Why **GRADUATE STUDIES in CHEMISTRY?**

A degree from Queen's Department of Chemistry is highly regarded and an important consideration in today’s competitive science and technology job market. Our new $56 million state of the art building is home to the Nuclear Magnetic Resonance facility and its eight high-field instruments, an on-site Mass Spec facility with four mass spectrometers, an X-ray diffractometer, a CFI-funded facility for materials characterization and more unique equipment in faculty labs.

Why **QUEEN’S?**

Queen's University and the Department of Chemistry enjoy international reputations. With 27 award-winning faculty, and over 130 graduate students, post-doctoral fellows and research associates performing cutting-edge research in a multitude of areas, you will find this an exciting place to do research. Research is performed in the areas of analytical, inorganic, organic, physical, polymer, and theoretical chemistry. Research in these areas ranges from the most fundamental to very applied.

“My years at Queen’s have left me with nothing but good memories. It was a great experience, a great city and a great education. It was a solid foundation to launch a career.”

– Will N. Rogers, PhD

**Program STRUCTURE**

PhD (4 years): course work, research thesis, comprehensive oral exam, and research seminar.

**RESEARCH Areas**

- Analytical/Environmental
- Biological
- Inorganic/Organometallic
- Materials/Polymer
- Organic
- Physical
- Theoretical/Computational

We encourage you to identify an area of research interest and contact a potential supervisor before applying.

Visit the [Chemistry Department website](http://www.queensu.ca/sgs) to read [faculty profiles](http://www.queensu.ca/sgs) and learn more about faculty members’ research areas. When you find a faculty member with similar research interests to yours, contact him/her and tell them about your interest in graduate work and related experience. This is also an opportunity for you to find out if the faculty member is accepting new graduate students to supervise.
DOCTOR OF PHILOSOPHY (PHD)

ACHIEVE YOUR ACADEMIC GOALS

- Key priorities include forming your committee and coursework.
- Meet early with your supervisor to set expectations and discuss roles, responsibilities, program requirements, resources, research/occupational goals, timelines, and any required accommodation plans.
- Look to Student Academic Success Services for a variety of supports.
- Complete WHMS safety training.

YEAR I
- Write your PhD candidacy exam and defend your thesis proposal.
- Embark on your substantive research.
- Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.
- Find your way through the academic process with the help of Expanding Horizons.

YEAR II
- Attend or present at a graduate conference such as the Canadian Chemistry Conference and Exhibition.
- Expand your research audience through social media such as Twitter or a blog.
- Apply for the Graduate Dean’s Travel Grant for Doctoral Field Research.
- Conduct research at an International Collaborative University (i.e. Stuttgart, Nagoya, Poitiers).

YEAR III
- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGS Dissertation Boot Camp or Dissertation on the Lake.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons Publishing workshop.
- Begin discussion of potential thesis defence examiners.
- Complete the Annual Research Progress Report (1/2).

YEAR IV & TRANSITIONING
- Plan date of thesis submission for examination.
- Present your research to graduate students and faculty or at conferences and work with supervisor to prepare for defence.
- Review submission and examination guidelines.
- Secure necessary oral defence accommodations.
- Discuss career pathways, references letters, and publication options with your supervisor.
- Complete the Annual Research Progress Report (2/2).

MAXIMIZE RESEARCH IMPACT

- Think about audiences for your research.
- Complete ROMEO online module on research ethics if doing research with living people or sensitive topics.
- Apply to NSERC, OGS, and other funding.
- Attend conferences in your field.

BUILD SKILLS AND EXPERIENCE

- Serve on departmental, faculty or university committees. Talk to the Queen’s Graduate Chemistry Society about getting involved.
- Consider positions in student services, the SGPS, or media outlets like the Queen’s Journal, CFRI, and the SGS Blog. Look in the AMS Clubs Directory.
- Use a Teaching Assistant or Research Assistant position to develop your skills and experience.

YEAR I
- hone skills for non-academic employment by continuing involvement on committees and in community.
- Start keeping an eportfolio of your skills, experiences and competencies.
- For help with teaching, get support from the Centre for Teaching and Learning. Enroll in SGS905 or the PUTF certificate for more professional development.
- Participate as a graduate representative on a department committee (i.e. Graduate Committee, Appointments Committee, Technical Resource Committee, Health and Safety Committee).

YEAR II
- Begin teaching as a departmental Teaching Fellow.
- Find opportunities for extra training through CTL, Expanding Horizons, Mitacs, or other sources to boost your skills. Investigate internships from Mitacs and others.
- Prepare work or studies in a multi-cultural environment by taking the QCIC and Four Directions Aboriginal Student Centre’s Training Certificate.

YEAR III
- Practice articulating the skills you have been developing in settings outside the university, such as casual conversation, networking, and interview. Get help from a Career Services workshop.
- Take advantage of the state-of-the-art research facilities, which feature NMR, mass spectrometry, X-ray diffraction, a laser lab, and more.

YEAR IV & TRANSITIONING
- Consider joining professional associations like the Canadian Society for Chemistry, or the American Chemical Society.
- Join groups on LinkedIn reflecting specific careers or topics of interest.

ENGAGE WITH YOUR COMMUNITY

- Consider volunteering with different community organizations such as Science Rendezvous.
- Take part in events put on by the Queen’s Chemistry Innovation Council.
- Consider judging local and regional science fairs.

YEAR I
- Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.

YEAR II
- Start building your teaching portfolio including student evaluations, and seeking mentorship.
- Explore different careers of interest by reading alumni profiles on the SGS website, and using Queen's Connects on LinkedIn to connect with Queen’s alumni, or find alumni in various careers through “Ask an Alum!” For more information check out Career Cruising.
- Investigate requirements for professional positions or other opportunities related to careers of interest.

YEAR III
- Do some targeted networking with people working in careers of interest, through Queen’s Connects on LinkedIn, Queen’s Alumni Association professional associations, and at conferences. Get help from a Career Services workshop.

YEAR IV & TRANSITIONING
- Consider joining professional associations like the Canadian Society for Chemistry, or the American Chemical Society.
- Join groups on LinkedIn reflecting specific careers or topics of interest.

LAUNCH YOUR CAREER

- Finding career fit starts with knowing yourself. Take a Career Services career planning workshop or meet with a career counsellor for help. Check out books like What Are You Going to Do With That? or Planning a Scientific Career in Industry from the Career Resource Area for advice on various career options.
- Start reading publications like University Affairs and the Chronicle of Higher Education. Browse non-academic labour market websites.
- Stay on the lookout for special events like Graduate Student Career Forum to explore your career pathways.

YEAR I
- Participate in hiring committees and attend job talks. Research academic careers of interest. Craft your CV and job application materials.
- Start focusing on non-academic areas of interest. Research organizations of interest and start putting together your resume for potential positions of interest.
- Connect with Queen’s Chemistry Innovation Council Members and chemistry alumni.

YEAR II
- Begin discussion of potential thesis defence examiners.
- Complete the Annual Research Progress Report (1/2).

YEAR III
- Continue to attend conferences and connect with scholars in your field and with community partners.
- Continue public outreach through social media and the Queen’s Media Centre.
- Set up a meeting with the School of Graduate Studies for a Grad Chat to discuss your research interests.
- Consider putting an article in The Conversation.

YEAR IV & TRANSITIONING
- Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.
- Apply to jobs or make plans for other adventures. Get help from Career Services with job searching, resumes, or interviews.
- If considering jobs abroad, research possible immigration regulations. If you are an international student interested in staying in Canada, consider speaking with an International Student Advisor.

WHAT WILL I LEARN?
A PhD in Chemistry can equip you with valuable and versatile skills, such as:
- Knowledge and Technical Skills
  - Chemical synthesis
  - Spectroscopic characterization
  - 3D printing/rapid prototyping
  - Mass spectrometry analysis
  - Experimental design
  - Molecular modelling
- Communications
  - Manuscript writing
  - Conference oral presentation
  - Poster presentation (graphic)
  - Creativity and Innovation
  - Scientific patent writing/patent protection
  - Business skills in chemical industry
- Grant writing, problem solving
  - Leadership and Collaboration
  - Committee participation
  - Supervision of junior researchers
  - Industrial engagement
  - Research with international experts/partners

WHERE CAN I GO?
A PhD in Chemistry can take your career in many directions. In Canada, less than 40% of all PhDs will work in post-secondary education – the majority will work in industry, government, or non-profits.
- Quality Control Chemist
- Postdoctoral Fellowship
- Forensic Scientist
- Environmental Law
- Patent Law
- Food Scientist
- Biochemistry
- Consumer Protection
- Pharmaceutical Chemist
- Materials Scientist
- Petroleum Engineer
- Chemical Education (University, College, Secondary/Primary)

Taking time to explore career options, build experience, and network can help you have a smooth transition to the world of work after graduation.

Visit careers.queensu.ca/gradmaps for the online version with links!

*This map is intended to provide suggestions for activities and careers, but everyone’s abilities, experiences, and constraints are different. Build your own Grad Map using our online My Grad Map tool.
Application FAQs

What do I need to know to APPLY?

ACADEMIC REQUIREMENTS
- MSc in Chemistry of equivalent, or direct entry from BSc for exceptional candidates with extensive research experience.
- Grade requirements: minimum upper second class standing (B+ average).

ADDITIONAL REQUIREMENTS
- If English is not a native language, prospective students must meet the English language proficiency requirements in writing, speaking, reading, and listening. The School of Graduate Studies requires the following minimum scores: TOEFL (paper-based): 550, (2) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30), for a total of 88/120 (applicants must have the minimum score in each test as well as the minimum overall score), or (3) IELTS: 7.0 (academic module overall band score), or (4) PTE Academics: 65.

KEY DATES & DEADLINES
- Application due: February 1st to be considered for awards. Later applications are accepted. International students are encouraged to apply early.
- Notification of acceptance: Accepted students are notified as the applications are reviewed.

Before you start your application, please review the Graduate studies application process.

What about FUNDING?

The minimum funding guarantee for Chemistry PhD students is $25,500 per year, throughout years 1-4. The funding package may be comprised of graduate awards, research assistantships, and teaching assistantships.

We encourage all students to apply for external funding from OGS, NSERC and other sources. Queen’s will automatically issue a $10,000 award to incoming PhD students who have won federal government tri-council awards. For more information, see the School of Graduate Studies’ information on awards and scholarships.