



*to promote, support, protect and expand the collection of mineral specimens and to further the recognition of the scientific, economic and aesthetic value of minerals and collecting mineral specimens.*

# BULLETIN OF FRIENDS OF MINERALOGY

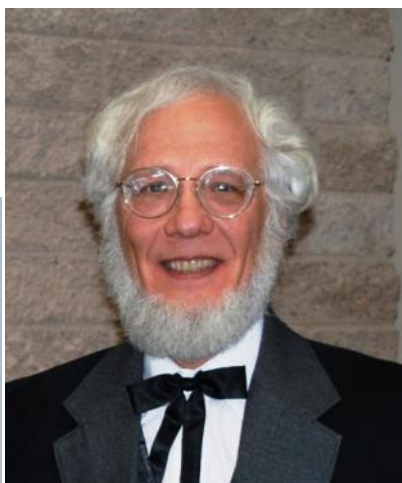
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## President's Message By Mark Jacobson

Welcome members. I have been re-elected as president of the society and I am excited about serving again. We are starting 2021 with high expectations, lots of organizational work to get done and high hopes for a post pandemic 4<sup>th</sup> quarter.

Our first organizational change is to transfer to a new National Treasurer, Dr. Bruce Bridenbecker of Southern California. We will be shipping financial records to him from Gloria Staebler, the previous treasurer in Arvada, Colorado, and also completing the bank changes of signature authority. I will also be obtaining the National historical records from 1970 to the present day from Gloria Staebler. After sorting and indexing into a finding aid, these records will be transferred to a public archive repository in the Tucson area, the foundational home of our organization. Prior to the transfer of the historical records, those FM newsletters not yet digitized will be scanned and added to those already available online.

Our other significant organizational change will be the revision of our bylaws and operating procedures. These documents, which guide our decision-making processes, were written prior to our current capability and need for virtual meetings. The revisions will add virtual meetings and combinations of physical and virtual meetings plus email and mail-ballots to voting. After the FM national board of directors (12 elected plus 8 chapter representatives) revises and approves the changes, the entire membership will be required to vote on them. We will also be proposing at the board meeting that we install a PayPal option for paying national dues (\$11 per year) on our website. This will be voted on both by the board and the membership.

In this newsletter we are also announcing the reinstatement of the FM National mineral symposium during the Tucson Gem and Mineral Show® in February, with co-sponsorship from the Mineralogical Society of America and the Tucson Gem and Mineral Society. The announcement includes the details on this symposium, along with a call for papers. We will publish updates about the symposium as planning decisions are made and speakers reply. This will also be the first symposium where we will try to broadcast the presentations live, so we can reach a broader audience.

The new Virginia Chapter, with Thomas Hale as President and Alex Venzke as Vice-President, continues to be active with once a month zoom lectures. Both the Pennsylvania and Pacific Northwest chapters were successful in holding virtual symposia last year. The advantage of virtual lectures is that physical location no longer limits the speaker pool.

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**(President's message continued)**

The quarter page ad for Friends of Mineralogy in *Rocks and Minerals* and *Mineral News* will be updated for every issue, an activity that Erin Delventhal is coordinating for now. This will be a good space for chapters to advertise their upcoming symposia, both live and virtual.

As the educational display committee, Jessica Robertson, Erin Delventhal, and Virgil Lueth are working to create a better set of definitions and criteria to use for judging institutional and non-institutional displays. The original educational awards were first given structure by Al and Sue Liebertau, who judged Tucson show cases for many years. These awards were later renamed the Kay Robertson educational awards in honor of one of the early 1970 FM members.

Erin Delventhal will be taking over as official webmaster of the national website. I currently also have access to the "add changes" to the website, but I would be thrilled to have additional people also volunteer to help revise, correct and add data to the FM national website. If interested, email me via [friendsofmineralogy@gmail.com](mailto:friendsofmineralogy@gmail.com).

With these organizational changes and planned activities, as Covid recedes, and meeting and field trip activities increase, FM will be well prepared to communicate our enthusiasm and mineral talents to a larger audience. I look forward to spending more time with the chapters later this year.

**The National FM logo**

Our organizational memory has grown quite short. I am trying to find any member who remembers what the mineral is on our logo, where it was from and who and when was it created. Anyone who has parts of this information please reply to the [friendsofmineralogy@gmail.com](mailto:friendsofmineralogy@gmail.com)

# **BULLETIN OF FRIENDS OF MINERALOGY**

## **Please help to recover missing historic Friends of Mineralogy newsletters 1972-1979**

I have been working at scanning all the Friends of Mineralogy National Newsletters and putting them on our National website. I have only located a handful of pre- 1980 newsletter and only one from volume 2 in 1973. The first official newsletters were issue in 1972. If anyone has any newsletters from 1972 to 1979, please email me at [friendsofmineralogy@gmail.com](mailto:friendsofmineralogy@gmail.com) and I will work with you to copy, scan or photograph. Photographs can be rectified to a flat page and converted to a pdf.

Mark I. Jacobson

**FM ANNUAL BUSINESS MEETING –Minutes**  
**Saturday, February 13, 2021**  
**Virtual ZOOM**

Attending: Jeanine Mielecki, Erin Delventhal, Mark Jacobson, William Besse, Bruce Bridenbecker, Linda Smith, Bob Hembree, Don Buchanan, Jessica Robertson, Alexander Schauss, Laurence Nuelle, Toby Seim, Nelson Shaeffer, Alex Speer, David Shapiro, Beth Heesacker, Thomas Hale, Ken Bladh, Alfredo Petrov

President Besse called the meeting to order at 9:10 am MST and declared a quorum present (15 voting member out of 20).

Minutes from the 2020 FM Business Meeting were approved.

Reports from officers:

President Besse: welcomed our newest chapter, the Virginia Chapter

Vice President Schauss: no report.

Secretary Smith: no report.

Treasurer: no report.

New Business:

We welcomed the Virginia Chapter of FM

Bruce Bridenbecker will make sure that FM is in compliance with the State of California Secretary of State, Office of the Attorney General, Franchise Tax Board and the IRS regarding possible fines as he takes over as the new Treasurer.

Reports from Committees and non-elected positions:

Nominating Committee for Directors: Erin reported that there were four nominees: Alex Venzke, Bruce Bridenbecker, Alex Schauss (re-elected), and Alfredo Petrov. All four nominees were elected.

The new Nominations Committee will be Alexander Schauss, William W. Besse, and Jessica Robertson.

FM Publicity was discussed and it agreed that it will be expanded to a committee with Thomas Hale and Jessica Robertson volunteering to work with the chairman of the committee.

At 10:15 am MST the Awards Presentations were announced by Alex Schauss.

Present by ZOOM to receive their awards were Andrew D. Thompson and Daniel Trinchillo,

The Magazines Awards:

*Mineral News*: The Mineral Collector's Newsletter, "A mineralogical game of connecting the dots" Volume 36, Issue 10, pp. 1,3,6-7,12-13,15 by Andrew D. Thompson

*Mineralogical Record*, "Collecting the King of Kashmir aquamarine" Volume 51, Issue 6, pp. 755-779 by Daniel Trinchillo

*Rocks & Minerals*, "Fluorite from the North Pennines Orefield" Volume 95, Issue 4, pp. 306-345. by Jesse Fisher



Election of Officers: Unanimous Approval of each the following officers

President-Mark Jacobson  
Vice President-Alexander Schauss  
Secretary-Linda Smith  
Treasurer-Bruce Bridenbecker

Chapter Reports:

Colorado-Bob Hembree reported that the chapter has not held elections. Their Summer symposium (2021) is on hold.

Midwest- Nelson Schaeffer reported that they were able to hold a meeting at Ohio University but haven't had field trips due to COVID-19.

Mississippi-Laurence Nuelle reported that they have not held meetings, or projects and their next meeting is cancelled.

New Jersey-David Shapiro reported that they have had monthly Zoom meetings in conjunction with the New Jersey Mineral Club and they that have been just presentations. He reported that there have been no field trips.

Pacific Northwest-Toby Seim reported that they were on track for their next virtual symposium in October 2021 after a successful virtual symposium in 2020.

Pennsylvania-no report

Southern California-Don Buchanan reported that the March and October 2020 field trips were cancelled due to the governors closing of Nevada and California group activities. The chapter was able to hold a board meeting on January 9, 2021 to discuss the possibility of having a geologist from the BLM, lead a field trip in October 2021. They are planning a ZOOM meeting in March 2021. The chapter made a donation to Mindat in honor of Kay Robertson, Tony Kampf, Bob Reynolds and Bob Housley.

Virginia-Thomas Hale reported that they formed their chapter to bring the mineral community together. In August, they started monthly ZOOM meetings establishing relationships with clubs on the East Coast with monthly lecture series as well as monthly board meetings. They have created a newsletter and are working on a badge program for the youth. They have also created a logo, Facebook page, Instagram and U-Tube sites in order to provide outreach to schools, teachers and educational systems. They also have monthly Virginia lecture series. All of the chapter's lectures and presentations are on U-Tube

Affiliates:

Rocks and Minerals-no report

Mineralogical Record-no report

MSA-Alex Speer reported that there are many manuscripts in progress and some of their members have presented their work virtually.

MSCC-Don Buchanan displayed a waiver form developed by MSCC that SCFM modified for field trips in order to keep the club members safe. It is titled "COVID-19 Liability Release Waiver" he offered to FM for review.

## Action Items:

Unanimous approval to form a committee to plan symposium key elements for FM National, MSA, and Tucson Gem and Mineral Society for the 2022 show. Mark Jacobson will follow up with Alex Schauss, William W. Besse. Erin Delventhal volunteered to be on the list of committee members.

Unanimous approval for Mark Jacobson to obtain the financial records and historical records from the past treasurer in order to transfer financial records to the new treasurer Bruce Bridenbecker and to find a place to archive the historical records in Tucson. Mark Jacobson will report back on his sorting of the historical records in collaboration with Jessica Robertson and Don Buchanan and Bruce Bridenbecker.

## Tabled items:

Amendment to Bylaws Article 6 Sec. 3 will be reviewed by email to the Directors.

Other Business: Erin Delventhal volunteered to replace William W. Besse as webmaster. Thank you, Bill for all of your hard work.

All thanked William EW. Besse for serving as President.

Meeting adjourned at 10:43am. MST

Submitted respectfully,  
Linda V. Smith, Secretary

**Mullite**

Funtanafigu Quarry,  
Oristano Province,  
Sardinia, Italy



Beth Heesacker collection, former Allen and Barbara Lundgren collection. Photo and copyright by Beth Heesacker

## Friends of Mineralogy 2020 Best Article Award Winners



### Rocks & Minerals

*Fluorite from the North Pennines Orefield, England.*

Volume 95, Issue 4, pp. 306-347

Jesse Fisher



### Mineral News:

### The Mineral Collector's Newsletter

*A mineralogical game of connecting the dots*  
Volume 36, Issue 10, pp. 1,3,6-7,12-13,15

Andrew D. Thompson



### The Mineralogical Record

*Collecting the King of Kashmir aquamarine*  
Volume 51, Issue 6, pp. 755-779

Daniel Trinchillo

**The 40th  
FM-TGMS-MSA  
Tucson Mineral Symposium**

**"Minerals of the apatite supergroup and mineral fluorescence"**

**Saturday, February 12, 2022  
Tucson Convention Center, Tucson, AZ**

**Call for papers**

The fortieth Mineral Symposium held in conjunction with the Tucson Gem and Mineral Show® will take place on Saturday, February 12, 2022. The symposium is cosponsored by the Tucson Gem and Mineral Society, the Friends of Mineralogy, and the Mineralogical Society of America. As a tie in with the show, the symposium theme is the same as the show theme: "**Minerals of the apatite supergroup and mineral fluorescence.**"

Presentations on the apatite supergroup, would include their descriptive mineralogy, mineralogic structure, paragenesis, classic and new localities, their fluorescence or lack thereof, and related subjects are welcome. For clarity, some of the minerals in the apatite supergroup in addition to apatite are pyromorphite, mimetite, vanadinite, and britholite.

Fluorescence presentations can highlight mechanisms of fluorescence, historical recognition of mineral fluorescence, the development of UV light sources, UV sources that are currently available, applications of mineral fluorescence, and lesser-known localities (other than Franklin/Sterling Hill) of outstanding fluorescent minerals.

An audience of amateur and professional mineralogists and geologists is expected.

Anyone wanting to present a paper should first submit their desired talk title for a presentation length of 30 minutes (or 25 minutes plus 5 minutes for questions).

We will acknowledge all submitted presentations. Accepted presentations will need to be followed up with a 200-500 word abstract (single spaced in word or equivalent format) with a few graphics if desired by the author, a 5 sentence speaker biography and a photographic headshot of the speaker. All presentations will be combined for creation into an abstract booklet. In addition these talks might be recorded or simultaneously broadcast to a logged-in virtual audience.

Please send submitted titles and later abstracts to:

Mark Ivan Jacobson, 1714 S. Clarkson St., Denver, CO 80210 or [friendsofmineralogy@gmail.com](mailto:friendsofmineralogy@gmail.com)

Presentation titles must be submitted prior to July 31, 2021.

Abstracts with speaker biography and photographic headshot for Tucson Gem and Mineral Show® program must be submitted prior to September 10, 2021.



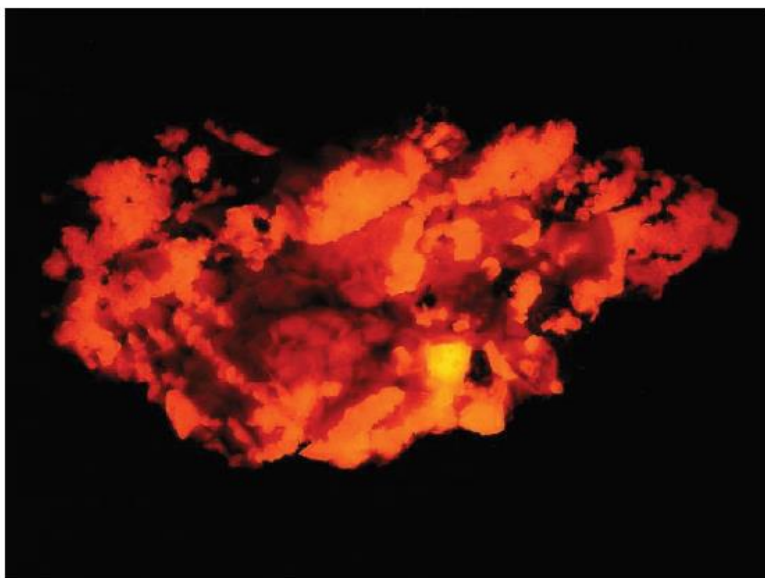
## An Unexpected Luminescent Response from a Calcite Specimen

by Calvin Harris

Every once in a while, calcite will display effects of ultraviolet light that are not anticipated. Recently, I observed a reaction from one of my specimens that was particularly noteworthy. This specimen from the Mogilta mine, Bulgaria exhibited, a fluorescent response that was limited to a certain part of the specimen, while a phosphorescent effect, colloquially known as *flash* was apparent in a much larger area.



Specimen under daylight conditions



Specimen exhibiting "Flash"

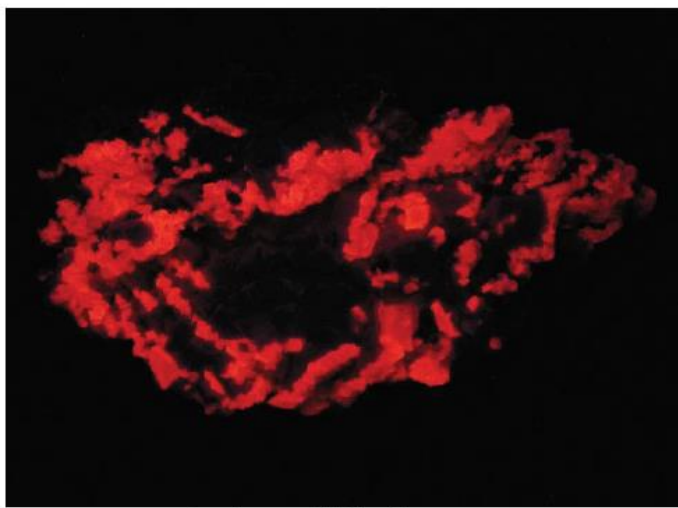
Calcite from the Mogilta mine formed under low temperature (90°C-160°C) conditions, where metasomatism occurred within two suites of metamorphic rock formations. The lower suite consists of marble and gneisses, while the upper suite is mainly marble, amphibolites, schists and gneisses. Lead and zinc ore deposits are also found in these rock formations. Manganese is abundant; this element, as well as, lead function as activators to make fluorescence and *flash* possible in calcite. The crystal habits are generation specific. Tabular, rhombohedron and prism forms develop during early stages, while flattened rhombohedral forms with prism and scalenohedron features are characteristic of the later generation.

The calcite specimen is a large cabinet sized sample that measures 25cm × 10cm × 8cm and consists of opaque, rhombohedral crystals with slight tan coloration. These crystals measure 0.5cm to 2.3cm on edge. In addition, several small, white translucent platy to scalenohedron crystals accompany the larger crystals generally along the edges of the specimen. These crystals measure up to 0.5cm on edge, but most are considerably smaller. Interestingly, only the smaller crystals display fluorescence and mid-wave ultraviolet radiation provided a greater level of luminance compared to shortwave and longwave wavelengths. A portable, battery-powered ultraviolet lamp was used to provide

this wavelength. All of the crystal forms described exhibited brief, intense phosphorescence or *flash* when they were exposed to ultraviolet radiation produced by a battery-powered photographic flash unit.

While observing fluorescence is a straight forward process, *flash* is more challenging because this phenomenon and the discharge from the photographic flash unit are very short-lived. Coordination must take place to avoid exposure to blinding light and the ability to observe *flash*. Photography provides a good analogy of this process because the fleeting phosphorescence, short duration of the electronic flash and camera shutter are difficult to coordinate for good results. When these factors are not synchronized, either the blinding light from the flash unit is recorded or no image is secured.

The luminescent characteristics of the calcite specimen featured in this article are quite interesting and possibly unique.



Specimen exhibiting fluorescence

Perhaps crystal structure and specific characteristics of the activators play a role in the responses, but this is unclear. However, it seems possible that the responses depend on how the different ultraviolet sources affect results. This possibility is the impetus for reevaluating specimens that are part of an existing collection and assessing specimens acquired in the future.

#### Selected References

Petrussenko, Svetoslav. 1991. "Minerals of the Madan Orefield, Bulgaria" *Mineralogical Record* 22, no. 6 (Nov/Dev 1991): 439-445.

Boyer, Mark. 2011. "Flash and BIP." *The Picking Table* 52, no. 1 (Spring 2011): 16.



Calcite / Quartz – Great Lakes Aggregates, Michigan  
Frank Konieczki specimen



## Minerals of the Penn/MD Materials Quarry, Fulton Township, Lancaster County, Pennsylvania, Part 5, Quartz

Ronald A. Sloto, P.G.  
West Chester University

### Introduction

The Penn/MD Materials quarry, owned and operated by the H&K Group, produces aggregate from ultramafic rocks of the Baltimore Mafic Complex, known locally as the State Line Serpentine District. This complex of ultramafic and associated gabbroic rocks is believed to be a remnant from the roots of an island arc complex formed about 490 to 510 million years ago (Smith and Barnes, 1998; Smith and Barnes, 2008).

All analyses were performed at the West Chester University Center for Microanalysis and Imaging, Research and Training (CMIRT). Imaging and chemical analyses were done using an FEI Quanta 400 environmental scanning electron microscope (SEM) integrated with an Oxford AZtec X-ray energy dispersive spectrometer (EDS). Samples were unpolished and uncoated. A Bruker D2 Phaser powder X-ray diffractometer (XRD) was used to determine mineral species.

The author thanks Jay Lang and the H&K Group for access to the quarry and Bob Housley for the use of his cristobalite image.

### Quartz $\text{SiO}_2$

Quartz is one of the most common minerals found in the Earth's crust. It occurs in two basic forms, (1) macrocrystalline quartz (quartz) and (2) cryptocrystalline quartz (chalcedony). The more common macrocrystalline quartz, or simply quartz, is made of visible crystals or grains. Examples are rock crystals, the grains in sandstone, and massive quartz that is made of large crystallites without crystal faces, such as vein quartz. Macrocrystalline quartz grows by adding molecules to the crystal's surface, layer by layer. Cryptocrystalline quartz is made of microscopically small intergrown quartz crystal grains that lack the structural homogeneity of crystals. Examples include chalcedony and agate. Cryptocrystalline quartz forms from a colloidal watery solution of silica.

Quartz generally is found on the upper levels of the Penn/MD Materials quarry where it is formed by

chemical weathering of serpentine. The quartz is macrocrystalline quartz, which mainly occurs as drusy quartz (fig. 1); larger crystals have not been reported. The tiny quartz crystals forming drusy quartz often have a sparkling appearance (fig. 2); however, the crystals typically are not well formed.



Figure 1. Drusy quartz from the Penn/MD Materials quarry, 12 cm. Sloto collection RS-4267.



Figure 2. Drusy quartz from the Penn/MD Materials quarry; close-up of the specimen in figure 1. Field of view is 1.2 cm.

One specimen of sparking drusy quartz (fig. 3) was examined under the scanning electron microscope (fig. 4). It was found on the fourth level on a very dark (nearly black) serpentine. The EDS analysis indicated that the crystals were  $\text{SiO}_2$ . However, the crystals were not the expected typical hexagonal prisms; the habit resembled that of alpha cristobalite (fig. 4) which was deposited by low-temperature hydrothermal solutions in Lobo Canyon, Santa Monica Mountains, Los Angeles County, California (Housley, 2019). Cristobalite is a polymorph of quartz. An XRD analysis of the crystals from the Penn/MD Materials quarry showed them to be regular quartz.



Several specimens of quartz resembling chalcedony (fig. 5) were found on the upper two levels of the quarry. An SEM image of one sample (fig. 6) showed that it was composed of tiny grains characteristic of quartz. The brown color was caused by Fe, which ranged from 0.33 to 0.97 weight percent. The specimen in figure 7 is a stalactitical growth of quartz. A close examination of this sample (fig. 8) showed it to be aggregates of quartz crystals with a melted appearance. Because of the method of quartz formation, it is unlikely that true cryptocrystalline quartz (chalcedony) would be found at the quarry.

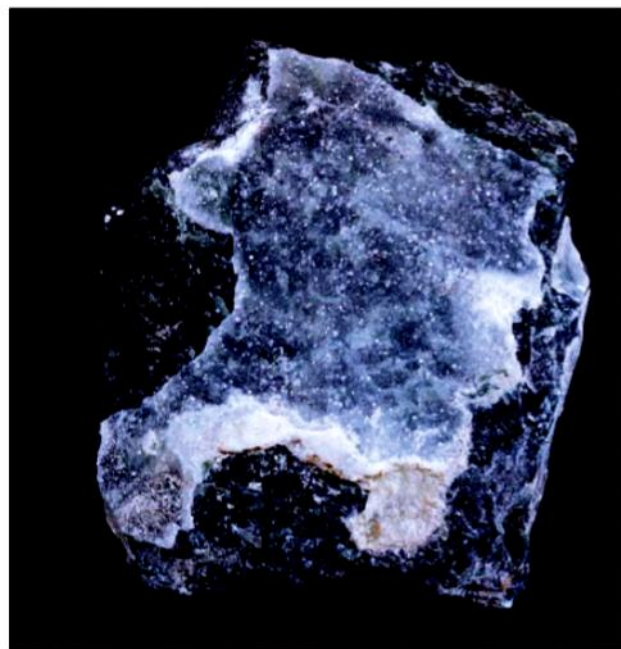


Figure 3. Drusy quartz from the Penn/MD Materials quarry, 6 cm. Sloto collection RS-4088.

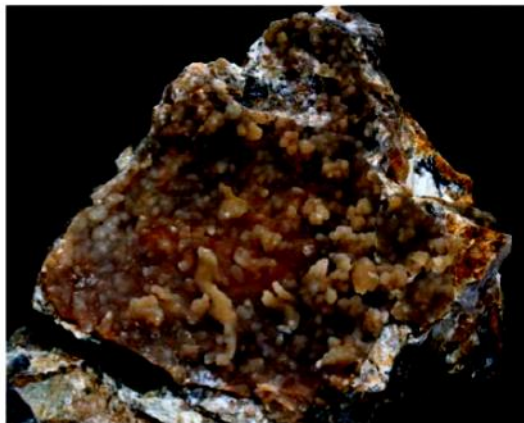


Figure 5. Quartz from the Penn/MD Materials quarry, 7.7 cm. Sloto collection RS-4274.



Figure 6. Scanning electron microscope image of quartz in figure 5 from the Penn/MD Materials quarry. Magnification is approximately 163X.

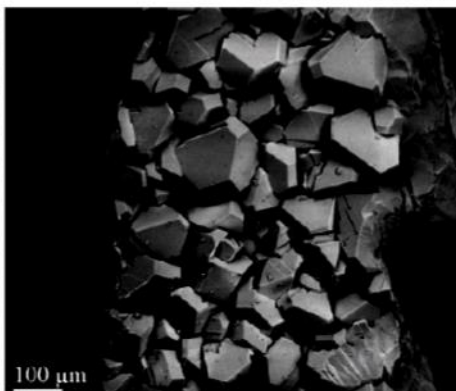
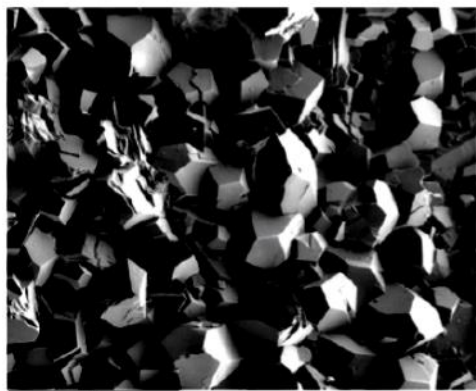


Figure 4. Left – Scanning electron microscope image of drusy quartz shown in figure 3 from the Penn/MD Materials quarry. Magnification is approximately 97X. Right – Scanning electron microscope image of alpha cristobalite crystals from Lobo Canyon, Santa Monica Mountains, Los Angeles Co., California. Image taken by Bob Housley. Image provided by Bob Housley.

Some quartz may not be easy to recognize. The orange-colored sample shown in figure 9 might be mistaken for deweylite or magnesite. It is quartz containing 1.61 weight percent Mg; it contained no Fe. On the upper two levels of the quarry, quartz often is associated with magnesioferrite-magnetite solid solution series (fig. 10). The orange color in the sample in figure 10 was caused by 2.15 weight percent Fe.





Figure 7. Quartz from the Penn/MD Materials quarry, 10 cm. Sloto collection RS-331.



Figure 8. Quartz from the Penn/MD Materials quarry; close-up of the specimen in figure 7. Field of view is 1.5 cm.



Figure 9. Massive quartz from the Penn/MD Materials quarry, 6 cm. Identification confirmed by SEM-EDS analysis. Sloto collection RS-4228.



Figure 10. Massive quartz and magnesioferrite-magnetite solid solution series from the Penn/MD Materials quarry, 1.3 cm. Identification confirmed by SEM-EDS analysis. Sloto collection RS-4279B.

### Quartz/Magnesite Mixture $\text{MgCO}_3 + \text{SiO}_2$

Several SEM-EDS analyses of a white mineral with an undulating surface (fig. 11) showed it to be a Si-C-Mg-O mineral with a composition that did not match any known mineral. Further investigation determined that the mineral was a mixture of equal parts quartz and magnesite. Analyzed samples of this mixture all showed a cracked surface (fig. 12), which can be used to distinguish it from magnesite. Robert Smith, II, suggested that the quartz might be opal. However, an XRD analysis showed it to be quartz. That does not rule out the occurrence of opal at the quarry.

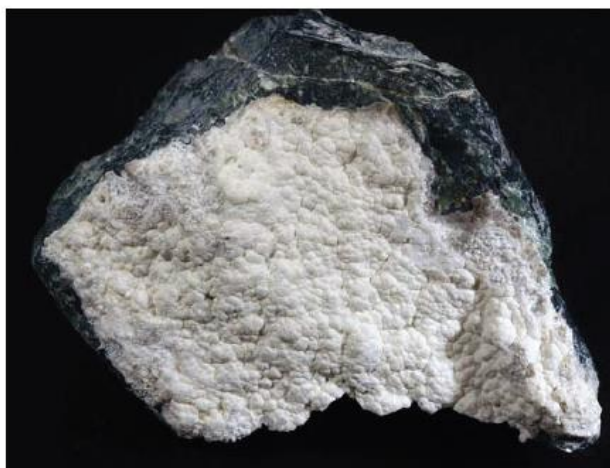


Figure 11. Quartz-magnesite mixture from the Penn/MD Materials quarry, 6.6 cm. Identification confirmed by SEM-EDS analysis. Sloto collection RS-3956.



Figure 12. Quartz-magnesite mixture from the Penn/MD Materials quarry; close-up of specimen in figure 11, showing cracks in surface. Field of view is 1.3 cm.

## REFERENCES

- Housley, Robert, 2019, The occurrence of sharp clear crystals of primary alpha cristobalite, accessed on January 9, 2021, at <https://www.mindat.org/article.php/3804>.
- Smith, R.C. II, and Barnes, J.H., 1998, Geology of Nottingham County Park: Pennsylvania Geological Survey, 4th ser., Trail of Geology 16-009.0, 41 p.
- Smith, R.C. II, and Barnes, J.H., 2008, Geology of the Goat Hill Serpentine Barrens, Baltimore Mafic Complex, Pennsylvania: Journal of the Pennsylvania Academy of Science, v. 82, no. 1, p. 19-30.





## HEMIMORPHITE

Silius Mine, Cagliari  
Province, Sardinia, Italy



IT JA 26 fov 4.5mm

Collection of Beth Heesacker,  
former Allen and Barbara  
Lundgren Collection. Photo  
and copyright by Beth  
Heesacker

## Thinking of Micromounts

Quintin Wight

A couple of years ago, I began to think about micromounts and micromount collectors. Thinking is difficult, and some aspects require a particular turn of mind. For example, it took me three years of pursuing a degree in chemistry and physics before I realized that I really didn't care whether  $\mu_x$  rose or fell in a spontaneous reaction, or what went on in an infinitely differentiable Riemannian manifold. I just don't think spontaneously along those lines. Some people do.

So there I was, thinking about micromounts and why people collect them. In other words, what values do micromounts have? Monetary value was not a consideration. The most expensive micromount I know of sold for \$2,500. That's peanuts in today's mineral market. Most sell for \$10 or less. There have to be other values involved, and they have to affect collectors in different ways.

*Quintin views his micromounts through a metaphysical lens, and in passing, introduces us to afmite as one of the 270 reasons why.*

I dropped the, "Oooh..., they're so pretty!", factor from consideration, although I presume that it does enter somewhere at the far end of the value range. It soon became clear that the question depended largely on the definition of a micromount. To some people, that's clear—it's "a little bit of rock in a box". An auctioneer in New Zealand once described one of my mounts in those words. He was right, but there are other things involved. (To be fair, he knew what micromounts were; he just didn't know how to pronounce "catapleiite".) The original definition that I used came from the late great Neal Yedlin, a lawyer by profession, who said that a micromount was:

*"A natural mineral specimen, preferably in distinct crystals, mounted, properly labeled, and requiring magnification for meaningful observation."*



*Figure 1 The Cleveland Museum of Natural History's micromount display, features the micromounts on a turntable and a microscope with a video camera feeding the video screen allowing viewers to choose the specimen and its magnification.*

That definition lasted until I ran into a couple of museum curators on the net of the SMMP (Society of Mineral Museum Professionals) who were carping at micromounts and implying that they were of little value to a museum. I suppose that's a logical attitude if one believes that natural history museums exist only to display things. Micromounts are difficult to display, although David Saja and Paul Clifford at the Cleveland Museum of Natural History have done very well in that respect (see Figure 1). On the other hand, if the belief is that museums exist to preserve, protect, and investigate natural treasures, display becomes a secondary factor. That prompted me to revise the definition of a micromount.

To that end, I postulated that a micromount has two attributes, one physical and one metaphysical. The physical is as given above; the metaphysical is again in two parts as below:

A micromount is NOT a "mineral specimen". It is an OBJECT created with care and attention that happens to contain a mineral specimen.

It also has values of provenance, location, history, style, and association that transcend the value of the mineral specimen alone.

That brought me back to values, and a look at how they fit today. The opposite ends of the spectrum are probably marked by two people: Tony Kampf of the Natural History Museum of Los Angeles County, California, and John Ebner of Tucson, Arizona.

Tony has officially retired, but is still working at the museum. He and his fellow curator, Aaron Celestian, have more than 100,000 micromounts in their care. Tony uses the mounts for research, and has described more than 250 species, many brought to him by micromounters. He has named 31 new species for the collectors who brought them in, and will himself be inducted to the Micromounter's Hall of Fame in October 2021. In short, he's the physical, "That's a mineral, and there are ionic bonds here and a vacancy there," end of the spectrum.

John Ebner, who has been in the Hall of Fame for 24 years, and has more than 80,000 mounts in his collection, is at the other end. John collects micromounters rather than



micromounts. For him, it is the metaphysical value of the mounts that count. Who collected it? Who mounted it? Whose collections has it passed through? He also has cabinets, plaques, and more than 75 microscopes originally owned by well-known micromounters and museum staff.

Between those two ends lie the rest of us: those who prefer self-collected specimens; those who think the only way to a complete collection of minerals is through micromounts; those who want all the minerals from one locality; those who collect only copper minerals, and so on. Interestingly, there are museum curators in the middle who keep the faith. One, James Hagadorn of the Denver Museum of Nature and Science in Colorado, has six micromount collections in his care. They amount to some 22,500 mounts plus 10,000 loose specimens, mostly diamonds, undergoing work. The museum has issued a 726-page catalogue of the mounts that can be downloaded as a pdf (see below). James is now working on a book on "why are micromounts important?" and is asking for input from those of us who know.

In the end, a little research took me back to science—not to the laboratory (I still don't care about  $\mu_x$ ), but to the idea of what micromounts, and perhaps more importantly micromounters, have done and are doing for science. It turned out that some micromounters don't want to be called micromounters in spite of the fact that they have large collections. They see us regarded as the "mice" of the mineral world and would prefer not to be categorized as such. That's fine. I changed my definition of a micromounter to, "a mineral enthusiast with a microscope", to keep them happy.

In the biological world, great attention is given to those who discover new species of plants and animals. Television cameras follow them into the jungle. In the earth sciences world, not much attention is given to those who discover new species—but look at their achievements. In the last few years in the USA and Canada, micromounters have discovered more than 183 new mineral species. In France, members of l'Association Française de Microminéralogie (AFM) have discovered 37. One member alone, Georges Favreau, also in the Hall of Fame, has discovered 14, one of which afmite,  $[\text{Al}_3(\text{OH})_4(\text{H}_2\text{O})_3(\text{PO}_4)(\text{PO}_3\text{OH})\cdot\text{H}_2\text{O}]$  was named in honour of the Association. In the period 2011-2020, members of the Associazione Micromineralogica Italiana (AMI) have found 50. In fact, the city of Turin is building a museum to house the collection of Marco Ciriotti, founder of the AMI. When it comes right down to it, I've discovered three-and-a-half myself (the half comes because someone else spotted the mineral first, but I found the type specimen—in my basement, 32 years after I had collected it).

As I said in the beginning, it took a while for all of this thinking to crystallize—and even more time to do the research. I finally turned it into a presentation that I've given a few times, but the essence is in this article. In short, the next time someone sneers at micromounting, just think: in the past few years, micromounters have introduced more than 270 new mineral species to science. How many have the "cabinet" collectors found?

Reference: Havens, L.G., Bucknam, S.H. & Hagadorn, J.W. 2018. *The Micromount Mineral Collection of the Denver Museum of Nature & Science*. Denver Museum of Nature & Science Reports 11: 726 pp. (20.xii.2018)

Used with permission, British Micromount Society Newsletter 2/21

## Atacamite and its polymorphs

John Haupt

Atacamite is a relatively common chloride mineral mostly occurring as an oxidation product of copper minerals in an arid saline environment. It is one of three polymorphs (species with the same chemical composition but different crystal structure) with the formula of  $\text{Cu}_2(\text{OH})_3\text{Cl}$ , the other two being botallackite & clinoatacamite. A fourth member of the group, anatacamite, is now a discredited species as it has been shown to be twinned clinoatacamite, rather than the triclinic dimorph. The structure and formation of the polymorphs have been extensively researched. (See Krivovichev *et al* (2017)).

*John looks at a family of minerals that share a green colour but need to go their own way in three dimensions*



**Atacamite** *Orthorhombic*. The most common of the three species. Its colour is bright green, dark emerald-green to blackish green. Atacamite was named in 1802 after an undefined locality in the Atacama region of Chile.

Specimens of atacamite occur in many countries and it is relatively abundant in Chile and Australia (Bottrill *et al*, 2010). The most notable Chilean locality is the La Farola Mine, Copiapó Province.

Atacamite occurred in many Australian copper mines. It was particularly common in the copper deposits in South Australia. Exceptional specimens came from the New Cornwall Mine, Kadina (Wilson, 2019) and during the 1980s, excellent specimens were collected in the Cattle Grid deposit, Mount Gunson Mine, Pernatty Lagoon.





Fig. 2

Figure 1.  
Parallel crystals of atacamite  
from the Cattle Grid deposit,  
Mount Gunson Mine,  
Pernatty Lagoon, S Australia.  
FOV 3 mm

Figure 2  
Elongated crystals of  
botallackite from Cligga  
Head. FOV 2 mm tall.

Figure 3.  
Atacamite crystals exhibiting  
unusual contact twinning from  
the Block 14 Opencut,  
Broken Hill, NSW Australia.  
FOV 8 mm

Figure 4  
Triangular shaped twinned  
crystals of clinoatacamite  
formed on the side of an  
atacamite crystal. La Vendita  
Mine, Sierra Gorda, Chile.  
FOV 1mm tall

All photos by John Haupt

**Botallackite** *Monoclinic* Named after the type locality, the Botallack Mine, Trewellard, Cornwall. (Church, 1865).

A rare mineral and a polymorph of atacamite & clinoatacamite, it may be confused with kapellasite,  $\text{Cu}_3\text{Zn}(\text{OH})_6\text{Cl}_2$ , which has a similar X-ray powder diffraction pattern. It occurs as bluish green to green crystals. Some botallackites contain minor Zn, but the Zn:Cu ratio never approaches that of kapellasite.

Notable specimens came from the Botallack Mine and more recently exceptional crystal specimens were collected at Cligga Head in Cornwall (Wolfe et al, 2008). Botallackite only occurs at a few other localities world-wide.

Note: Peter Haas suggests that specimens attributed to Wheal Hazard are likely to have come from the Botallack Mine (Bottrill et al 2010).





### **Clinoatacamite**

Monoclinic. It was identified as a new species in 1996 and named for its monoclinic morphology and relationship to atacamite. It is easily confused with the closely related paratacamite  $\text{Cu}_3(\text{Cu,Zn})(\text{OH})_6\text{Cl}_2$ , (which has essential Zn in its composition). The type locality is the Chuquicamata Mine, Calama, El Loa Province, Chile.

It occurs as dark-green twinned pseudo-rhombohedral crystals. The most notable specimens have come from the La Vendida mine, Antofagasta region, Chile. Here it occurs as 'wings' on atacamite crystals. Specimens have also come from the Castletown Mine, Lochgilphead, Argyll and Bute, Scotland.



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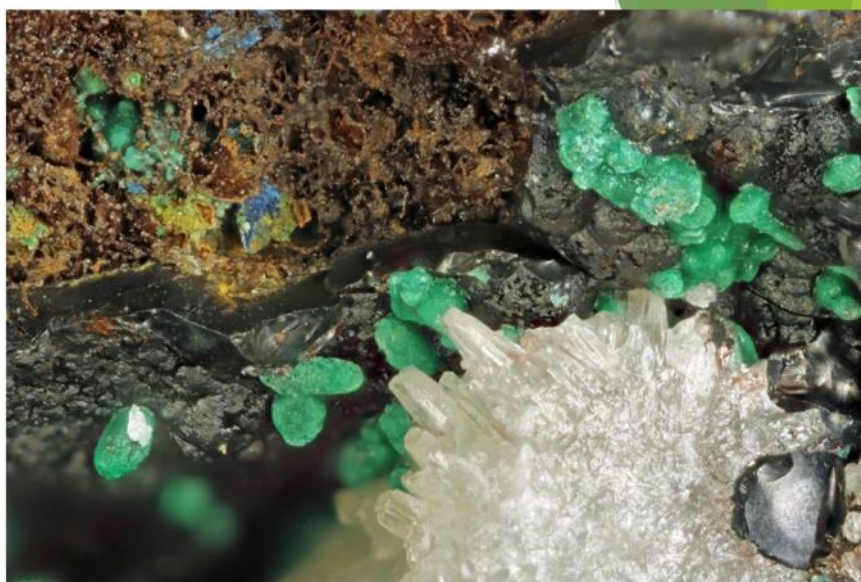
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MALACHITE  
CERUSSITE

Orroli, South Sardinia  
Province, Sardinia, Italy



IT JA 21a fov 4.5mm

Beth Heesacker collection, former Allen and Barbara Lundgren collection.  
Photo and copyright by Beth Heesacker

**Editor's Note: If you are tired of seeing  
my mineral pics,  
send me yours.  
I would love to publish them.**



**DOLOMITE**

San Giovanni Mine,  
South Sardinia Province,  
Sardinia, Italy



IT JA 25 fov 4.5mm

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Allen and Barbara  
Lundgren Collection.  
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Beth Heesacker

**ARAGONITE**

Orroli, South Sardinia  
Province, Sardinia, Italy



IT JA 06 fov 4.5mm

**CACOXENITE**

Cappoterra, Cagliari  
Province,  
Sardinia, Italy



IT JA 51a fov 4.5 mm



**LAUMONTITE**

Crastu Muradu Quarry,  
Sassari Province,  
Sardinia, Italy



IT JX 13 fov 4.5 mm

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**CHABAZITE,  
LAUMONTITE**

Crastu Muradu Quarry,  
Sassari Province,  
Sardinia, Italy



IT JX 27 fov 4.5 mm

**FLUORITE**

Mt. Arci, Oristano  
Province,  
Sardinia, Italy



IT Jx 01 fov 4.5 mm



## COLORADO CHAPTER UPDATE

<http://friendsofmineralogycolorado.org/>

It has now been a year since Covid-19 through a monkey wrench into our plans for 2020. Hopefully, everyone has managed to stay healthy during the past year. I was able to get my first vaccine dose last week. My hope is that everyone will get a vaccine and we can return to some semblance of normal. Along those lines FMCC is trying to get back to having presentations this year. Gloria Staebler is working to get some mineral experts to give talks remotely (on Zoom) over the next couple of months. We will let everyone know as we get them scheduled.

If you haven't heard the Merchant Mart is closing and the Denver Gem & Mineral show is looking for a new venue. The show committee is working hard to find an alternative place to have the show, so it won't be cancelled.

The board has not met this year, but when we do, we need to discuss what we need to do to start in person events such as our annual auction. We need input from the membership on future program and activities. Mark Jacobson is leaving his position as our treasurer to fulfill his duties at FM National and CMS. He has volunteered to stay on to take care of the FMCC website and the Gilman photo project. Mark has been a great asset for FMCC, his contribution will be missed. Anyone interested in the position of Vice President or Treasurer should let me know. The VP position is primarily responsible for finding speakers for our meetings so it is important to have someone fill it. We plan on having a board meeting in April. The meeting was delayed until then to let folks who are on the show committee who are also on our board to concentrate on finding a new venue and the logistics that need to be worked out to plan the show.

Bob Hembree

### Humor Section



"Ah, FOR THE GOOD OLD DAYS WHEN GEOLOGISTS WORKED OUTDOORS."



February 2021 – The Mineral Minutes





## MIDWEST CHAPTER UPDATE

[www.fommidwest.org](http://www.fommidwest.org)

See article on Pages 6-7.



## MISSISSIPPI VALLEY CHAPTER UPDATE

Your Report could be here!



## NEW JERSEY CHAPTER UPDATE

<https://fomnj.wordpress.com/>

It's definitely been an interesting end of 2020 and start to 2021 for us in Friends NJ. COVID has continued to make its impact known, and that has put a kibosh on any Field Trips for us for the time being. Our main events have been our monthly ZOOM Meetings, with guest presenters for each. We have been treated to Derek Yoost and Joe "Paleo Joe" Kchodl giving some outstanding presentations over the past several months. We have seen lectures on Ammonites, Trilobites, Stromatolites, and Meteorites in recent months, and the presentations just get better. We will definitely continue to have monthly virtual / online presentations.

We have not met in person since last March due to COVID; however our Meeting place, which is a Worship Center, has started in recent months, to have some of the congregation visit for Services.

Considering the implications of COVID, FM-NJ has only experienced a temporary drop-off of about 8 members since 2021 started; however our Membership was roughly 50 people which is a high for us. We expect in coming months when Trips become more of a potential reality, some more folks will renew dues with us.



## PACIFIC NORTHWEST CHAPTER UPDATE

[www.pnwfm.org](http://www.pnwfm.org)

Greetings All,

I hope everyone is of good health and actively planning your mineral adventures/activities as Spring approaches. With the Covid-19 pandemic slowly fading away, planned activities and mineral related projects will increase.

I have recently been conversing with Mark Ivan Jacobson (The National FM Board President) to align our future Friends of Mineralogy vision and with some key FM National organizational changes, there is some excitement buzzing. There is also a new Virginia Chapter whose president is very eager to make an impact. With our PNWFM Group being well established and the Virginia's Chapter bringing new fresh ideas to the plate, it's an easy decision to work together and share our processes/ideas to further improve the advancement of minerals. - Special thanks to Jessica Robertson for bringing both Chapters together and coordinating.

We have discussed an idea to improve our PNWFM Logo. At this time I have a panel of artists lined up who are very talented and ready to start drafting something. What I need from you, our members, is some creative ideas to get the ball rolling. I believe this logo should come from the voice of our members which will mean more when selected. If you would like to help to provide input please submit your ideas to [pnwgemcollectors@gmail.com](mailto:pnwgemcollectors@gmail.com) for consideration.

Please plan to attend a General Meeting **Saturday, April 10<sup>th</sup> at 10:00AM**. This meeting will be in Zoom format where we will communicate general updates, symposium status and some exciting summer opportunities such as potential field trips and a Washington Pass Clean-up. Stay tuned for the official Zoom link to be communicated.

Thanks to you all for continuing to share a big interest in rocks & minerals and once this Covid-19 pandemic is obliterated, I'm excited to be able to personally give each of you a joyous high-five.

Cheers, Toby Seim – President - PNWFM

### BROCHANTITE

Montevecchio Mine, South  
Sardinia Province,  
Sardinia, Italy



Beth Heesacker  
collection, former Allen  
and Barbara Lundgren  
collection. Photo and  
copyright by Beth  
Heesacker

IT JX 30 fov 2.25 mm





## PENNSYLVANIA CHAPTER UPDATE

[www.rasloto.com/FM/](http://www.rasloto.com/FM/)

See article on pages 8-11.



## SOUTHERN CALIFORNIA CHAPTER UPDATE

While California's lockdown has kept us from conducting any symposiums or field trips for one full year now, we are planning to resume field trips this October, 2021 as restrictions on gatherings are starting to loosen up.

We have entered the world of Zoom Board meetings this winter and borrowed a COVID-19 field trip waiver form for use when the Governor of California and State Health Offices allow group field collecting once again.

Our field trips with 30-45 vehicles won't be feasible anymore, so adjustments are being made to downsize. Retired BLM Geologist Dr. Gregg Wilkerson will be guiding us into the Cady Mountains for field collecting in October with dates to be firmed up as state of California guidelines continue to evolve.

Dr. Don Buchanan

President

California Friends of Mineralogy

### ANKERITE

Capurru Quarry,  
Sassari Province,  
Sardinia, Italy



Beth Heesacker collection,  
former Allen and Barbara  
Lundgren collection. Photo  
and copyright by Beth  
Heesacker

IT JX 40 fov 4.5 mm



## VIRGINIA CHAPTER UPDATE

2021 has provided us with similar trials and tribulations as 2020, but the mineral community is resilient and many of our local clubs and partner organizations have begun to utilize virtual programs to engage with their membership and the broader community.

FMVA kickstarted 2021 with a full list of high-quality speakers! Our monthly speaker series brings in talented collectors and educators from across the USA. We started our year with a fellow YMC member, Allie Gale, who presented a fantastic presentation on Mid-Ocean Ridge Basalts! Our second speaker, Evan Jones, shared the journey of making wulfenite the state mineral of Arizona and gave us the rundown top localities in the state. We continue to build relationships with our speakers and invite other members of the FM community to join us in these events! They are open to all chapters and local communities. If you cannot attend that night, no worries! We upload all videos to our [YouTube channel](#). FMVA released its first publication for the year, the 2021 [Virginia Mineral Directory](#)! This provides a list of all the state mineral societies, rock shops, museums, and provides resources and literature for beginners. We hope to include a show list for 2022 as a way to promote our local community as things open up again. Even if you are not from Virginia, please check our directory out. If you have suggestions, ideas, or comments let us know!

On top of the broader monthly speaker series, the Virginia Mineral Project hosts local lectures about Virginia mineralogy and mining history. This is a great opportunity to learn about a state whose mineral history has often been overlooked yet is full of incredible finds and stories. By the release of this newsletter, the VMP will have given a talk on the Herbb No. 2 Mine in Powhatan county which produced several record-breaking discoveries, including the largest gem topaz crystal (8.95lbs and ~11.5 inches) AND possibly the largest cassiterite in the United States.



FMVA's Educational Committee has also been hard at work developing an internship program with James Madison University. We are working on educational projects that will not only benefit the state but hopefully can be replicated and used by other FM chapters. We will keep the FM community informed on our progress. FMVA is currently developing a donation program for the support of its educational initiatives. Email us if you would like to learn more.



Finally, we are in process of updating our website in the next two months. We hope to have some exciting new resources to show off in the near future and plan to make our website “functional,” including research collections, databases, and mineral community news and events.

### **WORKING TOGETHER FOR THE FUTURE OF FRIENDS OF MINERALOGY**

We are proud of our memberships representation and engagement with the national FM chapter. Our Vice President, Alex Venzke was recently elected to the board and our member Matt McGill also resides on the board. Our President, Thomas Hale, is working with a team at FM National to help outreach and build new relationships with FM and regional affiliates. FMVA has been encouraging its members to look nationally and also participate in initiatives that support national on top of its local community.

The virtual world placed a new perspective on engaging with the international mineral community, where local chapters can participate nationally, share news and events with each other, and attend meetings on a wide variety of topics. FMVA stands by this virtual environment and will continue to promote its speaker series as a virtual and all-inclusive community event. We are working on ways to engage our members locally, but we realize there is so much that can be accomplished as an organization by staying in touch virtually and communicating after the pandemic.

Together we can accomplish great things and this virtual environment makes it easier than ever.

### **YOU ALL ROCK!**

FMVA would like to congratulate all of the new board members and leadership within National. We are excited to work with you and accomplish great things during your leadership!

One thing has been clear, the people we have met and worked with over this very short time have been the cornerstone to our success. The knowledge, passion, and teamwork exhibited during our toughest times has been immeasurable. We thank you for all the continued support and hope to continue this work building upon FM's core values and establishing a well-oiled chapter here in Virginia. As a board, we are proud of our team and local clubs who have stood by us and we cannot wait to see what the future has in store for us and for the national community at large.

Sincerely,

***The Friends of Mineralogy Virginia Chapter Inc. Leadership Board***

Thomas Hale, President ([virginiamineralproject@gmail.com](mailto:virginiamineralproject@gmail.com))

Alex Venzke, Vice-President ([alex.venzke27@gmail.com](mailto:alex.venzke27@gmail.com))

FMVA Email: [friendsofmineralogy.virginia@gmail.com](mailto:friendsofmineralogy.virginia@gmail.com)



## **NATIONAL MEMBERS “AT-LARGE”**

**Your Report could be here!**

**Would someone like to speak up for the “at-large”  
members?**

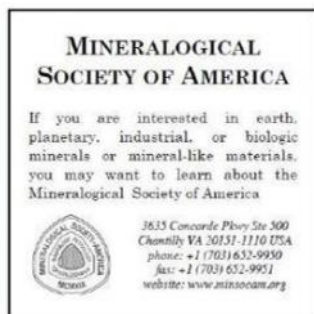
**Needs, wants, comments?**

## FM AFFILIATES



The Friends of Mineralogy is a long-time affiliate of The Mineralogical Record magazine. The magazine was founded in 1970 by John White, who was at that time a curator in the Mineral Sciences Department of the Smithsonian Institution. With the initial help of a financial backer, Arthur Montgomery, White succeeded in launching and bootstrapping the fledgling publication to the point where it was marginally self-sustaining. After seven years as editor and publisher, White stepped aside for a new Editor, Wendell Wilson.

Since then the Mineralogical Record has grown steadily in size, quality and prominence, thanks to the contributions of over 700 authors, photographers, artists, advertisers and donors. It has become a collective labor of love on the part of the entire mineralogical community worldwide. It is the only journal to have a new mineral species named in its honor (minrecordite), and it is the only journal to have received the Carnegie Mineralogical Award. Subscriptions, back issues, books and a variety of free databases are available online at [www.MineralogicalRecord.com](http://www.MineralogicalRecord.com).



Mineralogical Association of  
Canada



mindat.org



**Mineral News**  
*The Mineral Collector's Newsletter*