



Mineralogical Association of Canada

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2019 AWARDS

The Mineralogical Association of Canada (MAC) is pleased to announce its award winners for 2019.

Peacock Medal to Dr. Susan L.S. Stipp

The Peacock Medal, the highest award bestowed by the Mineralogical Association of Canada, is awarded to a scientist who has made outstanding contributions to the mineral sciences in Canada.



This year's awardee is **Susan L.S. Stipp**, a professor at the Department of Physics, Technical University of Denmark.

CITATION: After working for several years as an exploration geologist and hydrogeologist, Susan began a foray into what would become a long-term passion: understanding the science of mineral-surface chemistry. She has sought to employ novel techniques (XPS, AFM) to investigate atomic-scale processes occurring at mineral

surfaces and, by better understanding these, to develop insights into how these processes impact on mineral transformations and the reactivity of minerals. Susan has followed a remarkable career, built on her combined experiences, curiosity, and scientific rigor, that has culminated in her both creating and running the Centre for Interface Geochemistry (Switzerland) and the NanoGeoScience Center (Denmark). Throughout her illuminating and most-impressive career, she has not forgotten where she has come from and continues to lead and inspire the next generation.

BIOGRAPHY: Susan was born and raised in Niagara Falls (Canada). She received an Honours BSc (Earth sciences) in 1975 from the University of Waterloo (Canada). During her studies, she worked for the Ontario Ministry of the Environment, Inco Metals, and Cominco. After graduation, she joined Inco (Thompson, Manitoba). She returned to the University of Waterloo with her young children in 1980 and completed an MSc in hydrogeology and geochemistry, with part-time work in groundwater consulting. In 1983, on scholarships from the Natural Sciences and Engineering Research Council (Canada) and from Stanford University (California, USA), she moved to Stanford University for a PhD in civil engineering and chemistry. Following her PhD defense in 1989, she worked as a Maître Assistante in the Chemistry Department, University of Geneva (Switzerland) for 4 years and then for 2 years in the Physics Department at the École Polytechnique Fédérale (Lausanne, France). In 1995, she accepted a lectorship (associate professor) in the Geology Department at the University of Copenhagen (Denmark) and, in 2006, she was appointed professor at the Nano-Science Center, where she built a group of 45 physicists, chemists, geologists, mineralogists, engineers and mathematicians, all on research funding. The facilities and expertise of the group were directed toward studying the fluid interface between mineral surfaces in soil, sediments, and rocks. Her projects, with strong support from industry, have always been fundamental research with very direct applications. For example, using nano-techniques to understand nature's secrets and then applying that new understanding to solve society's challenges: ensuring clean water, safe storage of waste, removing organic material (oil, pesticides) from mineral surfaces, CO₂ sequestration, and discovering the mysteries of biomineralization. She recently moved to the Physics Department at the Technical University (Denmark), where she continues to use high-tech instruments to explore mineral-surface processes. When she is not working, she enjoys backpacking and skiing, her garden, reading, and spending time with her husband, children, and grandchildren.

Hawley Medal Winners

The Hawley Medal awarded to the best paper published in *The Canadian Mineralogist* in 2018 went to **Rémy S. Poulin**, **Daniel J. Kontak**, and **Andrew M. McDonald** of Laurentian University (Canada) and **Beth McClenaghan** of the Geological Survey of Canada for the following paper:

"Assessing Scheelite as an Ore-Deposit Discriminator Using its Trace-Element and REE Chemistry" in *The Canadian Mineralogist* Vol. 56, pp. 265-302, May 2018

The winning paper demonstrates that the crystal-chemical characteristics of a widely occurring mineral (scheelite) can be successfully used to discriminate between samples arising in different ore-deposit settings. By using a multi-pronged methodology (e.g., cathodoluminescence imaging; major, minor and trace-element chemistry; stable-isotopes), the authors established several key, elegant features that make discrimination possible. Besides contributing to our knowledge of the processes behind the formation and evolution of scheelite in a broad range of geological environments, the authors have created an extensive database of crystal-chemical data that will serve researchers far into the future. Their study illustrates key relationships between geology, mineralogy, and crystal chemistry.



Rémy S. Poulin is a research scientist with the Harquail School of Earth Sciences at Laurentian University (Canada). He obtained his BSc with Honours in geology from the University of Ottawa (Canada), followed by an MSc (2016) in Earth sciences from Laurentian University in the field of applied mineralogy. His MSc thesis, "A Study of the Crystal Chemistry, Cathodoluminescence, Geochemistry and Oxygen Isotopes in Scheelite:

Application towards Discriminating among Differing Ore Deposit Systems", was supervised by Drs. Andrew M. McDonald and Daniel J. Kontak. Since 2017, he has been an instrument and research scientist and sessional lecturer at the Harquail School of Earth Sciences. Rémy is an applied mineralogist and has been involved in numerous projects, focusing on the development of analytical methods (trace elements, cathodoluminescence) and the application of mineral chemistry to investigate complex geologic processes in a wide variety of Earth systems. He recently published a series of articles in *The Canadian Mineralogist*, and has been a reviewer for *Ore-Geology Reviews* and *American Mineralogist*. In addition, Rémy is an active member of the geological community. He is currently the finance chair of the Mineralogical Association of Canada and has served on a variety of councils and local committees.



Daniel J. Kontak joined the Harquail School of Earth Sciences at Laurentian University in 2006 after 20 years (1986–2006) as a mineral deposit geologist with the Nova Scotia Department of Natural Resources (Canada) where he worked on a broad range of ore deposit settings. He was educated at the following Canadian universities: St. Francis Xavier University (BSc 1976), University of Alberta (MS 1980), Queen's University (PhD 1985) and Memorial University (post-doc 1985), all in Canada. His interests are varied and span magmatic to metamorphic and diagenetic settings. With a large supportive group of undergraduate and graduate students, he has worked on magmatic (Ni–Cu–PGE, REE, Ta–Nb) and hydrothermal (Au, Sn–W, base metals) ore-deposit systems by integrating field work and a range of micro analytical methods. He has a particular fascination with fluid inclusions and their application to ore systems. He has been a Howard Street Robinson Lecturer for the Geological Association of Canada (1996), a previous Hawley Medalist for MAC (1990, 2002), and has received career achievement awards from the Atlantic Geoscience Society (Gesner Medal 2011), MAC (Peacock Medal 2011) and the Geological Association of Canada Mineral Deposits Division (Derry Medal 2016). He is a strong supporter of the MAC and has served as its president (2004–2006).



Andrew M. McDonald is an applied mineralogist in the Department of Earth Sciences at Laurentian University (Canada). His background is firmly planted in the crystal chemistry of minerals, which he uses to solve geologically relevant problems, specifically those in the areas of HFSE (Ti, Zr, Nb) mineralogy, platinum-group minerals, and sulfides from magmatic ore deposits.

He was educated at the following Canadian universities: University of Toronto (BSc Honors 1987) and Carleton University (MSc 1989, PhD 1992). In 1992, he joined the faculty at Laurentian, where his is currently a full professor and the director of the Microanalytical Centre. He volunteers his time with the International Centre for Diffraction Data and is the Canadian member of the IMA Commission on Ore Mineralogy (COM). He has served as an associate editor of the *American Mineralogist* (2010–2013), as the vice-chair of the IMA COM (2010–2013), and on the former IMA Commission on the Classification of Minerals (1996–2002). Within the MAC framework he has served as secretary (2000–2006), president (2016–2018), associate editor of *The Canadian Mineralogist* (2006–2009) guest editor for the special volume “The Mineralogy and Beneficiation of PGM–Cu–Ni ores” (Vol. 49, Pt. 6), member of the Hawley Medal Committee (2012), and as vice-chair for the 1999 GAC–MAC meeting. He was previously awarded the Hawley Medal in 2015. He organized the 2014 Berry Summer School on Optical Mineralogy with Prof. Jim Nicolls (University of Calgary) held at the University of Ottawa.



Beth McClenaghan is a graduate of the University of Waterloo and Queen's University. She is a research scientist at the Geological Survey of Canada (GSC) where she has worked for the past 28 years. In addition to being a research scientist, Beth is Head of the Geochemistry Section at GSC. Her research focuses on methods development for the application of till geochemistry and indicator mineral methods to mineral

exploration in glaciated terrain, with particular emphasis on precious, base, and strategic metals and diamonds. She is an adjunct professor at Queen's University and co-supervises the indicator mineral research of several graduate students at Queen's and other Canadian universities.

Young Scientist Award to Vincent van Hinsberg



The young scientist award is given to a young scientist who has made a significant international research contribution in a promising start to a scientific career. This year's awardee is **Vincent van Hinsberg**, associate professor in the Department of Earth and Planetary Sciences, McGill University (Canada).

CITATION: For using the chemistry of minerals to elucidate the conditions under which the minerals develop and, by extension, to better understand the broader geological processes behind mineral and rock formation. Vincent is also recognized for combining mineralogy and geochemistry, using quantitative modelling based on laboratory experiments and measurements in the field, investigating how fluid chemistry is recorded in minerals, and using novel approaches such as lattice-strain theory and the controls it exerts on mineral and fluid compositions. Vincent van Hinsberg is an associate professor in the Department of Earth and Planetary Sciences at McGill University (Canada). He received his MSc in geochemistry from Utrecht University (Netherlands), and his PhD from the University of Bristol (UK) working with John Schumacher on the potential of tourmaline as a petrogenetic indicator

mineral. He has been a visiting lecturer at the University of Botswana and a researcher in the Ceramics Research Centre of Tata Steel (Netherlands). Prior to his faculty appointment, he was a postdoctoral scholar at McGill University and a Marie Curie postdoctoral fellow at the University of Oxford (UK) where he studied the systematics of trace element partitioning between minerals and fluids. He currently leads a research group in experimental petrology and water-rock interaction.

BIOGRAPHY: Vincent's research interests are diverse, but he focuses on using the compositions and properties of minerals to constrain the processes that shape our planet. This requires a detailed understanding of how (trace) elements are accommodated in mineral lattices and how this depends on pressure, temperature, and composition. His research group studies the systematics of mineral compositions in experiments over a broad range of *P–T* conditions, in thermodynamic and crystal-structure modeling, and in natural samples. Applications include understanding the cycling of elements in subduction zones, the changes in oceanwater composition through time, and the compositions of ore-forming solutions. Vincent is an associate editor of the *European Journal of Mineralogy* and executive committee member of the Geotop research centre (Canada). He was a MAC councillor and is currently a member of the workshop committee of the Mineralogical Society of America.

Berry Medal



The Berry Medal recognizes the long-term dedication of individuals to the association. This year's awardee is **Lee A. Groat** of the University of British Columbia (Canada).

CITATION: For being actively involved in MAC for more than 25 years, taking on many leadership roles including foreign secretary, councillor, membership secretary, vice-president and president-elect. Lee currently serves as editor of *The Canadian Mineralogist*, a role he accepted in 2012 and continues to hold today. He has also acted as a strong advocate of research within the MAC, organizing short courses and special sessions on themes that ranged from petrology, to biological interactions with minerals, to gems.

BIOGRAPHY: Lee graduated from Queen's University with a BSc (Honours, Geology) in 1982 and from the University of Manitoba with a PhD in 1988. From 1988 to 1989 he was a NATO Postdoctoral Fellow at Cambridge University (UK). Lee has been a faculty member at the University of British Columbia since 1989, where his main research interests are the geology of gem deposits, pegmatites, the crystal chemistry of minerals, and economic geology, with a particular interest in northern Canada.

From 2001 to 2006, Lee served as editor of *American Mineralogist*. He is the former co-editor (2012) and current editor (2013–present) of *The Canadian Mineralogist*. From 2011 to 2016 he has served as vice-president, president, and past president of the Mineralogical Association of Canada. He is currently the Chair of the Commission on Gem Materials of the International Mineralogical Association.

In 1999, Lee received the Young Scientist Award of the Mineralogical Association of Canada. In 2003, he was elected a fellow of the Mineralogical Society of America, and in 2009 the new mineral groatite, $\text{NaCaMn}^{2+}_2(\text{PO}_4)[\text{PO}_3(\text{OH})]_2$, was named in his honor. In 2002, Lee was awarded a Killam Prize for Excellence in Teaching, and since 2007 he has been Director of Integrated Sciences, a program for upper-year students whose interests cross disciplinary boundaries within the sciences which gives them the opportunity to design their own curriculum. Professor Groat is an independent director of multiple companies in the exploration and technology spheres and a partner in a private consulting company.