

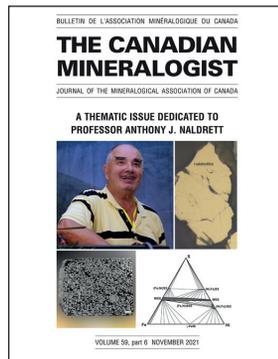


Mineralogical Association of Canada

www.mineralogicalassociation.ca

THE CANADIAN MINERALOGIST THEMATIC ISSUE DEDICATED TO TONY NALDRETT

The November 2021 issue (v59n6) of *The Canadian Mineralogist* is a special issue dedicated to the memory of **Professor Anthony James Naldrett**. This issue contains 25 papers on Ni–Cu–platinum group element (PGE) deposits and chromite deposits from a number of worldwide occurrences, in a variety of geological settings. These studies rely heavily on petrographic and field observations and are complemented by ancillary analytical techniques, including whole-rock geochemistry, sulfur isotopes, and the microanalytical techniques of scanning electron microscopy, electron probe microanalysis, and laser ablation inductively coupled plasma mass spectrometry. The evolving methods of submicrometer-scale analyses, automated mineralogy, and microbeam X-ray fluorescence spectroscopy for element mapping are also presented. Descriptions of newly discovered PGM deposits, along with the clarification of previously poorly resolved PGM deposits, are presented, thereby broadening our knowledge of the crystal chemistry of the PGMs and the environments they develop in.



Professor Naldrett was the world's foremost authority on the geology, mineralogy, petrology, geochemistry, and genesis of Ni–Cu–PGE and PGE deposits. He taught, mentored, and inspired three generations of geologists working on the geology, mineralogy, geochemistry, and genesis of mafic–ultramafic magmas and associated Cr, Ni–Cu–PGE, and PGE mineralization.

His papers were published in some of the top journals in the geosciences and economic geology, including *Economic Geology* (38 papers), *The Canadian Mineralogist* (11 papers), *Journal of Petrology* (7 papers), *Mineralium Deposita* (6 papers), and *Geochimica et Cosmochimica Acta* (5 papers). They have been cited more than 12,000 times. Tony also consulted for more than 40 mining and mineral exploration companies, including BHP–Billiton, Chevron, Cominco, Falconbridge, Kennecott, Rio Tinto, Voisey's Bay, and Western Mining, and he held directorships of several others.

He is best known for his work on **olivine “quench” textures** in what are now known as komatiites, **sulfide textural zoning** in komatiite-associated Ni–Cu–PGE deposits (his “billiard ball model”), the **phase equilibria of Fe–Ni–Cu sulfides**, recognition of **crustal S** in Ni–Cu–PGE deposits, **mass balance “R Factor”** constraints on chalcophile element partitioning (with Ian Campbell), and **fractional crystallization of sulfide melts** (with Chusi Li), along with many geological, genetic, and exploration models for Cr, Ni–Cu–PGE, and PGE deposits worldwide.

Tony's greatest legacy will be the hundreds of BSc students that he taught and took on field trips and the more than 50 MSc and PhD students and postdoctoral fellows that he supervised, many of whom have gone on to become world leaders in their fields. His research had a profound and lasting impact on our understanding of Ni–Cu–PGE and PGE deposits and their host rocks and had applications to their exploration and beneficiation.

With contributions from the many students, friends, and colleagues of Tony, who happily joined with him on his very long and productive career. He will be sorely missed.

MAC SCHOLARSHIP WINNERS

We congratulate Colton Vessey and Miranda Holt, each of whom receive a 2021 Mineralogical Association of Canada Scholarship.



Colton Vessey graduated from the University of Saskatchewan (Canada) in 2017 with a BSc (Honours) in geological sciences and a minor in chemistry. During his BSc program, he worked with Dr Matthew Lindsay to find ways of mitigating oil sand tailings contamination to the environment.

Shortly after, Colton then began his MSc under the supervision of Dr Lindsay at the University of Saskatchewan. His MSc project examined the mobility of toxic vanadium species in the presence of key mineralogical phases relevant to mine waste reclamation. During this time, Colton specialized in using synchrotron X-ray absorption methods applied to environmental and geological materials. He completed his MSc in 2019 and began his PhD program at the University of Alberta (Canada) under the supervision of Drs Siobhan (Sasha) Wilson, Anna Harrison, and Maija Raudsepp.

Colton's PhD research focuses on the partitioning of trace metals during the recrystallization of metastable phases induced by CO₂ sequestration and storage. Storage of CO₂ in benign Ca and Mg phases (i.e., mineral carbonation) is a safe and proven method for offsetting emissions; however, Colton's work has shown that trace metal incorporation can impact carbonation rates and efficiency through the formation of low-temperature Mg–Fe phases.

Colton's PhD research is motivated by social and political pressures surrounding sustainable resource extraction; his work will support continued and safe development of carbon capture, usage, and storage technologies. Furthermore, this work, by providing a detailed understanding of metal mobility in carbon–sulfur–silica systems, will contribute to our understanding of economic deposit formation and of metal extraction from potentially economic tailings.



Miranda Holt completed her BSc (Honours) in geology at the University of Alberta (Canada) in 2020, where she completed a research project on the evolution of lherzolite during partial melting. She also examined the Fe–Ni sulfides within the Tagish Lake meteorite, work that she now continues as part of her MSc thesis.

Under the supervision of Dr Chris Herd at the University of Alberta, her MSc thesis will focus on determining the nature of sulfur-bearing components within the following carbonaceous chondrites: Tagish Lake, Aguas Zarcas, and Tarda. This study will examine the textures and the chemical and S-isotopic compositions of these components, including minerals and organic matter, to determine their abundances, the temperature(s) and means by which they were formed, and whether they were formed by processes occurring in the solar nebula or on the meteorite parent body. Also to be assessed will be whether certain phases formed systematically by the alteration of another, earlier formed component. The conclusions may apply to other meteorites of the same type.

This study will also determine any changes that occurred to these phases since their fall, collection, storage, and various forms of invasive processing. This will be achieved by examining fresh, pristine samples, some of which have been kept under cold conditions since their collection, and comparing the results with those for samples that have been held at room-temperature and processed during previous studies. This will allow recommendations to be made about the proper methods of

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storage and so help to limit alteration and contamination, as well as finding the proper order of analysis to ensure that the greatest amount of information can be extracted from the smallest possible amount of material. This is highly valuable because many samples of extraterrestrial material are quite small.

MAC TRAVEL AND RESEARCH GRANT 2022

Terms of Reference

The Mineralogical Association of Canada awards travel and research grants to assist honours undergraduate and graduate students in the mineral sciences to do the following:

- Present their research at a conference,
- Visit a facility, laboratory, or field area to gather data for their research,
- Pay for analyses or equipment for a research project undertaken to complement the main research topic.

The maximum grant value is CAN\$1,200 per student. Grants will fund up to 50% of costs incurred for registration, travel, and subsistence, and up to 100% of other research costs (e.g., equipment, analyses).

Eligibility

- Graduate students and honours students at the undergraduate levels in one of the fields covered in *The Canadian Mineralogist* (mineralogy, crystallography, petrology, economic geology and geochemistry).
- Following the event, grant recipients must submit a report of their travel or research for possible publication by the MAC.

To Apply

- Submit the application form, which is available from our website (mineralogicalassociation.ca/scholarships-and-grants/student-travel-research-grant/), and your CV, along with a signed letter of support from your supervisor.
- A subcommittee of the MAC Council will review all proposals received by February 15; decisions will be made by March 31. The MAC Council reserves the right to make no awards.

Deadline for applications: 15 February 2022

HALIFAX 2022 GAC-MAC-IAH-CNC-CSPG JOINT MEETING

15–18 May 2022

Halifax Convention
Centre in Halifax
(Nova Scotia, Canada)

“Riding the Waves of Change – Surfer sur la vague du changement”

You are invited to submit your abstracts for the upcoming GAC-MAC-IAH-CNC-CSPG Halifax 2022 meeting; abstract submission will be open from 1 December 2021 through 15 February 2022, with late abstracts accepted at a higher fee between February 16 to March 1.

Meeting Location and Dates

Halifax 2022 is a joint meeting of the Geological Association of Canada (GAC), Mineralogical Association of Canada (MAC), International Association of Hydrogeologists–Canadian National Committee (IAH-CNC), and Canadian Society of Petroleum Geologists (CSPG). The



hosting society is the Atlantic Geoscience Society (AGS). Several other groups will also be providing content and coordinating with Halifax 2022.

It will be held **15–18 May 2022** in the Halifax Convention Centre, Halifax (Nova Scotia, Canada).

Conference Themes

The conference title for Halifax 2022 is “Riding the Waves of Change – Surfer sur la vague du changement”. The advent of COVID-19 and its mutations has made that theme even more appropriate than we anticipated!

Call for Abstracts

The conference program (<https://halifax2022.atlanticgeosciencesociety.ca/technical-program/>) will consist mainly of oral and poster contributions, arranged in thematic special sessions and symposia, as well as in general topical sessions. The schedule will be organized to promote discussion among meeting participants. At this time, we are planning for a mostly in-person, with the possibility of virtual participation for oral sessions, and both in-person and virtual options for poster presentations. In addition to the 61 symposia, special sessions, and general sessions, there are 11 field trips and 8 short courses.

Get more info or submit your abstract at halifax2022.atlanticgeosciencesociety.ca.

Registration

Conference registration will be available on 1 January 2022. Registration for field trips and short courses/workshops will be available on 1 January 2022.

See you in Halifax!

UPCOMING PUBLICATION AND NEW SERIES

We have just implemented a new publication series: Education Publication. The first volume to be published in this series will be the 13th edition of *Fleischer's Glossary of Mineral Species* (2022 edition) by Malcolm E. Back, a departmental associate of the Royal Ontario Museum (Toronto, Ontario, Canada).

The MAC is taking over the publication of *Fleischer's Glossary of Mineral Species*. Previously, it had been published by The Mineralogical Record Inc. (since 1971) when it was first introduced by Mike Fleischer some 52 years ago.

Malcolm Back was invited by Joe Mandarino to be a coauthor for the 9th (2004) edition and the 10th (2008) edition, which was to be their last collaboration on the glossary. Joe passed away 18 September 2007 as they were finishing the manuscript.

The number of new minerals being described each year continues to amaze. In 2017 there were 118 descriptions, in 2018 there was 168, in 2019 this was 136, in 2020 there were 104, and up to 31 October 2021, we already had 65 descriptions. As of 31 October 2021, this will be an alphabetical list of the names, symmetry, and chemical compositions of mineral species. Synonyms and discarded names will not be included. Diacritical marks will be included. The 2022 13th edition will supersede the 2018 edition. All mineral species listed follow the approved nomenclature of the International Mineralogical Association.

