



MNCA Website dcmicrominerals.org
The Mineral Mite



Vol. 48 – No. 3

Washington D.C. – A Journal for Micromineralogists March 2015

March 25 Time: 7:30 p.m. – 10 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22206

Program: Zooming-In on Micro-Minerals

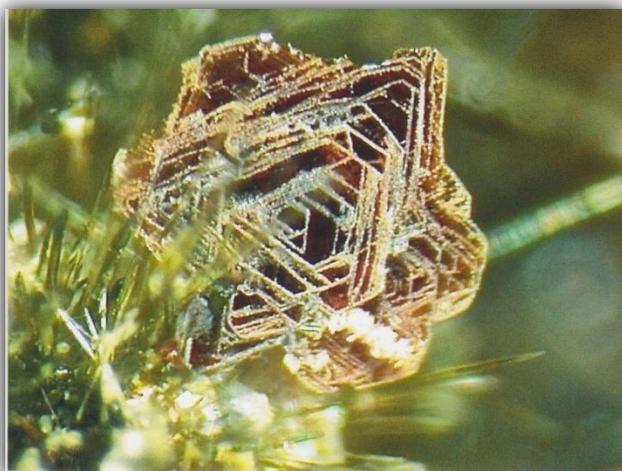
By Michael Pabst

Michael and Karen Pabst have collected micro-minerals for nearly 50 years. Because many micro-minerals are hard to see, and most people don't have stereomicroscopes, photomicrography is an important tool to share these small treasures with a wider audience. One of the delights of collecting micro-minerals is the discovery of beautiful crystals that are hiding on an unimpressive rock. To re-create that experience, Michael will show a series of pictures that start from a chunk of rock and then zoom-in on beautiful crystals.



Continued on page 2

Photo of the Month



President's Message:

By: Dave MacLean



We are demonstrating micromineralogy at the Gem Lapidary Mineral Society of Montgomery Co. GLMSMC show on Sat.-Sun. March 21-22 at the Montgomery County Fairgrounds in Rockville, MD. I thank the persons who volunteered to staff our table. However, we still need more volunteers especially for the Sunday 3-5pm slot. For some persons a microscope is an expensively, intimidating instrument. We might show people the wonders of microminerals accessible with a ten power loupe.

We still need mounted and unmounted micro minerals for the voice and silent auctions at our conference. Please bring them to our meeting Wed. March 25.

Our Atlantic Micromounters Conference is only about four weeks away on Friday evening and Saturday 10-11 April at the SpringHill Suites Marriott. We need help for setup after 4pm Friday and takedown Saturday evening. Please bring small carpets or doormats to hold down extension cords, so we do not trip over them. (Tape did not stick to the carpet.) We will have the freebie table. Please bring minerals which, you would like to share.

Pyrophanite Big Rock Quarry, Granite Mountain area, Little Rock, Pulaski County, Arkansas fov .6mm

Robert Rothenberg; photomicrographer

Previous Meeting Minutes: 2/25/15

By: George Reimherr, Secretary

President David MacLean opened the meeting at 8:00 p.m. Eleven members were present. The minutes for the previous month's meeting were approved, as printed in the Mineral Mite. The treasurer gave his report.

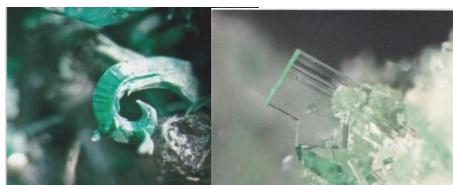


Old business -- This was taken up entirely with planning for our upcoming conference, and the role of our members in carrying out the various tasks. Topics discussed include the following: Setting up on Friday afternoon and early evening; refreshments. Saturday: Getting the coffee heated; Setting up the freebees table; Handling the silent auction, and, later, the live auction; Auctioneers and cashiers for the live auction; Two persons wanted to set out the lunches. Michael Pabst will take the mineral photos. Logan Babcock will handle technology support.

New business -- Members volunteered to demonstrate micromounting at the Montgomery mineral show on March 21 and 22, 2015. A motion was approved to confirm the authority of the club president to cancel our monthly meeting if this seems appropriate.

The business meeting ended at 8:36 p.m.

**Conference Request: April 10 - 11
Micromineral donations are needed
for the silent and live auctions.
(Mounted or unmounted welcome)
Bring your micromount donations to
our next meeting, or mail to:**



**Michael Pabst
270 Rachel Drive
Penn Laird, VA 22846**

Previous Program Reviewed 2/25/15

By: George Reimherr, Secretary

Foote Lithium Mine at Kings Mountain, Cleveland County, NC

Club member, David Fryauff discussed the Foote Lithium Mine at Kings Mountain, Cleveland County, North Carolina. This included the history (mining there was done from 1938 until 1998), and the minerals that were found there. David noted that lithium is the 33rd most common element in the earth's crust, but spodumene is the only lithium mineral in sufficient abundance for mining for lithium. David also showed photos of the mine dump site where he pounded rocks for minerals



Cloncurryite

By Michael Pabst, Treasurer

My obsession with the blue vanadyl ion, $(VO)^{2+}$, has been gratified by a new acquisition, Cloncurryite. I obtained the Cloncurryite specimen on our recent field trip to James Madison University. In the December 2014 *Mineral Mite*, I described a rare vanadium mineral, Nevadaite, where the essential role for vanadium is unclear. Nevadaite has the formula: $(Cu^{2+}, \square, Al, V^{3+})_6 Al_8 (PO_4)_8 F_8] (OH)_2 \cdot 22 H_2 O$, which features an unusual V^{3+} ion, in contrast to the V^{4+} in the vanadyl ion. The formula for Nevadaite must have vacancies to be charge balanced.

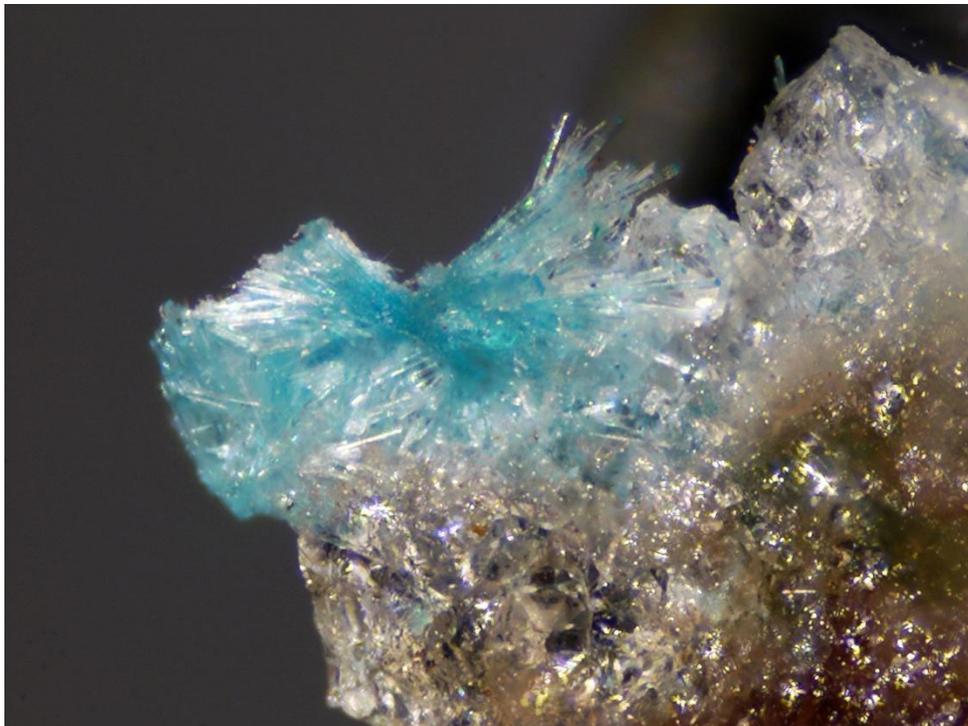
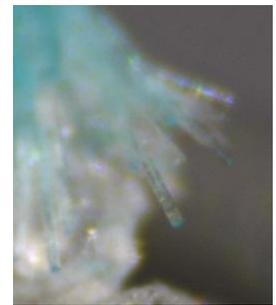
By contrast, my new mineral acquisition, Cloncurryite, has a nice straightforward vanadyl ion in its formula: $(Cu, VO) Al_2 (PO_4)_2 (F, OH)_2 \cdot 5 H_2 O$. Unlike the formula for Nevadaite, this formula for Cloncurryite is balanced. However, as with Nevadaite, perhaps vanadium is not truly essential. In the original reference describing Cloncurryite, the formula is given with Cu^{2+} at 56% versus $(VO)^{2+}$ at 44%. Therefore, copper wins, but the result is close to half and half, so I consider vanadium to be important, even if it is not "essential".



Cloncurryite is monoclinic prismatic $2/m$ ($\beta = 90.933^\circ$). I am tempted to round that off to orthorhombic, but that would be unscientific. Nevadaite is orthorhombic dipyramidal (mmm), and needs no rounding ($\beta = 90.000^\circ$). Anyway, the Cloncurryite crystals are too small to see the difference between monoclinic and orthorhombic. In fact, the whole specimen is nearly too small to see. It is a sliver of a sample at just 2 mm x 1 mm x ~0.2 mm thick. The sample arrived loose in a gelatin capsule. It was barely visible. So we are fortunate that I did not lose it, and that I managed to glue it to a tiny cork in a micromount box so that it could be photographed.

Cloncurryite from the Great Australia Mine, Cloncurry, Queensland, Australia.

Enlarged photo: field of view = 1 mm. Small photo: field of view = 0.3 mm. Enlarged was made by stacking 70 images with CombineZP. Small view is a single image in which a few crystals are almost in focus. The crystals show an interesting fiber optic effect, appearing nearly colorless along the length and blue at the tip.



Cloncurryite continued

Cloncurryite and Nevadaite are similar in many respects, including chemical composition and three-dimensional structure. However, in the reference given above, the authors explicitly compare the two minerals, and exchange notes with the authors of the earlier Nevadaite paper. They conclude that Cloncurryite and Nevadaite are indeed different. The key differences are that Cloncurryite is monoclinic (shown by x-ray diffraction) and that Cloncurryite contains the $(VO)^{2+}$ ion (shown by Raman spectroscopy), whereas Nevadaite is orthorhombic and contains V^{3+} .

If, like me, you are unsatisfied with the quality of my Cloncurryite specimen and my photographs, there are better specimens and better pictures available. The cover of the *Australian Journal of Mineralogy*, Volume 13, Number 1, June 2007, features a beautiful specimen of Cloncurryite. I will bring the issue to our next meeting. On Mindat, try this photo of Cloncurryite: www.mindat.org/photo-112126.html; and this photo of Nevadaite: www.mindat.org/photo-249007.html

The Cloncurryite is the smallest specimen in my collection. It is too tiny to reveal good crystal shapes in my photos, but I believe that it does have good crystals, if only I could magnify them enough. Despite its tiny size, Cloncurryite has a nice blue color, due to the combination of Cu^{2+} and $(VO)^{2+}$. The fiber optic effect shown in my photo might explain why Cloncurryite appears almost colorless at times, as noted by the authors. I am lucky to have stumbled onto specimens of Cloncurryite and Nevadaite in recent months, allowing me to pontificate on the beauty of the vanadyl ion and of vanadium minerals in general. [Pabst means pope in German, and popes pontificate.]

Reference: Colchester, D.M., Leverett, P., McKinnon, A.R., Sharpe, J.L., Williams, P.A., Hibbs, D.E., Turner, P. & Hoppe, V.H. (2007): Cloncurryite, $Cu_{0.56}(VO)_{0.44}Al_2(PO_4)_2(F,OH)_2 \cdot 5H_2O$, a new mineral from the Great Australia mine, Cloncurry, Queensland, Australia, and its relationship to Nevadaite. *Australian Journal of Mineralogy*, 13(1), 5-13.

About the Author: Michael Pabst

Michael and Karen Pabst have collected micro-minerals for nearly 50 years. Michael has a special interest in minerals that are aesthetic and that contain rare earth elements and radioactive elements.



Michael Pabst is a retired professor of biochemistry at the University of Colorado in Denver, and at the University of Tennessee in Memphis. His research centered upon improving innate resistance to infection, to confront the problem that so many microbes have become antibiotic-resistant.

Photomicrography by Michael Pabst



Michael's velvet lined sewer pipe, bellows.

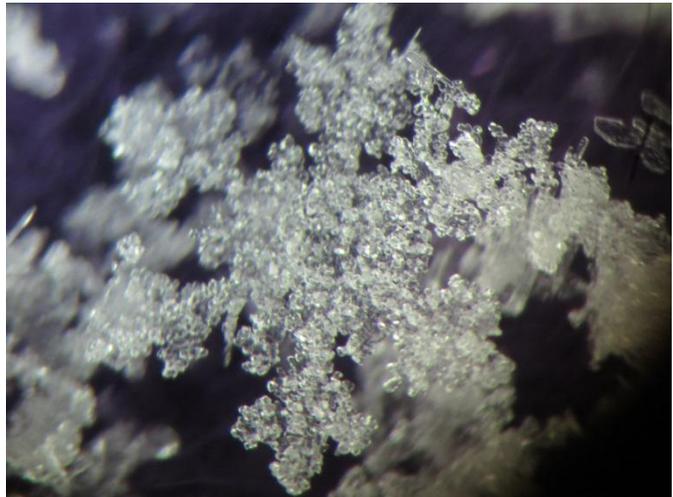
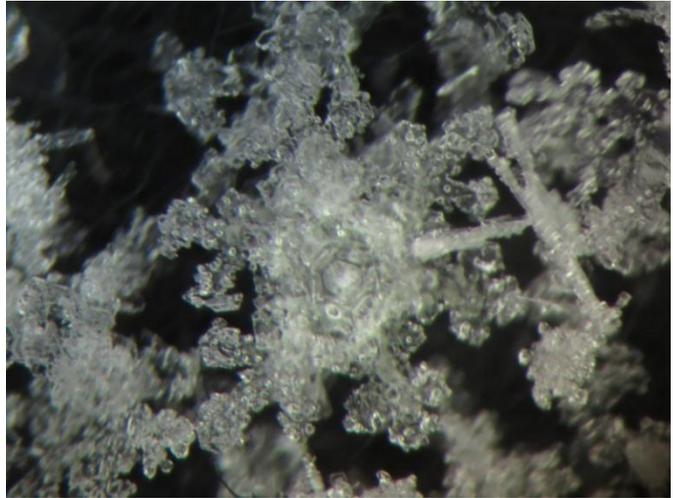
Photo by Kathy Hrechka

Snow Storm Thor's Snow Crystals

By: Snow Crystal Collector, Katharine Hrechka

On March 5, while anticipating eight inches of snow in Alexandria, VA from Snow Storm Thor, I was determined to photograph snowflakes through my microscope. First, I set up my Olympus microscope outdoors, on the front porch. Then I created portable 5"x 5" snow collecting stages, topped with black or purple felt panels. My digital camera is a Canon Power Shot ELPH 110 HS, 16.1 mega pixels. I simply held it up to the microscope's left eye piece, with a coupling to block out light between the microscope and camera.

The temperature at noon was 37 degrees Fahrenheit. I knew it was probably too warm for great crystal definition, but I had to get started, as the snow was falling fast. My portable stages were rapidly collecting snow. My microscope was set between 25-30 power magnifications, as the crystals were tiny. My hands were chilled, while constantly adjusting the microscope and camera, above freshly collected snow crystals. I was in awe at my camera screen, for crystal needles and hexagonal capped columns landed on my stages as my first subjects. Interestingly, snow crystals melted before my eyes, after I snapped my first photos.



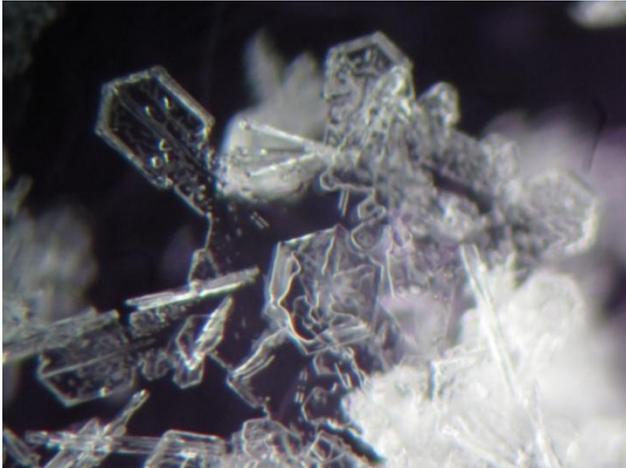
All 4 Snow Crystal Photomicrographs fov 30X at 37 Degrees Fahrenheit, experiencing melt.



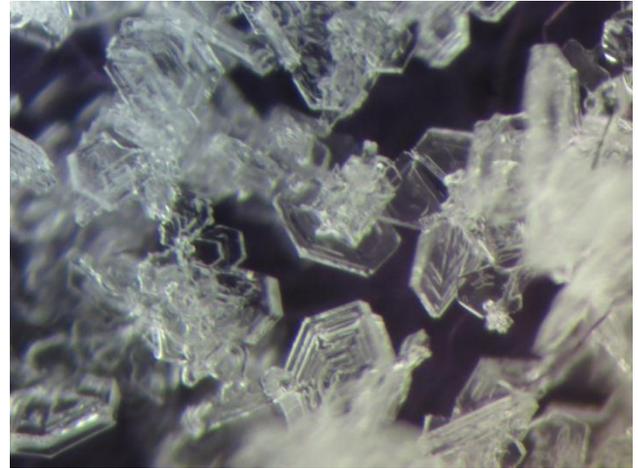
Snow Crystals continued

When the temperature dropped to 34 degrees, the larger, hexagonal snow crystals began appearing. At times, I turned my microscope light off to reduce glare on the ice. Many forms of ice crystals were interconnected, while landing on my stages. I had much work to do, as the snow and temperature continued to drop. While freezing outdoors myself, I continued until 4 pm when the temperature finally reached a freezing 32 degrees. While awaiting the perfect crystals, the snow abruptly stopped.

I was grateful that I began my snow crystal photography early in the day, even though the temperature was above freezing. I am waiting, and ready for the next snow crystal storm.



Photomicrographer, Kathy Hrechka



All 4 Snow Crystal Photomicrographs fov 30X at 37 Degrees Fahrenheit, frozen hexagons.



Speed Graphic Camera Captures Snow Crystals

By Richard Cline Geologist - Smithsonian volunteer

The speed graphic camera was the standard portrait camera for many years. The portrait version was often formatted at 4 by 6 inches. One in the following pictures is the 2 X 3 version of the same camera. This one was smaller and easier to handle away from the portrait studio, particularly when it was folded into its case. This camera belonged to Arvad J. Cline of Ft. Collins, Colorado. I inherited it when he died in 1980.

Figure 1 shows the camera closed with the plate film holder mount on the back. There are 3 viewfinders. The optical one is mounted on the right top of the frame. There is a metal pop up device, partly visible, hinged at the back top of the frame which flips up for viewing through a rectangular opening in the metal tab. The sheet film mount has a flip up door used to view the frame through the lens. The image through this view appears upside down. The view plate needed to be shaded, as photographers crouched behind their cameras with a black cloth over their head. A wind key on the right side is used to roll the film.



The device on the right side, protected by a metal frame, is an optical range finder. The view port at the top is the eyepiece. It has a metal lever that attaches to the bellows slide when the camera lens is open and extended.

Figure #1

Figure 2 shows the camera with the doors open. The bellows with the lens is retracted inside the frame. The front door flops down and provides a metal frame that engages slotted slides that run along the ribs on either side of the of the frame. Metal stops, part way along the frame can be seen about a quarter of the way along the tracks.

These stops set the distance the lens is allowed to slide on to the frame. Once that is set, wheels on the door can move the lens and bellows farther out for focusing. The open door at the back is the access for the lens view port, which provides it with partial shade. You can note the two lenses at the top and bottom of the range finder, which provide the parallax needed to determine distance.

Figure #2

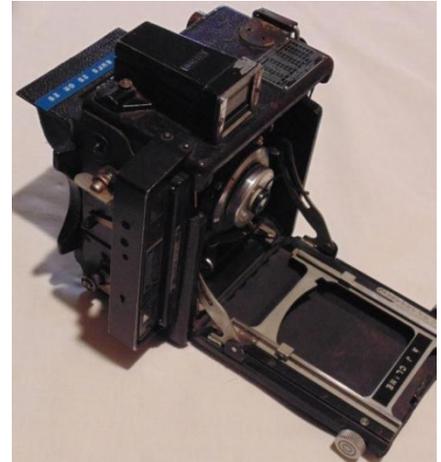


Figure 3 shows the camera with the bellows and lens extended onto the metal frame. A plate film holder is partly inserted into the mount with one of the protective slides. The slide is removed when the holder is in place to expose the film to the lens. The film is replaced once it is exposed, to protect the film until it is developed.

Figure #3

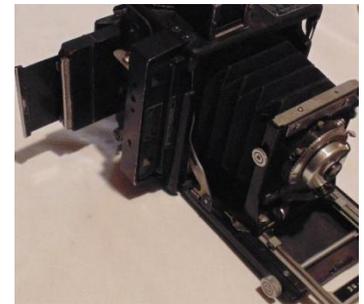


Figure 4 shows the camera with the bellows and frame extended part way. The range finder lever can be seen just inside of the front door brace on the left. It has a rivet that acts as a hinge for a metal extension that contacts a metal tab on the bellows frame. It can be seen crossing just behind the top of the cable release. You can also see the metal viewfinder folded down next to the optical viewfinder. The metal one probably takes a bit of practice. The two items in front of the camera are film holders. The one on the left is for the 2 X 3 flat film sheets. The right angle wires can be twisted to prevent inadvertent removal of the cover slide when there is film in the holder. The one in front is for roll film and attaches at the back in place of the sheet film mount.

Speed Graphic Camera continued

Figure #4



Figure 5 is a front view of the Ektar lens. The Kodak Ektar lens was considered among the best at the time. The controls for the lens are interesting.

Figure #5



The knob at the top next to the “D” is the cocking knob. It must be pushed to the right to cock the shutter. The shutter release is the lever just above the cable release attaching point. The black figures at the bottom are the aperture settings. The settings range from f 4.5 to f 32. The shutter speed is set at the top with the black and red arrows. The range is from 1/400 second to 1/25 second in black and 1/10 second to 1 second with a B (bulb—stays open as long as the release is held down) and T (time—opens with shutter release and closes when release is pushed again) setting in red. This lens screws into a plate and can be replaced by another lens. The plate is removable by sliding the metal SPEED GRAPHIC label above the lens to the right. This allows the label piece and the lens mounting plate to be lifted out.

I have an older brass mounted lens (1910 Figure 6) that will screw into the same threads. In 1910 Kodak apparently thought that ball bearings in lenses made them sell better. The glass lens in this arrangement is behind the aperture so you don’t see it in the picture. The aperture setting is simply numbered at the bottom.

Apparently this was made before the standard f stops were introduced. The shutter speeds are at the top 1/100th to 1/25th second with B and T settings.

Figure # 6



Biography of Richard Cline: He was born and raised in central New York, and graduated from Cornell in 1962 with a BA in Agriculture. He served in the US Navy 1962-1967, as a naval aviator, flying helicopters. In 1970 he obtained his Master’s degree in Soils at North Dakota State University. In 1974 he received his Doctorate degree in Soils from Washington State University.

Richard worked for the US Forest Service, 1974-2007, as a soil scientist (National Forest System until 1986, then USFS Research until retirement).

Speed Graphic Camera continued

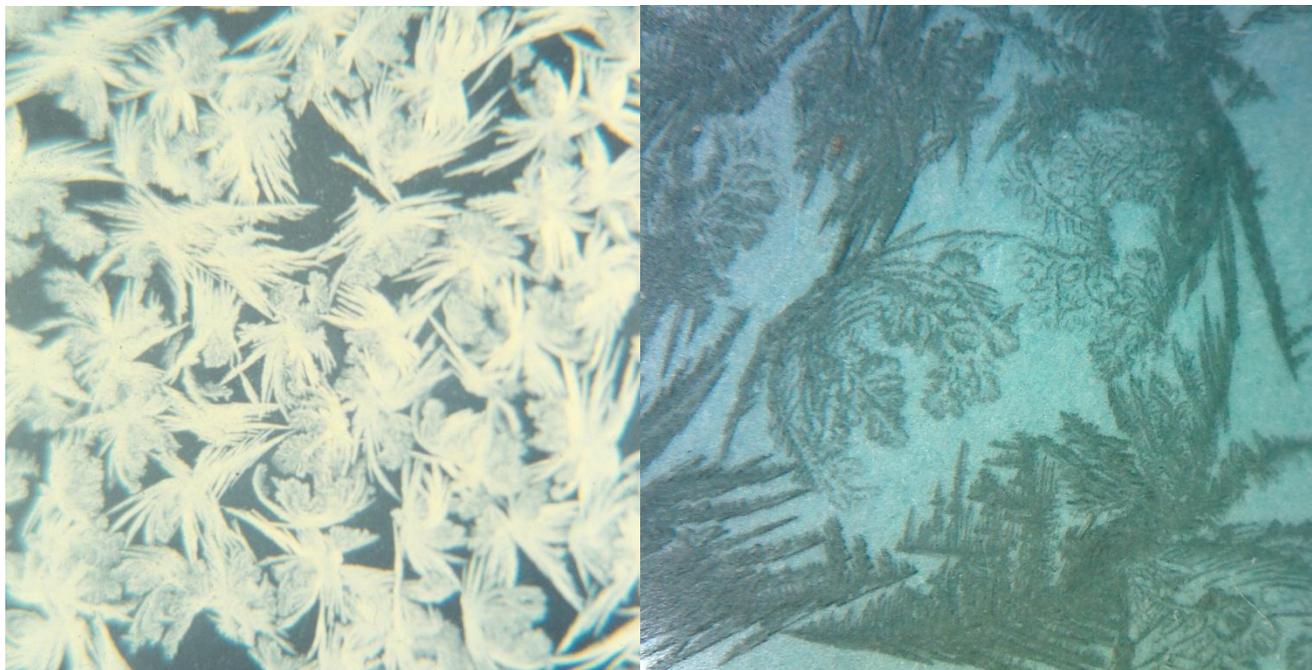
Richard has volunteered at the Smithsonian Museum of Natural History since;

- *April 2007-January 2008 Office of Exhibits
- *2008-10 Soils exhibit "Dig It Secrets of Soils"
- *2010-present Hall Of Human Origins
- *2011-present behind the scenes for Kay Behrensmeyer and in the Fossilab

Snow Crystals

Photos below: Scans of the whole 2X3 sheet negatives taken with the Speed Graphic through my sliding glass door in Missoula, Montana during a winter cold snap of 1980.

Photography by Richard Cline



Liroconite – A Fortunate Find

By Dave Hennessey

I recently had the good fortune to acquire a liroconite micromount from an old collection, and the extra good fortune to have Mike Pabst apply his photographic expertise to capture several images of the specimen. The photos tell a lot of the story of why finding this old micromount was such a thrill. As you can see from Mike's photos, liroconite is a beautiful bright blue mineral and this particular liroconite shows good crystal form and considerable transparency, making it an especially image-worthy example. The rest of the story is a little background and history on liroconite.

Liroconite is a Hydrated Copper Aluminum Arsenate Hydroxide with the formula $Cu_2Al(AsO_4)(OH)_4 \cdot 4H_2O$. Crystals are monoclinic and form from the oxidation of primary copper ores. Worldwide liroconite occurrences are few. The old copper mines in Cornwall and Devon, England are the only sites that produced significant specimens.

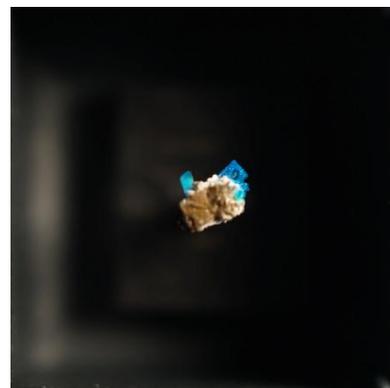
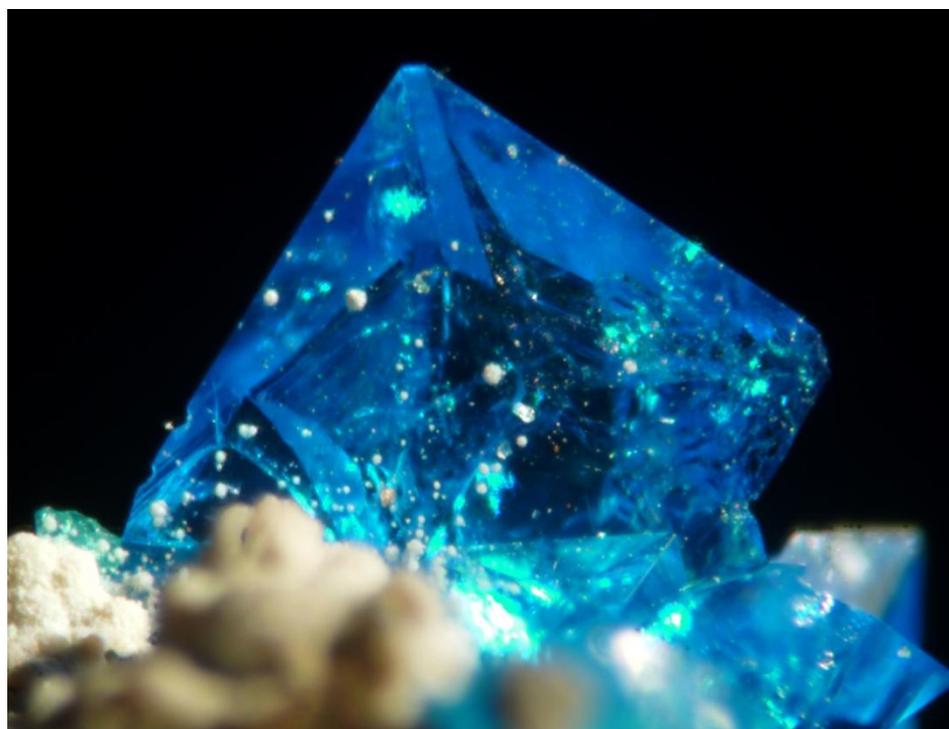


These mines have not been in production since the mid-1800s. This particular specimen is from the Wheal Gorland Mine which was located northeast of St. Day in Cornwall and was worked primarily for copper and tin. The Wheal Gorland Mine was abandoned in 1864, indicating this specimen was mined more than 150 years ago. The Wheal Gorland Mine is noted for the wide variety of uncommon secondary copper minerals found there as a result of supergene enrichment. It is the type locality for liroconite and several other minerals – chenevixite, clinoclase, and cornwallite.

It is likely that this liroconite has actually passed through collector hands for more than 200 years. There is a report titled "A Description of the Red Oxyd of Copper" (the name for cuprite at that time) published in the "Transactions of the Geological Society of London" in 1811, that makes mention of fine varieties of arseniate of copper (the name for liroconite at that time) that had previously been found. The 1811 reports cites as its source an earlier published paper by the Count de Bournon (for whom bournonite is named), so pre-1811 for this fine liroconite specimen seems likely. And in another 200 years, hopefully the superior color, clarity and form of this particular liroconite will be pleasing another generation of micromounters as much as it pleases us today.

Micromounted in 1"x1" box

Liroconite



Photomicrographer, Michael Pabst uses a stereomicroscope (stacking 5 images), and a picture with his bellows and Luminar lens (stacking 35 images).

Micromineralogists of the National Capital Area, Inc.



American Federation of
Mineralogical Societies

AFMS)
www.amfed.org

American Federation Mineralogical Societies Show October 23-25, 2015 Austin, Texas

Purpose of the AFMS: To promote popular interest and education in the various Earth Sciences, and in particular the subjects of Geology, Mineralogy, Paleontology, Lapidary and other related subjects, and to sponsor and provide means of coordinating the work and efforts of all persons and groups interested therein; to sponsor and encourage the formation and international development of Societies and Regional Federations and by and through such means to strive toward greater international good will and fellowship.

Wildacres; 2015 EFMLS Workshops

By Steve Weinberger, Wildacres Committee Chair

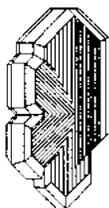
May 18 – 24: Bob Jones, Sr. Editor for Rock & Gem Magazine will be with us in spring.

August 24-30: Denise Nelson, jewelry appraiser and designer will be our fall speaker.
Little Switzerland, NC;
Cost \$390 plus supplies

Check EFMLS website
Tab Wildacres for
complete details.



April 23-26: 42nd Rochester
Mineralogical Symposium Radisson
Hotel Rochester Airport 175 Jefferson
Road Rochester, NY 14623



Eastern Federation of
Mineralogical and
Lapidary Societies

(EFMLS)
www.amfed.org/efmls

Communication and Involvement
Are the Keys to Our Success!

Geology Events:

March

14: 39th Annual MICROMOUNT SHOW -
Rock & Mineral Club of Lower Bucks County,
Fairless Hills, PA Minerals under the microscope &
mineral sales. Northminster Presbyterian Church,
140 Trenton Road. 10 am- 4 pm
Information: Dick Tillett (215) 757-1877

**14-15: 26th Annual Clifton/North Jersey Gem &
Mineral Show; North Jersey Mineral Society**
775 Valley Road, Clifton, NJ Sat 10-6, Sun 10-4

15: 2nd Northern Virginia Maker Faire NOVA
Labs and Fairfax County Schools; Major STEM
event; advance tickets \$15 adults, \$5 students at
door \$20 adults, \$8 students; Reston, VA;
<http://makerfairenova.com/>

**21-22: 51st Annual Gem, Lapidary & Mineral
Show; Gem, Lapidary & Mineral Society of
Montgomery County; Montgomery Co.**
Fairgrounds, Gaithersburg MD; Sat 10-6, Sun 11-5;
\$6 for 12 & older, Free children, Scouts in uniform

23: NVMC Meeting Mineral Auction 7:30 pm

**25: MNCA Meeting - Photomicrography by
Michael Pabst 7:45 pm** Long Branch Nature Center

27-29: EFMLS Show & Convention Hickory, NC
Convention Center, 1960 13th Ave. Dr. SE

April

**10-11: 42nd Annual Atlantic Micromounters
Conference; Micromineralogists of the National
Capital Area; Springhill Suites Alexandria
Marriott, 6065 Richmond Hwy, Alexandria, VA.**
Registration at www.dcmicrominerals.org/.

Micromineralogists of the National Capital Area, Inc.

42st Annual Atlantic Micromounters' Conference April 10 – 11, 2015

Presented by
**The Micromineralogists of the
National Capital Area, Inc.**



**Our featured speaker
Robert Rothenberg;
Micromounter Extraordinaire
from Oneonta, New York.**

Robert has collected micros since 1964, and has been a photomicrographer for the past ten years.

2015; Special recognition goes to Barbara Sky, and charter member Cynthia Payne.

Location: Springhill Suites by Marriott, Alexandria.
6065 Richmond Hwy, Alexandria, VA 22303
Phone (571) 481-4441

Registration:
Kathy Hrechka, MNCA Conference Chair
kshrechka@msn.com

Details are posted on our club website:
Tab Events - Conference
www.dcmicrominerals.org

**Micro donations are needed for the
"silent" and "live auction".**

**Bring your micromount donations to
our next meeting, or mail to:
Michael Pabst
270 Rachel Drive
Penn Laird, VA 22846**



Micromineralogists of the National Capital Area
Meeting: The 4th Wed. of each month 7:30 -10 p.m.
Long Branch Nature Center, (Except Easter & Dec.)
625 S. Carlin Springs Road, Arlington VA 22204

MNCA Purpose: To promote, educate and encourage interest in geology, mineralogy, and related sciences.

Pres: Dave MacLean, dbmaclean@maclean-fogg.com
Vice Pres: David Fryauff, fryauffd@yahoo.com
Secretary: George Reimherr, greim@cox.net
Treasurer: Michael Pabst, Michaeljpabst@yahoo.com
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Conference: Kathy Hrechka, kshrechka@msn.com

The society is a member of:

* Eastern Federation of Mineralogical and Lapidary Societies
(EFMLS) www.amfed.org/efmls

* American Federation of Mineralogical Societies
(AFMS) www.amfed.org Affiliation

**Dues: MNCA Membership Dues for 2015
\$15 (single) or \$20 (family)**

**Payable to MNCA - Michael Pabst, Treasurer
270 Rachel Drive
Penn Laird, VA 22846**



Editor's Note:

by Kathy Hrechka
Send your articles and photos to your editor.

**Club Article Deadline is 10th of each month.
The Mineral Mite will be emailed on 15th.
No newsletter July/August**



**AFMS Editor's Award
First Place 2011 - Mini Bulletins**



**March
Articles:**
*Michael Pabst
*Kathy Hrechka
*Dave Hennessey
*Richard Cline

