PhD opportunities in petrology and geochemistry

Scholarship round now open: closes on July 31st 2019.

Macquarie University's Department of Earth and Planetary Sciences has opportunities for motivated graduate students to work on projects in igneous/metamorphic petrology, including high-pressure experiments, trace element/isotope geochemistry, or a combination of these.

Our Department has a newly expanded high-pressure experimental laboratory and a strong tradition in microbeam mineral and rock analysis (EMPA, SEM, Laser-ICP-MS). We emphasize cross-links between geochemistry, petrology and geophysics in mantle and lithosphere studies. We seek outstanding students to actively contribute to a team effort in the Australian Laureate project “Deep Earth Cycles of Carbon, Water and Nitrogen”.

Specific project themes include those listed below, but we also encourage students to suggest their own research themes.

(1) Partial melting of hydrous pyroxenite in the arc mantle wedge: consists of high-pressure experiments on the role of hydrous pyroxenite in producing primary and intermediate arc magmas and volcanic rocks.

(2) Melting in reducing conditions (joint project with Australian National University): an experimental project investigating the melting conditions and melt compositions with carbon but no carbonate (C, H₂O and CH₄).

(3) The behaviour of nitrogen in the early stages of subduction: an analytical and experimental project on the minerals and reactions involved in the transport of nitrogen during subduction.

(4) Reaction between crust and mantle in subduction zones: an experimental investigation of reaction zones and melts produced by reaction of subducted crust in the mantle.

(5) Stability and chemistry of spinel in mafic volcanic rocks: an experimental and analytical investigation of spinels for the information they contain about magma source regions.

(6) Sources of eastern Australian Mesozoic/Tertiary volcanism: volcanic rocks and their olivine phenocrysts will be used to decipher the mineralogy and history of their mantle sources.

(7) Transport of elements in the deep crust: an analytical and experimental investigation of trace element distribution between minerals, fluids and melts.

Qualifications and applications

Direct entry into the PhD programme at Macquarie requires completion of a two-year Masters degree with a major research component at Distinction level (75%). For applicants with an Honours or shorter Masters degree, there are also MRES/PhD package scholarships which enable completion of MRES as a training pathway to a Doctoral degree.

International and domestic scholarships are available that include living stipend and fees for 3 years. Applications are now open: application deadline is July 31st.

https://www.mq.edu.au/research/phd-and-research-degrees/how-to-apply

There is also an option for co-tutelle projects with partner universities.

You are encouraged to discuss a research proposal before completing your on-line application. Informal enquiries should be addressed to Prof. Stephen Foley (Stephen.foley@mq.edu.au).

Enquiries about openings further into the future are also welcome.