Welcome

A modern chemist may be called upon to solve complex problems related to the environment, synthesis of new drugs, process engineering, computers, the human genome, renewable resources for energy, advanced materials, or the rapidly evolving field of nanotechnology.

The Central Michigan University Department of Chemistry and Bio-Chemistry offers degree programs certified by the American Chemical Society which prepares students to meet the growing challenges in the chemistry field by offering high-level course work and requiring extensive research.

The chemistry department offers Master of Science and Master of Arts in Teaching degree programs to serve the needs of chemists and teachers alike.

As a Master of Science student, you can choose to specialize in analytical, inorganic, organic, materials, physical, polymer chemistry, or biochemistry. The Master of Arts degree is tailored to aspiring college chemistry teachers.

Graduate students benefit from a student-oriented environment that focuses on quality teaching and student involvement in internationally significant research.

Because of the high caliber of our graduates, many doctoral degree-granting institutions and industrial corporations look to CMU for their future students and employees. Many of our graduates enter positions with Fortune 500 companies such as The Dow Chemical Company and Dow Corning Corporation, continue their education at leading Ph.D. programs around the country, or teach in high schools, colleges, and universities.

Research Facilities

CMU offers chemistry graduate students ample research and learning facilities. Contemporary classrooms and laboratories are housed on four floors of CMU’s Dow Science Complex.

The facility contains ten advanced research laboratories, which accommodate forty student researchers. Twenty faculty laboratories adjoin the research labs.

In addition, special labs house instrumentation for nuclear magnetic resonance, Raman spectroscopy, mass spectrometry, polymer characterization, and x-ray diffraction. CMU also has a research station on Beaver Island in northern Lake Michigan with a specialized site for departmental research in water and soil chemistry.

Students have access to chemistry instrumentation for research, including GC, GC/MS, high-temperature GPC, HPLC, UV-VIS, FT-IR, FT-NMR, Raman, AA, powder x-ray diffraction, fluorescence, AFM, and thermal analysis equipment including DSC, TGA, and DMA, cold/ freezer room, and centrifuges.

A student computer laboratory is well equipped with twenty-four computers which offer current molecular visualization, computational software, and other scientific software programs.

Degree Requirements

A minimum of 30 semester hours must be completed for either master’s degree program.

A maximum of 15 hours of satisfactory graduate credit may be transferred into the CMU programs. The curriculum includes foundation courses in the major subdisciplines of chemistry, communication courses in scientific writing and seminar, and research. Advanced elective courses are offered in the various subdisciplines that build on the foundation classes. Full-time graduate students should expect to be in residence for two years.

Financial Assistance

Financial assistance for chemistry graduate students is available through fellowships and teaching and research assistantships.

Full-time graduate students with outstanding records may receive fellowships through the College of Graduate Studies, which includes a stipend and remission of tuition fees. Applications for these special graduate fellowships are due by the first Monday of February.

Graduate teaching assistantships involve full-time graduate study, require teaching activities, and include a cash stipend and remission of 20 credits of tuition per year. Graduate research assistantships are supported by individual faculty with varying levels of support.

Admission Process

Applications for entrance in fall or spring semesters are accepted at any time. Applicants should apply by February 1 to compete for fall financial awards.

See the College of Graduate Studies Web site at www.grad.cmich.edu for fees and other information. You may apply online by visiting http://apply.cmich.edu.
Faculty

The research interests of our faculty vary from nanotechnology to dendrimer and polymer studies, biochemistry, catalysis, experimental and theoretical studies in analytical and physical chemistry, and chemical education. The following are members of the chemistry faculty and their research areas:

**David E. Ash, Ph.D., University of Pennsylvania; Biophysics.** Structure-function-activity relationships for enzymes involved in arginine metabolism; The role of individual amino acids in the catalytic cycle as probed by site-directed mutagenesis.  
ash1de@cmich.edu

**Minghui Chai, Ph.D., University of Akron.** Analytical chemistry. NMR spectroscopy, supramolecular and materials chemistry, nanofabrication and characterization of self-assembled nanostructures and bio-mimetic systems, nanodevice design based on singlewall carbon nanotubes and dendrimers.  
chai1m@cmich.edu

**Anthony Chappaz, Ph.D., University of Quebec INRS-ETE, Biogeochemistry.** Identification and characterization of reactions in both modern and ancient aquatic ecosystems involving trace elements, in order to improve our understanding of paleo-environmental implications - how the chemistry of Earth's surface has changed through geologic time, as well as implications for modern societies - environmental chemistry and identification of anthropogenic sources.  
chapp1a@cmich.edu

**Wenjun Du, Ph.D., University of California, Davis.** Organic and polymer chemistry. Synthesis of novel functionalized polymer. Carbohydrate-based biomaterials synthesis and self assembly.  
du1w@cmich.edu

**Bradley D. Fahlman, Ph.D., Rice University.** Materials chemistry, chemical education. Organometallic precursors for chemical vapor deposition, carbon nanotube templates, materials characterization.  
fahlm1b@cmich.edu

**Bob A. Howell, Ph.D., Ohio University.** Organic chemistry, polymer chemistry. Reaction mechanism, polymer-supported organoplatinum antitumor agents, polymer synthesis and degradation.  
howell1ba@cmich.edu

**Anton W. Jensen, Ph.D., Brigham Young University.** Organic chemistry. Organic photochemistry, reaction mechanisms, enzyme mechanisms, synthetic methods.  
jense1aw@cmich.edu

**Estelle L. Lebeau, Ph.D., University of North Carolina.** Inorganic chemistry. Oxidation mechanisms of polynuclear aromatic hydrocarbons, catalysts.  
lebeau1el@cmich.edu

**Dale J. LeCaptain, Ph.D., Michigan State University.** Process analytical chemistry. Chemical process analysis and control for green chemical production.  
lecap1dj@cmich.edu

**Choo Young Lee, Ph.D., Northeastern University.** Organic Chemistry, Organic, Medicinal, Bio-organic, and General Chemistry. Bio-conjugation of cancer drugs to dendrimer; Kinetics study between dendrimer and metal ions.  
lee1cy@cmich.edu

li3b@cmich.edu

**Dillip K. Mohanty, Ph.D., Virginia Polytechnic Institute.** Polymer chemistry. Polymer synthesis, structure-property relationships in polymers.  
mohan1dk@cmich.edu

muell1a@cmich.edu

**Ajit Sharma, Ph.D., Wayne State University.** Clinical chemistry, biochemistry. Development of analytical methods in clinical chemistry.  
sharm1a@cmich.edu

**Phil J. Squatrrito, Ph.D., Northwestern University.** Inorganic chemistry, crystallography. Solid state chemistry, structural trends in inorganic compounds, X-ray structure determination.  
squat1pj@cmich.edu

**Benjamin M. Swarts, Ph.D., Wayne State University; Chemistry.** Development of chemical tools to image and profile glycoconjugates and proteins associated with the cell wall of mycobacterium tuberculosis, the global pathogen that causes human tuberculosis.  
ben.swarts@cmich.edu, http://people.cst.cmich.edu/swartslab/

**Mary M.J. Tecklenburg, Ph.D., Texas A&M University.** Physical/analytical chemistry. Raman and IR spectroscopy of materials. Biominalization studies of apatite, the bone mineral. Polymer-imbedded nanoparticles for surface enhanced Raman spectroscopy.  
teckl1mm@cmich.edu

**Janice Hall Tomaski, Ph.D., University of Wisconsin-Madison; Inorganic Chemistry and Chemical Education.** Incorporating research-based labs into undergraduate chemistry courses, and understanding the impacts of the labs on students learning and interest in chemistry; Studying the online learning environments of web-based chemistry courses.  
tomas1jh@cmich.edu

**Linlin Zhao, Ph.D., University of Connecticut; Bioanalytical Chemistry.** Understanding the mechanisms of mutation caused by damaged DNA structures using chemical, biochemical, and structural biological approaches; identify certain damaged DNA structures as potential biomarkers for aging and cancer.  
linlin.zhao@cmich.edu

Apply Online

http://apply.cmich.edu

For More Information

Requests for applications and additional information about the chemistry graduate programs should be addressed to:

**Graduate Program Coordinator**  
Dr. Mary Tecklenburg  
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Central Michigan University  
Mount Pleasant, MI 48859  
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