

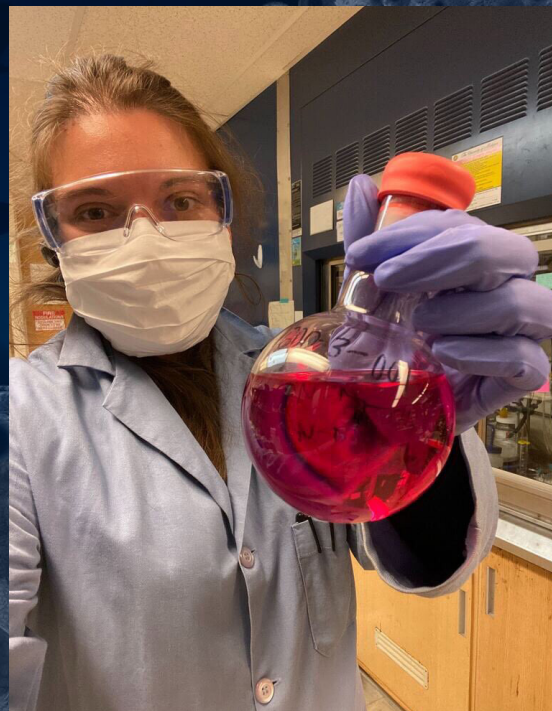


UNIVERSITY OF MICHIGAN

# Chemistry 2020 News



Moving Chem216 lab from bench top to laptop — members of @ShultzGroupCER worked together to create content for four weeks of experiments for the 771 students in the course.



Grad student Gloria De la Garza is happy to finally be allowed back to lab in the summer.



Koutmou lab carved pumpkins in October — all together for first time since March



Virtual booth at #ABRCMS2020 with Katie Foster, student services; Matthew Culberson, grad student; and Wenjing Wang, faculty.



## Welcome from the Chair

### Alumni and Friends—

What can we say about 2020? Our department, just as all of you, has been faced with an incredible array of challenges starting with a pandemic that precipitated innumerable effects on our research and teaching mission. We were confronted with a reckoning on racism that has prompted on-going introspection about how we can make our department fully inclusive and welcoming to all. Our international students faced ever-changing policies that made their ability to study here difficult. Through it all our department has persevered with a resilience and spirit that is inspiring.

When the pandemic struck in March we quickly pivoted to all-remote instruction through a heroic effort by our instructors. With local schools closed, many began, and continue, to both work from home and home-school their own children. During the Summer we busily planned for Fall teaching that included a mix of in-person, remote, and hybrid classes. The Chemistry Faculty and Graduate Student Instructors provided as much in-person teaching as possible, especially for lab courses, while allowing anyone to opt of out of teaching in-person. Instructors adapted technology and innovation to improve the remote learning experience. Despite the plans, the fall was disrupted by limits on international travel, which prevented some students from arriving here, as well as campus unrest over the University's plans for coping with the pandemic. All of these changes caused much stress, which was exacerbated by our inability to meet and see each other on a regular basis.

COVID-19 has also affected our research mission. As the pandemic first began to take hold, our building was shut-down so that researchers were unable to come to the lab for a few months. Over the summer we were allowed a gradual research ramp-up that involved reduced time in the lab to keep building density low, a whole new set of policies for building entrance, and use of personal protection equipment to control the pandemic. Even now we operate at a reduced capacity. Despite the stresses, some research groups found ways to begin new programs aimed at developing treatments and assays for COVID-19.

The George Floyd tragedy prompted a widespread movement to examine all forms of racism. Our department has found ways in which we must improve so that students and faculty of all races and nationalities are fully welcomed and included. We adopted a Core Values statement that shows who we aspire to be. We are also examining our modes of in-

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### Department of Chemistry Newsletter

**Chair:** Robert Kennedy  
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struction, graduate student and faculty training, hiring, support for students, and curriculum to better include students of color as a way of improving our success as a department.

Even as these major efforts were underway, our department continued about its mission of teaching, research, and service. In these pages you can read about:

- New faculty hires: Josh Buss, Matt Soellner, and Nicole Tuttle
- New Collegiate Professor Anne McNeil and newly promoted Associate Prof. Kerri Pratt
- Prof. Sarah Keane's new "flipped" course
- Prof. Neil Marsh's reflection on providing live instruction for lab courses
- Our M|CORE graduate study preview program
- New student organizations CommUNITY and NOBCChE chapter
- Our Mass Spectrometry Facility upgrade

We can now take a moment to be thankful for what we have accomplished in the department.

Many students received excellent opportunities for learning and hands-on lab experience despite the conditions imposed by the pandemic. Our research has continued as revealed in the many awards and promotions described in these pages. All of this good work was done safely as we observed no spread of COVID-19 within the Chemistry Building. We have the opportunity to improve the climate for everyone in our department.

Finally, we can be thankful that as vaccines become available we will be able to gather together and connect again, especially with our alumni.

If anything you read about in this newsletter particularly intrigues you, I urge you to contact us. We welcome the involvement of our alumni. You can provide mentoring for our current students through our CALC|UM and CSIE|UM programs, and we are deeply grateful for your generous financial support for the Department of Chemistry.

Share with us what you are doing by sending in an alumni update. If you find yourself in the Ann Arbor area once the pandemic subsides, I hope you will take the opportunity to stop by the department. In the meantime, sending a note or email is most welcome.

Sincerely,

**Robert Kennedy**

*Chair, Chemistry Department*

*Hobart Willard Distinguished University Professor*

*Professor of Chemistry*

*Professor of Pharmacology*

## **On the cover**

*The COVID-19 pandemic caused us to move classes online, force changes in teaching labs, and suspend research for several months. PhD defenses, summer programs, seminars, and professional conferences all moved to Zoom. Our research groups found creative ways to stay in touch and bolstered their use of social media. Images of this year from our community's Instagram and Twitter accounts are overlaid on a drawing of the SARS-CoV-2 virus that formed a backdrop to our lives this year.*

## Meet Josh Buss

### Excellent mentoring he received inspires his approach to teaching and developing his research group

“It always surprises me that I ended up being a chemist,” says Josh Buss, a new assistant professor in Michigan Chemistry, as he reflects on his childhood growing up in the small town of Patagonia, Arizona.

While initially pursuing a pre-med path at Claremont McKenna College (CMC) on a Questbridge National College Match scholarship, Buss signed up for general chemistry and became enamored with labs. This excitement of performing experiments focused his interests on chemistry. To this day, he still recalls his favorite gen chem lab experiment: “a separation of unknown metal ions using a series of colorimetric tests and precipitations... I just thought it was fascinating!”

During his second year at CMC, Buss was invited to participate in an organic chemistry lab pilot program, which allowed top students to perform an accelerated semester of experiments, followed by independent research with a professor. “Fate had it that I worked with Professor Anna Wenzel, who is an absolutely incredible educator.”

He continued to conduct undergraduate research in the Wenzel lab, where “she sparked a desire in me to pursue my PhD in chemistry. I loved working in her lab.” Because CMC is a primarily undergraduate institution, Buss worked directly alongside Wenzel, receiving guidance, training, and mentorship from her, aspects that he hopes to emulate in his own career.

Buss was awarded an NSF Research Experience for Undergraduates (REU) position at the University of Washington with Mike Heinekey. His two-month project focused on the synthesis of iridium complexes for C–H activation. “I was absolutely hooked,” he says. “To me, the only thing more exciting than doing chemistry research was doing inorganic chemistry research.”

With this newfound passion for inorganic chemistry, Buss applied to graduate school. He decided to attend Caltech after a chance one-on-one meeting with Theo Agapie, who was giving a seminar at CMC. “Theo has an intense enthusiasm for science and a smaller group, which allows for frequent discussions and collaborations with him. These are some aspects of his advising style that I hope to carry with me into my own program.”

In June he completed an NIH Postdoctoral Fellow-



ship with Shannon Stahl at the University of Wisconsin-Madison focused on oxidative catalysis. “My passion still very much lies in inorganic synthesis—I love making molecules—however, during my postdoc I discovered that there is a lot of space to do that in a way that is instrumental to catalysis, to new reaction development, and for application oriented fundamental science.”

Buss recalled a conversation with his REU advisor, who shared that “ultimately, the students he mentors are his most important output as an academic—seeing his undergraduate and graduate students succeed is deeply meaningful.”

He is excited about leading his own team of researchers and recognizes that his experiences will shape his future group. “By mentoring...you can learn so much more about chemistry—how to communicate and teach. Your students will ask you questions that you didn’t even think of.”

“Something that is so special about running your own research program is that you get to define the challenges that you tackle.”

He looks forward to being able explore that with his team: “I want students in my group to be creative and fearless synthetic chemists. I want them to draw a molecule on the chalkboard and say ‘this is what we need to be making and this is why.’”

—Taylor Soucy, SciCommFellow

A longer article is available on the Chemistry website.

## Soellner settles in at Michigan Chemistry

Matthew Soellner is a welcome addition to the chemistry faculty, bringing his expertise in research on protein kinases in breast cancer to his role as Roush Assistant Professor.

“I’ve been at Michigan a while now and I am thrilled to join the chemistry department. I am especially excited at the prospect of having chemistry graduate students in my lab,” Soellner says. Before joining the Department of Chemistry, he was part of the College of Pharmacy and the Medical School.

“I really enjoy training graduate students,” Soellner says. “They bring a level of energy and excitement to a research lab. One of the most important products for any academic lab is teaching students to correctly think about and do science. Graduate student trainees make a large and positive impact on society.”

Soellner discovered a love of research early on. Soellner originally was interested in becoming a doctor but realized after working in a rehabilitation facility that he was more interested in laboratory work. He was able to find the best of both worlds when he chose to focus on cancer research, specifically protein kinases.

“Many kinases have well-established roles in cancer,” Soellner explains. “We are interested in the type of breast cancer for which there is no current therapy: triple-negative breast cancer, which is defined by what it doesn’t have.”

Breast cancer affects nearly 250,000 women in the United States each year. Triple-negative breast cancer is most likely to be metastatic and cannot properly regulate estrogen and progesterone, the two hormones directly responsible for tumor growth.

Soellner believes that his research is applicable not only to providing new pathways in cancer treatments but also to acting as an antidote to the current attitude towards science in general.

“One of the most unfortunate things that has happened in the last five to ten years is the politicization of science,” Soellner states. “Science is based on facts and should therefore be apolitical. We find ourselves living in a post-truth world. This makes our job as scientists and educators even more important: that we focus on



*Who is that masked man? Matt Soellner, William Roush Assistant Professor of Chemistry. He is joined in the lab by first year rotation student Nicole Rivera Fuentes who comes to Michigan from Puerto Rico. Soellner is known to some students through his work with Professor John Wolfe in teaching a research-based organic chemistry laboratory—authentic research version—focused on medicinal chemistry.*

the facts and we make sure what we are doing has a clear and profound impact on society.

“I think the best way to depoliticize science is for science to continue to provide consumer advances, whether new medicines or new green plastics. If you look with an objective eye, it is irrefutable that science has made a dramatic and positive impact on all human lives.”

**—Kristina Lenn, SciComm Fellow**



## Lecturer Nicole Tuttle Joins Chemistry

The fall wasn't likely what Nicole Tuttle expected when she was hired as the newest Department of Chemistry Lecturer III. The online format was a bit different than her own experience teaching chemistry at the faculty level or as study group leader for organic chemistry during her undergrad days. Fortunately, she had a wealth of teaching knowledge to draw on as she prepared this summer to teach a large organic lecture course and a small chemistry seminar for the Comprehensive Studies Program. That knowledge got put to the test in a semester where she focused on creating inclusive and equitable online spaces for learning chemistry and transitioning a large organic lecture course to online assessments.

Before joining Chemistry full time, she was an assistant director at the UM Center for Research on Learning and Teaching. There she consulted with faculty and Graduate Students Instructors (GSIs) about their teaching and led workshops on pedagogy with a focus on teaching in the STEM disciplines. She developed and delivered face-to-face and online courses for postdocs about teaching college science.

She earned her B.S.Chem at UM in 2003 in chemistry, biochemistry, and plant biology. Through Teach For America, she taught sixth-grade science in Atlanta Public Schools. She completed a Ph.D. in Chemistry at the University of Chicago in 2013 with a dissertation on the catalytic properties of yeast spliceosomal RNA. She received further pedagogical training there while working as Graduate Teaching Consultant with the Chicago Center for Teaching. Her research efforts of an NSF-funded professional development program (NURTURES) from the University of Toledo centered on implementing science inquiry in Toledo-area K-3 classrooms. She has also taught courses sciences and education at the University of Toledo and Lourdes University.



## Kerri Pratt Promoted

Kerri Pratt has been promoted to associate professor of chemistry, with tenure, and associate professor of Earth and environmental sciences, without tenure, College of Literature, Science, and the Arts.

Pratt has been a successful mentor to over 35 students, including 29 undergraduate students in a research laboratory setting. Eleven undergraduate students have been co-authors on publications.

She developed an innovative "Authentic Research Connection" laboratory course where students collect novel data for a snow chemistry research project, while still incorporating the skill and concept development expected for this laboratory class.

She is well-recognized for her development and application of methods to measure halogen chemistry in the Arctic and mid-latitudes. Her group has overcome the challenges associated with measuring trace level halogenated molecules and atoms in harsh conditions, elucidating chemical cycles that have implications for changes in mercury availability and air quality. She was also able to show for the first time that road salt contributes to halogen chemistry in the mid-latitudes. Her research has been supported by a broad array of funding agencies including NSF, NOAA, NASA, and the DOE.

She also participated in several outreach activities with elementary and high school students, and service for a variety of environmental research organizations.

Reviewers praised her work highly.

"Prof. Pratt is the leading atmospheric chemist focusing on fieldwork of her generation. She is also one of the most influential scientists working on Arctic atmospheric chemistry today, at any career stage."

"Are there any more productive, more dedicated scientists anywhere than Kerri Pratt? I think not..."



## McNeil Named Collegiate Professor

Anne J. McNeil has been named the Carol A. Fierke Collegiate Professor of Chemistry, College of Literature, Science, and the Arts.

McNeil joined the Michigan faculty in 2007 and was promoted through the ranks to professor in 2016. She was honored as an Arthur F. Thurnau Professor in 2014.

Her research program focuses on using chemical approaches to solve problems in materials science. She has developed an international reputation in three different areas: electronic materials, molecular gel-based sensors, and sustainable materials. She has published more than 50 papers in these areas since joining our faculty, along with obtaining several patents. Her work is recognized by her peers as creative, original, and significant.

McNeil has received many awards, most recently, a Guggenheim Fellowship. She was elected a Fellow of American Association for the Advancement of Science. She has received a Rackham Faculty Recognition Award. Earlier in her career, she was awarded an Arnold and Mabel Beckman Young Investigator Award, the Office of Naval Research Young Investigator Award, an NSF Career Award, a Presidential Early Career Award in Science and Engineering, and a Sloan Research Fellowship. This impressive list represents just about every award a junior faculty member who is doing non-bio-medical research can receive.

McNeil was selected in 2014 as a Howard Hughes Medical Institute (HHMI) Professor, in a fiercely competitive education grant program that requires outstanding performance as both a scholar and educator.

Over the past five years, McNeil used the \$1,000,000 in grant funds to develop two education-focused innovations at Michigan. Her biggest effort was to com-

pletely overhaul a first-semester organic chemistry laboratory course (CHEM 211) to give students a sense of excitement of research and to help retain underrepresented students in STEM.

McNeil chose to name her professorship after Carol A. Fierke, now the provost at Texas A&M. Fierke is a former department chair and chemistry professor, who during her decade at Michigan was a champion for women faculty, in particular. A stipend funded from college resources accompanies this professorship.



*Among her many outreach activities, Anne McNeil launched the **Diversifychemistry.com** website to bring visibility to those from underrepresented groups in the academic chemistry community. It is being used by people putting together panels and journalists looking for chemistry experts.*

*Throughout this issue, (and on the website) look for articles authored by our **SciComm Fellows**, another innovation from Anne McNeil. These graduate students get financial support and mentoring for their science communication work while also continuing their chemistry research.*

## Faculty News

**Ryan Bailey** is the 2020 recipient of the American Chemical Society Division of Analytical Chemistry Award in Chemical Instrumentation.

**Julie Biteen** has received a Special Creativity Award from National Science Foundation which extends her funded grant by two years.

**S. M. Blinder** has published a new edition of his book, *Introduction to Quantum Mechanics*, 2<sup>nd</sup> Edition, Elsevier, in October 2020.

**Jennifer Bridwell-Rabb** has been named a Beckman Young Investigator (BYI). The BYI program provides research support to the most promising young faculty members in the early stages of their academic careers in chemical and life sciences. There are only ten awards nationally and each awardee receives \$600,000 funding over four years. Jennifer has also received a Department of Energy Early Career Award for her project, "Structural and mechanistic studies of O<sub>2</sub>-dependent and O<sub>2</sub>-independent enzymes."

**Amy Gottfried** has received a 2020 Individual Award for Outstanding Contributions to Undergraduate Education by the College of Literature, Science and Art (LSA).

**Kristina Hakansson** has received the 2020 Berzelius Gold Metal from the Swedish Chemical Society. The award was given for her singular achievements in mass spectrometry.

**Sarah Keane** has been named a Pew Biochemical Scholar, one of only twenty-two nationally. Her award includes \$75,000 research support for each year for four years. She has also received a Ralph E. Powe Junior Faculty Award for outstanding junior faculty in their first two years of independent research. The award is sponsored by the Oak Ridge Associated Universities.

**Raoul Kopelman** reports that his group is now working, together with their Medical School collaborators, on a five-year project on precision cancer medicine: Personalized Cancer Therapy Guided by Photoacoustic Chemical Imaging (PACI) of the Tumor Microenvironment (TME). In this work, mice bearing the patient's cancer samples (cells and TMEs) are tested for their pH, O<sub>2</sub>, and K<sup>+</sup> contents, and their effects on chemo-, radiation- and

immuno-therapy of these mice, so as to serve as a guide for the most optimal treatment. The treatment is matched to the specific patient whose tumor was transferred to that specific mouse. "Our invention of in-vivo chemical imaging is novel, in contrast to structural imaging, like CT or MRI. The ability to map K<sup>+</sup> in a tumor is highly relevant to its potential immunotherapy." Kopelman reports that work was significant enough that the National Institutes of Health funded the grant proposal, "which is quite unusual for my advanced age," he jokes.

**Markos Koutmos** has received a National Science Foundation Career Award for his project, "Harnessing large protein conformational changes to perform remarkable chemical reactions."

**Kristin Koutmou** has been named one of 25 Cottrell Scholars for 2020. The award includes \$100,000 for research. Her project is entitled, "Chemical modifications to mRNA nucleosides: a new frontier in gene regulation." The Koutmou lab is also investigating the role of chemically modified nucleosides in the COVID-19 virus. Their work will identify the modifications present in viral genome and uncover the consequences of RNA modifications on viral replication. She is excited about the mRNA vaccine. "It is really cool to see my very basic science field have such an important application!"

**Anna K. Mapp** has been elected to the American Academy of Arts and Sciences. The Edwin Vedejs Collegiate Professor of Chemistry and research professor in the Life Sciences Institute, she conducts research that focuses upon developing a molecular-level picture of inducible gene expression in eukaryotes using organic molecules as mechanistic probes. Regulated gene expression is critical for cellular existence, and a number of human diseases such as cancer and diabetes have been linked to aberrant patterns of gene expression. She has received many honors and awards, including the American Association for the Advancement of Science (2011), Dept. of Chemistry Distinguished Faculty Service Award (2009) and National Science Foundation Career Award (2004). Mapp is currently serving as associate dean for academic programs and initiatives in the Rackham Graduate School.

**Anne J. McNeil** received a 2020 Harold Johnson Diversity Award from the Office of the Provost at UM.

**John Montgomery** has received a Thurnau Professorship for his outstanding teaching.



**Alison Narayan** has received several awards recognizing outstanding early career scholars:

- 2020 Camille and Henry Dreyfus Scholar Award, one of fourteen awards nationally, with an unrestricted research grant of \$100,000
- 2020 Amgen Young Investigator Award; one of five awards nationally; a \$25,000 research grant
- 2020 Robert Augustine Award, Organic Reactions Catalysis Society and ACS Journals, for contributions to catalysis of organic reactions of industrial importance
- 2020 Natural Product Reports Emerging Investigator Leadership Award

**Kerri Pratt** was promoted to associate professor and has received the Class of 1923 Teaching Award, given for outstanding teaching by the LSA College Executive Committee. She will receive the 2021 American Meteorological Society Henry G. Houghton Award, an early recognition of research achievement. The citation reads, "For pioneering field and theoretical studies that have significantly advanced the understanding of atmospheric chemistry in the Arctic boundary layer."

**Brandon Ruotolo** has received a Special Creativity Award from the National Science Foundation (NSF). The award is given to holders of NSF grants in recognition of creative accomplishments and extends his NSF grant for two years.

**Melanie Sanford** has received:

- 2020 Royal Society of Chemistry Catalysis in Organic Chemistry Award
- Rackham Distinguished Graduate Mentoring Award
- Web of Science "highly cited researcher"
- 2021 ACS Award in Organometallic Chemistry. This award has been sponsored by the Dow Chemistry Company since 1983. Many of the prior awardees are intellectual giants in chemistry!

**Dottie Sipowska** has been named Emerita Lecturer.

**Matt Soellner** has been named the Roush Assistant Professor of Chemistry.

**Peter Toogood** (Chemistry Faculty, 1992-1998) became Director of Michigan Drug Discovery in January 2020. He continues as an Adjunct Professor of Medicinal Chemistry, UM College of Pharmacy. Previously, he worked for Parke-Davis and Pfizer and for Lycera, a biopharmaceutical company started by Professor Emeritus Gary Glick.



**Adam Matzger**  
Charles G. Overberger  
Collegiate Professor  
of Chemistry

**From Better Health to Improved Lethality:**  
Controlling Crystallization of Pharmaceuticals and Explosives

**Inaugural Lecture**

*Adam Matzger gave his collegiate lecture virtually in November on his work using crystallization to make powerful explosives that are safer to handle and as a way to deliver forms of drugs that are better absorbed by the patient.*

**Corey Stephenson** has received the Moore Mentorship Award. It recognizes faculty members from LSA who have made exceptional contributions towards recruiting and mentoring graduate students from non-traditional backgrounds. He has also been listed as a "highly cited researcher" by the Web of Science.

**Nils Walter** became the new Faculty Director of the Microscopy Core in the Biomedical Research Core Facilities.

## Space for Biological Mass Spec Core

The Biological Mass Spectrometry Core Facility is moving into approximately 1000 sq. ft. of newly renovated laboratory space in January 2021. The core provides specialized mass spectrometry (MS) services and to serve as a gateway for new MS users on the UM campus. Housed in the space will be state-of-art instruments, including Cyclic IMS Q-TOF system, Q Exactive Ultra High Mass Range (UHMR) Hybrid Quadrupole-Orbitrap MS, TSQ Quantis Triple-Stage Quadrupole MS, and preparative scale LC/MS system.

Professor of Chemistry Brandon Ruotolo leads the facility, guided by a steering committee of Robert Kennedy, Kristina Hakansson, Phillip Andrews, Kerri Pratt, and Andrew Ault. Joseph Caruso manages the Biological Mass Spectrometry Facility. Dr. Caruso has over 12 years of experience in mass spectrometry and data analysis. He is responsible for maintaining the core instruments and training new users. It is supported by the Department of Chemistry and a grant from the UM Biosciences Initiative.

# Lab courses balance hands-on learning, safety during COVID-19

While UM COVID-19 guidelines require most undergraduates to study from their homes for the winter semester, some classes — those that are nearly impossible to conduct online — will continue to be taught in person.

Biochemistry 352 is one such class. There's something essential about being in a lab to learn this kind of science, said chemistry professor Neil Marsh.

"It's the difference between driving a car and reading a book about driving a car. We think of lab experience as being mission-critical to teaching the undergraduates," Marsh said. "We did run remote labs, but it's a very, very poor substitution for a real lab."

Chemistry, he said, more than other types of science, relies on hands-on learning in the lab. Students in his Biochemistry 352 class learn basic biochemical techniques critical to performing experiments in chemistry. Seemingly straightforward skills such as using pipettes can be more complex when students use the instruments in person.

The ability to teach students these techniques was upended as the university attempted to deal with the coronavirus pandemic. During the fall semester, just 20 percent of class credit hours were offered in person.

The chemistry department revamped classes to ensure they met safety protocols. Marsh's course included about 100 students and typically involved a lecture and four sections of labs. Now, Marsh records 15- to 20-minute videos on certain topics that the students then watch before they attend their lab.

Typically, each of the four lab sections would meet once a week, with 16 students and one graduate student instructor leading the section. Now, only six people are allowed in a lab — five students and a graduate instructor — at a time. For all of the 100 students in the class to attend a lab, extra sections had to be added and students attended every other week.

Balancing the desire to offer students hands-on experience and the safety of both graduate instructors and students has been a delicate process. The chemistry department offered students and graduate instructors the choice to attend or teach in person.

Students uncomfortable with attending class in person could choose entirely virtual classes, and their ability to graduate was not compromised if they chose not to take an otherwise required lab. The department likewise honored graduate instructors' wishes to teach in person or virtually.

"Nobody was, or will be in winter, assigned to an in-person section if they do not want to teach an in-person section," said Robert Kennedy, chair of the Department of Chemistry.

One graduate student who volunteered to teach a lab section during the fall semester was Srijoni Majhi. She said she initially felt hesitant because she didn't want to spread the virus to her labmates and roommates.

"If I'm exposed, then it's certain that the other people will be suffering because of me," Majhi said. "But I talked to my labmates and they were very supportive."

Ironically, students may be safest in the biochemistry lab, Marsh said. Lab coats, gloves and goggles have long been required wear, and students are required to wear masks. Instructors disinfect the labs after every class.

"There's also very good ventilation in the lab," Marsh said. "In some ways, they're actually much safer doing our lab course than they are pretty much anywhere else on campus, in terms of risk of exposure to the virus."



*Graduate student instructor Srijoni Majhi volunteered to teach an in-person Biochemistry 352 lab this fall.*

Photo by Ayesha Maleeha

It's the ability to teach experiments that Majhi found most necessary in having an in-person lab. Students are familiar with general chemistry, and some students have already worked in biology or biochemistry labs elsewhere in the university. But for other students, this class is their introduction to the subject.

"We have to keep in mind this is a very new biochemistry lab, so many of them are not aware of how to use pipettes or work with enzymes, or other simple techniques."

Jack Toor is an undergraduate who opted to take the in-person lab. A biochemistry major, Toor has done research in the School of Dentistry.

One experiment the undergraduates performed was to identify proteins based on their molecular weights. The students put proteins in an acrylamide gel and ran an electric current through the gel. This arranges the proteins in proportion to their mass. Toor said to conduct this experiment himself was more valuable than being given the parameters of the experiment in an online format. After all, experiments shown in a video typically don't contain a blooper reel.

"When I took my gel out of its casing, it ripped, and that's something your textbook never talks about," Toor said. "I talked to Srijoni about it, who told me after I stained it, I would still be able to piece it back together. It's little things like that that your textbook wouldn't mention."

The changes the chemistry department has had to implement to meet safety requirements do have their silver linings, Marsh said. Although students are in the lab less frequently, the time they spend there might be higher quality. The student-to-teacher ratio is lower, and instead of having to share lab equipment to perform experiments with a partner or group, each student has their own equipment.

"Now there's a much better teacher-to-student ratio in the lab, and students can really get the attention and help they need. Even though they're only coming in every other week, we now have enough equipment that every student can do the experiment themselves," Marsh said.

"What we've seen is that the students have come to lab very focused. They really get down and do the work."

—Morgan Sherburne, Michigan News



## Finding a silver lining in pandemic teaching

Sarah Keane, assistant professor of chemistry and biophysics, found a silver lining in her pandemic teaching this fall as she explained in a series of tweets on her Twitter account, @KeaneLab.

"The pandemic has forced me to flip my advanced biochemistry class. This is something I've wanted to do, but didn't have the right motivation. It is certainly one good thing to come from the shift to remote instruction," she explained in the twitter thread

"Flipped" instruction reserves the time when instructor and students are together for problem solving and discussion, with lectures delivered by video and available prior to class time.

"One of my favorite parts of this class has been the ability to highlight all of the awesome biochemistry that is happening across the @UMich campuses. Now that lectures are asynchronous, I can use the synchronous classes to dive deeper into recent findings related to the course.

"When we covered protein folding and chaperones, we also discussed a paper from the Bardwell lab." James Bardwell, renowned for his work on chaperones, is professor in UM's Molecular, Cellular, and Developmental Biology.

She went on to list some topics covered in class —P450 chemistry, fragment-based drug discovery, RNA-targeting small molecules—and the work at UM and around the country in this area. This included a ribozyme paper from Jennifer Doudna's lab, which turned out to be particularly timely.

Keane tweeted on October 7: "Today, I'm thrilled to highlight the #ChemNobel being awarded to two outstanding scientists! Congratulations Doudna and Charpentier! And to the scientists in their labs who contributed to this breakthrough!"

Keane is glad she made the switch. "This has been, by far, the most rewarding way to teach this course! Looking forward to the rest of the semester and continuing to refine and develop this material!" she reported.

## **M|CORE: lowering barriers to graduate school**



Michigan Chemistry Opportunities for Research and Education (M|CORE) may have happened virtually this year, but it was no less meaningful. M|CORE helps potential graduate students from underrepresented backgrounds in STEM learn about UM Chemistry and the process of applying for graduate school. Each fall, 10–14 participants are selected for a preview visit. They meet one-on-one with faculty and graduate students, tour research facilities, attend a session on preparing a strong graduate school application, and even attend a Michigan basketball or hockey game.

### **Lowering barriers**

M|CORE aims to make graduate school accessible to students who may not otherwise consider it. Professor Nils Walter, who helped develop M|CORE, hopes that the weekend “lets students see themselves in the role, like the other graduate students that are their hosts.” He adds, “We also hope they realize that Michigan faculty are nice people and see that applying to a program like Michigan is less of a hurdle than they might have thought.”

For current graduate students M|CORE accomplished just that. “Prior to M|CORE, pursuing a Ph.D. was something that I didn’t really think was a worthwhile investment for myself,” Gloria Diaz reports. She changed her mind after learning about the ways that the department supported graduate students. For her, the most meaningful part of M|CORE was how it connected students from marginalized backgrounds. “It’s not necessarily

*The 2019 M|CORE cohort had an in-person visit to campus, including attending a Michigan basketball game, to get a sense of what it would be like to be a student at Michigan.*

that we need to feel validated by talking to one another but it’s good to see other people who look like you. I think it’s just such a gem that marginalized communities have.”

For Iliana Hampton, M|CORE revealed options that she wouldn’t have considered otherwise. “It was just so funny, I used to say you couldn’t pay me to go back to school and here I am, getting paid to go back to school!” Two key experiences at M|CORE ultimately convinced her to apply. One was learning about the high employment rate for graduates. Another was a panel on graduate student life, which featured students from diverse backgrounds and different stages in the chemistry program.

For her, it eased concerns about such a big university. “Had I not had the opportunity to go to M|CORE, ...I don’t think I would have been brave enough to just go to recruitment weekend,” Hampton says.

### **M|CORE students come to Michigan**

M|CORE students who are accepted to the chemistry graduate program are invited back for recruitment weekends where Walter has seen M|CORE students welcome other visiting students from underrepresented backgrounds. On average, four M|CORE participants

matriculate to Chemistry. One or two others enter Chemical Biology or Engineering or other UM graduate programs. “Students stay with us for five years, so that has a long-lasting effect,” Walter says.

### Impact and other efforts at inclusion

M|CORE’s impact on the chemistry department is borne out by the numbers. Along with modifications to graduate admissions like eliminating the GRE requirement, M|CORE over its first seven years has contributed to an increase from 2 percent to 21 percent of incoming chemistry graduate students who self-identify as coming from underrepresented backgrounds.

Yet efforts to make the chemistry program more diverse, equitable, and inclusive (DEI) are far from finished. This important work involves faculty, staff, and students across the department. **commUNITY** is one recent development is [*See: right*].

—Emily Mueller, SciComm Fellow

M|CORE has been made possible with financial support from the Rackham Graduate School; the College of Literature, Science and the Arts; and the Department of Chemistry.

## commUNITY aims to create a ‘family away from home’

While M|CORE helps students envision becoming a chemistry graduate student, a student-run organization called **commUNITY** was established this year that advocates for students who have joined the department, with a focus on those who identify as Black, Indigenous, and People of Color (BIPOC). Through knowledge and support, **commUNITY** members hope to build a foundation of trust, bridge the racial gap, and recruit more underrepresented minority chemists who excel academically, succeed professionally, and positively impact the community.

The organization aims to create a collaborative and sustainable community among all the various parts of Michigan Chemistry—undergraduate and graduate students, postdoctoral fellows, faculty/staff, and alumni.

This group is the product of conversations among the BIPOC community in the department about their experiences. The organization became reality after a Community Conversation sponsored by College of Literature, Science, and the Arts (LSA). When Dean Anne Curzan invited students, faculty, and staff to share their thoughts, experiences, and ideas for a strategic planning initiative for the future of LSA, graduate student Taylor Bramlett shared her concern about BIPOC students in Chemistry, specifically the absence of a group or support system within the department.

Bramlett is now president of the **commUNITY**. Vice President is graduate student Matthew Culberson, who also attended that LSA meeting.

Healthy social and professional development for the BIPOC students, staff, and faculty in chemistry will allow them to create a new family away from home, where they can be their authentic selves without having to code-switch or worry about making other people feel more comfortable with them, explain the organizers.

Winter term, the **commUNITY** team is planning the first annual CHEM|UNITY Symposium, as well as workshops, game nights, and other social events to provide resources and support for our community. Follow their work on social media.

Twitter: @commUNITYUMChE1

Instagram: community\_umich

### NOBCChE Chapter now at Michigan

Our graduate students also helped establish the UM chapter of the **National Organization for the Professional Advancement of Black Chemists and Chemical Engineers** (NOBCChE). NOBCChE is a non-profit professional organization dedicated to assisting black and other minority students and professionals in fully realizing their potential in academic, professional, and entrepreneurial pursuits in chemistry, chemical engineering, and allied fields.

Read more about M|CORE, our Core Values and other Diversity, Equity, and Inclusion efforts on the Chemistry website at: <https://myumi.ch/2D93B>

# PhDs Awarded

## December 2019

### Student

### Committee Chair

Armaly, Ahlam Michelle Schindler  
*Studies Towards the Total Synthesis of Atropurpuran and the Arcutines*

Cheungseekit, Melanie Martin  
*Functional Analyses of ABHD17 Enzymes*

Dixit, Sugyan Ruotolo  
*Combining Ion Mobility Mass Spectrometry and Computational Methods to Study Structures of Biomolecules in the Gas Phase*

Lancaster, Mitchell Martin Maldonado  
*Platforms for Analyzing and Controlling Charge Transfer Processes at Semiconductor/Liquid Interfaces*

Leng, Katy Fierke  
*Investigating the Substrate Selectivity and Regulation of Histone Deacetylases*

McAtee, Rory Christopher Stephenson  
*Innovations in Photochemical C-C and C-N Bond Forming Reactions*

McNamara, Stephen M Pratt  
*Atmospheric and Snowpack Halogen Chemistry in Urban Areas and the Arctic*

Riehl, Paul Scott Schindler  
*Development of Lewis Acid Catalyzed Methods for Carbonyl-Olefin Metathesis, Enantiodivergent Total Synthesis of Lingzhiol and Studies Towards the Divergent Synthesis of ent-Kaurenes*

Steyer, Daniel Kennedy  
*Electrospray and Nanoelectrospray Ionization-Mass Spectrometry Systems for the High-Throughput Analysis of Microfluidic Droplets*

Vazquez, Ricardo Goodson & Kim  
*Characterizing the Excited State Dynamics of Organic Materials for Efficient Energy Conversion: from Current to Photons and Vice-Versa*

Wiscons, Ren Alessandra Matzger  
*Manipulating Energetic and Electronic Performance in Multicomponent Crystals through Discrete and Continuous Compositional Variation*

## May 2020

Arvin, Natalie Elizabeth Kennedy  
*Microfluidic Western Blotting with Increased Sample Loadability and Fast Immunoassay*

Baker Dockrey, Summer Anika Narayan  
*Biocatalytic Oxidative Dearomatization and Applications in Chemoenzymatic Total Synthesis*

Chhabra, Sahil Frank  
*Using Machine Learning to Better Predict the Structure of RNA and RNA Containing Complexes*

Cox-Vazquez, Sarah Joelle Ramamoorthy  
*Biophysical Characterization of Amyloid Disease-Related Peptides Using Small Molecule Tools*

Ghosh, Soumi Marsh  
*Probing the Mechanism of Viral Inhibition by the Radical S-adenosyl-L-methionine (SAM) Dependent Enzyme- Viperin*

Hardin, Nathaniel Ramamoorthy  
*Synthesis and Characterization of Polymers, and Development of Polymer Based Lipid-Nanodiscs*

Kammeraad, Joshua Zimmerman  
*Digging Deeper into the Methods of Computational Chemistry*

Leung, Kwan Yee McCrory  
*The Effect and Prevention of Trace Metal Contaminants on CO<sub>2</sub> Reduction by Heterogenous Copper Catalyst*

Mantell, Mark Alexander Sanford  
*Developing Strategies to Control Reactivity and Selectivity in Catalytic Transformations*

Michocki, Lindsay Brooke Kubarych  
*Ultrafast Chemical Dynamics of Catalysts and Photoswitches*

Proctor, Aaron Bartlett  
*Metal Oxides as Photocatalysts for Selective Oxidations*

Romero, Kevin Joseph Stephenson  
*Persistent Radicals in Natural Product Synthesis: A Biomimetic Approach to Resveratrol Oligomers*

Sun, Alexandra Carol Stephenson  
*Visible Light-Driven C-H Functionalization Reactions: Methodology Design and Development of a Droplet Microfluidics Screening Platform*

Valenta, Alec C Kennedy  
*Advances in in Vivo Neurochemical Monitoring Using Microdialysis with Liquid Chromatography-Mass Spectrometry*

Wang, Yanming Brooks  
*Advances in Coarse-grained Models for Protein Folding and Protein-protein Interactions*

Winograd, Blair Zgid  
*Stochastic Self-Energy in a Self-Consistent Second-Order Green's Function Scheme*

Zuo, Tiancheng Biteen  
*Probing Light-Matter Interactions between Plasmonic Nanoantennas and Single Emitters: Polarization and Localization*

# Award Winners

The Department of Chemistry made its annual awards to our undergraduate and graduate students this year though we had to forgo in-person ceremonies. See all our award winners on the Chemistry website.

## NSF GRFP Awards

Michigan Chemistry fared well in the National Science Foundation's Graduate Research Fellowship Program (GRFP) for 2020, which provides three years of support. Eleven graduate students and one undergraduate were offered awards; nine students received honorable mentions.



Sarah Ackenhusen



Anthony Allen



Madeline Cooke



Gloria de la Garza



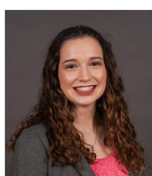
Joshua Jones



Jenna Manske



Maria Morales



Danielle Maxwell



Maribel Okiye



Katie Rykaczewski



Evan Romero



Ina Zaimi

## August 2020

Aldaz, Cody Ryan

*Development of Reaction Discovery Tools in Photochemistry and Condensed Phases*

Zimmerman

Rand, Alexander William

*Method Development and Mechanistic Investigations of Nickel-Catalyzed C-N and C-H Functionalizations*

Montgomery

Chun, Stephanie Wing-Yee

*Chemoenzymatic Synthesis of Chiral Amines by Carrier Protein-Dependent Enzymes*

Narayan

Robo, Michael

*Computational Investigation of Chemical Reactions: Exploring the Reactivity of Nickel Enoate and Fumarate Complexes, and Radical Assistance in the Force-Enabled Bond Scission of Poly(Acrylic Acid)*

Montgomery, Zimmerman

Doverspike, Joshua Carson

*Antimicrobial Nitric Oxide Releasing Creams/Devices Based on a Novel Reaction Between S-Nitrosoglutathione and Zinc Oxide Nanoparticles*

Meyerhoff

Roessler, Allison

*Development of Polymeric Materials Chemistry via Physical Organic Simulations*

Zimmerman

Fantin, Sarah Marie

*Ion Mobility - Mass Spectrometry Methods for Studying Membrane Proteins*

Ruotolo

Shanahan, James

*Assessing Effects of Unconventional Acid/Base Interactions Within Transition Metal Complexes*

Szymczak

Kirsch, Janelle Kathryn

*Palladium-Catalyzed Alkene Difunctionalization Reactions: Synthesis of Functionalized Heterocycles and Mechanistic Investigation*

Wolfe

Shrestha, Anuska

*Processes at the Interface of Electro- and Organic Chemistries*

Sanford

Liu, Yingshuo

*Electrochemical CO<sub>2</sub> Reduction by Polymer-Encapsulated Cobalt Phthalocyanine: Controlling Coordination Environment to Modulate the Activity and Selectivity*

McCrary

Sodano, Taylor Marie

*Development of a Metabolically Innocuous Aniline Isostere Enabled by Photoredox Catalysis*

Stephenson

MacInnes, Molly Marie

*Materials for Electrochemical Energy Conversion and Storage*

Lehnert, Maldonado

Walker, William A

*Using CRISPR Knockout Screens to Investigate Biological Phenomena*

Bailey, Martin

McAtee, Christopher Casey

*Development of Lewis-Acid Catalyzed Carbocyclization Reactions; and the Total Synthesis of Herquines B and C*

Schindler

Zhang, Chengcheng

*Molecular Understanding of Interfacial Interactions in Anti-Biofouling, Oil-Water Separation and Pharmaceutical Crystallization*

Chen

Nasrallah, Daniel James

*Leveraging Mechanistic Insight to Develop New Modes of Reactivity Between Ubiquitous Double Bond Functional Groups*

Schindler

Zhang, Kexin

*Multiscale Modeling of RNA Structures Using NMR Chemical Shifts*

Frank

# Summer Alumni Events and Karle Symposium Go Virtual



The Karle Symposium committee lines up for a photo outside, masked, socially distanced. @KarleSymUM

## Alum|NUM | URAN|UM

[pronounced “aluminum” and “uranium”]

For the first time in its six-year history, our annual summer event with alumni—Alum|NUM [Alumni Networking at the University of Michigan]—was hosted virtually. Undergraduate, graduate students, and postdoctoral scholars attended morning panels on careers in industry and academia. The industry panel featured 3M scientist **Amanda Leone** (*PhD 2018, McNeil*), Dow scientist **Eric Dahl** (*PhD 2017, Szymczak*), and Bristol-Myers Squibb scientist **Kevin Ileka** (*PhD 2018, Hakansson*). The academic panelists were University of Texas-Austin professor **Kami Hull** (*PhD 2009, Sanford*); **Kate Plass** (*PhD 2006, Matzger*) Franklin & Marshall College; and **Ningkun Wang** (*PhD 2018, Mapp*) San Jose State University.

Twenty trainees were able to meet with at least twenty different alumni volunteers in the afternoon via Zoom breakout rooms. We also had a virtual networking session where students and alumni were paired up to chat about life, school, and industry jobs. Approximately 45 people participated.

Many alumni shared that they were excited to participate and happy they could remain connected with chemistry grad students despite a pandemic.

Committee volunteers were Kristine Parson, Justin Harris, Matthew Hannigan, Gloria de la Garza, Jessica Tami, Yulia Sevryugina, Taylor Soucy, and Giacomo Di Mauro.

—Justin Harris

Graduate students also organized a parallel event called URAN|UM [undergraduate research and networking at UM] that connects students from primarily undergraduate institutions across the midwest with UM graduate students, postdoctoral fellows, faculty, and alumni.

URAN|UM events included academic and industrial career panels from alumni, panels on life in graduate school

Follow 2021 plans for these events at these websites:  
[sites.lsa.umich.edu/alum-num/](https://sites.lsa.umich.edu/alum-num/)  
[sites.lsa.umich.edu/karle-symposium](https://sites.lsa.umich.edu/karle-symposium)

and the application process, as well as one-on-one resume and cover letter workshops.

URAN|UM also gave undergraduates a platform to share their research through a virtual poster session. More than fifty students from across the country participated, with thirty individual posters (one by a high school student) and seven group posters. We thank Corteva Agriscience for their ongoing sponsorship in support of our vision to empower undergraduates to pursue a graduate degree. —Kristine Parson

To safeguard public health during the pandemic, the Karle Symposium was held virtually for the first time in its history. This year, the theme was dedicated to the International Year Plant Health (IYPH), instituted by the United Nations to raise global awareness on how protecting plant health can help end hunger, reduce poverty, protect the environment, and boost economic development.

One-hundred ninety-six attendees for a nine hours event. One plenary lecture, held by Dr. Gabe Kwang from Georgia Tech and Emory School of Medicine on “Chemical Approaches to Synthetic Immunity.” Eight student talks to showcase the variety of research conducted in the Chemistry department. Four speakers from DOW Chemicals and PPG Industries, showcasing the breadth of the research done in their R&D facilities. Finally, forty-six posters in two sessions to allow interactions among student presenters and attendees. The attendee’s experience was surveyed at the end of the symposium. The purpose is to assess this first virtual edition toward better future solutions. The results will soon be published in a study led by Dr. Yulia Sevryugina and Giacomo Di Mauro.

Twenty-six chemistry graduate students formed the symposium organizing committee. Faculty advisors were Paul Zimmerman and Yulia Sevryugina.

Karle Symposium 2021 currently in an early planning stage, and it is still unknown whether it will be an in-person event or virtual again. Whether virtual or in-person, no doubt that the 2021 organizing committee will deliver another great event. —Giacomo M. Di Mauro & Zachary Fejedelem, 2020 co-chairs.





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## Award winning 2020 Alum: Jenna Manske

*A passion for chemistry, mentorship, and education*



An Organic Lecture at 8:00 AM may sound like a college student's nightmare, but it was that class with Professor Brian Coppola that convinced Jenna Manske her first semester at UM to become

a chemistry major. In the intervening four years, this Northville, Michigan student took advantage of all that the department had to offer on her way to becoming a 2020 graduate with a B.S. degree in Chemistry with Honors. Along the way she garnered about every major award the department gives to undergrads and capped her career with a National Science Foundation Graduate Research Fellowship.

**Research:** As part of the Professor John Wolfe's lab, she has a publication on palladium-catalyzed reactions for the synthesis of hydrocarbons. Her summer research was supported with the department's very competitive Summer Undergraduate Research Fellowship program.

**Teaching:** She helped re-design the curriculum for Orgo 211 and was an undergraduate teaching instructor, giving lectures for 99 students in a session. She was involved in the Science Learning Center as a course leader and facilitator for CHEM 210 and enjoyed working as a Student Study Group leader. These experiences, she says, helped her find her passion for teaching and engaging with students.

**Service:** Manske and some colleagues realized there was no venue for undergraduates involved in research to present their work other than the UROP event for first-year students. They started the Undergraduate Research Symposium, finding financial support from the Department of Chemistry among other places. It succeeded beyond all expectations, drawing more than 150 presenters from all across campus.

She was a mentor for incoming first-year students through the Michigan Mentorship Program and served as the Vice President of the pre-professional chemistry fraternity on campus. Through each of these roles, she strived to create a welcoming environment and promote learning and community.

Jenna Manske is now pursuing a Ph.D. in chemistry at the University of California, Berkeley. Her goal is to join academia to make an impact on the field of chemistry through research and education.

She was selected to give a presentation for the Department of Chemistry commencement, which became a virtual celebration for our graduates shared via video. You can view it online at: <https://myumi.ch/51rQr>

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*More stories about our alums online*

### "Together We Science"

#### ***UM alumni establish crowdfunded grant foundation for infection-induced cancer research***

Over the last decade, crowdfunding has emerged as a new way to support anything from disaster relief to business startups. Now, UM alumni have added a new opportunity focused on research on infection-induced cancer.

The Richard G. Hankett Memorial Research Grant Foundation (RGHGF) was co-founded by Jeanne Hankett (PhD 2016, Chen), Lauren Soblosky (PhD 2014, Chen), Josh Jasensky (PhD 2015, Chen) and Will Collin (PhD 2015, Zeller).

The grant award will go directly to graduate students and postdoctoral researchers.

*Read the whole story from Emily Mueller, SciComm Fellow, on the Chemistry website.*

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### **UM to 3M: Transitioning to Industry after your PhD**

#### ***Amanda Leone, recent grad from the McNeil lab, shares her experience working in industry***

*Read this story from Ryan Burdick, SciComm Fellow, on the Chemistry website.*

## Alumni News

**Carlos R. Baiz** (*PhD 2011, Kubarych*), an Assistant Professor of Chemistry at the University of Texas at Austin, has received a 2020 Cottrell Scholar Award. His project is entitled, “Molecular Dynamics of Heterogeneous Oil-Water Interfaces and a New Approach to Addressing the Mental Health Needs of Graduate Students.”

**Myra Beaudoin Bertrand** (*PhD 2008, Wolfe*) is an Associate Director, Search & Evaluation, Immunology, Fibrosis and Digital Health at Bristol-Myers Squibb in Princeton, NJ. At a recent seminar for UM chemistry department she discussed her career at BMS. After earning an MBA, she transitioned to business development organization from chemistry bench-top work.

**Tom E. Blackburn** (*PhD 1984, Stedman*) is a 50-year member of the American Chemical Society.

**Darryl Boyd** (*BS 2004*) was profiled in LSA Today “Creative Chemistry.” Online at: <https://myumi.ch/zxk2D>

**Denis W. Brinkman** (*PhD 1976, Sacks*) has been recognized as a 50-year member of the American Chemical Society. After graduation, he worked for twelve years for the U.S. Department of Energy Laboratory in Bartlesville, OK. In 1988, he moved to Chicago to become Research Director at Safety-Kleen Corporation, an international hazardous waste management company. Twelve years later he transitioned to teaching chemistry at Indiana Wesleyan University in Marion, IN and spent his last four years there as the Head of the School of Physical and Applied Sciences. He has been a Professor Emeritus for the last six years.

**Charles Cornman** (*Postdoctoral 1992-3, Pecoraro*) in January 2020 became the President of the Custom Building Products, a national leader in the tile installation industry.

**Craig A. Dorschel** (*BS 1970*) has been recognized as 50-year member of the American Chemical Society. He retired as a principal chemical research scientist for The Waters Corporation in 2013. Since then he has been pursuing hobby-related interests, primarily as a member of the board of directors of the American Rose Society.

**Keary M. Engle** (*BS 2007*), an Assistant Professor at Scripps Institute, California, has been awarded a Cottrell Scholar Research Grant for his project entitled, “Catalytic Difunctionalization of Alkenes Using Transient Directing Groups.” He recently gave a seminar in the Department of Chemistry at UM.

**Nancy Goroff** (*Postdoctoral 1996-97 Coppola & Ege*) was a candidate for Congress in New York’s first district. “I ran because I wanted to bring more science into policy making,” she told *Science*. Though she lost this race, she says “That’s still my goal. And I’m very excited that Biden is continuing to focus on that” in his policy plans.

**Rachel Hems** (*current Postdoctoral, Pratt*) has been awarded a 2020-2022 Natural Sciences & Engineering Research Council of Canada Postdoctoral Fellowship.

**Sean Huang** (*PhD 1995, Gland*) spent 21 years in R&D at Sherwin-Williams Co. in the Midwest, before moving to be an Innovation Executive at ITW Evercoat in California. Two years ago he joined Custom Building Products, Huntington Beach, CA, as an R&D director. He and his wife have three children.

**Thomas Kelly** (*PhD 1980, Stedman*) recalls spending nearly two years of his UM graduate school time at the National Center for Atmospheric Research in Boulder, CO. After graduation he was employed for seven years in the Environmental Chemistry Division of Brookhaven National laboratory, conducting research on acid rain and cloud chemistry. Beginning in 1987, at Battelle Memorial Institute in Columbus, OH, he participated in field studies to evaluate atmospheric models, tested the performance of environmental monitoring technologies, and directed projects in support of U.S. EPA’s hazardous air pollution and homeland security programs. He retired from Battelle in 2015. In retirement he serves a volunteer Guardian ad Litem in the juvenile court system through Court Appointed Advocates of Franklin County, OH.

**Rosalyn V. Kent** (*PhD 2019, Matzger*) is a part of a Dow Research team which won a 2020 R&D 100 award in the mechanics and materials category.

**Alexander Khmaladze** (*Postdoctoral, 2008-11; Chen, 2011, Morris*) has been promoted to associate professor with tenure, Department of Physics, SUNY at Albany.

**Kent S. Kokko** (*PhD 1984, Wiseman*) retired from the 3M company after 32 years of service. He is volunteers at the Animal Humane Society in the Twin Cities, MN.

**Steven G. Link** (*PhD 1977, Lawton*) retired from Eastman Kodak Research in 2008. In 2013 he started working part time at Home Depot in the paint department. It was a good way to keep using his knowledge of dye chemistry, dispersions, and color science. In retirement he has continued his interest in ballroom dancing. He teaches a few classes and gives private lessons. Occasionally he does showcase performances which he choreographs himself. He also plays the trombone in a community jazz big band.

**Sharon Neufeldt** (*PhD 2013, Sanford*) is an Assistant Professor of Chemistry at Montana State University. She has been awarded a Cottrell Scholar Research Grant for her project, "Combined Experimental and Computational Approach to Improving Nickel- and Palladium-Cross-Couplings."

**Sethu Pitchiaya** (*PhD 2011, Walter*) has accepted a position as Assistant Professor of Urology, University of Michigan Medical School.

**Wayne Pretzer** (*PhD 1975, Rudolph*) has been recognized as a 50-year member of the American Chemical Society. He did research in a fourth-floor laboratory of the old chemistry building. He recalls that in summer, before air-conditioning was common, the windows were often left open at night and the lab was occasionally visited by bats. Following graduation, he was postdoctoral fellow at Cornell, including six months at the Institute of Chemical Physics, Moscow. He worked at Gulf Oil in Pittsburgh developing homogeneous catalysts for synthesis gas reactions. Several petroleum company mergers later, the business was sold to INEOS. He now works about three days a week as a senior technical analyst for INEOS Joliet providing technical support for customers. He reflects that it has been a wonderful and rewarding adventure from basic research on boron hydrides to organic polymer chemistry to applications in chemistry.

**Lawrence N. "Moe" Reitman** (*BS 1970*) has been recognized as a 50-year member of the American Chemical Society. Dr. Reitman received his PhD in organic chemistry from the University of California at Berkeley. He is the founder and president of Moe Reitman, Inc., a professional recruiting firm in San Francisco.

**Barry B. Snider** (*BS Chem. 1970*) has been recognized as a 50-year member of the American Chemical Society. He was elected a Fellow of the ACS in 2011 for service to the Organic Division of ACS of which he was Secretary/Treasurer from 2014-17. He is currently the Chair of the Department of Chemistry of Brandeis University in Waltham, MA. He recently joined the book series Organic Reactions as Secretary to the Board of Editors and Corporation.

**William L. Studt** (*PhD 1973, Wiseman*) has been recently honored as a 50-year member of the American Chemical Society. After working with Professor Wiseman on the synthesis of natural products, he spent a postdoctoral year with Professor Fred Ziegler at Yale and then entered Pharma chemistry at Rorer, Inc. He worked through five mergers and spent 15 years as a Global Head of Process Development Chemistry in Rhone Poulenc Rorer, Aventis and then Sanofi-Aventis. He was the contributor to 78 US patents. After retirement he spent two years as an Adjunct Associate Professor in Biomedical Writing with the University of Sciences in Philadelphia. He and his wife Susan, who is retired from Pfizer as a Director for global business, have four married children and eleven grandchildren.

**Weihong Tan** (*PhD 1993, Kopelman*) was honored on his 60th birthday on May 12 by a Cloud Symposium on the theme of Advances in Molecular Science. Dr. Tan is a director of the State Key Laboratory of Chemo/Bio-sensing and Chemometrics and distinguished professor of chemistry and biology at Hunan University. He spent more than 20 years at the University of Florida. Professor Kopelman was one of the plenary speakers at the symposium.

**Chi Zhang** (*PhD 2014, Chen*) is now a tenure-track Assistant Professor in the Department of Chemistry at Purdue University.

## In Remembrance

### Thomas M. Dunn

Thomas M. Dunn, *Professor Emeritus of Chemistry*, passed away November 6, 2020 at the age of 91 in Spartanburg, South Carolina.

A native of Australia, Professor Dunn earned his Bachelor's and Master's degrees in chemistry at the University of Sydney, Australia. He was awarded a *Royal Exhibition of 1851 Scholarship* and completed a PhD at University College London (England) in 1957. He was a faculty member of University College until his appointment as Professor of Chemistry at the University of Michigan in 1963.

Professor Dunn was one of the earliest workers in large-molecule spectroscopy, having studied large organic aromatic molecules by high-resolution methods. His work on the highly symmetric benzene molecule resulted in the first band contour assignment of its lowest electronically excited state.

His earliest research efforts at Michigan were focused on the electronic spectroscopy of inorganic complexes and the development of crystal field theory, an area that played a pivotal role in the renaissance of inorganic chemistry in the 1950s and 1960s.

He contributed importantly to the general area of metal-ligand interactions in inorganic complexes, which fostered the growth of molecular orbital methods for describing the electronic structure of small and large compounds.

He achieved widespread recognition for his analyses of high-resolution spectra of gas phase diatomic molecules. These efforts allowed measurements of nuclear hyperfine interactions that were reported in widely cited classic publications.

Professor Dunn served as chair of the chemistry department from 1972-83 and worked energetically to win college and state support for the construction of a new chemistry building. He was the first chair of the university Budget Priorities Committee in 1972. He chaired the university Task Force on Graduate Student Aid in 1982. He served on the board of directors of the Michigan Research Corporation and as chair of SACUA from 1991-93. Professor Dunn was a charter member of the English Composition Board that established English writing requirements in the UM College of Literature, Science, and the Arts. Upon retiring in 1998, the University awarded

him emeritus status and the Faculty Distinguished Service Award for Administrative Services.

Thomas Dunn was an accomplished tennis player, representing Sydney University with his doubles partner in the Far West Championships. While attending University College, London, he was a standout member of the cricket team. He also enjoyed playing squash; and developed a passion for golf later in life.

After retirement, he served on the board at the Humane Society of Savannah (GA), volunteered at St. Paul's Episcopal Church (Savannah), and pursued his love of woodworking, crafting many beautiful pieces.

He is survived by his wife Dorothy and his former wife Barbara and their four children, Deborah Grifka, Ann Waldrop, Suzanne Dunn, and Geoffrey Dunn. Also surviving are seven grandchildren, his brothers, Warwick and Stephen, his sister Rosalyn and many nieces and nephews. He was predeceased by his sister Laurel Cronin and his second wife, Grace Stephens.

### John J. Eisch

John J. Eisch (*Chemistry Faculty Member, 1959-63*) died on June 29, 2019 from cardiac arrest at the age of 88 in Vestal, NY. Professor Eisch earned his BS in chemistry at Marquette University in 1952 and his PhD from Iowa State University in 1956, followed by a postdoctoral fellowship at the Max Planck Institut fuer Kohlenforschung in Muelheim, Germany. He held successive faculty positions in chemistry at St. Louis University, the University of Michigan, Catholic University and SUNY at Binghamton. In 1972, he joined SUNY at Binghamton as Chairman of the Chemistry Department, was named a Distinguished Chemistry Professor in 1983, and Professor Emeritus upon his retirement in 2013.

John Eisch was a major figure in main-group organometallic chemistry. Over his 40-year career he supervised the work of 50 PhD students and published more than 400 scientific articles. He received the first Henry Gillman Research Award from Iowa State University in 1995, a DSc, honoris causa, from Marquette University in 2002 and Alexander von Humboldt Senior Scientist Research Awards in Munich, Germany 1993 and 2005. Professor Eisch is survived by his wife Joan, daughters Karla, Paula, and Amelia, son John and grandchildren. *C&EN Obituary January 27, 2020.*

### **Danica “Dana” Dabich**

Danica “Dana” Dabich (BS 1952) died in Ann Arbor on June 2020 at the age of 89. She was born in Detroit on August 6, 1930. She received her BS in Chemistry from the University of Michigan in 1952. Three years later she received her MS from Ohio State University and in 1960 her PhD from the University of Illinois. In addition Dr. Dabich was a post-doctoral fellow at the University of Freiburg, Germany from 1960-61.

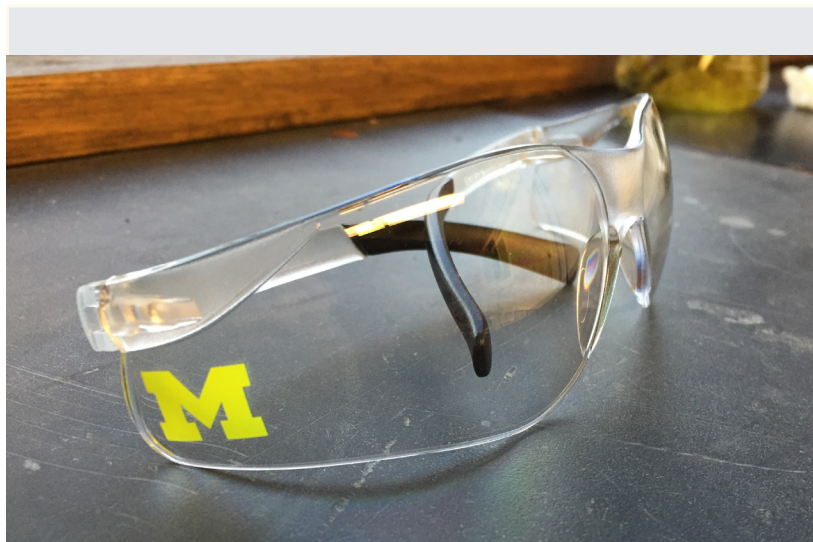
Dr. Dabich joined the Wayne State University School of Medicine in 1961. In 1963 she became an instructor and then an assistant professor in 1966 and in 1970 she became an associate professor in biochemistry and on retirement Professor Emerita. Dr. Dabich is survived by her sister Lyubica Dabich and a brother Sam Dabich. See *Ann Arbor News Obituaries*, July 26, 2020.

### **Carol E. (Jentelson) Goodell**

Carol E. (Jentelson) Goodell (BS 1963, MS 1965 *Blinder*) died at her home in Bingham Farms, MI on January 14, 2020. She was born on October 30, 1941 in Cincinnati, OH. After graduation she held various jobs working with a fashion designer, selling in local art galleries and finally working for 15 years for E. I. DuPont in their automotive coatings laboratory in Troy, MI. She is survived by her husband Gerald Goodell and her sister Kathrin Cole.

### **Anthony (Tony) Joseph Scioly**

Anthony Scioly (MS 1977, PhD 1985 *Sattelberger*) died on July 11, 2020 from Acute Myeloid Leukemia at the age of 69. He received his BS from the University of Washington and his PhD in theoretical chemistry from the UM. Professor Scioly taught at Sienna Heights University in Adrian, MI for more than 30 years. He taught chemistry and Physics and occasionally classical Latin and Greek. He served as chairman of the Department of Chemistry for many years and was the long-standing chair of the Academic Standards Committee. He was received the Outstanding Faculty Award in 1999. He retired in 2016, becoming Professor Emeritus. Dr. Scioly is survived by his wife Claudia, his daughter Meredith and grandsons Connor and Gavin. See: *Ann Arbor News Obituaries*, July 16, 2020.



## **OUR ENDOWMENTS**

*Endowments are wonderful legacies. Some have been created by former students to recognize beloved professors and by alumni whose lives were transformed by their college experiences. Some aim to “pay it forward” to the next generation of scholars. Others are just grateful for their association with the department. Whatever the motivation behind their creation, endowments keep giving year after year as the interest earned provides current support for our missions while the principal maintains a solid foundation for the future.*

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*If you would like to explore giving opportunities, please contact Robert Kennedy, Chemistry Chair.  
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As the University of Michigan has responded to the COVID-19 pandemic, the usually bustling atrium of the Chemistry building has been quiet. Social distancing and other precautions have become part of the daily routine. Nevertheless, our work continues.

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Classes were canceled and then moved online abruptly in March. Fall saw the return of some in-person labs as instructors balanced the value of hands-on labs with prevention of COVID-19.