

Modular Course Exploration for Magmatic Ore Deposits

08-19 April 2018

Harquail School of Earth Sciences
Goodman School of Mines
Laurentian University

Course Description: 12-day intensive course in magmatic Ni-Cu-(PGE), PGE, Cr, and Ti-V deposits including 3 days of theoretical material, 8 days of exploration applications and case studies, and a 1/2 to 3/4-day field trip. Topics include: S and Cr solubility and metal partitioning in mafic-ultramafic magmas; generation of fertile magmas; applications of stable and radiogenic isotopes (including mass-independent S isotope methods) in identifying S and metal sources; sulfide transport and localization mechanisms; textures and deformation of Fe-Ni-Cu sulfide ores, sulfide recalculation and plotting methods; geology, genesis, and exploration for Ni-Cu-(PGE) deposits in mafic-ultramafic lava channels, feeder sills/dikes, and magma conduits; geology, genesis, and exploration for PGE deposits in mafic-ultramafic layered intrusions; geology, genesis, and exploration for stratiform and podiform Cr deposits and Ti-V deposits in anorthosites and mafic-ultramafic intrusions (including those in the “Ring of Fire” district northern Ontario). Case studies and laboratory practicals will include: Alexo (Ontario), Duke Island (Alaska), Duluth (Minnesota), Kambalda (Western Australia), Noril’sk-Talnakh and Pechenga (Russia), Jinchuan and other deposits in China, Thompson (Manitoba), Raglan (Nunavik), Voisey’s Bay (Labrador), and Sudbury Ni-Cu-PGE; and Bushveld (South Africa) and Stillwater (Montana) PGE and Cr; and ‘Ring of Fire’ Cr.

Speakers: Prof Sarah-Jane Barnes (UQAC), Dr Stephen J. Barnes (CSIRO-Perth), Dr Paul Golightly (Consultant), Dr Michel Houlié (GSC-Québec), Lisa Gibson (Vale), Dr Pedro Jugo (HES/MERC), Prof Michael Leshner (HES/MERC), Dr Peter Lightfoot (Consultant), Edward Pattison (Consultant), David Richardson (Glencore), Dr Edward Ripley (Indiana U)

Prerequisites: Advanced undergraduate-level courses in *Geochemistry*, *Igneous Petrology*, and *Ore Deposits*. **Course**

Format: ~50 hours of lectures, ~35 hours of laboratory exercises, and ~5 hours of field instruction = 90 contact hours, equivalent to a full-term course

Webcast Option: non-students may take the course remotely – contact Prof Leshner mlesher@laurentian.ca for details

Course Credit: 3 credits, applicable toward thesis-based or coursework-based MSc and PhD programs; applicable toward continuing education and professional development requirements for Professional Registration.

Grading: Laboratory practicals and problem sets 100%.

Course Costs: *Students:* tuition and PDFs of course notes included in tuition fees (CDN\$ \$1306 for Canadian residents, CDN\$ 2915 for non-residents: see <http://laurentian.ca/graduate-fees> under *Part-Time*). *Non-Students:* CDN\$3390 (includes HST) for the entire course (including PDFs and hard copy of course notes and field trip) or CDN\$339 (includes HST) per day for individual course days (including relevant course notes). *All participants are responsible for their own travel, lodging, and meals.*

Registrations: please contact Roxane Mehes rmehes@laurentian.ca

Updated versions of the course Syllabus (this document), Schedule, and Logistical Information will be posted at <http://hes.laurentian.ca/programs-and-courses/modular-courses>. For other information about this particular course please contact mlesher@laurentian.ca.