



UNIVERSITÉ  
LAVAL

Faculté des sciences et de génie  
Département de géologie et de génie géologique

## Metal Earth Postdoctoral Fellow Position

### Pyrite-hosted fluid inclusions – a window to orogenic Au veins formation

The first francophone university in North America, Université Laval is amongst the top-ranked comprehensive universities in Canada. Recognised for its leadership and high achievements in education and research, it offers a convivial and diverse environment in the heart of Quebec City, a UNESCO World Heritage City. The university community counts amongst its ranks over 45,000 students and offers an engaging work environment which was recently ranked by Forbes magazine as one of Canada's best employers.

With CAD \$104 million in funding provided by the Canada First Research Excellence Fund and through strategic partnerships led by Laurentian University, with 4 Canadian universities, 6 government geological surveys and 3 international research centers, Metal Earth is the largest ever mineral exploration research project undertaken in Canada.

#### Project description:

Study of quartz-hosted fluid inclusions in Archean orogenic Au deposits is challenging due to the strong deformation of the quartz, occurrence of multiple secondary fluid inclusion assemblages, and the unclear timing between quartz and Au precipitation in the veins. This challenge makes the physicochemical nature of the auriferous fluids and their origin unclear. Pyrite a common component of the orogenic Au veins and one of the main hosts for native Au is less affected by deformation and is a good host to preserve pristine fluid inclusions that are key archives of the mineralizing fluids. Fluid inclusion studies in pyrite were limited as pyrite is opaque in transmitted light, however, it's transparent under Near-Infrared (NIR) light. A new NIR-optimized fluid inclusions laboratory at Université Laval equipped with recent InGaAs NIR cameras enable direct study of pyrite-hosted fluid inclusions and thus offer a unique opportunity to study pristine fluid inclusions in Archean orogenic Au deposits.

Objectives of the PDF project are: (1) Optimize sample preparation and protocol for pyrite-hosted fluid inclusion studies; (2) Perform detailed microthermometry + LA-ICP-MS analyses of pyrite-hosted fluid inclusions from the Triangle orogenic Au deposit (samples already available); (3) Performed similar analyses on barren and mineralized orogenic Au veins from the Val-d'Or vein field (Québec). The study will include visit to different mine sites and exploration projects in the Val-d'Or vein field.



The selected PDFs will integrate a large and active team of more than 40 graduate students and PDF working on different thematics related to economic geology, metamorphism, and geodynamics. The PDF will contribute to supervision of graduate students, within a team integrated with other researchers of the Metal Earth program. The research will include field and laboratory work. The PDF candidates must hold a PhD since a maximum of 3 years at the start of the position. Experience with fluid inclusion study is required whereas experience in Archean terrane geology is an asset. The 2-year position will start as soon as possible.

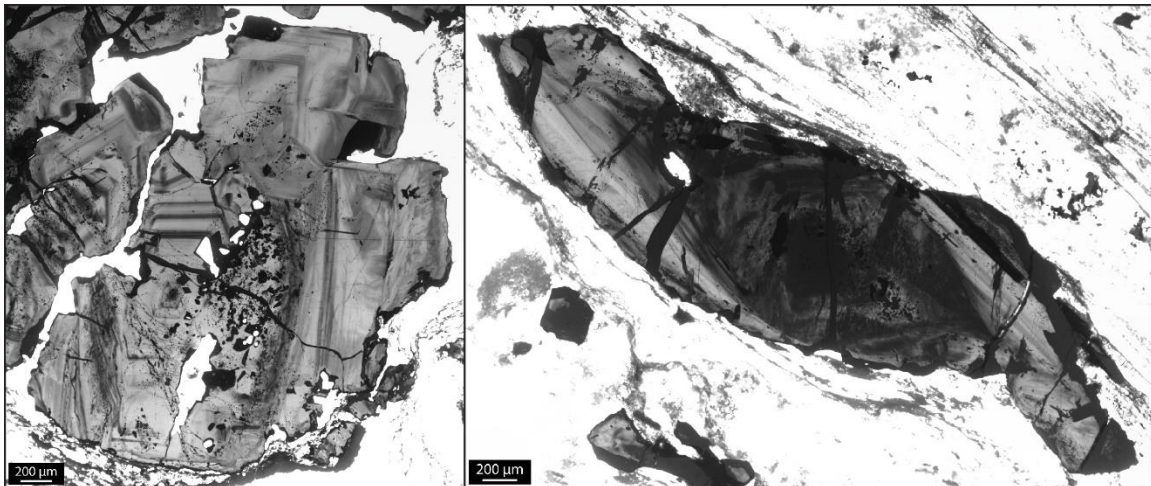
Salary will be determined according to the collective agreement in place at the time of hire. Salary range is from \$39 000 to \$53 000 per year plus benefits.

Candidates should prepare a complete candidacy package which includes: (1) a long-form CV that includes publications and research achievements, (2) academic transcripts, (3) letter of motivation, (4) names and contact details of three references.

The full application package should be sent electronically as a PDF document to [explomin@ggl.ulaval.ca](mailto:explomin@ggl.ulaval.ca)

Applications will be accepted until **November 30, 2023**.

*Université Laval, through its commitment to the promotion of diversity, invites all qualified applicants to submit their candidacy. In particular, we invite women, members of visible minorities, members of ethnic or indigenous groups and differently-abled people to submit their candidacy. Priority will be given to those who are Canadian citizens or who are permanent residents of Canada.*



*Example of NIR images of pyrite from the Triangle Orogenic Au deposit*

