



## Department of Chemistry

### THE POWER

The Department of Chemistry at the University of Michigan has a storied history of landmark research and innovation. From the discovery of organic free radicals, which opened up major fields of research ranging from physical chemistry to polymer chemistry to biology, to the first chemical synthesis of a steroid, which helped to expand the modern era of medicinal chemistry, to fundamental discoveries on the structure of matter, which resulted in a Nobel Prize for one of our graduates, the department has long been at the forefront of research in the chemical sciences. Today, faculty in the department are leading the way in all aspects of the chemical sciences: discovering and testing new medications and treatments for cancer, autoimmune diseases, and infections; developing the next generation of medical/biological imaging and sensor technologies; and enabling energy efficient technologies with advances in catalysis, energy storage, and energy harvesting.

## THE OPPORTUNITIES

In recent years, our department has become one of the top departments in the nation. Students graduating with a degree in chemistry from Michigan have established themselves as productive, independent researchers and scholars. After completing the program, they are well prepared for challenging careers in the forefront of science and technology. Expanding excellence in research and education is costly. Our annual expenditures for innovative research exceed \$18 million and are funded mainly by competitive federal grants, which are decreasing, and by individual gifts.

## THE IMPACT

Preserving—let alone continuing to build—the excellence for which the Department of Chemistry is known is becoming an increasingly difficult task in the face of reduced state funding and the intense competition with other schools for the best students and faculty. To become first in the nation for both teaching and research, the department must continue to attract and retain superb faculty, provide competitive financial support or fellowship packages for outstanding graduate and undergraduate students, continue to enhance the curriculum, and generate a source of flexible funding to seed new initiatives.

## Catalysis Center

***\$8M endowed / \$100,000 annually for 5 years to launch***

This center will leverage U-M's expertise in the area of catalysis. Over the past decade, we have hired more than 10 faculty working in this area to position Michigan as the premier chemistry department in the nation in the area of catalysis. With world leading experts in the areas of homogeneous catalysis, heterogeneous catalysis, electrocatalysis, photocatalysis, and biocatalysis, researchers in the U-M chemistry department are making ground-breaking advances using catalysis to address some of the world's most important challenges. This includes numerous research groups who are developing new routes to biofuels, converting carbon dioxide to fuels, harnessing water as an energy source, developing more sustainable routes to medicines, and identifying the biological mechanisms of diseases. The Named Center for Catalysis Research will unite diverse groups of U-M undergraduates, graduate students, postdoctoral fellows, and faculty to address grand challenges in the field. Support for this named center will enable the college to:

- Leverage catalysis expertise throughout the U-M campus to address challenges including sustainable food production, alternative fuels, and affordable medicines.
- Provide seed funds for high risk/high reward projects that address the most cutting-edge approaches to these challenges.
- Recruit and support the most talented undergraduates, graduate students, postdoctoral fellows, and faculty in the field.
- Create a state-of-the-art facility containing both equipment and staff focused on accelerating advances in the field of both chemical and biological catalysis at U-M. Such a facility would position U-M as a nucleus for state, national, and global progress in this field.
- Accelerate and streamline the process for moving from an innovative idea to a viable technology.
- Provide a mechanism (matching funds, strategic partnerships, etc.) for attracting productive collaborations with the chemical, pharmaceutical, biocatalysis, energy, automotive, and other relevant industries to solve critical challenges
  - Directorship: **\$2.5M endowed**
  - Program research support: **\$100,000 to \$200,000 annually / \$3.5M endowed**
  - Operational support and equipment: **\$25,000 to \$50,000 annually / \$1M endowed**
  - Student fellowships: **\$50,000 annually / \$1M endowed**

## **Innovation Fund**

*\$1M to \$5M endowed*

An endowment would ensure a guaranteed flow of discretionary resources to be used as seed money for innovative research projects and for development and integration of new technologies in our teaching laboratories.

## **Junior Faculty Support Fund**

*\$1M endowed/\$50,000 annually for 5 years*

Awarded for a term of five years, these positions will enable the Department of Chemistry to recruit and retain the finest emerging talent at Michigan. Awards will be made to junior faculty to support their research efforts as they build their careers at Michigan.

## **Summer Undergraduate Fellowship Fund**

*\$200,000 endowed/\$7,500 annually per student*

An undergraduate research experience is essential for students to compete for elite graduate programs and jobs in the chemical and biotechnology industries. All funds support LSA chemistry and biochemistry majors taking part in summer research opportunities.

## **Named Undergraduate Student Lounge**

*\$125,000 expendable*

To enhance collegiality and community for undergraduate majors, we propose to create a designated space where chemistry and biochemistry students can come to share experiences and work together. When it's time to hit the books (or plug in the laptop) students will be drawn to this specially outfitted space, where they can work on projects without having to disrupt their schedules by leaving the Chemistry Building. Our undergraduate students have identified such a space as a top priority.

## **Future Faculty Program**

*\$10,000 to \$50,000 annually*

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 by providing mentored teaching experiences and engagement in curricular development. Funding for this program helps to support students with (a) programming (seminars, brown bag sessions, workshops, and special speakers), and (b) contributes toward the cost of attending professional meetings and symposia related to teaching and learning.

## International Student Fellowships

*\$10,000 to \$50,000 annually*

Proceeds from this fund would provide support to international students entering the graduate program in chemistry. Contributions would support opportunities for international students to integrate into the department culture by coming to the department in the summer prior to their first year for an intensive research experience.

## Strategic Fund

*\$10,000 to \$50,000 annually*

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
- 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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## CONTACT INFO

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