



# McGill

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## **A plagioclase perspective on a volcanic plumbing system**

Plagioclase is a ubiquitous mineral in volcanic rocks and famous for its complex zoning patterns. Numerous studies have looked at obtaining temperature, pressure and compositional information from plagioclase phenocrysts to unravel the processes occurring before an eruption. This project will take a novel approach in cross-correlating plagioclase phenocryst zones within and between volcanic deposits by using their unique chemical fingerprint as provided by LA-LIBS. This will provide an idea of the percentage of the crystal cargo that is entrained from prior intrusions and when this entrainment occurred in relation to the eruption date.

This PhD project will focus on plagioclase population(s) to reconstruct a record of magmatic processes. The project consists of two main components: characterisation of plagioclase from multiple eruptions and xenoliths by tandem LA-LIBS, and a detailed study of the magmatic processes that occurred prior to the youngest eruption. This project involves both lab-and fieldwork. Fieldwork will take place on the volcanoes of the Quill (St. Eustatius) and Mt. Scenery (Saba) in the Lesser Antilles. Last eruptive activity at the Quill occurred 1600-1800 years ago, but Mt. Scenery erupted as recent as in 1640.

The successful candidate will join the Department of Earth and Planetary Sciences at McGill University in Montreal, Canada, which host a new tandem LA-LIBS analytical facility. The candidate will further have access to SEMs, XRD, RAMAN, FEG-EMP and isotope mass-spectrometry facilities at the GEOTOP research centre ([www.geotop.ca](http://www.geotop.ca)).

The PhD project is expected to start September 2018, is funded in terms of salary and research costs at the standard McGill University rates, and will be co-advised by Dr. Kim Berlo, Dr. Nancy McMillan (New Mexico State University, USA) and Dr. Elske de Zeeuw- van Dalzen (KNMI, the Netherlands).

We seek a geochemist/petrologist with a keen interest in volcanic processes. Experience with in-situ trace elements analysis is an advantage. An MSc degree in geosciences is required and must have been obtained before the start date.

The application deadline for this position is **February 1<sup>st</sup> 2018**, and applications with reference letters and transcripts will need to be submitted through the McGill Graduate admissions portal (<http://www.mcgill.ca/gradapplicants/apply>). For questions, please contact [Kim.Berlo@mcgill.ca](mailto:Kim.Berlo@mcgill.ca).