



THE CANADIAN MINERALOGIST NEWS

Highlights

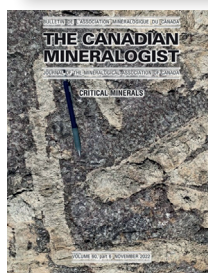
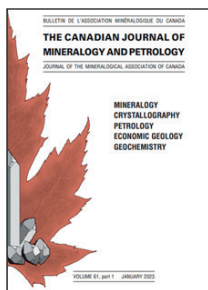
The principal highlight of the scientific journal of the Mineralogical Association of Canada is that, as of January 2023, the name has been changed from *The Canadian Mineralogist* (since 1957) to the more inclusive *The Canadian Journal of Mineralogy and Petrology* to better reflect the more diverse content of the journal. This is the same journal, with the same administration and management, just with a new moniker. The journal website has been updated accordingly, and this will soon also be reflected on the GeoScienceWorld site where the journal is accessed. The volume numbers will continue from where the journal left off in 2022, with volume 61 appearing in 2023.

Our November 2022 output features a thematic issue on the globally pertinent theme of Critical Minerals, edited by Tania Martins, Dave Lentz, Lee Groat, and Robert Linnen. The thematic issue contains nine articles regarding sites in Canada, Europe, and Africa related to enrichment processes and the petrogenesis of a variety of different critical metals.

Couëslan (2022) discusses the metamorphic paragenesis of the Paleoproterozoic Huzyk Creek graphite, V, U, Mo, and Cu deposit in Manitoba (Canada). Henning et al. (2022) provide a detailed mineralogical study on sphalerite-hosted and -associated Ga, Ge, and In in the Ruhr Basin and Rhenish Massif, Germany. Loidolt et al. (2022) assess the REE enrichment processes associated with the Storkwitz carbonate breccia near Delitzsch, Germany. Benn et al. (2022) assess the petrogenesis of Li-pegmatites of the Wekusko Lake pegmatite field in central Manitoba, Canada.

Continuing with pegmatites, Shaw et al. (2022) examine lithium mineralization in pegmatites from the Kamativi region in Zimbabwe, distinguishing early pegmatites from a late pegmatite suite previously mined for tin. Roberts et al. (2022) assess the Deer Horn deposit, an Eocene polymetallic (Au–Ag–Te ± Bi–Pb–W) system deposit in west-central British Columbia, Canada. Eastman et al. (2022) present a study on supergene turquoise and associated phosphate minerals in a porphyry-lode system in Butte, Montana, USA, applying thermodynamic modeling and the paragenesis of Cu- and Fe-phosphate minerals as tools to investigate porphyry copper systems. Li et al. (2022) demonstrate the application of geochemical and cathodoluminescence characteristics of K-feldspar to recognize diverse genetic settings relevant to ore deposit provenance, with particular attention to gold deposits. Finally, Schoneveld et al. (2022) present an analysis of the platinum group element (PGE) distributions and Re–Os isotope systematics in chromite from the Coobina chromitite deposit in Western Australia. For more information see the link at <https://pubs.geoscienceworld.org/canmin/article/60/6/851/620565/Thematic-Issue-on-Critical-Minerals-The-Canadian>.

Our January 2023 issue features a pair of papers by Christopher Beckett-Brown and colleagues on tourmaline in mineralized porphyry copper systems, plus an assessment of detrital corundum as an indicator phase in sapphire deposits from Montana, a pegmatite associated with marble in New Jersey, Cretaceous lamproites in eastern India, serpentine-group minerals in Japan, and a reassessment of selected Pt–Pd sulfide compositions and nomenclature, the latter from Louis Cabri and Andrew McDonald. In addition, three new minerals are introduced:



betzite (from the Eifel volcanic field in Germany); Pb–Zn hydroxides redmondite and two variations thereupon (from North Carolina); and raydemarkite, a hydrated molybdenum oxide from New Mexico. Read up and don't get left out of the watercooler/online chit chat!

Our recently most-read publications, according to GeoScienceWorld, include the following.

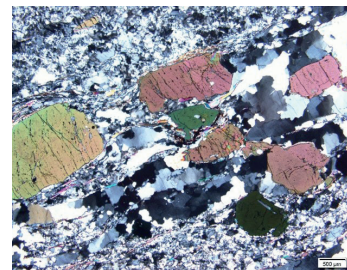
The magmatic–hydrothermal transition in lithium pegmatites: petrographic and geochemical characteristics of pegmatites from the Kamativi Area, Zimbabwe, by Richard Shaw, Kathryn Goodenough, Eimear Deady, Paul Nex, Brian Ruzvidzo, Jeremy Rushton, and Ian Mounteney.

A proposed new mineralogical classification system for granitic pegmatites, by Michael Wise, Axel Müller, and William Simmons.

Zeolite Minerals from Wat Ocheng, Ta Ang, Ratanakiri Province, Cambodia – Occurrence, Composition, and Paragenesis, by Paula Piilonen, Glenn Poirier, William Lechner, Ralph Rowe, and Peter Richards.

FEATURED MINERAL/TEXTURE

Our featured mineral for this article is tourmaline, from a mylonitic tourmaline pegmatite from the Sierra de Quilmes (NW Argentina). The tourmaline is associated with entirely recrystallized alkali feldspar and quartz and synkinematic sillimanite and shows minor plastic deformation itself. A related paper can be found “in another journal,” to borrow and modify Johnny Carson’s old phrase, entitled “Deformation-controlled cation diffusion in compositionally zoned tourmaline” by Büttner (2005).



Mylonitic tourmaline pegmatite from the Sierra de Quilmes, Argentina. Field of view is around 6 mm wide, in cross-polarized light. IMAGE COURTESY: S. BÜTTNER.

MAC TRAVEL AND RESEARCH GRANT AWARDS IN 2022

The Mineralogical Association of Canada (MAC) awarded 18 Student Travel and Research Grants in 2022 that totaled \$15,000. Report excerpts from five of the recipients follow.



Annie Borch is a PhD student at the University of British Columbia (Canada) under the supervision of Dr. Kelly Russell. Her research focuses on reconstructing the volcanic and geomorphic history of lava-filled valleys in the Garibaldi Volcanic Belt, British Columbia. In particular, she studies the interaction of Quaternary lavas with glaciers, meltwater, and fluvial systems both during and post-eruption. Annie received the MAC travel grant to present her research at the 2022 GAC-MAC-IAH-CNC-CSPG Joint Annual Meeting in Halifax, Nova Scotia, Canada, in an oral session dedicated to understanding areas of complex glacial history. She also attended the post-meeting short course, *Applications of Cosmogenic Nuclides in Earth Sciences*. The course provided valuable technical information, allowing Annie to use cosmogenic nuclide dating to constrain the age of a large, post-glacial erosional event recorded by the young, highly dissected Quaternary basalts of the Garibaldi Volcanic Belt.



Alix Osinchuk is a PhD student at the University of British Columbia Okanagan (Canada) under the supervision of Dr. Brendan Dyck. The MAC travel grant allowed her to attend the Gordon Research Seminar and Conference for Rock Deformation in Lewiston, Maine (USA), where she presented her research on quantifying stress states with varying metamorphic conditions in polymineralic rocks. Her work utilizes the microstructures of minerals to quantify the paleostresses in deformed

metamorphic rocks, known as paleopiezometry. This research couples a novel subgrain-size piezometer, calibrated with electron backscatter diffraction, with both conventional thermobarometry and equilibria phase modeling in metamorphic rocks. The objective of her research is to reconcile the chemical (e.g., pressure-temperature conditions) and stress histories recorded in metamorphic rocks to better understand how lower- to mid-crust accommodates stress in geological settings.



Makoto Honda-McNeil is a MSc student under the supervision of Dr. Siobhan Wilson at the University of Alberta (Canada). His research focuses on the partitioning, distribution, and recoverability of critical metals (with a concentration on nickel and cobalt) from ultramafic mine tailings from Lord Brassey, Tasmania (Australia), and Record Ridge, British Columbia (Canada). The

MAC Travel Grant allowed him to attend the 2022 GAC-MAC-IAH-CNC-CSPG Joint Annual Meeting in Halifax, Nova Scotia, Canada, to present the key findings of his work as a talk and to discuss the potential of historic mine tailings as a legitimate source for critical metals. Over the four days of the conference, there were numerous insightful presentations, networking opportunities, and moments of constructive feedback that made the entire experience invaluable.



Justin Lockhart is a second-year MSc student at Trent University (Canada) under the supervision of Dr. Ian Power. Justin's research aims to better understand CO₂ mineralization and mineral (e.g., carbonate) cementation pathways within historic ultramafic mine wastes, including those from diamond (kimberlite) and asbestos (chrysotile) mines, as part of a comparative study. The formation

of these carbonate cements both sequesters atmospheric CO₂ and physically cements wastes, thereby reducing the greenhouse gas emissions of mining and physically de-risking mine waste storage. The MAC Student Travel Grant enabled Justin to organize and carry out fieldwork at the Clinton Creek Asbestos Mine in Yukon, Canada, in August 2022 with colleagues from Trent, collecting solid and water samples as a crucial component of his master's thesis. Scanning electron microscopy, powder X-ray diffraction, and stable isotope analyses of these samples will provide him with crucial information about key geochemical processes occurring at the mine.



Rebecca Price is currently completing her MSc degree in geology at Lakehead University under the supervision of Dr. Shannon Zurevinski and Dr. Roger Mitchell. The MAC Student Travel Grant allowed her to present her research, "Mineralogy and petrology of the Good Hope carbonatite complex, Marathon, ON," at the 2022 GAC-MAC-IAH-CNC-CSPG Joint Annual Meeting in Halifax,

Nova Scotia, Canada. Her research aims to use mineral compositions and textural associations to propose a possible petrogenesis of the occurrence and to assess potential relationships with the Prairie Lake carbonatite that occurs at the southeast margin. This experience

provided Rebecca with a unique opportunity to receive feedback and advice on her research from professionals in a variety of fields, in addition to being able to attend presentations on a wide variety of topics.

MINERAL IDENTIFICATION MANUAL Clues from Their Geological Provenance

Education Publications Series Volume 2

AUTHORED BY: **George W. Robinson**,
Jeffrey R. Chiarenzelli (St. Lawrence
University), and **Susan M. Robinson**

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Excerpts from a review in *Mineral News*
(2022) by Tony Nikischer:

The work takes a new approach to an old issue of mineral identification, adding the logical and critically important step of adding geological context to the usual equation of common physical properties.

... the authors note that understanding the physical and chemical conditions operative in different geological environments enables one to predict which minerals are likely to be present in a given rock, and which will not. This aspect of mineral formation understanding is typically missing in virtually all previous process of elimination attempts to provide collectors with tables of physical properties to reach a tentative identification of an unknown mineral. The authors have compiled 15 different geological environments, resulting in 15 different physical property tables that offer hardness, specific gravity, cleavage, and other (color/fluorescence, streak, crystal shape etc.) characteristics of likely minerals to be found in that environment.

Instructions are provided for how to use the tables, and most importantly, enable one to describe and distinguish among the various geological environments so that the proper table is used.

See complete review at https://www.mineralogicalassociation.ca/wordpress/wp-content/uploads/2022/08/EP2_Review_MineralNews.pdf.

Excerpts from review in *The Mineralogical Record* (2022) by Chris Stefano.

As a young geology student, I learned mineral identification as it has always been taught: studying dusty, nondescript samples completely out of context, with nothing to help except for my handy determinative table of minerals and some basic tools for determining physical properties. Over the years, I've noticed that other geologists ... always ask at once, when handed an unknown sample, some version of the question "Where was this found?"

Where a specimen came from is a tremendously valuable piece of information because minerals are products of their environment, and so most minerals only occur in certain types of geologic environments.most mineral identification manuals I've seen over the years seem to downplay or even omit the question of geological context, focusing on determinative tables instead. Robinson et al. have bucked that trend, having written the first mineral identification manual I'm aware of that is built around the idea of geological context. Rather than starting with determinative tables and then asking you to check provenance after you think you have an identification, the manual starts with asking you to determine provenance, then sends you to a determinative table tailored for that environment. This method greatly reduces your options and makes identifying an unknown specimen much easier.

Overall, this is a must-have for serious mineral collectors or geology students who wish to hone their mineral identification skills. Having seen the book now, I am shocked that it didn't already exist.

See complete review at https://cdn.shopify.com/s/files/1/0681/3502/6961/files/Robinson_et_al._2022_Review.pdf?v=1670274159.

Order online at <https://mac-amc.myshopify.com/collections/education-publications-series>.

