

CHEMISTRY

Graduate program



CHEMISTRY at NC State

Join us in
exciting and
innovative
discovery at
one of the
most diverse
doctoral research
programs in
the country.



About Our Department

The Chemistry graduate program at NC State has approximately 130 graduate students across four divisions of study with the average student requiring five years to complete a Ph.D. degree. First year graduate students typically teach undergraduate laboratory and recitation courses, enroll in classes specific to their interests, choose a research mentor, and begin taking cumulative exams. Research usually begins during the Spring of the first year.

Graduate students in the Department of Chemistry perform cutting-edge interdisciplinary research. Working with our 30 distinguished and award-winning faculty, graduate students develop the skills needed to excel in industrial, academic, and government positions throughout the world. Our vibrant research groups work in basic science, technology development, and interdisciplinary chemistry. More than 125 years after its creation, NC State continues to make its founding purpose a reality. Every day, our career-ready graduates and world-class faculty make the fruits of learning and discovery available to people across the state, throughout the nation and around the world.

About NC State University

NC State is located in one of the fastest-growing urban centers in America. A top spot for young professionals and families, Raleigh is nationally recognized as a city on the rise:

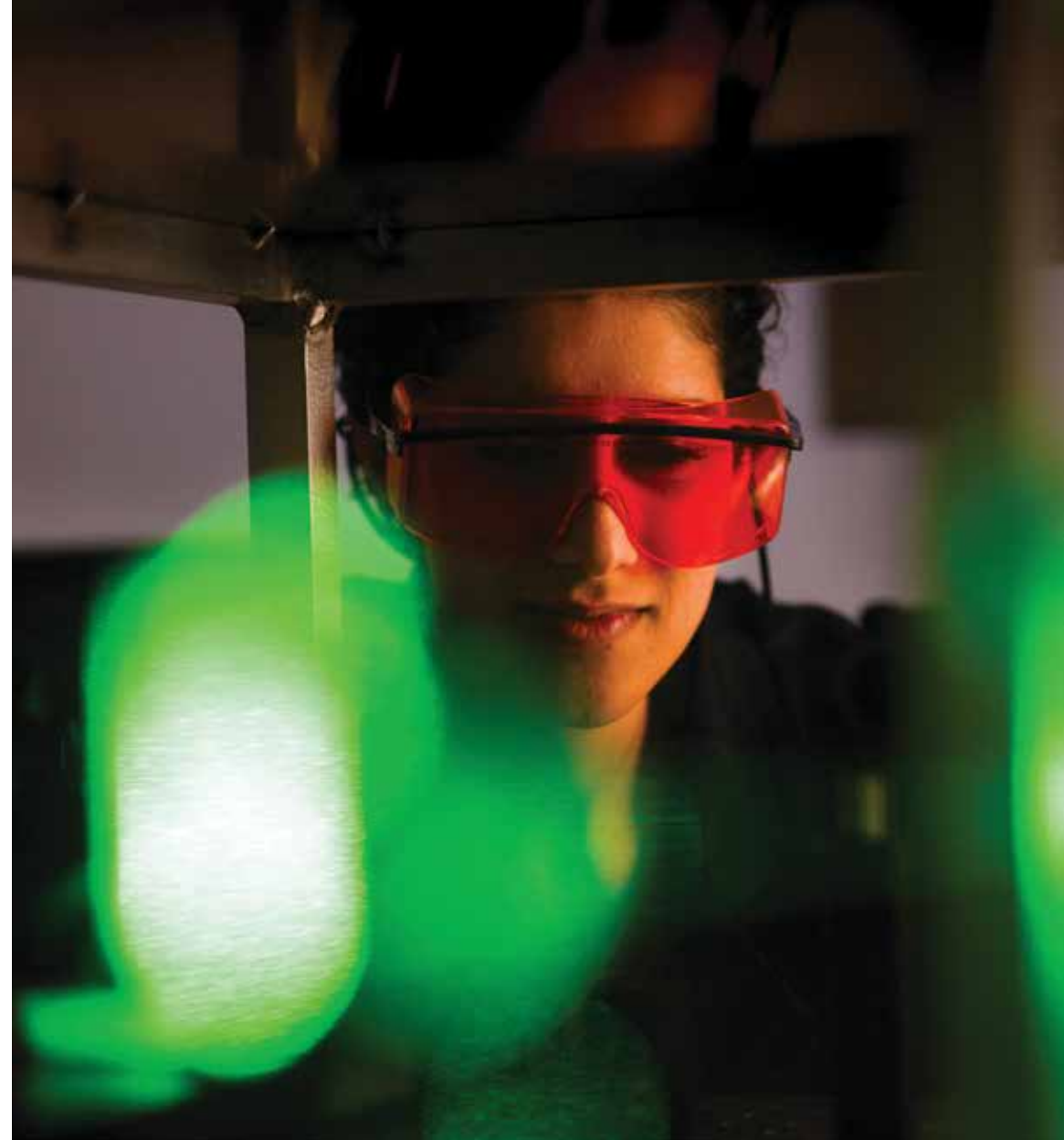
- > No. 2 most educated city in the country (Forbes, 2017)
- > No. 10 among America's 15 best cities for young professionals (Forbes, 2017)
- > No. 5 among the best midsize U.S. metro areas for college students (American Institute for Economic Research, 2017)
- > Recently selected as a Google Fiber expansion city

No. 4
among U.S. cities
for jobs

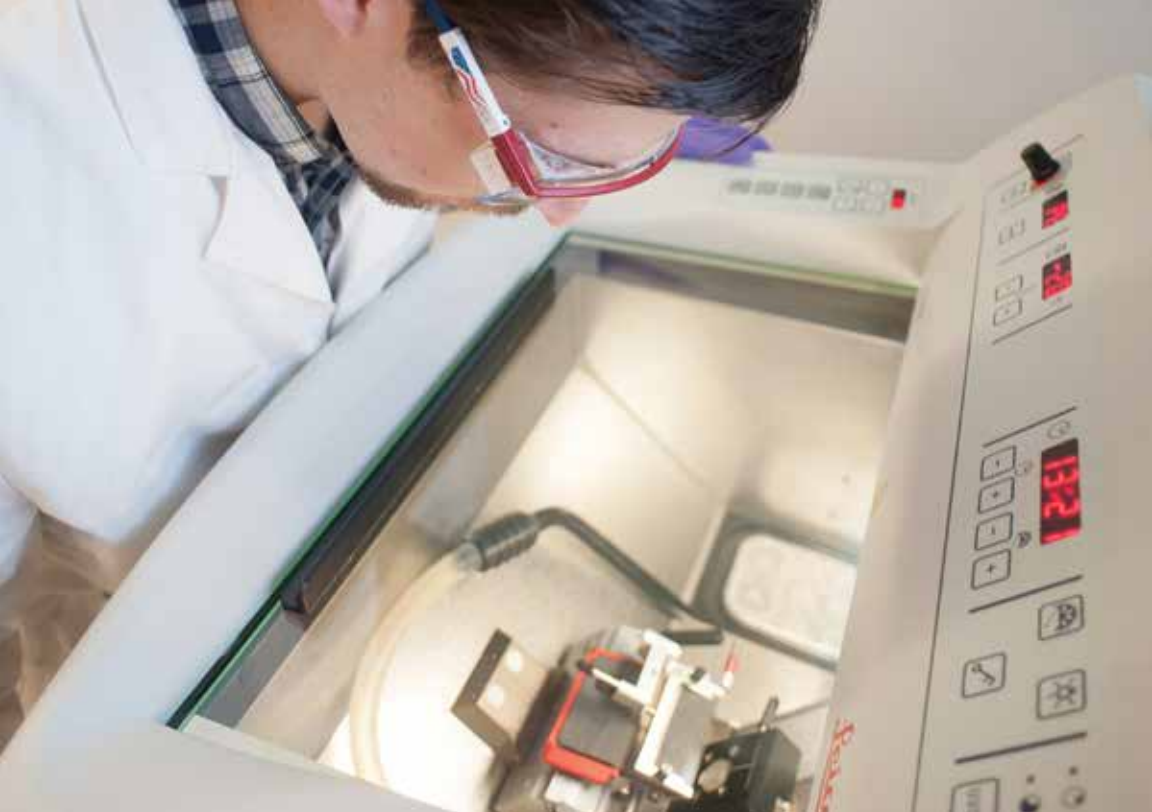
(Glassdoor, 2017)

No. 3
among the best
places for business
and careers

(Forbes, 2016)



Along with Durham and Chapel Hill, Raleigh anchors North Carolina's Research Triangle, a national hotspot for high-tech enterprise. The top companies in the region — including Novartis, Novozymes, Syngenta Biotechnology, Becton Dickinson, Cree, BASF, IBM, Cisco Systems, SAS Institute and Biogen Idec — are among the country's best employers and hire many of our alumni.



Research Opportunities and Faculty

Analytical and Bioanalytical

The Analytical Chemistry division includes faculty with a wide range of interests who share the mutual goal of advancing analytical science. Research areas include electrochemistry, mass spectrometry, microscopy, sensors, and spectroscopy. The program is especially well known for students and faculty studying the biological basis of disease, and developing new instrumentation and measurement strategies. Projects span interdisciplinary topics that include, but are not limited to, biosensors, nanoscopic materials, neurochemistry, proteomics, materials characterization, and ultra high-resolution imaging.

> Erin Baker, Ed Bowden, David Muddiman, Leslie Sombers, Thomas Theis, Gufeng Wang

Inorganic

Modern Inorganic Chemistry is a continuously expanding research area. From bio-inorganic spectroscopy to solid-state synthesis, (and almost everything in between!) our faculty and students will help to place incoming students on the path to become an expert in the field.

> Felix (Phil) Castellano, Reza Ghiladi, Elon Ison, Elena Jakubikova, Paul Maggard, James Martin, David Shultz



Financial Support

Interested students have the opportunity to visit NC State to meet with our faculty and students and tour the campus and greater Raleigh area. Admitted students receive research or teaching assistantships that include a competitive stipend, tuition payment, and health insurance guaranteed for 5 years to students who maintain good academic standing. Numerous fellowships, internships and training grants are also available for high achievers in our program.

Job Placement

BASF, Novozymes, Abbvie, Cree and other companies from the nearby Research Triangle Park, as well as other national and international businesses, regularly send recruiters to visit our Department and present information sessions, usually with free food. Our graduate students also often take advantage of regional and national industrial internship programs.

Organic

The Organic Division encompasses a wide-range of research areas including: organic methods development, natural product total synthesis, medicinal chemistry, chemical biology, synthetic biology, materials science, computational, and energy.

> Wei-chen Chang, Denis Fourches, Chris Gorman, Vincent Lindsay, Jonathan Lindsey, Joshua Pierce, Caroline Proulx, Gavin Williams

Physical

Research in the Physical Division covers a variety of topics ranging from application of spectroscopic techniques (electron paramagnetic resonance, solid state NMR, and laser spectroscopy) in chemistry and biology, to development and application of new computational methodologies for studies of magnetic materials, catalytic systems, and materials for solar energy conversion.

> Stefan Franzen, Elena Jakubikova, Alex Nevzorov, Alex Smirnov, Tatyana Smirnova, Thomas Theis



Energy, Photochemistry and Materials

Next-generation technologies require innovative and interdisciplinary discoveries. Through the synthesis of new materials and molecules, in combination with advanced spectroscopic and computational approaches, the groups in this area utilize their expertise in applied research and fundamental discovery to help meet the needs of the future.

> Felix (Phil) Castellano, Stefan Franzen, Reza Ghiladi, Chris Gorman, Elon Ison, Elena Jakubikova, Jonathan Lindsey, Paul Maggard, James Martin, David Shultz

Computational and Theoretical

Research in computational and theoretical chemistry spans the areas of electronic structure theory and cheminformatics, with strong connections to the fields of physical, organic, and inorganic chemistry. Our faculty focus both on the development of new approaches for modeling complex electronic systems, and application of computational modeling to various problems in catalysis, photochemistry, magnetic materials, and drug discovery.

> Denis Fourches, Elena Jakubikova





Chemical Biology, Synthetic Biology and Drug Discovery

Research in these areas is highly interdisciplinary and spans the discovery of novel treatments for infectious disease and cancer to the design of microbes for the synthesis of complex molecules. Faculty in this area collaborate with a number of other departments and programs across campus to conduct cutting edge research at the interface of chemistry and biology.

> [Wei-Chen Chang](#), [Denis Fourches](#), [Joshua Pierce](#), [Caroline Proulx](#), [Gavin Williams](#)

Chemical Education

This is a unique program that targets the design and development of resources for chemistry instruction. Additional training for a career in education is available through our Foundations in Teaching (FIT) and Certificate of Accomplishment in Teaching (CoAT) programs.

> [Maria Oliver-Hoyo](#)

Application Requirements

- > Domestic application fee waived with "check" option on application; \$85 international fee - no waiver available
- > Transcripts - unofficial may be uploaded with application
- > Personal statement
- > Three letters of recommendation
- > GRE General Test scores (Chemistry GRE optional)
- > TOEFL or IELTS scores - international applicants

Send official documents to:

The Graduate School
NC State University
1000 Main Campus Drive
Room 2300A
Raleigh, NC 27695-7102

Apply Online:
go.ncsu.edu/gradapp

NC State University promotes equal opportunity and prohibits discrimination and harassment based upon one's age, color, disability, gender identity, genetic information, national origin, race, religion, sex (including pregnancy), sexual orientation and veteran status.

NC STATE
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College of Sciences

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