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Mineralogical Association of Canada

2007 MAC MEDALISTS

Past Presidents' Medal to Barnes

Dr. Sarah-Jane Barnes of the Université du Québec à Chicoutimi, Québec, Canada, is the 2007 recipient of the Past Presidents' Medal, the highest award of the Mineralogical Association of Canada. This medal recognizes a scientist who has made outstanding contributions over a sustained period to the mineral sciences in Canada.

Dr. Barnes received her BSc (Hons) in 1975 at the University of the Witwatersrand, South Africa, and her MSc at the University of Cape Town, South Africa (1978). She moved to the University of Toronto as a PhD candidate in 1979 under the direction of Prof. A.J. Naldrett. Since 1986 she has taught and carried out research on magmatic ore deposits and igneous petrology at the Université du Québec à Chicoutimi. Her continued ascent to national and international prominence was recognized when she was granted a Tier I Canada Research Chair in Magmatic Metallogeny.

Sarah-Jane Barnes has worked for over two decades on the nature and origin of PGE–Ni–Cu–Au mineralization associated with mafic magmas, both in Canada and abroad. Along with her colleagues, graduate students, and post doctoral fellows, she has set the standard for exhaustive, thorough, and in-depth studies of the petrology, mineralogy, and geochemistry of many of the classic sites for magmatic ore deposits, including the Bushveld Complex, the J-M Reef of the Stillwater Complex, the famed Noril'sk area, the Rana Intrusion, the Duluth Complex, and the Abitibi and Cape Smith greenstone belts. This work, summarized in over 80 international peer-reviewed articles, has advanced significantly our understanding of the factors involved in generating some of the most significant resources on the planet.

The Hawley Medal to Farges et al.

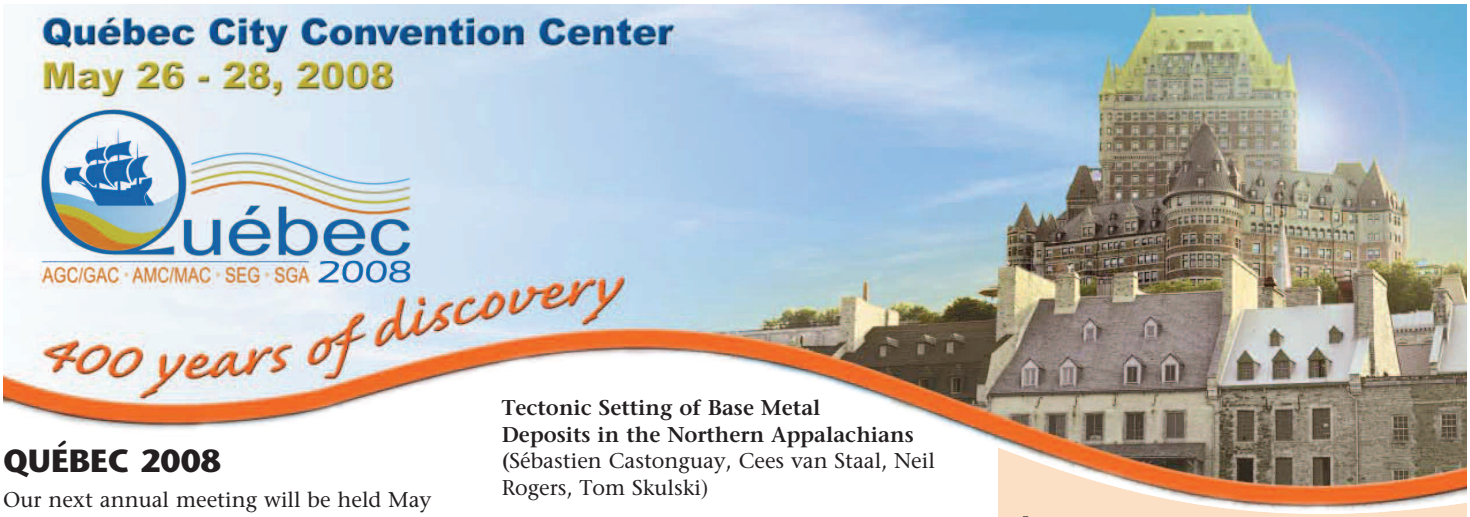
The Hawley Medal of the Mineralogical Association of Canada is awarded to the authors of the best paper to appear in *The Canadian Mineralogist* in a given year. The award is named in honor of Dr. J.E. Hawley (1897–1965), who was a distinguished professor of mineralogy at Queen's University in Kingston, Ontario. The Hawley Medal for 2006 is awarded to François Farges, Ralf Siewert, Carl Ponader, Gordon Brown Jr., Michel Pichavant, and Harald Behrens for their paper "Structural environments around molybdenum in silicate glasses and melts. II. Effect of temperature, pressure, H_2O, halogens and sulfur." Canadian Mineralogist 44: 755-773.

François Farges

This paper was published in a special issue of the journal entitled "Rare-Element Geochemistry and Mineral Deposits." The paper selected – one of four contributed to this special issue by Farges – summarizes XAFS spectroscopic data revealing new molecular-level information relevant to the nature of molybdenum bonding in melts and the transport of chalcophile elements in late-stage magmas resulting in economic concentrations of such elements. In a series of novel and difficult experiments conducted over many years, the authors determined the local structure around molybdenum over a wide range of physical and chemical parameters using synthesized glasses. This work has shown that molybdate moieties are the dominant form of molybdenum in anhydrous melts down to very low oxygen fugacities, a finding not reported previously. Furthermore, this work shows that the addition of H_2O and halogens has a limited effect on the local structure of molybdenum. In contrast, the addition of sulfur is shown to be significant, with the formation of thio-oxo-molybdate moieties. It is this latter complex that disconnects molybdenum within highly polymerized melts, such as those that host porphyry moly systems, thus making molybdenum mobile and, significantly, capable of being transported in a fluid phase. The results of these meticulous experiments reconcile some lingering issues concerning molybdenum. First, why the sulfur-bearing mineral, molybdenite, predominates in relatively oxidizing subvolcanic environments where it forms ore concentrations; and second, why large melt/fluid partition coefficients have long been noted in melt–H_2O vapor experiments. Thus, the findings reported in this paper not only resolve the molecular-scale structural nature of molybdenum under a series of controlled experimental conditions, but importantly also advance our understanding of the geochemical controls of molybdenum mineralization in porphyry systems.

Laurence Coogan – Young Scientist Awardee

The Young Scientist Medal for 2007 has been awarded to Laurence Coogan. Since he obtained his PhD in 1998, Laurence Coogan has made many inroads into the mineralogical, petrological, and geochemical, processes operating at mid-ocean ridges. Laurence Coogan graduated from Liverpool University (UK) in 1993 and obtained his PhD from the University of Leicester (UK) in 1998, working with Andy Saunders and Pamela Kempton on how the lower oceanic crust is formed at slow-spreading mid-ocean ridges. This research led him to Cardiff University (Wales) where, as a postdoctoral researcher, he worked for over four years in the three major oceans and in the Troodos and Oman ophiolites. He then moved back to Leicester University as a NERC postdoctoral fellow. Over his postdoctoral years his interests in the cooling rate of the lower oceanic crust, a key link between magmatic and hydrothermal systems, led him into the world of experimental petrology. This required learning experimental techniques for measuring diffusion and partition coefficients. Since 2004 he has been an assistant professor in the School of Earth and Ocean Sciences at the University of Victoria (BC). His current research ranges from how melt is extracted from the mantle (at 1300°C) to quantifying low-temperature hydrothermal fluxes away from the ridge axis (<50°C).



QUÉBEC 2008

Our next annual meeting will be held May 26–28, 2008, in beautiful Québec City during its 400th anniversary celebrations. The meeting will be held jointly with the Geological Association of Canada – our long-time partner – and with the Society of Economic Geologists and the Society for Geology Applied to Mineral Deposits. The technical program centers on the themes of sustainable environment, Earth evolution, and resources and energy. Here is a sampling of the program. For the full program, see **www.quebec2008.net**.

Symposia

Recent and Not-So-Recent Developments in Uranium Deposits and Implications for Exploration (Michel Cuney, Kurt Kyser)

Tectonomagmatic Settings of Ni–Cu–PGE Deposits (Michael Lesher, Peter Lightfoot, Derek Wilton)

Geology and Ore Genesis in the Abitibi Subprovince (Benoît Dubé, Robert Marquis, John A. Ayer, Patrick Mercier-Langevin, Jean Goutier, Réal Daigneault, Phil Thurston, Pierre Keating, Eric de Kemp, Olivier Rabeau)

Recent Advances in Climatic Reconstruction of the Last Centuries – Temperature and Precipitation Series (Martine M. Savard, René Roy)

The Tibet Plateau Uplift and its Impact on Global Climate (Changshan Wang, Zhifei Liu, Réjean Hébert)

Mine Tailings Management in the Perspective of Sustainable Development (Bruno Bussière, Michel Aubertin)

Special Sessions

Diamonds : From Mantle to Jewellery (Serge Perreault, James Moorhead)

Tectonic Setting of Base Metal Deposits in the Northern Appalachians (Sébastien Castonguay, Cees van Staal, Neil Rogers, Tom Skulski)

The Development and Application of New Geochemical Techniques for Ore Deposit Modeling and Exploration (Sarah-Jane Barnes, L. Paul Bédard, Richard A. Cox)

Iron Oxide–Copper–Gold (–U–Ag–Bi–Co) Deposits: From World-Class Examples to Underexplored Terranes (Louise Corriveau, Georges Beaudoin)

Carbon Sequestration and Geological Storage (Greg Dipple)

Geology and Health (Jeanne Percival, Henrietta Mann, Peter Bobrowski)

Metal Cycling in Surface Waters and Aquatic Sediments (Sam Alpay)

New Advances in Migmatites (Edward W. Sawyer, Mike Brown)

Challenges to a Genetic Model for Pegmatites (David London, Daniel Kontak)

Bimodal Magmatism: Petrogenesis and Tectonic Setting (Jaroslav Dostal, Brendan Murphy)

Effusive and Explosive Subaqueous Volcanism (Wulf U. Mueller, John Stix)

Experimental Studies of the Lithosphere (Cliff Shaw, Lori Kennedy)

Fieldtrips

The Voisey's Bay Ni–Cu–PGE Deposit (Peter Lightfoot, Derek Wilton, Michael Lesher)

Archean Stratigraphy and Volcanology Related to Base Metal and Gold Mineralization in the Abitibi Greenstone Belt: A Transect through the Kidd-Munro and Tisdale Assemblages in the Timmins Area (John A. Ayer, Michel G. Houlé, Anthony D. Fowler, Phillip C. Thurston, Brian Atkinson, Ben R. Berger)

Interested in being part of this great gathering? Make sure you book accommodation early. Because of the demand related to Québec City's 400th anniversary celebrations, the number of rooms available in our block reservations will decrease gradually starting in September.

Short Courses

- **Uranium deposits – Recent and not-so-recent developments and implications for exploration – a joint MAC and SGA short course – May 24 and 25, 2008**
  Michel Cuney, Kurtis Kyser

Exploration for uranium is currently at a level that surpasses the last exploration boom some 30 years ago. Despite the lack of interest in uranium as a commodity during the past 30 years and the resulting loss of expertise and research, considerable progress has been made in research because of new ideas and technologies. These have allowed researchers to quantify models for all types of deposits. The purpose of this short course is to highlight the data and research that have quietly developed over the last 30 years as well as results from new research that can be integrated into exploration for uranium. The short course will consider models for different types of uranium deposits and the mechanisms that control their genesis, relating source, transport, deposition, and preservation, and how these can be used to refine strategies for uranium exploration.

- **Working with Migmatites – A MAC short course** Edward W. Sawyer, Mike Brown

The purpose of this workshop is to transfer the recently gained knowledge of migmatites from the specialist to the wider geological community. It is targeted at those geologists who map or conduct research in migmatites, whether of contact or regional origin, and is aimed at providing the background to enable faster and more effective retrieval of geological information from these rocks. The short course will be complemented by a two-day special session on migmatites.

OTHER SHORT COURSES OFFERED

- **Exploring for Iron Oxide–Copper–Gold (–Ag–Bi–Co–U) Deposits: Examples from Canada and Global Analogues**
  Louise Corriveau, Hamid Mumin
- **Submarine Volcanism and Mineralization: Modern through Ancient**
  Brian Cousens, Steve Piercey