ROM

Friends of Earth and Space

Spring Newsletter 2022

Message from the Chair

Our more spring-like weather is so welcomed – and such a relief from the continued challenges of COVID. The signs of spring around us are so uplifting.

FES continued to work mostly 'behind the scenes' this past year – although some of our members did take part in activities at ROM during March Break. We were fortunate to have two very interesting Talks this past year – one given by Dr. Soren Brothers, ROM's curator of climate change, and one by Dr. Phil McCausland, a professor at Western University working for a period of time in the Earth Sciences section. A summary of Phil's talk is featured in this newsletter.

Thanks to your donations and monies raised during the Scotia Bank Charity Run, we were able to purchase a veszelyite specimen from the Republic of Congo which was featured in our last newsletter. This is an upgrade to the specimen at ROM now.

Our AGM has been scheduled for June 30th at 1:00 when the highlights of this past year will be shared. And in recognition of International Asteroid Day, Dr. McCausland will present on the Tagish Lake Meteorite. More details will be sent out closer to that date but do mark your calendars in the meantime.

On behalf of FES, I thank you all for your continued support of the incredible work of Dr. Kim Tait and her team in Earth Sciences. We are always looking for new members – so please pass on our newsletters and share highlights of who we are – and of the work we do.

Thank you,

Toni Fiore Lisi

Chair of the Friends of Earth and Space

Digitization in Geology and Mineralogy: A Six-Month Update

By Katherine Dunnell, Mineralogy Technician, ROM

As part of the gift to fund the Kirwin collection, the final phase of the gift was earmarked for digitizing some of the 15,000-piece collection as well as the “hidden gems” in the mineralogy and geology collections. One of the goals of this project was to integrate the Kirwin collection into the existing geology and mineralogy collections, marrying the historic 100-year existing collections to this new collection that had been amassed over 30+ years. We set out an aggressive plan to image 5000 specimens in the rock, mineral, and gem collections over the course of one year. Photographer Tina Weltz, who worked heavily on the last ROM digitization project and did many of the images in the new Dawn of Life gallery, is charged with imaging all the specimens in our area. The set-up for this project is in the Hatch Learning Lab in 3B.

The goals for this project within the geology collection were to image speciality sub-collections within the Kirwin gift; gossans, breccias, Unidirectional Solidification Textures (UST), and a sampling of the extensive ore suites with particular emphasis on classic economic localities in geology and unique and hard-to-obtain access localities (Mongolia as an example). This online collection would be used for industry, geologists, investors, and post-secondary educators.

Within the gem collection, the focus is on gem deposit material from Kirwin, gem minerals, and slowly imaging the specimens on display in the gem and gold room. As part of the project, we were able to purchase a new gem lightbox that enables us to evenly light gemstones, which are extremely difficult to image without getting hot spots or extinction spots on the gemstone. A traditional photo session for gems requires half a day of set up to image maybe 10 specimens.

Here is one example of our new fluorapatites that the Friends of Earth and Space helped to fund.

Figure 1: Tina in the temporary photo studio set up on Level 3B.
© Katherine Dunnell.

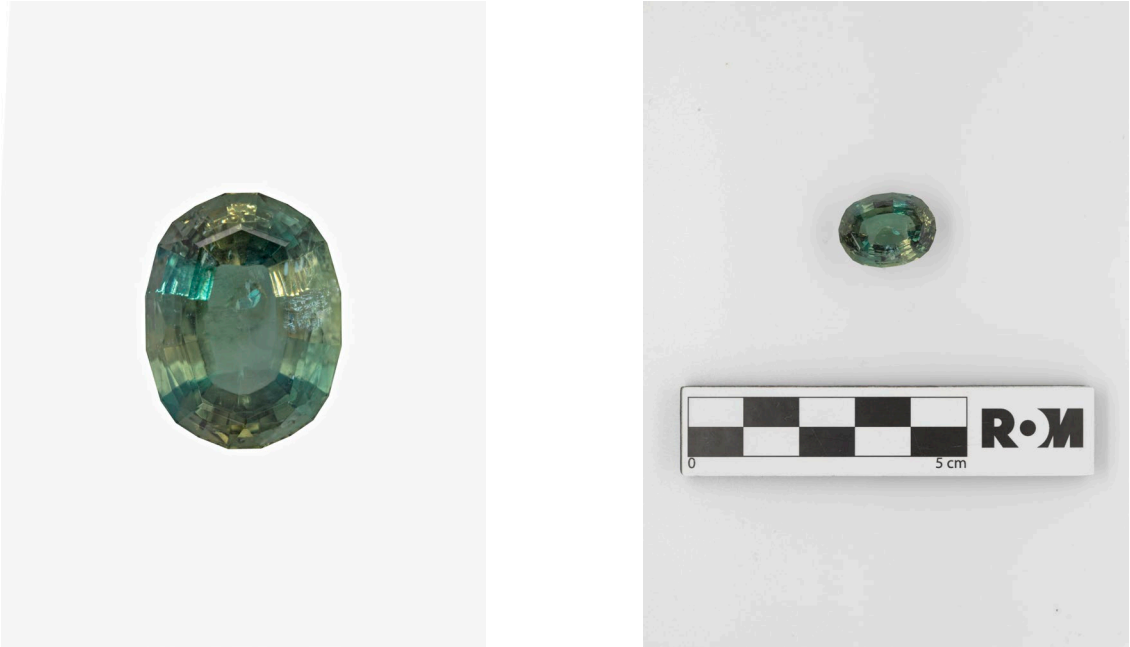

Figure 2: Bi-Coloured Fluorapatite in gem lightbox and with scale. M59788, Sludjanka, Siberia, USSR, 15.29 carats.
© Katherine Dunnell.

Within minerals, our priorities are new acquisitions from Kirwin, new specimens we have acquired since opening the Teck gallery, Canada localities, critical minerals, and looking for minerals that are of a smaller scale that, in a gallery environment, would be lost to the visitor. Photography is the great equalizer when it comes to size of the specimens.

A large consideration for this project, but especially post-COVID, is to ensure our stakeholders, such as educators, fellow curators, universities, and our online visitors can access the collections in a meaningful and easy way. To accomplish this goal, we have included some key words in the metadata within TMS (museum database) that allows any visitors from the online portal to search key words like palaeoenvironment, Minecraft, metamorphic, igneous, sedimentary, and critical minerals and to have a group of specimen images come up that are related to each other.

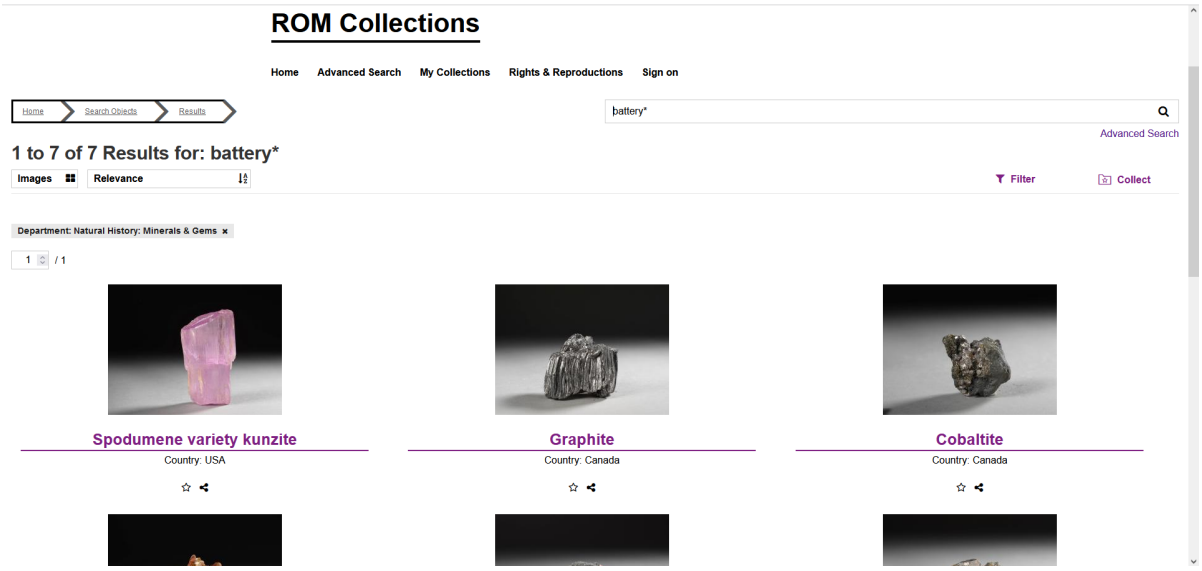

Figure 3: ROM Online Collections search on the keyword “battery”, with filter “Department: Natural History: Minerals & Gems”, yields 7 minerals used in batteries. © Katherine Dunnell.

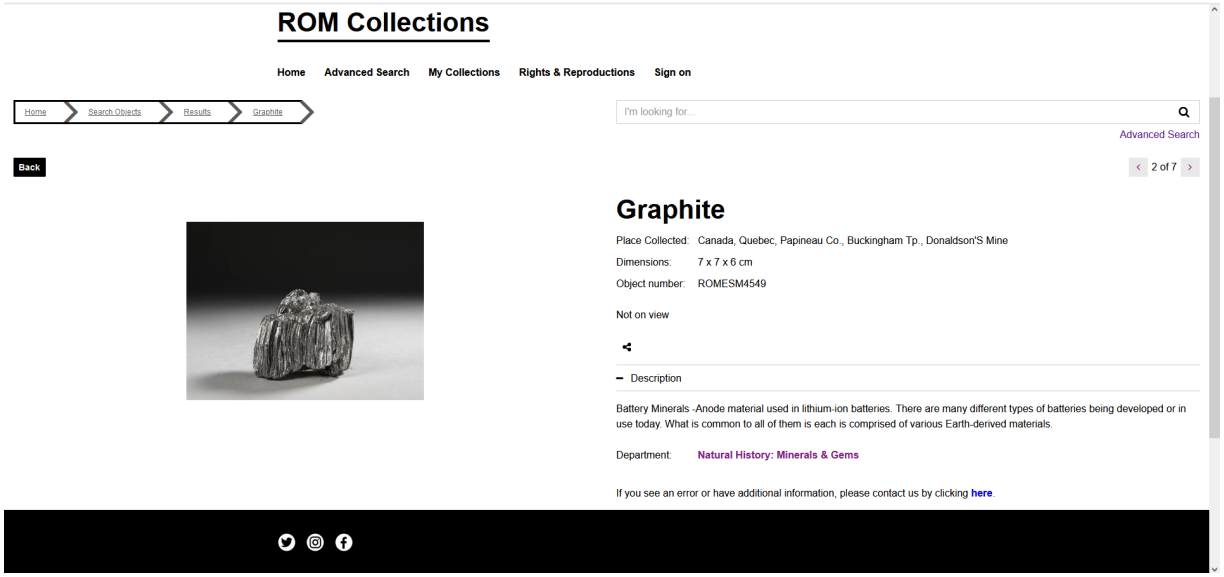

Figure 4: ROM Online Collections selected mineral (Graphite). When selecting a mineral, a description for what that mineral does in the context of a battery is at the bottom of the page. © Katherine Dunnell.

In the first six months of this project we have imaged 2248 specimens (as of April 1st) with well over 4,496 images generated. The team images approximately 100+ new specimens each week. We have processed about 75% of the images taken and they have been posted on eMuseum at https://collections.rom.on.ca/ . We are excited for the next 6 months of this project and the ability to share the amazing specimens we have in storage with everyone.

Phil and the Meteorite

By Doug Gibson, FES Member

A co-sponsored Friends of Earth and Space and DMV Speaker Series presentation by Dr. Phil McCausland was enjoyed by many, both volunteers and Friends donors alike. Dr. McCausland, Director of the Western Paleomagnetic and Petrophysical Laboratory at UWO, talked about a recent meteorite fall in the town of Golden, BC, which miraculously almost hit a human being.

Figure 5: Meteorite on her bed with roof debris.
© Ruth Hamilton.

The meteorite fall occurred in October of 2021, and a piece of the meteorite actually went through a roof and landed in the bed of a Golden, BC resident. The fireball was well documented by ground cameras at Lake Louise and Sunshine Ski resort and numerous security cameras: as a result, its exact course could be plotted. It hit the Earth's atmosphere at 80 km altitude at 18 km/second – Phil estimated that it had an initial mass of 1-2 metric tons and was likely around 1 metre in diameter. Course plotting established that the meteoroid had entered Earth's atmosphere while travelling on an elliptical solar orbit with its farthest point (aphelion) just inside the asteroid belt and its nearest point (perihelion) inside Earth's orbit.

Analysis of the 1.3 kg bedside fragment indicated that the meteorite was classed as an L5 Chondrite. It was a plain black cubic stone with a fusion crust. The fusion crust is just the

surface which melts during transit through the atmosphere. Meteorites are classified now by their composition: chondrites (used to be called 'stony' meteorites) represent 86.2% of meteorites and are named after silicate inclusions called chondrules. This particular chondrite was low in iron, giving it the "L" name, for low iron content. Chondrules are small grains within the meteorite that have in the past been rapidly melted and flash cooled while they were all in orbit around the sun, very early in solar system history.

Figure 6: Golden Meteorite.
© Ruth Hamilton.

The rest of the meteorites are made up of achondrites (8%), irons (4.7%) ('iron' meteorites) and pallasites (1.1%) ('stony-iron' meteorites).

Initially, the meteorite was scanned by X-ray, which established the distribution of chondrules within the specimen. X-ray scanning enables the scientist to determine the distributions of the dense metal and sulphide concentrations and the less dense chondrule silicates. Just as Kim can determine the history of our Martian meteorites by atom scattering techniques, so Phil and collaborators with Argon isotopic dating will be able to determine the history of this meteoroid – whether it originated in a larger body or whether it is older and originated in the solar nebula – the gas-dust mixture surrounding the ancient sun 4.6 billion years ago. The full story of this meteorite is yet to be told.

Figure 7: 3D Digital Model of the Golden Meteorite.
© P. McCausland, Western University.

We look forward to further information on meteorites with our International Asteroid Day, June 30. The annual event celebrates the 114th anniversary of the arrival of the Tunguska Meteorite in Siberia, which was thought to be a cometary impact.

We hope you will consider joining our group and become a member with a $50.00 tax-receipted donation. For more information, contact us at fes@rom.on.ca.

Friends of Earth and Space
100 Queen's Park, Toronto ON M5S 2C6

Contact FES: fes@rom.on.ca
Become a ROM member

Friends of Earth and Space is organized by the ROM's Department of Museum Volunteers to provide support for the Museum.

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