

Modular Course Exploration for Magmatic Ore Deposits

10-21 April 2012

Department of Earth Sciences
Laurentian University

Course Description: 12-day intensive course in magmatic Ni-Cu-(PGE), PGE, Cr, Ti-V, and pegmatite deposits including ~2 days of theoretical material and ~8 days of case studies and exploration applications. Topics to be covered include: S and O solubility and metal partitioning in mafic-ultramafic magmas; generation of 'fertile' magmas; applications of stable and radiogenic isotopes in identifying S and metal sources (including mass-independent S isotope methods); sulfide transport and localization mechanisms; textures of sulfides ores, sulfide recalculation and plotting methods; geology, genesis, and exploration for Ni-Cu-(PGE) deposits in mafic-ultramafic lava channels, feeder sills, 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 McFauld's Lake); geology, genesis, and exploration for rare-element pegmatites; deformation of Fe-Ni-Cu sulfides; geology of Ni laterites; and discrimination between gossans, false gossans, and laterites. Case studies and laboratory practicals will include: Alexo (Ontario), Duluth (Minnesota), Kabanga (Tanzania), Kambalda (Western Australia), Noril'sk-Talnakh and Pechenga (Russia), Jinchuan (China), Thompson (Manitoba), Raglan (New Québec), Voisey's Bay (Labrador), and Sudbury Ni-Cu-PGE; and Bushveld (South Africa) and Stillwater (Montana) PGE and Cr; and Lac des Iles (Ontario), and Nipissing-East Bull Lake PGE.

Tentative (weather and access dependent): Full-day field trip to Ni-Cu-PGE mineralization in the Trill Offset, the Worthington Offset, and other parts of the East Range. Afternoon field trip to a pegmatite dike south of Sudbury.

Confirmed Speakers: Prof. Sarah-Jane Barnes (UQAC), Dr. David Burrows (Vale), Dr. Paul Golightly (Consultant), Dr. Michel Houlié (GSC), Dr. Pedro Jugo (MERC), Prof. Dan Kontak (MERC), Prof. Michael Leshner (MERC), Dr. Peter Lightfoot (Vale), Dr. James Mungall (U Toronto), Ed Pattison (Consultant), Dave Richardson (Xstrata), and Prof. Ed Ripley (Indiana U).

Prerequisites: Advanced undergraduate-level courses in *Geochemistry, Igneous Petrology, and Ore Deposits*. **Course Format:** lectures, laboratory practicals, and problem sets. **Course Credit:** 3 credits, applicable toward thesis-based or coursework-based MSc programs and PhD program; also applicable toward continuing education and professional development requirements for Professional Registration. **Grading:** Laboratory practicals and problem sets 100%.

Course Costs: Students: tuition included in regular course fees; course notes and lunch during field trips extra. **Non-Students:** CDN\$2250 (CDN) + HST for the entire course (including all course notes and field trip) or CDN\$275 + HST per day for individual course days (including relevant course notes). *All participants are responsible for their own travel, lodging, and meals.*

Student Registrations: please contact Roxane Mehes rmehes@laurentian.ca

Non-Student Registration: please contact Char Mosher cmosher@laurentian.ca

Course syllabus, schedule, and logistical information may be found at: <http://earthsciences.laurentian.ca/> under Modular Courses. For other information please contact: mlesher@laurentian.ca