

M.Eng/MASc project in Biomining

Extraction of base metals from sulfide minerals has led to worldwide challenges with sulfide-laden tailings that represent a potential environmental problem and are costly to clean up. These waste “reservoirs” can also contain a large quantity of metals, such as nickel, gold, or copper, albeit at low concentrations. The Biomining Consortium led out of the University of Toronto is aiming to develop novel bioprocesses and bioleaching technologies that could treat mine discharges/wastes, with the aim of recovering valuable metals and alleviating environmental risks/challenges.

We are seeking an MASc/M.Eng-level graduate student to work on life cycle assessment (LCA) and technoeconomic assessment of existing and developing technologies for management of mine discharges. Potential activities include:

- 1) Developing an inventory of tailings ponds at key sites within Canada and North America, to assess current environmental impacts and management costs
- 2) Work with other team/consortium members to assess economic and environmental impacts of their respective novel recovery and treatment technologies. This will involve creation of theoretical “scaled-up” processes from lab scale operations, assessing capital and operating costs, and projecting overall performance in terms of metal recovery, improvements to water quality, and other regulatory requirements.

Desired background of candidate:

Candidates should have experience in process engineering or systems analysis. Additionally, experience in life cycle assessment, technoeconomic assessment, and/or mining/mineral processing would be advantageous. Background in biological processes may be helpful, but not essential.

Timeline:

The project is underway. We are seeking MASc. candidates that are available to start a graduate program by January, 2018, or existing M.Eng. students able to begin project work by January 2018.

Interested candidates should submit a CV and statement of interest to Professor Bradley A. Saville (Bradley.saville@utoronto.ca), using the email subject line “Biomining Graduate Project”.