



CHEMISTRY

Committed to excellence in teaching and research that pushes the boundaries of fundamental science in important new areas

The Department of Chemistry has a long tradition of excellence in the chemical sciences. In 1856, the university built the chemical laboratory, thought to be the first such building erected for that purpose on a public campus. Throughout the decades, fundamental research by our faculty has revealed the makeup of the world and opened new areas of work—for example, the discovery of organic free radicals opened up major fields of research in physical chemistry, polymer chemistry, and biology. More recently, findings on halogen in the Arctic snowpack has revealed new understandings of environmental processes.

As the questions chemists ask have become more complex, the Department of Chemistry has pushed the boundaries of traditional work in chemical sciences.

Today our faculty are leading quests for cleaner energy sources, better battery technology, greener chemical production, improved biomedical diagnostics and sensors and a host of other work that addresses critical challenges of national and global importance.

Our faculty are driving improvements in the teaching of chemistry and expanding opportunities for STEM education for persons of all backgrounds. At the same time, we are looking closely at the needs of our students that complement their rigorous scientific training to develop the teachers and leaders of tomorrow.

In recent years, we have become one of the top departments in the nation. We continue to strive for excellence but it is increasingly difficult as we compete for the best faculty and the best students and require ever more modern facilities for the work we do, while also recognizing our obligation to be good stewards of our planet. Your support can help make our quests possible.

UNDERGRADUATE FELLOWSHIP FUND

An undergraduate research experience can be life changing, setting students on a course to be tomorrow's leaders in our field. Research experience is essential for students to compete for elite graduate programs and jobs in the chemical and biotechnology industries. These opportunities also draw top students to our field. A gift of \$300,000 endowed, or \$6,000 annually per student, supports LSA chemistry and biochemistry majors taking part in research opportunities throughout the academic year.

FUTURE FACULTY PROGRAM

The Department of Chemistry has developed a comprehensive program for preparing our chemistry and biochemistry undergraduates, graduate students, and postdoctoral associates to become faculty members. We provide mentored teaching experiences and engagement in curricular development. Annual funding of \$10,000 - \$50,000 for this program:

- helps to support students with seminars, mentoring, and attendance at professional conferences
- engages graduate students to spend time in the program
- gives senior undergraduates experience in supporting a class as a teaching assistant while the graduate student instructor is working on curriculum development

CHEMCAREERS PROGRAM SUPPORT

Recognizing the need to expand career mentoring for our students, the Department of Chemistry has established the ChemCareers program. It highlights the range of careers open to students with advanced degrees in chemistry and prepares them to enter the job market. Annual funding of \$10,000 - \$50,000 for this program supports students with programming—seminars, brown bag sessions, workshops, and special speakers—and contributes toward the cost of attending relevant professional meetings.

“I’ve developed copious technical and critical thinking skills through investigating the properties of self assembled monolayers on metal surfaces. Working with these delicate systems allows me to gain valuable analytical chemistry experience and more clearly understand concepts I’ve learned in class. Along with a team of amazing graduate student mentors, we have multiple papers on our findings in progress toward publication and hope to establish a starting point for more research aimed at mitigating carbon dioxide emissions.”

– *Grace Clinger, B.S. '23*

OUTREACH PROGRAMS

Addressing the need to expand access and the ability to enter our field

MCORE

This fall preview visit for senior undergraduates considering graduate school is aimed at expanding the pool of students from underrepresented groups that enter our graduate programs. We need annual funding of \$10,000 - \$50,000 to support this impactful initiative.

D-RISE

A collaboration with Cass Technical High School in Detroit, the Detroit Research Internship Summer Experience (D-RISE) immerses select high school students in the world of college and research by having them spend a summer on campus doing research with faculty and graduate students. Annual funding of \$10,000 - \$50,000 is needed to support this life-changing program.

IMPACT

“The most important hallmark of (D-RISE) is that the high school students do not just observe their graduate student or postdoctoral mentors in the laboratory, but the high school students perform full-time, hands-on research for 40 hours per week,” says Nicolai Lehnert, professor of chemistry, who initiated the program with Cass Technical High School. “They are working on projects that are directly related to the Ph.D. students’ graduate work or the postdoctoral fellows’ research projects.”

He started the outreach program when he noticed the low number of underrepresented minority students in his upper-level chemistry undergraduate courses. “You start to realize it’s because of (students) being disadvantaged in college access and high school education,” Lehnert said. “I just felt that society should do something about it and we, as the University of Michigan, should have an interest in doing something about this because they’re right here. This is essentially in front of our doorstep so we should be making an effort to help and ultimately recruit these students.”

Stephanie Camarena was part of D-RISE and then earned a B.S. degree from the University of Michigan. As a U-M undergraduate, she continued doing research. “When I came here it was really an eye opener. I never thought I’d get to use the kinds of machines I saw people using in YouTube tutorials and things like that. But now I’m actually doing it and using the same equipment I see professional scientists use. And the purpose behind the research really benefits people and the environment. This is an opportunity that’s not guaranteed to anybody and only a few people really have access to it. It’s really reaffirmed my passion for science, and I’m glad I’ve been able to be a part of this. If it wasn’t for the D-RISE program, I would not be doing research. As a first-generation student, I did not directly have an experienced and older figure around to guide me through the important decisions that come with the college experience.”



—STEPHANIE CAMARENA, B.S. '21

SUSTAINABILITY WORK

A growing concern with the impact of our activities on our planet has led our faculty to consider sustainability in their work and to do research on ways to make our products more sustainable. Expendable gifts of \$5,000 - \$25,000 will support work like this:

- Creation of polymers that are less hard to recycle
- Innovative ways to recycle current plastics such as those found in disposable diapers
- Outreach efforts such as the weekend programs to clean up parks along the Huron River
- Laboratory practices that produce less toxic products

STRATEGIC FUND

Undesignated, expendable gifts are extremely important to the continuing success and growth of the department. Contributions to the department's Strategic Fund make it possible to meet unexpected needs and challenges such as seed funding for new faculty research and innovative research projects, curriculum development, research laboratory maintenance and upgrades, and purchase or repair of major instruments for the research and teaching laboratories.

WAYS TO FUND YOUR GIFT

Your gifts of cash, pledges, or appreciated securities change lives. Wills, estate, and planned gifts allow you to create a lasting legacy that will enable the best and brightest minds to experience a liberal arts education, solve problems in a changing world, and yield ideas and innovations that will make a difference in Michigan and around the globe.

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