



# Mineralogical Association of Canada

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## THE 2021 PINCH MEDAL AWARDED TO MR. GEORGES FAVREAU



Bou Azzer District (Morocco) in 2005. PHOTO BY R. PECORINI

The Pinch Medal, awarded biannually by the Mineralogical Association of Canada, is bestowed in recognition of an outstanding and long-term effort by an amateur mineralogist. We are proud to announce that the 2021 recipient is Mr. Georges Favreau of Aix-en-Provence (France).

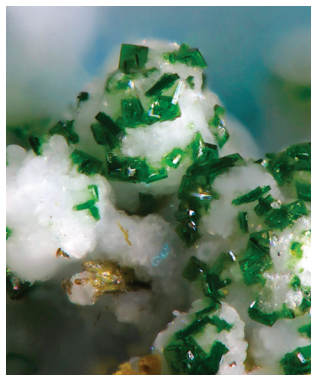
Georges Favreau's life-long journey into the world of mineralogy began at a young age when he was presented with a microscope by his parents, who long supported his mineralogical passion. With this, he was able to explore the micro-world of mineralogy, which opened up a new avenue into the natural world. He collected at many of the famous mineral localities in France, including the uranium mines

of the Lodève area, the Trimouns talc quarry, the Jas Roux thallium deposit and, of course, the great Cap Garonne copper mine. Collecting in these areas helped him develop a taste for regional geology and a personal quest to describe the local mineralogy associated with them.

In the early 1990s, Mr. Favreau embarked on a life-changing experience when he visited the five-metal mines at Bou Azzer and the copper mines at Touissit (both in Morocco). Little was known of the mineralogy of these areas, so this became a key focus of his collecting and his research. With his collecting companion Robert Pecorini, he followed-up by visits to the Imiter silver mines, he also collected from phosphate pegmatites, and he visited the Tachgalt manganese deposit and the Bou Skour district (all in Morocco).

His scientific interests have been primarily in the area of arsenate and copper minerals, which has led him to be involved in the discovery of many new minerals: yvonite, jacquesdietrichite, bouazzerite, afmite, forêtite, omsite, alfredopetrovite, and écrinite, to name but a few. Additionally, he has provided material that led to publications on the crystal structures of known minerals, including matulaite, camerolaite, and parnaute. It is through his collaborations that his relationships with academic mineralogists developed, including with Halil Sarp, Nicolas Meisser, Tony Kampf, and Stuart Mills, all of which continue to this day.

Mr. Favreau has been a strong supporter of Mindat, serving as an administrator there since 2010. He is a founding member of the Associazione Micromineralogica Italiana (and is a regular translator for their magazine) and of Géopolis, an association for the defense of collectors' interests and the diffusion of geological and mineralogical knowledge in France. He is also an honorary member of the Association des Amis de la Mine de Cap Garonne and a member of the research team that is dedicated to holistically understanding the complex mineralogy found there. His list of collaborations with other noted amateur mineralogists



Favreauite from the El Dragón Mine (Bolivia). PHOTO BY C. REWITZER



Silver from the Imiter Mine (Morocco) in 2006. PHOTO BY R. PECORINI

is long, but includes Philippe Roth from Zürich (Switzerland), Dick Thomssen from Tucson (Arizona, USA), and Joe Marty from Salt Lake City (Utah, USA).

Mr. Favreau was born in 1961 and is an engineer by training, but a mineralogist by passion. He served as President of the Association Française de Microminéralogie (after which the mineral afmite is named) from 1993 to 2007. He is an avid field collector who likes to work in such exotic locales as Bou Azzer but also "in his own backyard" of Cap Garonne.

Mr. Favreau has contributed to the discovery of 16 new minerals and has authored or co-authored numerous articles on the mineralogy of France, Italy, Germany, and Spain. Perhaps one of his greatest achievements was serving as the senior author of the book *Cap Garrone* (2014, published by the Association Française de Microminéralogie).

Mr. Favreau is a member of the Micromounter's Hall of Fame (2002), is a much sought-after lecturer, and is the creator of FACES, a software package used to illustrate the morphology of crystals.

It is with immense pride that the Mineralogical Association of Canada awards the 2021 Pinch Medal to Mr. Georges Favreau. He reflects the high standards of an individual with a deep passion for mineralogy and one who works tirelessly to promote it. He is truly an ambassador for mineralogy on the world stage.

## 2020 MAC SCHOLARSHIP WINNERS

We congratulate Rebecca Morris and Laura Mateo, each of whom receive a 2020 Mineralogical Association of Canada Scholarship.



**Rebecca Morris** completed her BSc Hons (2010) in geology at the University of Calgary (Canada). During her undergraduate she performed research under the supervision of Dr. Cathy Ryan on stable isotope variations and chloride mass flux of groundwater-surface water interactions within the Calgary area. After graduation, she worked as a hydrogeologist before returning to school to study her true passion: igneous petrology and arc geochemistry. She completed her MSc at

Western Washington University (USA), supervised by Dr. Susan DeBari, on the petrogenetic processes that generated the mid- to upper-crustal units of the southern Alisitos arc in Baja California (Mexico). She is now pursuing her PhD under Dr. Dante Canil at the University of Victoria (Canada). For this research, she integrates her love of field geology, igneous petrology, and geochemistry by studying magma-wallrock interactions within arc systems. Specifically, she focuses on magma-carbonate interactions, because these produce significantly more CO<sub>2</sub> than was previously believed. To investigate why, she studies the well-exposed Jurassic Bonanza arc (Vancouver Island, Canada), which was built on, and intrudes, older carbonate platforms. She is currently tracing the assimilation of carbonate into the arc magmas, such as δ<sup>18</sup>O values of mineral and whole-rock chemistry along pluton margins in contact with the wallrock. Her work has led to a discovery of unique orbicule-rich dikes that show physical and chemical evidence of magma-carbonate interactions, and may represent a possible unexplored CO<sub>2</sub> transport mechanism within arc systems.



**Laura Mateo** completed her BSc in geology (2009) at the University of the Basque Country (northern Spain). Following completion of her BSc, she worked as a project geologist for seven years for the Geological Survey of Chile in Santiago, working in the area of ore-deposit metallogenesis. This experience presented her with an opportunity to start an MSc under the supervision of Drs. John Hanchar and Fernando Tornos at the Memorial University of Newfoundland (in St. John's, Canada). Laura's

MSc focuses on defining a genetic relationship between iron oxide-copper-gold (IOCG) deposits and magnetite-apatite (MtAp) deposits, to which end she is examining samples from ore deposits in northern Chile and in southern Perú, including in the Montecristo district in northern Chile because this has both types of mineralization. There is, and will be, extensive analytical work: Re-Os dating of molybdenite;  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating of actinolite; U-Pb dating and Hf tracer isotopes in zircon; whole-rock sulfur; isotopic analyses of Pb, Sr, and Nd; electron probe microanalyses of major and minor elements; X-ray maps of actinolite; and laser ablation inductively coupled mass spectrometry (LA-ICPMS) analyses of trace elements in actinolite. The results will help identify any chronological and/or geochemical similarities in the IOCG and MtAp mineralizations, help determine if they are related, and find out if there is a spatial and/or temporal relationship between the Chile and Perú locations. The results from this study will contribute to our understanding of both types of deposit in South America and will be useful for mineral exploration purposes elsewhere in South America and globally.



## GAC-MAC LONDON 2021 JOINT MEETING

1–5 November 2021

The University of Western Ontario (Western)  
in London (Ontario, Canada)

### Exploring Geosciences through Time and Space

The Call for Abstracts is now open; the submission deadline is: **12 July 2021**. Get more information or submit your abstract at [gacmac2021.ca](http://gacmac2021.ca).



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## IN MEMORIAM: JAMES (JIM) HARVIE CROCKET (1932–2020)

James (Jim) Harvie Crocket passed away 22 December 2020 at the age of 88. Jim was a pioneer in the development of analytical techniques that could generate geochemically meaningful data for the platinum-group element (PGE) and gold (Au) contents of rocks. Much of what we know today about PGE geochemistry stems from research that he started and the students that he trained. Jim developed methods to determine low-level (i.e., low parts per billion) PGE data for rocks in a quest to solve fundamental questions using PGE geochemistry. Jim left behind a superlative legacy that others have built upon to make the analysis of PGE a powerful tool for unravelling the petrogenesis of ore deposits and other rocks and, ultimately, for PGE exploration.

Jim was born in Fredericton (New Brunswick, Canada) in 1932 and received a BSc in geology at the University of New Brunswick in 1955. He was awarded a Rhodes Scholarship to Oxford University (UK) where he completed an MSc in 1957. At Oxford, he was introduced to the newly evolving technique of radiochemical neutron activation analysis (RNAA). He was the first to use this technique to determine the gold contents of gabbros from the Skaergaard Intrusion (Greenland). After Oxford, Jim went to the Massachusetts Institute of Technology (MIT; USA) where he did his PhD on using radiotracers to determine the partition coefficient of zinc between crystalline calcium carbonate and an aqueous fluid.



Completing his PhD in 1961, Jim took up a position at McMaster University (Canada), drawn in part by the on-site nuclear reactor that he could use for RNAA. By this stage, Jim had recognized the potential of RNAA to produce the low-level PGE data that would be necessary to solve geological problems. Jim spent the remainder of his career at McMaster where he was involved in experimental studies investigating the partitioning of the PGEs between sulfide and silicate liquids and in research aimed at using various isotopic systems (strontium, lead, sulfur, and osmium) to solve geological problems.

As a scientist, Jim was a gifted researcher and a wonderful teacher. As a mentor, Jim generously shared his vast scientific repertoire, analytical experience, and investigative enthusiasm. He was also an accomplished athlete, playing basketball and tennis at the varsity level. While at Oxford, he was recruited onto the hockey team, mainly due to his athletic ability and Canadian roots. Personally, Jim was kind, friendly, and very supportive, with a great sense of humour and an infectious smile. Jim's passion for research and for finding solutions to challenging problems made him an excellent supervisor to his many graduate students.

**Reid R. Keays** (Monash University, Australia)  
**David Good** (University of Western Ontario, Canada)