper (*J. Org. Chem.* 84, 817-830 (2019), DOI: 10.1021/acs.joc.8b02671) that provides evidence that the unusual preferential

formation of helicenes in Mallory photocyclizations is due to establishment of a photostationary state between critical intermediates in the reaction.

Ed Clennan finished his 6-year appointment on the Petroleum Research Foundation (PRF) Advisory Board in May. He is still a member of the Editorial Board of the *Journal of Physical Organic Chemistry*, and the Editor of the *Journal of Sulfur Chemistry*.

### CHEMISTRY DEPARTMENT EVENTS

- **The 26<sup>th</sup> Rhoads-Raulins Lecture in Organic Chemistry on May 3, 2019**
- **Chemistry Summer Lecture Series in June 2019, with Guest Lecturer Vincent Lavallo from University of California, Riverside.**
- **Fall 2019 Coates Lecture with Guest Lecturer Pete Wolczanski from Cornell University.**

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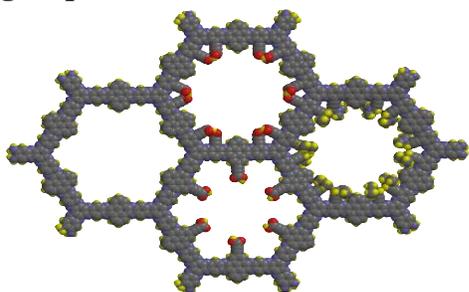
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College of Arts and Sciences  
Department  
of Chemistry

## HOBERG GROUP RESEARCH

In collaboration with Professors Bruce Parkinson and Katie Li-Oakey, we are synthesizing two-dimensional materials that are highly ordered, functionalized nano-porous materials. These are in the same class as graphene but are nitrogen containing and thus have a distinctly different set of properties and applications. The materials are comprised of a carbon/nitrogen framework (see below model) with pores that are filled with a variety of groups. The work is supported by the UW Carbon Initiative and NASA, and involves graduate students Valerie Kuehl, Bruce Mastorovich, undergraduates Veronica Spaulding, Zachary Ahrndt and Nathan Smith. We have initially focused on developing the materials for use in membrane separations, which have led to significant breakthroughs that were recently published in *J. Am. Chem. Soc.* (DOI: 10.1021/jacs.8b11482) and *J. Membrane Sci.* (DOI: 10.1016/j.memsci.2018.12.042). One of our other group members, Amanda Landis, completed her PhD in 2019 with the Hoberg group.



## HIGHLIGHTS



Patricia Goodson received her sixth PIE Award, and Carla Beckett received her third PIE Award, for excellence in teaching freshman introductory courses.

## CHEMISTRY STUDENTS JOIN THE SCIENCE ROADSHOW

During the 2018-2019 school year, Chemistry students Tyler Meyers and Joshua Walmsley joined the Science Initiative's Learning Actively Mentoring Program (LAMP) Roadshow. Led by Chemistry faculty member and director of LAMP, Rachel Watson, the Roadshow travels to schools across Wyoming to integrate hands-on science projects into K-12 classrooms. These active learning days allow undergraduate Wyoming Research Scholars, such as Joshua and Tyler, to showcase their STEM research and engage the K-12 students in doing real science.

Tyler traveled to Rozet Elementary school, Rock Springs High School and Douglas High School. In Douglas, Tyler worked with K-8 students from the rural communities surrounding Douglas. He led students through a hands-on activity using the natural pH indicators from blackberries. Students blew into straws to mimic the process of ocean acidification.

One 6th grade student said, "I learned a lot about the ocean and the pH scale...Thanks so much for coming- hope to see you again!"

Joshua Walmsley joined the Roadshow for trips to Douglas and Riverton. The seventh-grade students in Riverton were working to learn proportions. Thus, Joshua designed an activity in which students built a rectangle using string and thumbtacks. Joshua then asked the students if they could change the area of the rectangle even though the perimeter never changed. Some students immediately answered, "No!" But Joshua challenged them to test their prediction/hypothesis. Quickly they found that they could and could calculate variable proportions of area to perimeter.

When asked about this Roadshow trip, Joshua Walmsley says, "The Roadshow positively impacts all who are involved with the activities. It is great for younger students to get a taste of the scientific method and work through problems as a group...The Roadshow has helped me realize the importance and benefits of sharing my knowledge with others."

Since its inception in 2017, the Roadshow has impacted ~2300 students in 15 schools across 10 Wyoming counties.

## CHEMISTRY FACULTY LEAD THE WAY IN ACTIVE LEARNING TRAINING



The LAMP Fellows program is a yearlong pedagogical training opportunity for college educators. Since 2016, when the program began, the Department of Chemistry has led the way with educator involvement. Seven faculty have already completed the program. Michael Taylor is the most recent Chemistry LAMP graduate. Congratulations to Debashis Dutta, Ginka Kubelka and Navamoney Arulsamy who were selected by a team of five educational developers to join the 2019-2020 LAMP cohort.



## ZHOU GROUP RESEARCH

Jing Zhou's group continues the research effort on the growth of rare earth-based oxides and supported metal particles for their applications in fuel cells and energy production. Elfrida Ginting and Linze Du have been working on the project. Last fall, Linze successfully passed her prelim exam for her PhD study. Elfrida is writing her PhD thesis this spring in preparation to graduate. The group welcomed two new graduate student members (Daniel Braedt and Jintao Miao) last fall. Additionally, the group is delighted to host Chloe Tolbert and Bailey Kane (undergraduate students in Chemistry) for research this spring. The group is thankful for the financial support from NSF ([CHE1151846](#)) and Wyoming Carbon Engineering Initiatives to sponsor our exciting research projects and presentations of results at the American Chemical Society, American Institute of Chemical Engineers Meetings as well as in peer-reviewed journal articles.

## DUTTA GROUP RESEARCH

The Dutta research group currently has two graduate students, Sakur Mahmud, and Rajesh Deb. While Sakur is presently working on a device that allows electrokinetic energy generation based on spontaneous capillary flow through a charged membrane, Rajesh has been developing a micro-/nanofluidic platform that enables a new approach to DNA pre-concentration and separation. The Dutta group members published 3 articles over the past year two of which appeared in the journal *Electrophoresis* and one in the journal *Analyst*. Prof. Dutta also edited a book on *Microfluidic Electrophoresis* over the past year in the Methods of Molecular Biology Series and received a patent on the idea Sakur Mahmud is working on. Research work in the Dutta group is currently funded through grants from the National Institutes of Health, National Science Foundation and the Wyoming INBRE program.

## PATRICIA GOODSON & DEAN RODDICK RETIREMENT

### Comments from Patricia Goodson:

I will be retiring at the end of this academic semester (May 2019) after being at the University of Wyoming for 33 years. So first a little bit of a retrospective: I joined the Department of Chemistry in 1986 as a graduate student, earning my Ph.D. in 1990. For the next decade, I was employed as the staff crystallographer and then, in 1999, was hired into my present position of Academic Professional Lecturer. Coupled with the years in which I was doing temporary teaching in the department, I have over 26 years of experience teaching chemistry here at UW and have taught 9 different undergraduate courses in the fields of general, organic, and inorganic chemistry, as well as chemical literature.

During this last academic year, I was thrilled to receive two university awards: the PIE “Promoting Intellectual Engagement” award and Mortar Board’s “Top Prof” award.

I have enjoyed my time here, but at the end of the summer, I will be moving with my husband, Dean Roddick, and our furbaby, Rosie, to Pacific Grove, CA. I will definitely miss my friends and colleagues in the department, the University community, and Laradise.

### Comments from Dean Roddick:

With my impending retirement at the end of this Spring, the Roddick group needs to do a lot of lab clean-up and planning. In my 33 years at Wyoming I have acquired *a lot* of loose ends, and am left with unpublished results, “planned papers”, and perhaps some unplanned papers as well. It is hard to pull back from all this. My final two students have some work to do. **Phil Miller** needs to defend his thesis this summer, and **Tanner Remick** needs to get his project on a firm footing so that he can continue on under both Elliott Hulley’s and my continued direction. My final NSF grant will finish up this summer and I will stay through the wonderful Laramie summer to enjoy the best part of the year and do a bunch of packing. I plan to attend my final Organometallic Gordon Conference in Newport, Rhode Island this summer. It has been a pleasure being a faculty member in the Chemistry Department at the University of Wyoming, and I hope to come back and visit and see how the future of the department develops. Patricia and I are retiring to Pacific Grove, California, a beautiful sleepy little town on the California coast with a rugged coastline and a wonderful bay to explore. We hope to have friends come visit us and see it for themselves.



## UNDERGRADUATE AWARDS LUNCHEON



This year's Chemistry Department undergraduate awards luncheon was held on Thursday, April 25, 2019 in the Union Senate Chambers Room. Students who received Chemistry Department awards were recognized with certificates. The teaching assistants also received UW Chemistry Department mugs as a special thank you. The Awards Committee consisted of Brian Leonard, Edward Clennan and Patricia Goodson. Department Head David Anderson presented the awards. Kaycee Fillmore, Joshua Walmsley, Rachel Tenney, Victoria Spaulding, Tyler Smith, and Wesley Nietfeld were among the undergraduate students who received awards.



*Congratulations to  
all of the award  
recipients!*



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