

Modular Course Exploration for Magmatic Ore Deposits

06-17 April 2010

Department of Earth Sciences
Laurentian University

Course Description: 12-day intensive course in magmatic Ni-Cu-(PGE), PGE, Cr, Ti-V, diamond, and pegmatite deposits including ~2 days of theoretical material and ~8 days of case studies and exploration applications. Topics to be covered, all of which have been updated, include: S 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 newly-developed mass-independent S isotope methods*); sulfide transport and localization mechanisms (*expanded*); textures of sulfides ores (*expanded*), sulfide recalculation and plotting methods; geology, genesis, and exploration for Ni-Cu-(PGE) deposits in mafic-ultramafic lava channels 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; geology, genesis, and exploration for rare-element pegmatites (*expanded*); 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 *new*), Kabanga (Tanzania *new*), Kambalda (Western Australia), Noril’sk-Talnakh and Pechenga (Russia), Jinchuan (China *expanded*), Thompson (Manitoba), Raglan (New Québec), Voisey’s Bay (Labrador), and Sudbury Ni-Cu-PGE, and Bushveld (South Africa), Stillwater (Montana), Lac des Iles (Ontario), and Nipissing-East Bull Lake PGE.

Tentative (weather and access dependent): 1-day field trip to the recently-discovered Trill Offset, the Worthington Offset, and (if there is time) other parts of the East Range.

Confirmed Speakers: Prof. Sarah-Jane Barnes (UQAC), Dr. David Burrows (Vale Inco), Dr. Catharine Farrow (FNX Mining), Nic Fenner (Xstrata), Dr. Paul Golightly (Consultant), Dr. Michel Houlié (GSC), Dr. Bruce Jago (Wallbridge Mining), Dr. Scott Jobin-Bevans (Caracle Creek Consulting), Dr. Pedro Jugo (MERC), Prof. Dan Kontak (MERC), Prof. Michael Lesher (MERC), Dr. Peter Lightfoot (Vale Inco), Prof. Ed Ripley (Indiana U), and Dr. Rebecca Sproule (GeoDiscovery/NewGenCo).

Prerequisites: Advanced undergraduate-level courses in 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\$2000 (CDN) + GST for the entire course (including all course notes and field trip) or CDN\$250 + GST 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 Mehés 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