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A gypsum record of volcanic activity at crater lakes

For many crater lakes, the historic record of observations only dates back a few decades. To extend this record back in time for monitoring and hazard prediction purposes we propose to use gypsum. Gypsum is a common mineral precipitate from the acidic fluids of volcanic crater lakes, which captures the composition of the fluid as it crystallises.

This PhD project will focus on gypsum from two volcanic crater lakes to reconstruct a historical record of water compositions. The project consists of two main components: the analysis of gypsum and fluid by tandem LA-LIBS; and, experimental determination of element exchange between gypsum and fluid.

The successful candidate will join the Department of Earth and Planetary Sciences at McGill University in Montreal, Canada, which host an extensive hydrothermal laboratory (piston-cylinder, rapid-quench cold-seals, and flow-through autoclaves) and 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).

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 Profs. Kim Berlo and Vincent van Hinsberg.

We seek a geochemist with a keen interest in volcanic processes. Experience with in-situ trace elements analyses would be an added 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 1st 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.