Modular Course
Exploration for Magmatic Ore Deposits
03-14 April 2016
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 3 days of theoretical material and 9 days of exploration applications and case studies. Topics (all continually updated) to be covered 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; structural controls on mineralization (NEW); 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, and magma conduits; geology, genesis, and exploration for PGE deposits in mafic-ultramafic layered intrusions, including multi-media lithogeochemical exploration methods (NEW); geology, genesis, and exploration for stratiform and podiform Cr deposits and Ti-V deposits in anorthosites and mafic-ultramafic intrusions (including those in recently-discovered "Ring of Fire" in northern Ontario); geology, genesis, and exploration for rare-element pegmatites. Case studies and laboratory practicals will include: Alexo (Ontario), Duluth (Minnesota), 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; 'Ring of Fire" Cr, and several recently-discovered deposits (NEW).

Confirmed Speakers: Dr. Sarah-Jane Barnes (UQAC), **Heather Carson** (MERC), **Dr. Paul Golightly** (Consultant), **Dr. Michel Houlé** (GSC), **Lisa Gibson** (Vale), **Dr. Pedro Jugo** (MERC), **Dr. Daniel Kontak** (MERC), **Dr. Michael Lesher** (MERC), **Dr. Peter Lightfoot** (Vale), **Edward Pattison** (Consultant), **David Richardson** (Glencore), **Dr. Edward Ripley** (Indiana U), **Charles Spath** (MERC), **Dr. Rebecca Sproule** (Newgenco), **Dr. Martin Tuchscherer** (Consultant)

Prerequisites: Advanced undergraduate-level courses in *Geochemistry*, *Igneous Petrology*, and *Ore Deposits*. **Course Format:** lectures, hands-on laboratory practicals, and problem sets; includes 12 days x 4.5 hrs of lectures per day = 54 lectures contact hours plus 11 lab exercises x 3 hours per lab = 33 lab contact hours for a total of 87 contact hours. **Course Credit:** 3 credits, applicable toward thesis-based or coursework-based MSc and PhD programs; also 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 regular course fees (CDN$1184.60 for Canadian residents, CDN$2914.55 for non-residents: see http://laurentian.ca/graduate-fees under Mineral Exploration). Hard copies available for purchase. ***Non-Students***: CDN$2250 + HST for the entire course (including PDFs and hard copy of course notes and field trip) or CDN$270 + 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 can be found at http://des.laurentian.ca/*modular-courses*. *For other information about this particular course please contact* mlesher@laurentian.ca.

Laurentian University
Mineral Exploration Research Centre
Department of Earth Sciences
935 Ramsey Lake Road, Sudbury, Ontario, Canada P3E 2C6
Telephone: (705) 675-1151 x6575; Facsimile: (705) 675-4898
E-mail : DES@laurentian.ca or MERC@laurentian.ca

Université Laurentienne
Centre de recherche en exploration minérale
Département des sciences de la terre
935 Chemin du lac Ramsey, Sudbury (Ontario) Canada P3E 2C6
Téléphone: (705) 675-1151 x6575; Télécopieur: (705) 675-4898
Courrier électronique: DES@laurentian.ca ou MERC@laurentian.ca