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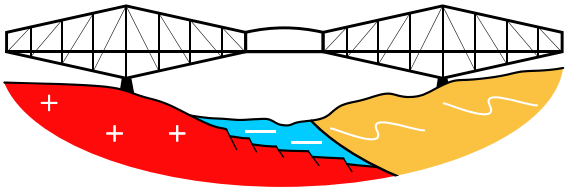
QUÉBEC 2019
Où les géosciences convergent



GAC-MAC-IAH
QUÉBEC 2019
Where geosciences converge

12 - 15 mai 2019 May 12-15 2019

Pre-meeting short course
Ore systems with IOA, IOCG, IOU and affiliated deposits
May 11th and 12th, 2019, Québec, QC, Canada

Conveners:
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Presenters:
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Sponsoring organization: Mineral Deposit Division of the Geological Association of Canada

Costs: 600$ for professionals (includes lunch and short course volume), 150$ for students (may not include lunch and short course volume depending on number of professional registrants)

Description:
Iron oxide and alkali-calcic alteration systems host iron oxide-apatite (IOA), iron oxide copper-gold (IOCG), iron oxide-uranium (IOU) and polymetallic skarns and albitite-hosted deposits and their REE, Co, Bi, Mo, Re and U variants. They are characterized by unique fluids, melts and fluid-rock reactions that generate polymetallic ores and diagnostic metasomatic rocks. The course provides an overview of the geological, mineralogical, structural and geochemical attributes of these ore systems and their magmatic and tectonic contexts using the Great Bear magmatic zone (for its stunning exposures) and global reference settings (e.g., the Olympic Cu-Au province, Chinese examples and the Andes). Observations on the space-time relationships among deposits and alteration facies will be reconciled with current understanding of fluids, melts (including iron oxide and salt melts) and metasomatic reactions to further knowledge on mineralization paths from depth to surface. The mineral potential of significantly under-explored North American and Chinese settings, such as those of the Great Bear magmatic zone, Central Mineral belt, Grenville Province, Kangdian and Xinjiang districts, and Middle-Lower Yangtze River metallogenic belt, is then addressed through comparison with mining districts of the Olympic Cu-Au province and the Andes. Finally the course reviews the footprint of a Grenvillian case example metamorphosed to granulite facies to optimize exploration of Precambrian terranes in Canada and globally.
Specific topics include:

1) Definition, classification, distribution, timing, and examples of iron oxide-apatite±REE (IOA), iron oxide copper-gold (IOCG) and their affiliated Co, Bi, and Mo variants, skarns, and albitite-hosted U and Au-Co-U deposits;
2) Alteration facies, regional to deposit footprints, and prograde, retrograde, telescoped, and cyclical reaction paths with examples from Australia, North and South America, and Asia, specifically including:
   - the Great Bear magmatic zone, Central Mineral Belt, Romanet Horst and Grenville Province in Canada;
   - the Olympic Cu-Au province in Australia;
   - the Missouri district in the United States;
   - the Kangdian, Xinjiang and Middle–Lower Yangtze River districts in China; and

- the Central Andes in Peru;

3) Fluid and heat sources, including the role of coeval magmatism and evaporites on ore genesis;
4) The behavior of saline fluids and saline melts, including their impact on coupled dissolution and reprecipitation processes involving ore deposit minerals and their microfracturing;
5) Known and prospective settings in Canada and China, the spectrum of their deposit types, and the challenges facing new ore discovery;
6) Examples of metamorphosed ore systems and how their IOCG footprints can be discriminated from those of other deposit types that have been metamorphosed to high grades; and
7) Strategies and tools for mapping and exploration.

Sample collections from Canadian, Chinese and Chilean districts will be available for hands-on activities.

PRELIMINARY PROGRAM, DAY 1

7:30 – 8:15 Registration

8:15 – 9:30 Introduction and overview of IOCG, IOA and affiliated deposits

Louise Corriveau (presenter), Jean-François Montreuil, Kathy Ehrig, Eric Potter

9.30 – 10:15 Mineralogical record of metasomatic processes: Insights from apatite within IOA deposits

Dan Harlov (presenter)

10.15 – 10:30 Health break

10.30 – 11:15 Ore genetic models for IOA deposits

Dan Harlov (presenter)

11.15 – 11:30 Discussion and questions on ore genetic models for IOA deposits

Dan Harlov (moderator)

11:30 – 12:00 Mineral chemistry as vector to mineralization: Magnetite in IOA and IOCG deposits

Pedro Acosta-Góngora (presenter) and Eric Potter

13:00 – 14:15 Footprints and metasomatic paths of iron oxide and alkali-calcic alteration systems and their IOA, IOCG, skarn, albitite-hosted U±Au±Co and affiliated deposits

Louise Corriveau (presenter), Jean-François Montreuil, Eric Potter, Anthony-Franco de Toni and Jeanne Percival

14:15 – 15:15 Linkages among IOA, skarns and magnetite-group IOCG deposits in China: From deposit studies to mineral potential assessment

Xin-Fu Zhao (presenter), Mei-Fu Zhou and Huayong Chen

15.00 – 15:15 Health break

15:30 – 16:30 Paleozoic and Mesozoic IOCG and affiliated deposits: The Xinjiang district in NW China and the Central Andes

Huayong Chen (presenter), Liandang Zhao and Pei Liang

16:30 – 17:15 Rock lab: samples from deposits and ore systems on display. Label, describe and infer timing and depth to surface relationships for the series of samples displayed at each table – participants

PRELIMINARY PROGRAM, DAY 2

8.30 – 9:30 Ore systems hosting IOCG deposits in the Olympic Cu-Au Province, Australia. Part 1– Geological setting, mineralization, geophysical and alteration characteristics

Adrian Fabris (presenter), Roger Skirrow and Anthony Reid

9.30 – 10:00 Ore systems hosting IOCG deposits in the Olympic Cu-Au Province, Australia. Part 2– Geochemical and mineralogical footprints

Adrian Fabris (presenter) and Anthony Reid

10.00 – 10:15 Health break

10:15 – 10:45 Hydrothermal alteration control on Prominent Hill iron oxide–copper–gold ore, Australia

Tobias U. Schlegel (presenter)

10:45 – 12:00 Geochemical footprints and exploration tools for IOCG, IOA and affiliated

Jean-François Montreuil (presenter), Olivier Blein, Louise Corriveau, Kathy Ehrig, Anthony Reid, Adrian Fabris, Dipak Pal and Pedro Acosta-Góngora

13:00 – 14:00 Sources and processes of U enrichment in IOCG deposits and their iron oxide and alkali-calcic alteration systems

Eric Potter (presenter), Pedro Acosta-Góngora, Louise Corriveau, Jean-François Montreuil and Zhaoping Yang

14:00 – 15:00 Prospective settings in Canada with an emphasis on the Great Bear magmatic zone, Central Mineral Belt and Romanet Horst

Louise Corriveau, Jean-François Montreuil and Pedro Acosta-Góngora (presenters), Eric Potter, A. Hamid Mumin, Anthony-Franco de Toni, Olivier Nadeau and Greg Sparkes

15.00 – 15:15 Health break

15:15 – 16:15 Recognition of iron oxide and alkali-calcic alteration systems metamorphosed at granulite facies: Field criteria and case example

Louise Corriveau (presenter), Olivier Blein, Pierre-Henri Trapy, Félix Gervais