University of Minnesota Duluth
Chemistry and Biochemistry
Department Newsletter:
Summer 2018

transitions

in this issue

General Chemistry Labs Adopt a New Approach

The laboratory is the perfect venue to inspire students to pursue a career in Chemistry or Biochemistry. In this setting, theory learned in class is put to practice, and the creative process of experimentation in pursuit of meaningful results is made tangible. For many students, General Chemistry Lab is the first time they experience the reality of what it means to work in a lab as a practicing chemist. This hands-on experience is ideal not only for developing technical and professional skills in our future chemists, but also for retaining talented chemistry and biochemistry students in the majors and in the profession.

To ensure our General Chemistry Laboratory sequence was taking advantage of these opportunities to the best of its abilities, we revamped the laboratory curriculum in the summer of 2017. The new curriculum was designed to include experiences that would not only develop basic laboratory and safety skills but also give our students the opportunity to design their own experimental protocols. The bulk of the work on this project was completed by two undergraduates, Elijah Farley and Victoria Fringer, under the supervision of Dr. Jacob Wainman (pictured above).

The first step to revising the laboratory curriculum was evaluation of the existing curriculum. Unsurprisingly, many of our General Chemistry experiments are simple – e.g. separations, titrations, simple precipitation reactions. These experiments are excellent illustrations of the types of chemical concepts encountered in General Chemistry – e.g. physical and chemical properties, stoichiometry, and solubility – and their simplicity helps to onboard new college students to the heightened expectations of college-level learning. However, the procedures outlined in the experiments in our laboratory curriculum were wholly prescribed, akin to following a recipe from a cookbook, and the expected results of the experiment were always known before the experiment. This approach is clearly limited, and perhaps, not terribly exciting for the students.

(continued on page 3)

Dear Friends and Alumni of UMD Chemistry and Biochemistry,

It is a bittersweet task to sit and write this last letter in Transitions as department head. I am very proud of our department and consider it an amazing privilege to have been department head over the past three years. However, I am looking forward to more opportunities to sample great lakes, to meet with my environmental chemistry and limnology/oceanography colleagues from around the world, and to work with amazing UMD undergraduate and graduate students. Please join me in saying congratulations and good luck to incoming department head Dr. Steve Berry and incoming associate department head Dr. Erin Sheets.

I hope that you enjoy reading through Transitions. In this year's issue, we highlight how the General Chemistry Labs have adopted a new approach (p.1, continued on p. 3). We also provide updates on the 2017-2018 academic year. Congratulations to the 76 undergraduates and 12 graduate students who received degrees this year! Our faculty and students are researching at the forefront of chemistry and biochemistry (with 29 publications in peer-reviewed journals), improving pedagogy, and providing science outreach in the northern Minnesota region. The department is excited to update you on the HCAMS building (see p.6), which will soon provide beautiful new laboratory facilities and will house our department office.

Our department's efforts are strengthened by the generous support of our alumni and friends. Your gifts help us to provide scholarships to deserving students (p. 14-15), to maintain our strong undergraduate research tradition, and to support our instructional and research facilities and undergraduate and graduate student development.

Please share with us your recent accomplishments and visit the department if you are in the area. We will be in our new department office next spring!

Sincerely,

Elizabeth Austin-Minor

Transitions - Summer 2018

The Newsletter of the UMD Department of Chemistry and Biochemistry

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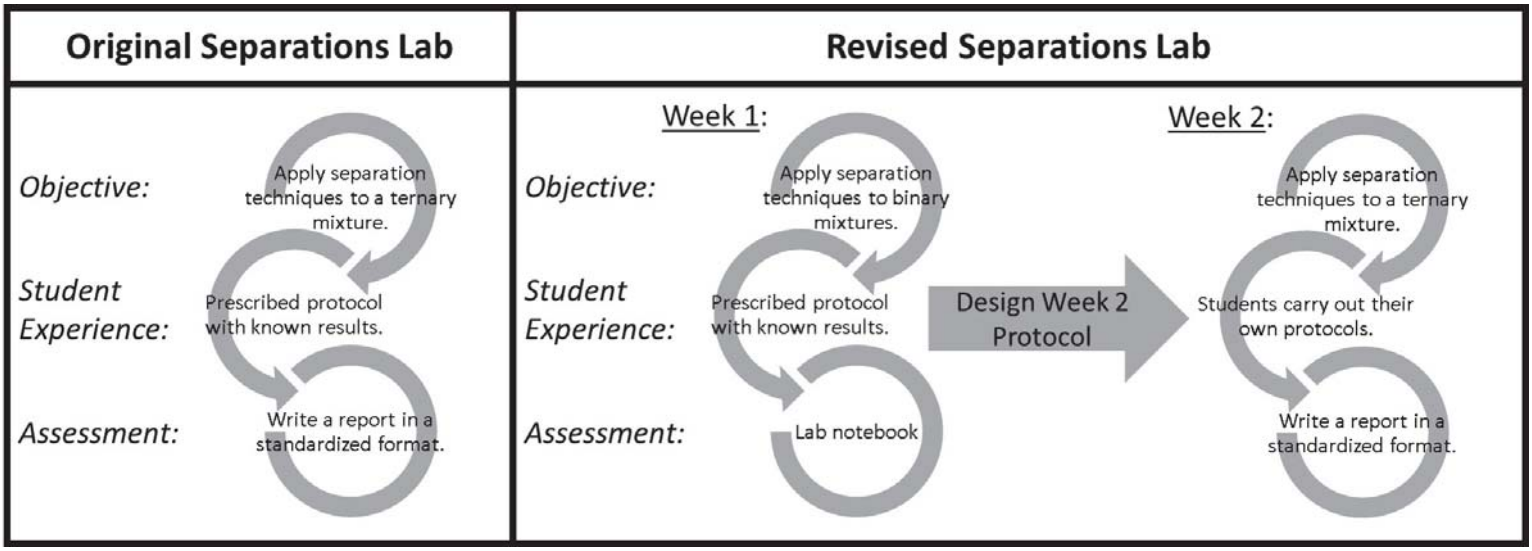
Transitions is published for alumni, donors, and friends of the Department of Chemistry and Biochemistry at the University of Minnesota Duluth

General Chemistry Labs Adopt a New Approach, cont.

Recent science education studies have shown that laboratory experiences should be more open-ended. Not only is this approach more reflective of working in a real-world chemistry laboratory, but it has also been shown to reinforce modern students' perceptions of their own abilities and their identities as scientists, key factors in student retention. However, open-ended labs are notoriously difficult to implement on a large scale. To minimize the burden on our laboratory prep staff, we adapted existing laboratory protocols to a two-week structure. In Week 1, students follow a prescriptive protocol that teaches them a certain technique or instrument. In Week 2, students are asked to solve real-world problem by developing their own protocol using the techniques or equipment from Week 1.

For example, in an existing laboratory, students separated a ternary mixture of salt (KCl), chalk ($CaCO_3$), and sand (SiO_2) by following a pre-determined separation scheme involving simple separation methods (e.g. gravity filtration, extraction, and decantation). In the revised version of this lab, students spend Week 1 separating binary mixtures (salt:chalk, chalk:sand, and salt:sand) using the aforementioned separation methods. In Week 2, students are given a ternary mixture of unknown composition and are asked to determine the amount of each compound in the mixture. To achieve this goal, students must design their own separation scheme based on their experiences in Week 1 and devise a method for accurately determining the amount of each substance. Such an experience better reflects the nature of working in a chemistry and biochemistry laboratory – applying previous knowledge to novel situations to solve problems.



A full year of similarly revised laboratory experiments was developed and piloted in the General Chemistry Laboratory for Majors courses during the 2017/2018 Academic Year. Over the course of the year, we anecdotally noticed that the students became more comfortable with designing their protocols. In addition, we noticed that students enrolled in these courses generally enjoyed this approach, as the open-ended labs were perceived as "more interesting" than the traditional labs. Many students did say they were confused or unclear on how to approach Week 2, a common feeling among many new chemists in a lab, but these sorts of complaints waned throughout the academic year. Likely, the gradual improvement in the students' performance and comfort was due to several factors including having adapted to college life, an increasing comfort with utilizing the resources available to them, and, perhaps, improved experimental design skills. We are currently developing an assessment strategy to more systematically unpack these observations.

Overall, these revisions are a promising starting point, and we will continue to refine the General Chemistry Laboratory experience over the next several years. Eventually, we intend to implement this course design in all of our General Chemistry Laboratory courses, thereby extending a more creative and real laboratory experience to students in other majors. As we move toward a more realistic and exciting General Chemistry Laboratory, we hope to not only see improved technical and professional skills in our students, but also to inspire students to pursue majors and future careers in Chemistry and Biochemistry.

Faculty & Staff Updates

Congratulations To:

Joseph Johnson received the 2017-2018 Pharmacy Teacher of the Year Award for first year Pharmacy class in the College of Pharmacy.

Venkatram Mereddy received class of 2019 Professor of the Semester, & Professor of the Year in the College of Pharmacy. Based on his lab research, UM has filed 3 patent applications on anticancer drug development and one of the patents has been licensed to a small biotech company for further development.

Kathryn Schreiner won the James Riehl Young Teacher Award in recognition of her NSF-funded work to develop a novel graduate education curriculum for WRS graduate program. The new curriculum aims at teaching graduate students the skills & knowledge needed for careers in and outside of academia.

Dawna Carlberg received the SCSE Unit Staff Award for learning, discovery, engagement, inclusiveness, sustainability, integrity, and excellence.

Welcome To:

Prashanth Poddutoori, our newest faculty member. He joined the department in January 2018 as an Assistant Professor. His expertise is Inorganic Materials Chemistry.

Fond Farewell To:

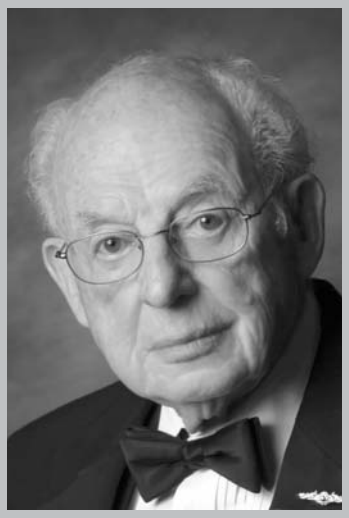
Christine Boisjoli left the department in May 2018. She accepted a position with UMD School of Fine Arts.

In Memory:

Dr. Norman Gill, passed away on March 12, 2018. Norm graduated from UMD in 1961 with a BA in Chemistry and went on to earn his Masters Degree in Chemistry from the Twin Cities campus in 1964. Norm worked as a research chemist at Cargill and Tennant until his retirement. In 2004, Norm and Joan Gill established the UMD Norm and Joan Gill Scholarship Fund to provide scholarship support for UMD undergraduate students studying chemistry and biochemistry.

If you would like to support the UMD Department of Chemistry and Biochemistry and any of its current missions, please use the giving envelope located in the center of this newsletter. If desired, please note any specific unlisted program you would like to contribute to (HCAMS Building, UMD Chemistry and Biochemistry Department Fund, etc.) via the “Other” option.

SCSE Academy of Science & Engineering



The Academy of Science and Engineering was established in 2002 to recognize alumni and special friends of the Swenson College of Science and Engineering who have distinguished themselves through their participation, commitment, and leadership in their chosen professions. Our 2017 inductee to the Academy is Dr. Helmer Scott Huseby.

Dr. Huseby attended Duluth Central high school, graduating in 1948. After high school, he attended UMD and graduated in 1952 majoring in Chemistry with minors in Zoology and Mathematics. Following college at UMD, he transferred to UMTC to become a medical doctor, obtaining his degree in 1956.

In 1957 he entered the United States Navy, assigned to the U. S. Navy School of Deep Sea Diving and experimental diving unit in Washington D.C. After two years in the Navy diving program, he began an Orthopaedic Residency at the U. S. Naval Hospital Chelsea, Massachusetts. Following his residency, Dr. Huseby was transferred to California to the Oak Knoll Naval Hospital located in Oakland California where he was a staff Orthopaedic surgeon.

In 1965, Dr. Huseby was assigned a tour in Vietnam with the U. S. Marine Corp in Chu-Lai a coastal region in South Vietnam. While on route to Vietnam he received orders to establish a military field hospital to provide surgical care for injured combat causalities.

Following his time in Vietnam, Dr. Huseby returned to Oak Knoll Hospital assigned to the amputee ward and later became Chief of Orthopaedics, establishing a training program in the area of Hand and Reconstructive Surgery. After 13 years practicing military medicine, he joined an Orthopaedic practice in Concord California. In 2001, he retired after practicing Orthopaedic Surgery for 40 years.

Major Grants Awarded

Viktor Zhdankin received a $341,000 grant from NSF to support his research on the development of new polyvalent iodine reagents. Professor Zhdankin is developing new classes of polyvalent iodine compounds, which are efficient and environmentally friendly oxidizing reagents with numerous applications in organic synthesis.

Kathryn Schreiner (co-PI) received a $530,997 grant from NSF. "Does organic sulfur make a significant and overlooked contribution to sediment sulfate reduction in low-sulfate environments?"

The Heikkila Chemistry and Advanced Materials Science (HCAMS) Building Update

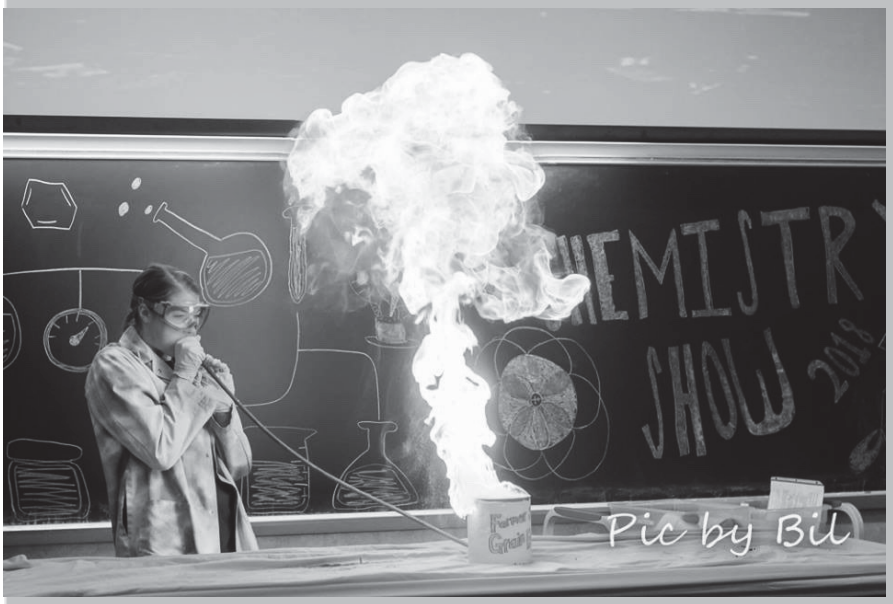
If you have been to the UMD campus in the past year, you may have noticed the new three story building being constructed in a portion of the Darland parking lot. This handsome brick building at the entrance to campus is the Heikkila Chemistry and Advanced Materials Science (HCAMS) building. HCAMS was designed in 2015-2016, with groundbreaking occurring on July 11, 2017. HCAMS is projected to be completed by early spring semester 2019 and will open for classes in fall, 2019. The building theme is "Science on Display" and its design and associated artwork will celebrate Duluth's cultural connections to rock, forest and lake, and to industry and materials. The finished building and landscaped grounds will be very impressive.

The Chemistry and Biochemistry Department now includes 16 tenured and tenure-track faculty, 6 term faculty, 6 staff, approximately 400 undergraduate majors in Chemistry and Biochemistry and approximately 30 chemistry master's students. HCAMS will house offices and research and teaching laboratories and the department office. The three floors of HCAMS will also contain gathering places for study groups, small meetings, and general conversations among faculty and students. The skywalk on the second floor, which is under construction this summer, will connect through the Medical School building to the rest of campus. The many windows in the building are designed to provide abundant natural light and several of these windows will also include fused-glass artwork. The entrance area will incorporate an outdoor seating location, with landscaping and artwork to create a perfect setting for our summer departmental cookouts and for quiet reflection. It has been an exciting year for the Chemistry and Biochemistry faculty as we fine-tuned instructional and research lab spaces, chose furniture, planned for building instrumentation and prepared for moving. The departmental building committee and university-wide HCAMS Art Committee have also been busy, looking at interior color schemes and art portfolios and proposals.

HCAMS also incorporates the AMC, a recently developed center which focuses on research of importance to the region and the state and will provide collaborative research opportunities between departmental faculty and students and the AMC. In addition, the AMC is affiliated with a new Applied Materials Science master's degree program, adding additional options for graduate students interested in the interface between chemistry and engineering.

Please feel free to contact the department office for further information on this building's progress. For more information about supporting this impressive project, please contact Carrie Sutherland, Development Officer, 218-726-6984.

What has the Chemistry and Biochemistry Club been Doing?



The Chemistry and Biochemistry Club (CBC) is one of the student run organizations in the UMD Chemistry and Biochemistry Department. The CBC meets weekly to run fun experiments, have social meetings to build community, and do outreach to the Duluth community. This past academic year, they had a few social nights that included the haunted hayride, Bentleyville, and even a brewery tour! Some of the outreach for the club last year included trips to Congdon Elementary and Meyers-Wilkins Elementary for a science night of multiple demonstrations that were educational and hands-on. They also participated in Science and Engineering Day at UMD where they did a hands-on activity on The Chemistry of Taste, which taught students on receptors and signal molecules, simple genetics, data collection and analysis, and the difference between correlation and causation. Every year, they have a Chemistry show that is open to the public. They do about 15 demonstrations on various aspects of chemistry, with a short explanation on how each experiment works. This year, over 230 people attended the show. Bring on 2018-2019!

Who are The Society of Chemists & Biochemists?

The Society of Chemists and Biochemists (SCB) is a student led organization in the department that aimed at creating professional chemists and biochemists. The group seeks to promote broadening interests of our majors, engagement of students with faculty, and professional development opportunities within the department's student population while simultaneously building community and having fun. The student club has been active for the past 4 years, having recently become the American Chemical Society Student Affiliates Chapter at UMD, and provides a great complement to the efforts of the Chemistry and Biochemistry Club.

SCB takes on a wide variety of activities throughout the year including hosting graduate school/professional school panels, inviting professors in the college to present their research/scientific journey, coloring their stress away during midterms, and enjoying a bi-annual potluck hosted at faculty members house. A couple highlights from the past year:

- **Hosting prominent scientist:** Dr. Marina Ramirez-Alvarado from the Mayo Clinic to give a seminar on her research and spend time with students to learn about their work at UMD and give advice for future endeavors.
- **SCB Buddy Program:** SCB began a buddy program for students where lower-classmen were paired with upper-classmen to provide an avenue for student-to-student mentorship. The upperclassmen were trained on best practices in a mentorship relationship and the student pairs had multiple club hosted events to encourage interactions.
- **ACS Program-in-a-Box:** SCB hosted 2 webinars through the ACS including "Chemistry ROCKS!" and "Fighting Opioid Addiction with Chemistry." Students enjoyed learning from experts and eating pizza that was compliments of the Local ACS section.
- **1st Annual Chemistry and Biochemistry Olympics**: Students and faculty competed in a series of challenges including lighting of the Bunsen burner, chemistry lab items "Price is Right," pipette tip shooting, pipette box tip filling races and more!

We had record turnout at meetings this year and it is most definitely due to our wonderful student officers, Kaleigh Nelles, Claire Baetzold, Morgan Tinquist, Matt Danley, and Josh Adamek. We look forward to another great year!

PeerUp Mentoring Program: Supporting Diversity in STEM

New to UMD in spring of 2017, the PeerUp mentoring program for underrepresented individuals in Science, Technology, Engineering, and Mathematics (STEM) was created in response to 2016 campus climate reports, in which 64% of students of color considered leaving UMD, stating that they felt that the "climate was unwelcoming" and "lack of a support group" (Rankin 2016). In response, student leader Akquaa Anye (B.S. Biochemistry '18), professors Anne Hinderliter, Ona Egbue, and Romesh Lakhan conceived and initiated a mentoring program called PeerUp, with the immediate aim of increasing student retention and bolstering inclusivity in STEM, and the long-term goal of promoting a STEM workforce that reflects the diversity of society around it.

Beyond campus climate reports, the urgency of programs that support and maintain levels of diversity within school and work environments is evident based on demographic disparities as compared to the state of Minnesota. In 2017, K-12 students in Minnesota have gender parity, and white students make up 67.5% of the population (Minnesota Report Card, 2017). Furthermore, in 25 years, 70% of Minnesota's projected population growth will be in people of color (WICHE, 2016). Our future student population is in stark contrast to the current composition of the student body at UMD. For example, in Swenson College of Science and Engineering (SCSE), only 32% of undergraduates are women, and 12% are people of color (Student Enrollment Pivot, 2017). By implementing a mentoring system in which students are leaders, and undergraduates from underrepresented groups are introduced into a self-sustaining support system in which mentees eventually become mentors, PeerUp hopes to offset the demographic disparities observable in SCSE, as well as build a stronger sense of community by providing underrepresented students with a host of familiar and friendly faces within their peers, upperclassmen, and faculty in their first years at UMD.

PEER UP

Participants in PeerUp are categorized (by year in school) into mentors or mentees, and all attend bimonthly gatherings, which include workshops in fluency in communication strategies, empathy training, self-defense sessions, study halls, and the occasional game night. Mentors are encouraged to meet mentees frequently over coffee or lunch to discuss large or small matters, as they arise throughout the semester. Through these activities, PeerUp introduces underrepresented freshmen to a strong support system early in their academic careers, training them to become future mentors in STEM, increasing their sense of comfort and belonging in SCSE, and thereby lowering the transfer rate of highly talented and alienated students out of UMD's highly-esteemed academic programs. In 2018, PeerUp, under the new leadership of chemistry graduate students Jeffrey McVay and Madelyn Petersen and additional faculty advisors Rachel Breckenridge and Ping Zhao, will extend its program to more departments within SCSE and will expand to include other underrepresented communities within the college.

~ Madelyn Petersen (B.S. English Literature, B.A. Chemistry, M.S. Chemistry '20)

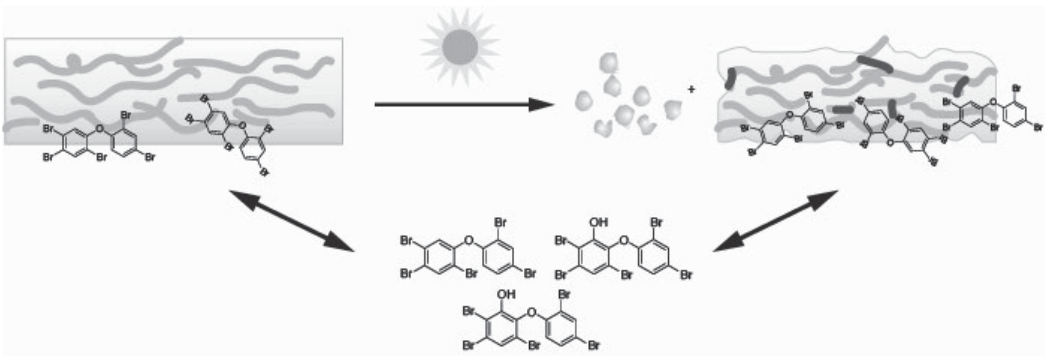
My Research: UV Light and its Effect on Plastic's Interaction with Pollutants

Plastics are a large topic of discussion in today's society. They provide us with many societal benefits and challenges ranging from protection to sustainability. This makes it important for us scientists to have an understanding of plastics and plastic transformations so we can advance their use. Dr. Melissa Maurer-Jones's research lab puts plastics, and specifically the environmental degradation of plastics, at the center of it all. Although all of us researchers in Dr. Maurer-Jones's lab deal with plastic every day, our projects widely vary. Our research ranges from working on predictive degradation models for polymer insulations in power cables to trying to create a faster, more efficient way to quantify microplastics.

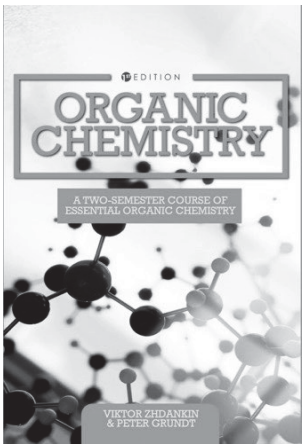
All of us want to learn more about the fate of plastics in the environment. My research specifically looks at the interaction between plastics and pollutants. Previous work has shown that plastics take up and hold, or sorb, pollutants. For now, I specifically want to look at this from one angle: how do ultraviolet rays (UV) from the environment affect plastics' ability to sorb pollutants?

The basis of this question points to figuring out UV light's role in changing the hydrophobicity of the plastics. Since every plastic has its own initial degree of hydrophobicity, answering this question will take multiple experiments. In order to make a valid conclusion, this question needs to be answered using a variety of plastics and pollutants. The hydrophobicities of the pollutants are also considered because the rate of sorption to the plastic should differ with differing hydrophobicities of pollutants. The hypothesis of my experiment is that as a plastic is irradiated with UV light, its 'apparent' hydrophobicity will change. This change in plastic hydrophobicity would therefore affect its own sorption capabilities. For example, if a hydrophobic plastic which attracts hydrophobic pollutants becomes less hydrophobic upon irradiation, it should not sorb this pollutant as well as it did previous to the irradiation.

Currently, my hypothesis will be tested using plastics that are commonly found in marine environments like polyethylene (PE) and polyethylene terephthalate (PET) and model pollutant molecules like ibuprofen and caffeine, which are not necessarily toxic but still persistent, human-contributed molecules in our environment. I am excited to see the results from my experiments and carry on this research in new directions.



~ Faith Murphy (B.S. Chemistry '17, M.S. Chemistry '20)



New Organic Textbook

Viktor Zhdankin and **Peter Grundt** have published a textbook "Organic Chemistry: A Two-Semester Course of Essential Organic Chemistry". The book is based on lectures taught by the authors at UMD for many years, and it covers all essential material within the requirements outlined by the American Chemical Society. The textbook is available from Cognella Academic Publishers (https://titles.cognella.com/organic-chemistry-9781634878999). A preliminary edition of this book was already used at UMD for one year. In addition to the textbook, a study guide by Peter Grundt, Sangeeta Mereddy and Viktor Zhdankin is also available from the same publisher (https://titles.cognella.com/solutions-manual-and-additional-problems-for-organic-chemistry-9781516524563).

My First Experience at an ACS National Meeting

Before heading to my first ACS National Meeting in New Orleans, LA, my PI Dr. Melissa Maurer-Jones, told me that it was going to be a stressful yet very exciting event to attend, but whew, that was an understatement! The first night I was there, I arrived later in the day when most of the crowds had died down and happened to cluelessly walk into a social event where a bunch of universities were set up with representatives there to tell you why 'their school is the best' and why you should go there. After being on a long plane ride, this was a lot of information to take in, but it did help me narrow down the list of prospective graduate schools I'll consider to apply.

The following day I attended a few seminars varying in the type of research. Each talk was very fascinating but also required a ton of attention as most of the topics were very complex. Beyond the topics being mentally draining, the conference was physically draining as the large convention created a lot of walking. Luckily, a little planning made it easier to make it to most of the talks that I wanted to go to. Still, by the end of the day I was exhausted and ready to refresh for the next event-filled day.

During the talks it was intimidating hearing all these people, whom I deemed much smarter than me, present on topics that I had not yet learned about. This made me hesitant at first to raise my hand and ask questions in front of an audience because I felt that I would make a fool of myself by asking such a "menial question." Eventually, I gathered the courage and asked a question, which was received very well, and helped me gain the confidence in future presentations to ask clarifying questions.

While at the ACS, I also got the opportunity to present a poster about my current research as an undergraduate. This was arguably where I felt the most confident as I was telling people about the project that I had been working on for the past two years. During the presentation session, there were many people that came up and gave me recommendations about what I should look at or try next. This was very helpful to get ideas from peers and professors that had more experience in the field and may know how to overcome some of the hurdles I have experienced for my research.

My final recommendations to all those who are going to attend their first conference is to: have fun, ask questions, go to presentations on topics that are not something you would think you're interested in, sightsee, go to every event that you can (without exhausting yourself too much), and most of all try to not be intimidated by the people that are there as they have been in your shoes at some point during their life.

~Liam Fawcett, Chem-BS, Biochem-BS, Class of 2019

Student Profile: Kaleigh Nelles

Our department often relies on outstanding undergraduate students to help in our teaching mission as undergraduate teaching assistants (TAs) for introductory courses such as general chemistry. We take pride in providing these training opportunities on teaching to both our graduate and undergraduate students as a part of our mission.

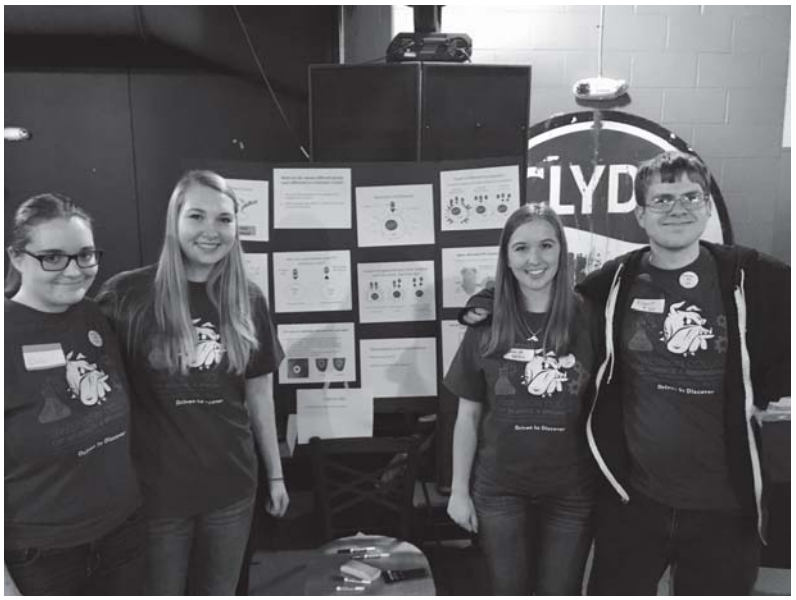
I had the privilege to teach General Chemistry I & II for our majors since the Fall-2016. This spring, Ms. Kaleigh Nells was my undergraduate TA for CHEM 1175 (65 students), an experience that changed my perception of what our best teaching assistants, both graduates or undergraduates, can do.

For assessment purposes, we had a weekly homework, on-line quizzes, three midterm exams, and a final ACS standardized exam. For the homework assignment, the students return a hardcopy of their answer that was graded by TAs in a timely manner along with some feedback. The TAs also helped me manage the course website by posting the students' grades and to identify struggling students in the mid-semester so that we could reach out to them in a timely manner. In the weeks prior to the midterm examinations, the TAs also held review sessions. Ms. Kaleigh Nelles was simply one the best TAs that I had the privilege to work with so far.

In their TAs evaluation at the end of the semester, for example, students wrote the following about their experience with Kaleigh: "*She brought excellence in every way she could",* "*Interacts with all the students, puts many hours in outside of class for our benefit*", "*Never letting the students give up on themselves even when they really wanted to*", "*Found time out of class to meet if they were busy during office hours*", "*Very, very kind and helpful throughout the course, gave great examples and provided great feedback*", and "*Extremely helpful and made an effort to help whenever she could, encouraged collaboration and supported everyone equally, communicates very clearly through emails, I was always aware of what was coming up in the class*".

Over the last three years, Kaleigh has also played a leading role in the nascent Society of Chemists and Biochemists (SCB) as a student-driven organization in our department that focus on creating professional chemists and biochemists through networking, workshops on career development, resources for success at UMD, and creating a community within the Department.

Kaleigh also volunteered for the Students in Transition program and as Champ the Bulldog mascot, the Welcome Week RockStar during students' orientations, the Safe Haven Shelter, and at the Essentia Health Palliative Care Unit.



Ms. Kaleigh Nelles (from Ashland, WI) has graduated in May with BS degree in Biochemistry with 3.95 GPA and Summa Cum Laude for the Latin honors.

Kaleigh has accepted an offer from the University of Minnesota School of Medicine, Duluth campus. She aspired to become a family practice physician with an emphasis on underserved and rural communities.

Ms. Kaleigh Nelles set a very high standard for our graduates to follow with her strong people skills, work ethic, keen intellect, empathy and passion, and leadership abilities. She represents the best our department can offer.

~ Ahmed A. Heikal, Ph.D., Professor of Physical Chemistry and Biophysics, UMD

Graduating Seniors: 2017-2018

Maleehah Ali, BA-Biochem, BA-Chem
Akquaa Anye, BS-Biochem, BA-Chem
Ntsang Anye, BS-Biochem, BA-Chem
Cody Alpin, BA-Chem
Ashlee Baca - BA-Biochem
Salem Bajjali, BS-Biochem, BA-Chem
Mary Helen Berntson, BA-Biochem
Alida Besch, BS-Biochem, BS-Chem*
Shawn Bourgeois, BS-Biochem
Binh Bui, BS-Biochem, BA-Chem
Forrest Dalbec, BS-Chem*
Jaclyn Eller, BS-Biochem, BA-Chem
Theodore Erickson, BA-Biochem
Haley Ersfeld, BA-Biochem
Josie Flesvig, BS-Chem
Victoria Fringer, BS-Biochem, BA-Chem
Vitaliy Goncharov, BS-Biochem
Madeline Grimm, BA-Biochem*
Erin Groth, BS-Biochem, BS-Chem*
Danica Grover, BS-Biochem, BA-Chem*
Emily Hartman, BA-Biochem
Joseph Havener, BS-Biochem
Holly Israelson, BA-Chem
Matthew Iverson, BS-Chem
Christian Junes, BS-Biochem

Andrew Knapp, BA-Biochem
Ross Koivisto, BS-Biochem
Confidence Kpegeol, BA-Biochem
Seth Kriha, BA-Biochem
Rachel Ladzinski, BA-Biochem
Brad Landis, BS-Chem
Kristin Larson, BA-Biochem
Kevin Laspa, BA-Biochem
Elizabeth Lastovich, BS-Biochem, BA-Chem
Joe Laursen, BA-Biochem
Hyosub Lee, BS-Biochem, BS-Chem
Ryan Leighton, BS-Chem*
Jeffrey Lukanich, BA-Chem
Nicholas McCormick, BS-Biochem
Luke McCutcheon, BS-Biochem, BS-Chem*
Kevin McDonald, BA-Biochem
Jeffrey McVay Jr, BS-Biochem
Jasmin Mellesmoen, BA-Biochem
Benedict Monley, BA-Biochem*
Bryan Motzko, BS-Chem
Alex Naughton, BS-Biochem
Kaleigh Nelles, BS-Biochem, BA-Chem
Savannah Nelles, BS-Biochem, BA-Chem
Robert Nickoloff, BS-Chem
Tana O'Keefe, BS-Chem*

William Olson, BA-Biochem
Allan Omete, BS-Biochem, BA-Chem*
Jessica Pavek, BS-Chem
Marrea Peters, BA-Biochem
Madelyn Petersen, BA-Chem
Torvin Rajala, BS-Chem
Riley Raskob, BS-Biochem
Bailey Rasmussen, BA-Biochem
Karina Rauenhorst, BA-Biochem
Kyle Ross, BA-Biochem
Erin Salo, BS-Biochem, BA-Chem
Kayla Schabacker, BS-Biochem, BA-Chem*
Andrew Shrake, BS-Chem
Michael Simon, BS-Biochem
Michael St. Martin, BA-Biochem
Hannah Stoffel, BS-Biochem, BA-Chem
Kristine Theis, BS-Chem
Emily Thiessen, BA-Biochem
Lee Utecht, BS-Chem
Lyseette Velez, BS-Biochem
Jacob Weaver, BA-Biochem
Nicole Wieden, BA-Biochem
Madelynne Zellman, BA-Biochem
Jingyao Zuo, BS-Chem

*** With Distinction (Departmental or University Honors)**

Master of Science in Chemistry Program Graduates: 2017-2018

The Master of Science in Chemistry degree program at UMD provides an excellent opportunity to acquire and develop advanced technical expertise and problem-solving skills expected of today's chemical and biochemical professionals. Coursework is designed to provide a firm fundamental basis for students going into a variety of chemical specialties in both professional and academic settings. Following is a list of students who are completing their Master's degree over the 2017-2018 academic year:

Top Row (L to R): Charlie Liggett, Alexander Carlberg, Andrew Bosio, Christian Coffman

Middle Row (L to R): Benjamin Kreitlow, Sarah Moe

Bottom Row (L to R): Hong Bok Lee, Alexander King, Ellen Cooney, Katelyn Koval

Student Awards

Our department is fortunate to be able to recognize our outstanding and deserving students. Former students, faculty, and friends of the department established some of these awards; others are from organizations in the field. Award details can be viewed at https://scse.d.umn.edu/about/departments-and-programs/chemistry-biochemistry-department/scholarships-awards.

UNDERGRADUATE AWARDS:

Swenson Family Foundation Scholarships for Academic Excellence
2017/2018: Sophie Boisjolie-Gair, Samuel Breimhurst, Gunnar Frahm, Matthew Rigdon, Juliette Villeneuve, Kaitlyn Wolf

Achievement in Organic Chemistry (ACS) Award
2017/2018: Allan Omete

Achievement in Inorganic Chemistry (ACS) Award
2017/2018: Alida Besch

Achievement in Physical Chemistry (ACS) Award
2017/2018: Alida Besch

Achievement in Organic Chemistry (POLYED) Award
2017/2018: Rowan Simonet

Peterson Memorial Scholarship
2017/2018: Courtney Smith

Lake Superior Section of ACS Outstanding Senior
2017/2018: Alida Besch, Ryan Leighton

The American Institute of Chemists Outstanding Senior
2016/2017: Erin Groth

F.B. Moore Academic and Leadership Award
2017/2018: Ryan Leighton

General Chemistry Award for Excellence
2017/2018: Hailee Albers, Nathan Horsch, Hanna Leapaldt, John McClay, Sam Nelson, Jordan Schwarz

Warren F. Davis Award for Excellence in Biochemistry
2017/2018: Julie Beenken, Austin Cox, Mark Delong, Alexis Doucette, Cassie Hamm

Catherine E. Cox Scholarship for Chemistry & Biochemistry
2017/2018: Maddie Olkonen

James H. Maguire Scholarship
2017/2018: Marissa Jensen, Jenna Swenson, Emilie Ziebarth

Undergraduate Analytical Chemistry Award
2017/2018: Roselynd Lin

Robert Bayer Memorial Scholarship
2017/2018: Madeline Brown, Sam Fogarty

Larry C. Thompson Inorganic Chemistry Award
2017/2018: Erin Groth

James C. Nichol Scholarship
2017/2018: Tana O'Keefe

Casmir Ilenda Award for Outstanding Undergraduate Research
2017/2018: Alida Besch, Shawn Bourgeois, Luke McCutcheon

Dr. Nathan and Elaine Ballou Scholarship
2017/2018: Joshua Adamek, Katie Andresen, David Eaton, Christopher Huss, Dien Nguyen

Departmental Honors
2017/2018: Alida Besch, Forrest Dalbec, Erin Groth, Danica Grover, Ryan Leighton, Luke McCutcheon, Benedict Monley, Tana O'Keefe, Allan Omete, Kayla Schabacker

Student Awards, cont.

Departmental Outstanding Service Award
2017/2018: Elijah Farley

Chemistry and Biochemistry Outstanding Undergraduate Teaching Assistant
2017/2018: Victoria Fringer, Erin Groth, Alexander Wooner

GRADUATE AWARDS:

John C. Cothran Memorial Fellowship
2017/2018: Andrew Bosio, Zachary Gardner, Benjamin Kreitlow, Sarah Moe, Tanner Schumacher

Moses Passer Graduate Fellowship
2017/2018: Alexander Carlberg, Katelyn Koval, Alexander King

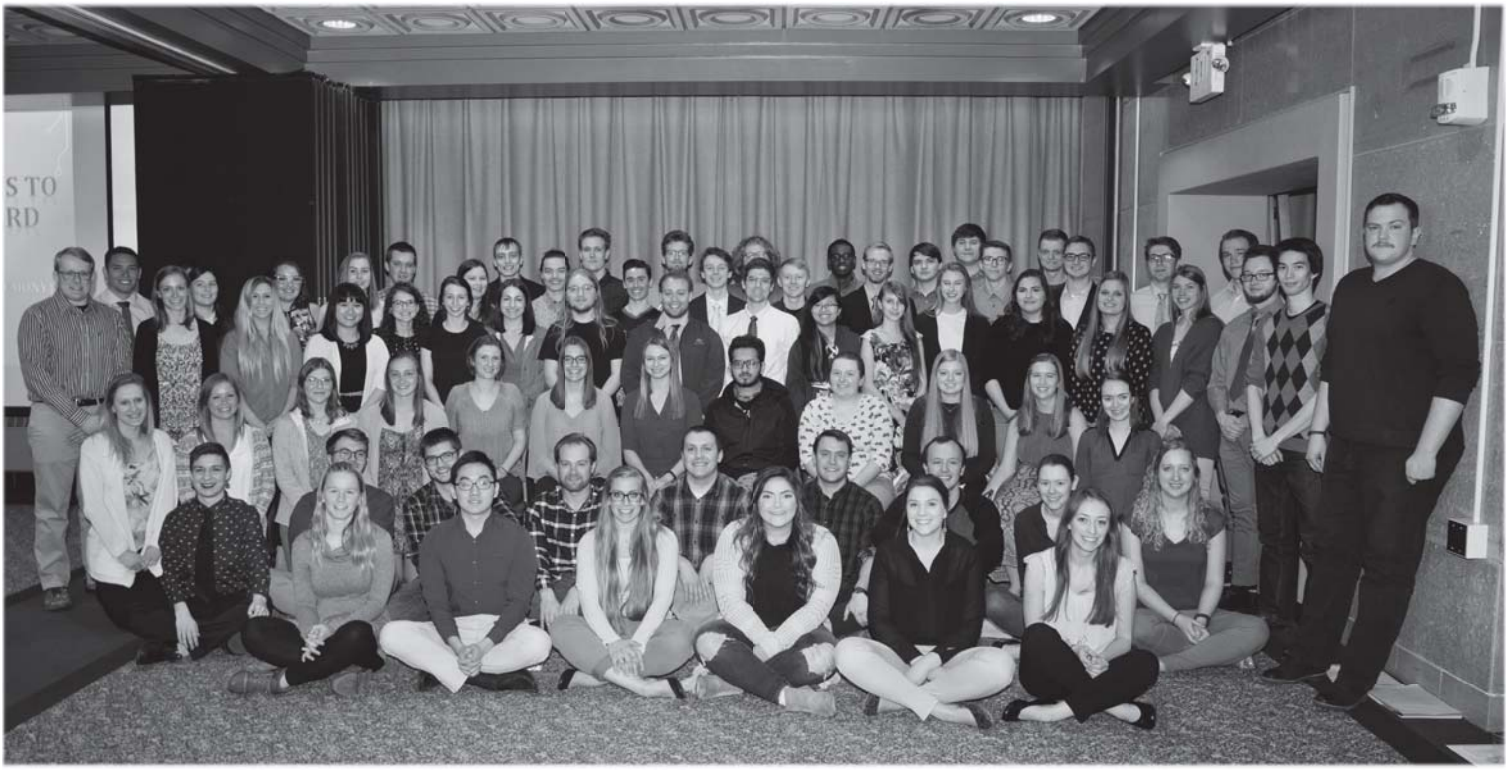
UMD Siders Chemistry Graduate Fellowship
2017/2018: Christian Coffman

SCSE Outstanding Graduate Teaching Assistant
2017/2018: Christian Coffman, Katelyn Koval, Benjamin Kreitlow, Sarah Moe

Dept. Outstanding Graduate Teaching Assistant
2017/2018: Ellen Cooney

CAMPUS AWARDS:

University Honors
2017/2018: Madeline Grimm



2017-2018 Department of Chemistry and Biochemistry Awardees

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https://www.facebook.com/UmdDepartmentOfChemistryAndBiochemistry

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Department of Chemistry
& Biochemistry

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