



# Mineralogical Association of Canada

[www.mineralogicalassociation.ca](http://www.mineralogicalassociation.ca)

## AWARD AND MEDAL WINNERS

The Mineralogical Association of Canada (MAC) is pleased to announce its medal and award winners for 2022.

### Peacock Medal to Dr. Roberta L. Flemming (Western University)

The Peacock Medal is the highest award bestowed by the Mineralogical Association of Canada and recognizes the long-term research efforts and contributions of an individual to the Earth sciences within the Canadian context. This medal is awarded to a scientist who has made outstanding contributions to the mineral sciences in Canada.



This year's awardee is **Dr. Roberta L. Flemming**, a Professor in Earth Sciences and Director of the Powder and Micro-X-ray Diffraction Facility at Western University. She was born and raised on the Niagara Peninsula and graduated from Brock University (1985) with a BSc in Geology and Chemistry. At Brock, she discovered her love for solid state nuclear magnetic resonance spectroscopy (NMR) during her fourth-year thesis with

Dr. J. Stephen Hartman. She received her MSc (1990) and PhD (1997) in Geological Sciences from Queen's University, studying under Dr. Ron Peterson, where she combined NMR spectroscopy with X-ray crystallography and high-temperature mineral synthesis, studying spinel group minerals. She held a Killam Post-Doctoral Fellowship at the University of Alberta (1997–1999) with Dr. Robert Luth where she studied aluminous pyroxenes synthesized at high pressures. She has been at Western University since 2000, where she has enjoyed research and teaching in mineralogy for over 20 years. She was awarded a CFI-funded Micro X-ray Diffractometer in 2002, which performs in situ XRD, and she analysed her first kimberlite indicator minerals (KIMs) (garnets from Dr. Herb Helmstaedt) and her first meteorite (Southampton Pallasite) with the micro-XRD in 2003.

Roberta's research program uses minerals as interpretive and predictive tools to reveal past and present processes on Earth and other planetary bodies including the Moon and Mars. Her research program involves innovative applications of in situ X-ray diffraction and NMR spectroscopy, and allied methods such as EPMA and XRF, to study Earth and planetary materials to understand Solar System evolution. She uses solid state NMR and XRD to quantify minerals as recorders of temperature in the early Solar System and terrestrial mantle rocks, by making systematic observations of mineral composition, crystal structure, and cation distribution (order-disorder) for key mineral suites, to derive thermodynamic parameters and equilibration temperatures. She uses in situ XRD to correlate crystal structural parameters to chemical composition in minerals, including meteorites to aid classification (e.g., H, L, LL), and KIMs for application to diamond exploration. She is pioneering the development of in situ XRD to interpret and quantify minerals as recorders of crystal deformation resulting from tectonic deformation (strain) and meteorite impact (shock) in Earth and planetary materials. She has recently begun calibrating strain using experimentally shocked rock-forming minerals, as well as evaluating strain at a smaller scale using EBSD. She is also leading a multidisciplinary team of researchers, with funding from the Canadian Space Agency, to develop a "Miniaturized In-situ X-Ray Diffractometer for Mineralogical Characterization of Planetary Surfaces (ISXRD)" with a focus on Mars.

Her research has benefited greatly from working with many excellent collaborators at Western, across Canada, and internationally. She has supervised 37 BSc, 20 MSc, and 7 PhD thesis students, and published over 70 research papers. She considers it a privilege to have been able to supervise and collaborate with so many outstanding students over the past two decades.

She is an enthusiastic teacher and mentor to students of all ages, and she is committed to public outreach. She was awarded Western's Faculty of Science Outreach Award in 2020. Last year, she co-chaired GAC-MAC 2021, hosted by Western in London, Ontario, and she co-organized the 14<sup>th</sup> Canadian Powder Diffraction Workshop-Berry School, also at Western.

### Young Scientist Award to Dr. Pilar Lecumberri-Sanchez (University of Alberta)

The MAC Young Scientist Award recognizes a young scientist who has made a significant international research contribution as a promising start to a scientific career. The areas of research considered are any or all of those covered by the Mineralogical Association of Canada. The scientist will have received their PhD not more than 15 years before the award. The scientist must be a Canadian working anywhere in the world or a scientist of any nationality working in Canada. Research areas include mineralogy, crystallography, petrology, geochemistry, mineral deposits, and related fields of study.



The 2022 Young Scientist Award goes to **Dr. Pilar Lecumberri-Sanchez**, an assistant professor at the University of Alberta. She obtained her BSc in geology at Universidad Complutense de Madrid, Spain, and her PhD at Virginia Tech, USA. She completed a three-year Marie Curie postdoctoral fellowship at ETH, Zurich, Switzerland, and worked as a researcher for one year at the University of Arizona, USA. Pilar's expertise is in mineral deposits and fluid geochemistry. Her current research focuses on the tungsten-gold occurrences in the Tungsten belt (Yellowknife, Northwest Territories (NWT)), orogenic gold mineralization in the Yellowknife Gold Belt (NWT), and epithermal mineralization in the Toadoggonne district (British Columbia), all in Canada.

### Hawley Medal for the best paper published in The Canadian Mineralogist in 2021

The **Hawley Medal** is awarded to **Drs. Andrew J. Kaczowka** (Cameco Exploration), **T. Kurt Kyser** (deceased, formerly from Queen's University), **Tom G. Kotzer** (University of Saskatchewan), **Matthew I. Leybourne**, and **Daniel Layton-Matthews** (Queen's University).

The paper is entitled: "**Geometallurgical ore characterization of the high-grade polymetallic unconformity-related uranium deposit**" *The Canadian Mineralogist*, September 2021; Vol. 59, part 5, 813-845 <https://pubs.geoscienceworld.org/canmin/article-abstract/59/5/813/608140/Geometallurgical-ore-characterization-of-the-high>.

The winning paper describes a robust technical approach to characterizing the mineralogy and geochemistry of the polymetallic unconformity-related Cigar Lake uranium deposit (Saskatchewan, Canada). Elements of concern for both uranium metallurgical processing and the downstream environment were identified. A wide range of analytical techniques was used for the mineralogical characterization including X-ray diffraction (XRD), scanning electron microscopy with mineral liberation analysis (SEM-MLA) to determine mineral proportions, and electron microprobe analysis (EMPA) to quantify elemental substitutions of the mineral phases. Finally, the spatial distribution of the elements of concern and their mineral hosts were outlined in plan view sections across the deposit using geostatistical modeling software—a key outcome linking the geology to the process metallurgy of the deposit. The success of this holistic geometallurgical approach that integrates the geochemical, mineralogical, geological, and geospatial characteristics of the Cigar Lake deposit makes this paper an outstanding contribution to the 2021 *Canadian Mineralogist*.

**Dr. Andrew J. Kaczowka (Cameco Exploration)**

Andrew Kaczowka completed his BSc with honours at the University of Regina in 2010 and his MSc at Queens University in 2018. He has worked at Cameco Corporation for the past 12 years as a Sr. Mine Site Geologist and more recently as a Sr. Exploration Geoscientist. Andrew worked at the Cigar Lake uranium mine from 2013 to 2021, where he was a strong proponent of using and integrating geological, geochemical, and mineralogical data to optimize mining and milling. Andrew's current work and research focus is on ore deposit metallogeny, exploration geochemistry, and geospatial modeling. Andrew is an avid uranium explorer hoping to contribute to the discovery of new economic deposits.

**Dr. Tom G. Kotzer (University of Saskatchewan)**

Thomas Kotzer is a professional geoscientist with over 30 years of experience in industry and academia. His main interests are associated with the global application of advanced technologies to understand complex geochemical, mineralogical, and hydrogeologic relationships within nuclear power generation and radioactive material storage, mineral exploration, and mining. He has held senior scientific, technical management,

and oversight positions at Atomic Energy of Canada, Canadian Light Source, Cameco Mining and Exploration, AEL-AMS Laboratories, and SRK Consulting. Throughout his career, he has maintained an active and ongoing relationship with academia as an adjunct professor and graduate student mentor and supervised and provided field support and funding to collaborative academic research programs.

**Dr. Matthew I. Leybourne (Queen's University)**

Matthew Leybourne is a Professor of Geochemistry and Analytical Geochemistry in the Department of Geological Sciences and Geological Engineering at Queen's University, Kingston, Ontario. His research is focused on developing new analytical methods especially related to solution and laser ablation ICP-MS and low-level trace element determinations, the geochemistry of fluids associated with ore deposits (groundwater, marine water, and hydrothermal systems), geochemical exploration, the petrogenesis of igneous rocks, and the timing of the onset of plate tectonics. Matt is Co-Director of the Queen's Facility for Isotope Research (QFIR) and is a faculty member of the Arthur B. McDonald Canadian Astroparticle Physics Research Institute in the Department of Physics, Astronomy and Engineering Physics.

**Dr. Daniel Layton-Matthews (Queen's University)**

Daniel Layton-Matthews has been a faculty member at the Department of Geological Sciences and Geological Engineering at Queen's University and a co-director of the Queen's Facility for Isotope Research (QFIR) since 2007. His research group has focused on the physical and chemical dispersal of elements in the near-surface environment with an emphasis on ore systems. His global collaborative research program has strong ties

with industry, government, and academic researchers and has been involved with the supervision of 103 BSc, MSc, and PhD students. Dan received a MAC scholarship in 2002, served as a MAC councillor in

2003–2005, and was the recipient of the GAC Harvey Gross Award and Distinguished Lecturer Award for the Association of Applied Geochemistry. Dan's current research group is focused on the mobility and deposition of metals and metalloids and developing methods for the measurement of isotopic ratios and element contents in complex geological and biological media.

**MAC AWARDS – CALL FOR NOMINATIONS****Peacock Medal**

The Peacock Medal is awarded to a scientist who has made outstanding contributions to the mineralogical sciences in Canada. There is no restriction regarding nationality or residency. The medal recognizes the breadth and universality of the awardee's contributions to mineralogy, applied mineralogy, petrology, crystallography, geochemistry, or the study of mineral deposits.

**Young Scientist Award**

This award is given to a young scientist who has made a significant international research contribution during the early part of their developing scientific career. The scientist will have received his/her PhD not more than 15 years before the award. He or she must be a Canadian working anywhere in the world or a scientist of any nationality working in Canada. The research areas include mineralogy, crystallography, petrology, geochemistry, mineral deposits, or related fields of study.

**Leonard G. Berry Medal**

The Leonard G. Berry Medal is awarded annually for distinguished service to the association. The award recognizes significant service to the Association in one or more areas that may include leadership or long-term service in an elected or appointed office or an important contribution(s) that enhances the mineral sciences in Canada or broadens the Canadian mineralogical perspective. The medal is named after Leonard G. Berry (1914–1982), a founding member of MAC, editor for 25 years of *The Canadian Mineralogist* and its predecessor, and first winner of MAC's Past-Presidents' (now Peacock) Medal.

Nominations for the 2023 medals and awards are to be submitted to **Andrew Conly** (Department of Geology, Lakehead University, 955 Oliver Road, Thunder Bay, ON P7B 5E1, CANADA); E-mail: [aconly@lakeheadu.ca](mailto:aconly@lakeheadu.ca).

Please submit your nominations by **31 December 2022**. Check our website, [www.mineralogicalassociation.ca](http://www.mineralogicalassociation.ca), for additional details.

**SUDBURY 2023 GAC-MAC-SGA JOINT ANNUAL MEETING**

May 24–27, 2023

Laurentian University, in Sudbury, Ontario, Canada

*Discovering Ancient to Modern Earth – Découvrir la Terre Ancienne à Moderne*

**REQUEST FOR ABSTRACTS**

Join us in for the Joint Annual Meeting of the **Geological Association of Canada (GAC)**, **Mineralogical Association of Canada (MAC)**, and **Society for Geology Applied to Ore Deposits (SGA)**, which will be held on **24–27 May 2023** at Laurentian University in Sudbury, Ontario, Canada.

Abstract Submissions: will be open from **November 2022** through **1 February 2023**, with late abstracts accepted at a higher fee between **2 February** and **1 March 2023**. Get more info at <https://event.fourwaves.com/Sudbury2023/pages>.

Hoping to see you in Sudbury!