One of the first universities in the country with a chemistry department, the University of Michigan has a longstanding record of achievement in the molecular sciences. Our future, however, is not confined by our past. The Ph.D. graduate program develops students into world class researchers and educators. Organized around Analytical, Biological, Inorganic, Materials, Organic and Physical Chemistry groups, the department also has joint studies in medicinal chemistry, macromolecular science, applied physics, and biophysics, among other areas. This approach enhances the critical skills you will need to succeed in industry or academia in our increasingly complex and interdependent world. UM Chemistry graduates hold leading positions in industry and academia throughout the country.

### Outstanding features of our program

- Extraordinarily interdisciplinary, collegial and collaborative environment
- Laboratory rotations for first-year students—Jump-start your research and explore your individual interests before committing to a research lab and dissertation topic.
- Dynamic future faculty development program that offers scientists an opportunity to develop teaching skills
- Strong connections with industry

See the UM Chemistry website for details on specific projects in these areas at Michigan and faculty associated with each cluster.

### Analytical Chemistry

Development of revolutionary techniques and their application to real-world analytical problems are the research domains of the Analytical Chemistry group at Michigan. Faculty and students work closely with biomedical and industrial scientists and engineers. Particular areas of expertise are:

- Chemical & Biosensors
- Electrochemistry
- In Vivo Measurements
- Mass Spectrometry
- Microfluidics
- Separations

### Chemical Biology

An exciting multidisciplinary program at the interface of chemistry and biology, Chemical Biology considers the fundamental chemical principles that govern all biological systems. Synthesis, measurement and theory of biological molecules are important components. Particular areas of expertise are Biological Catalysis, Biomolecular Structure & Function, Chemical Genetics, Imaging & Sensing, Metallo-Biochemistry, RNA Biochemistry, Synthetic Biology & Nanotechnology, Theory & Simulation, and Metallo-Neurochemistry. State-of-the-art microscopy allows for the imaging and manipulation of single molecules in vitro and in living cells. Students may also participate NIH-funded UM training programs that may include industry internships.

### Inorganic Chemistry

The remarkable breadth of Inorganic research at Michigan reflects the highly interdisciplinary character of modern inorganic chemistry. UM inorganic chemistry flourishes in the three modern areas of metals in biology (Bioinorganic Chemistry), catalysis for transformation of organic molecules (Organometallic Chemistry), and design of solids with defined properties (Inorganic Materials).

### Organic Chemistry

Michigan offers a diverse selection of research opportunities in this area with particular strengths in Organometallic Chemistry, Organic synthesis, Bioorganic Chemistry, and Organic Materials. Whether students are interested in the use of transition metals in reaction discovery, synthetic methodology development, and mechanistic chemistry, or on applying organic chemical principles to solve problems focused on human health, there is a broad spectrum of available research projects. A highly collaborative atmosphere spanning the department and university allows students to tackle important problems in Chemical Biology, Medicinal Chemistry, and Materials Science, further strengthening the breadth of Organic Chemistry research at Michigan.

### Materials Chemistry

The diversity of research programs in Materials Chemistry creates an extraordinary opportunity for stimulating graduate research at the interface of materials science and analytical, inorganic, organic, and physical chemistry. Particular areas of expertise are in:

- Materials Synthesis
- Materials in Biology and Medicine
- Materials in Sensors
- Materials in Energy Conversion & Storage
- Spectroscopy of Materials
- Theoretical Description of Materials Properties

### Physical Chemistry

Physical Chemistry at Michigan has grown dramatically, expanding into single molecule spectroscopy, atomic scale imaging, solid state NMR, X-ray spectroscopies, femtosecond dynamics and multidimensional spectroscopy and other cutting-edge areas. The importance of a firm theoretical foundation leads to exploration in diverse areas, and development and implementation of state-of-the-art experimental and theoretical techniques.
Come to Michigan

Among the leading academic institutions in the world, the University of Michigan has a national and international reputation for excellence. This continuing commitment to quality and innovation is reflected in multi-faceted research activities covering all areas of modern chemistry.

15 Research Themes

• Bioanalytical Chemistry
• Bioinorganic Chemistry
• Bioorganic Chemistry
• Biophysical Chemistry
• Computational and Theoretical
• Energy Science
• Environmental Chemistry
• Nano Chemistry
• Optics and Imaging
• Organometallic Chemistry
• RNA Biochemistry
• Sensor Science
• Surface Chemistry
• Sustainable Chemistry
• Ultrafast Dynamics

Further Information

For more information about specific research interests, go to: www.lsa.umich.edu/chem/faculty/
You may contact faculty directly.

How to Apply

Apply to the Chemistry Graduate Program online through the Rackham Graduate School. For more information on UM admissions, see: http://www.rackham.umich.edu/prospective-students
Deadline for applications is December 15.

For more information about the department:
   Website: www.lsa.umich.edu/chem/
   Email: ChemAdmissions@umich.edu
   Phone: toll free 888-999-2436 or 734-764-7278

University of Michigan

• Top-15 World University
• $1.3 billion total annual research enterprise
• 30 million square feet of facilities
• 49,000 total students; 15,000 grad/professional students
• 460,000 living alumni
• $9.7 billion endowment
• Full electronic access to a world-class academic library system
• 11 museums
• Big 10 College sports, club and intramural sports, recreational facilities

Chemistry at UM

• Top-15 ranked Chemistry department (US News & World Report)
• Among the top-10 funded departments in the US
• Open access to instrumentation
• Research rotations in any of 50 groups
• True interdisciplinary research to choose from
• Very competitive stipend and benefits, combined with low cost-of-living
• Research active faculty, with more the majority hired since 2000
• About 250 graduate students

Ann Arbor

• Repeatedly ranked in Top 5 places to live in the US
• Safe environment with affordable housing
• Free student transportation around city and campus
• Vivid cultural life including live music, theater, dance, fine dining
• Natural areas with many recreational opportunities
• Half-hour drive to Detroit Metropolitan Airport, within a 5-hour drive of Chicago or Toronto

Regents of the University of Michigan: Michael J. Behm, Mark J. Bernstein, Laurence B. Deitch, Shauna Ryder Diggs, Denise Ilitch, Andrea Fischer Newman, Andrew C. Richner, Katherine E. White, Mark S. Schlissel, ex officio.

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