

Chemistry

Master of Science

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The Department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry, and analytical chemistry. The department offers a B.S./M.S. program (using the non-thesis M.S. option) if you meet the admission criteria listed below. Current areas of research specialization are Synthetic and Structural Organometallic Chemistry, Photochemistry, Theoretical Physical and Biophysical Chemistry, Environmental Chemistry, Electroanalytical Chemistry, Synthetic Inorganic and Organic Chemistry, Computational Chemistry, Analytical Instrumentation, Inorganic Compounds for Materials Science, Carbohydrate Chemistry, Physical Biochemistry, Biocatalysis, and Bionanotechnology.

Admission Requirements

1. A baccalaureate degree with a major in chemistry.
2. A cumulative Grade Point Average (GPA) of at least 2.75 for all undergraduate work or a GPA of at least 3.0 for the junior and senior years of undergrad work.
3. Undergraduate credit in mathematics through integral calculus.
4. One year of physics.
5. Graduate Record Examination General test for all students. (Chemistry subject test also required for all applicants without a baccalaureate degree in Chemistry.)
6. International Students: Minimum TOEFL Score of 550 on the paper-based test or 213 on the computer-based test, or for the Internet-based TOEFL, a composite score of 79, with minimum scores of 21/30 (Speaking*); 19/30 (Listening); 19/30 (Reading); and 17/30 (Writing). Applicants may also meet language requirements by presenting IELTS scores of 6.5.
7. International applicants who have received their bachelor's or master's degree in the United States or English-speaking Canada are not required to submit the TOEFL or IELTS. *Applicants being considered for Graduate Teaching Assistantships must achieve these minimum TOEFL scores, but have a minimum score of 26/30 on the Speaking subtest.

Degree Requirements

Students seeking the Master of Science (Thesis Option) Degree at the University of North Dakota must satisfy all general requirements set forth by the Graduate School as well as particular requirements set forth by the Chemistry Department.

Thesis Option (32 credits total):

1. A minimum of 32 semester credits in a major field, including the credits granted for the thesis and the research leading to the thesis.
2. At least one-half of the credits must be at or above the 500-level.
3. A maximum of one-fourth of the credit hours required for the degree may be transferred from another institute.
4. Required Courses:
 - a. Chem 509 (Graduate Seminar) – 1 credit
 - b. Six (6) credit hours from major sequence
 - Analytical
 - Inorganic
 - Organic

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- Physical
- c. Six (6) credit hours of 500-level chemistry courses from two divisions other than the major.
- d. Three (3) credit hours of additional elective coursework
- e. Chemistry 599 (Research) 10-12 credits
- f. Chem 998 – (Thesis) 4-6 credits.

Faculty and Areas of Expertise

- **Harmon Abrahamson, Ph.D.**, Organometallic chemistry and photochemistry
- **Julie Abrahamson, Ph.D.**, Chemical education
- **R. Chu, Ph.D.**, Organic synthesis
- **J. Delhommelle, Ph.D.**, Computational physical chemistry; molecular simulation of nonequilibrium processes
- **Guodong Du, Ph.D.**, Inorganic and organometallic chemistry; catalysis and mechanism
- **Mark Hoffmann, Ph.D., Department Chair**, Theoretical and computational physical chemistry
- **Sean Hightower, Ph.D.**, Materials Science
- **Alena Kubatova, Ph.D.**, Analytical separation methods applied to air pollution and climate change
- **Evguenii Kozliak, Ph.D.**, Physical biochemistry, biocatalysis in the gas phase, enzyme catalysis
- **Alexei Novikov, Ph.D.**, Synthetic organic chemistry, total synthesis of natural products
- **David Pierce, Ph.D.**, Electrochemical analysis and remediation, acoustic-wave sensor development
- **Irina Smoliakova, Ph.D.**, Synthetic organic chemistry, stereochemistry, and carbohydrate chemistry
- **Lothar Stahl, Ph.D.**, Main group and transition metal chemistry, materials, X-ray crystallography
- **Kathryn Thomasson, Ph.D., Graduate Program Director**, Theoretical biophysical chemistry
- **Julia Zhao, Ph.D.**, Design and chemical synthesis of nanoparticles, application of nanoparticles in bioanalysis

Contact Information

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