Queen's University | DEPARTMENT OF GEOLOGICAL SCIENCES AND GEOLOGICAL ENGINEERING

23 July 2026

MSc or PhD Position in Igneous Petrology, Geochemistry, and Crustal Evolution

Applications are invited for a fully funded MSc or PhD position in the Tectonochemistry Research Group at Queen's University to investigate the genetic relationship between coeval granitoid batholiths and mafic plutons, a long-standing question in igneous petrology with important implications for continental crustal growth.

Project Description

The genetic relationship between large granitoid batholiths and roughly coeval, volumetrically subordinate mafic intrusions remains one of the enduring controversies in geoscience. Resolving whether these magmas represent complementary products of a common magmatic system, mantle-derived inputs to crustal magmatism, or unrelated intrusive events is fundamental to understanding the evolution of continental crust during orogenesis.

This project focuses on the Devonian Leinster Batholith of southeastern Ireland and several spatially associated appinites (hornblende-rich mafic intrusions) that remain poorly characterized. Although these small bodies are interpreted to be broadly contemporaneous with emplacement of the batholith, their ages, petrogenesis, genetic relationship to the surrounding granitoids and plate tectonic significance remain uncertain.

The successful applicant will combine field observations with petrography, whole-rock geochemistry, mineral chemistry, isotope geochemistry, and geochronology to investigate the origin and evolution of these magmatic systems. The results will provide new insights into magma generation, crust-mantle interaction, and crustal growth during the Caledonian orogeny.

The expected program start date is January 2027 with fieldwork in Ireland in Spring 2027.

Qualifications

Applicants should possess, or be completing, a BSc (for MSc applicants) or MSc (for PhD applicants) in geology, earth sciences, or a closely related discipline.

Ideal candidates will have an interest in one or more of the following: Igneous petrology, Geochemistry, Geochronology, Isotope geology, Field geology, Mineralogy, Data analysis and quantitative interpretation.

Experience with analytical geochemistry or geochronology is considered an asset but is not required. Applicants should demonstrate strong written and oral communication skills, enthusiasm for research, and the ability to work independently and collaboratively.

Research Environment

The successful applicant will join the Tectonochemistry Research Group in the Department of Geological Sciences and Geological Engineering at Queen's University. Research is supported by access to the Queen's Facility for Isotope Research (QFIR), one of Canada's premier

geochemical research facilities, which houses state-of-the-art LA-ICP-MS, IR-MS, EMPA, and SEM instruments.

The student will become part of a collaborative international research team that includes researchers at University College Dublin, Saint Francis Xavier University, and Queen's University. This collaborative environment provides opportunities for mentorship, international research experience, and interaction with experts in igneous petrology, geochemistry, and crustal evolution.

Students are encouraged to present their research at national and international conferences. PhD students may also have opportunities to develop additional field-based or laboratory research projects beyond the primary study area, allowing them to broaden their dissertation and pursue complementary research questions related to magmatism and crustal evolution.

Funding

The position is fully funded through research grants and teaching assistantships, with additional opportunities to receive financial support through competitive scholarships and additional research funding.

Application

Interested applicants should submit:

- A cover letter describing their research interests and relevant experience
- Curriculum vitae
- Unofficial academic transcripts
- Contact information for three academic referees

Applications will be reviewed beginning 15 October and will continue until the position is filled. For further information, please contact: Dr. Chris Spencer: c.spencer@queensu.ca

Queen's University is committed to employment equity and diversity and welcomes applications from women, Indigenous Peoples, racialized persons, persons with disabilities, and persons of all sexual orientations and gender identities. Applicants requiring accommodation during the recruitment process are encouraged to contact the Department of Geological Sciences and Geological Engineering.

Queen's University is one of Canada's leading research-intensive institutions, offering graduate students an outstanding environment for scientific discovery and professional development. The Department of Geological Sciences and Geological Engineering has a long-standing international reputation in the Earth sciences, with strengths spanning tectonics, geochemistry, mineral deposits, geophysics, and environmental geoscience.

Located on the shores of Lake Ontario, Kingston offers an exceptional quality of life for graduate students. The city combines the amenities of a vibrant university community with a relatively affordable cost of living, excellent access to outdoor recreation, and convenient travel to Toronto, Ottawa, Montréal, and Syracuse. Its welcoming community, historic downtown, and proximity to lakes, parks, and conservation areas make Kingston an outstanding place to live, study, and conduct research.