Seeking two PhD candidates

Critical metal evolution of magmatic sulfide systems in the Cape Smith belt, Nunavik, Québec

Project description:
The Ungava Orogen, Nunavik Québec, contains two major magmatic Ni-Cu-Co-(PGE) deposits: Raglan (100 Mt Ni-Cu-Co-PGE), Expo-Ungava (24 Mt Cu-Ni-PGE), several known prospects (e.g., Delta, West Raglan), and hundreds of showings. It is superbly exposed in unvegetated, glaciated outcrops making it an ideal area to study specific controls on magmatic sulfide mineralisation. We are seeking two highly motivated students to undertake PhD projects in understanding the nature and evolution of komatiitic magmas in the southern domain of the Cape Smith belt, Ungava Orogen. These projects will focus on:

Project 1. ***Sulfur isotope comparison of the Raglan deposits***

To quantify, compare, and explain the multiple sulfur isotope composition of the Raglan, Delta and West Raglan occurrences and their host rocks, to test the viability of multiple sulfur isotopes as a potential vector to mineralisation.

Project 2. ***Chalcophile element composition of ore and melt oxides***

To monitor critical metal depletion in melts and compare with the composition of the contaminating Nuvilic Formation in order to better target fertile and barren flows/sills.

Activities.

Both PhD projects will have several weeks-long field components to describe and sample outcrops and/or core, in established partnerships with Glencore and Géologie Québec. The analytical work will utilise state-of-the-art facilities at ULaval (described below).

Working environment:
The candidate will work directly with Prof Crystal LaFlamme, Canada Research Chair in Ore systems and Prof Georges Beaudoin, the Agnico Eagle-Eldorado gold Québec Research Chair in Mineral Exploration. The two candidates will also be incorporated into a team of researchers working in the Cape Smith belt at Université Laval in collaboration with Profs Carl Guilmette and Mike Lesher (Laurentian). Our larger research group at Université Laval headed by Prof LaFlamme, Beaudoin, Guilmette and Prof. Bertrand Rottier comprises 50 research professionals, postdocs, PhD, MSc and honours' candidates studying the fields of geodynamics, geochemistry, ore deposit geology as related to mineral exploration. Within Université Laval's department of geology and geological engineering, the PhD candidates will have access to the wide-ranging sample preparation and micro-analytical equipment of the *MicroLab*, including a microprobe, SEM, microXRF, XRD, LA-ICPMS (QQQ), and NIR-optimized fluid inclusion laboratory. The PhD candidates will have additional funding to attend regional, national and international conferences.

Fluency in spoken and written English is mandatory and proficiency in French is beneficial, but not required. The PhD project is supported with a research scholarship of 27,500$/year with an additional 8,500$ (total) from Université Laval, and additional opportunity for paid teaching assistantships.

How to apply:
Candidates should send their CV, academic transcripts (unofficial is ok) and up to 1 page motivation letter to: explomin@ggl.ulaval.ca. Applications will be accepted until **June 1, 2024**.