



MNCA Website dcmicrominerals.org
The Mineral Mite



Vol. 47 – No. 10

Washington D.C. – A Journal for Micromineralogists December 2014

Holiday Party: December 15 Time: 6:30 p.m. – 10 p.m.
Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22204



Holiday Party begins at 6:30 p.m.

You are invited to our Member Appreciation Holiday Party. We will be honoring each micromounter who volunteered at the GMU show. NVMC club funds provide Red Hot & blue. MNCA funds provide beverages. What can you bring? Sign up at Volunteer Spot. ... <http://vols.pt/7JBb7Q>.....

Micromounter's Gift Exchange

Bring a wrapped (labeled) Micro, to be placed under the Crystallography Tree, which was originally constructed years ago



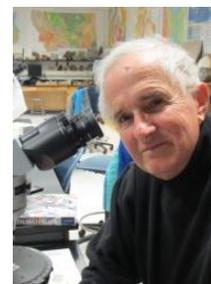
by
Cynthia Payne.



President's Message:

By: Dave MacLean

2014 was good year with interesting meetings, several field trips, and our spring conference at a new and better place. Many thanks to all who made these successes happen.



Judging from the NVMC show there was a steady stream of interest in the little things. How can we fan those sparks of interest into becoming micromineralogists?

I wish all of us a "Happy Hanukah" and a "Merry Christmas". At these holiday times we are called on to notice and serve persons who are less fortunate. Let us not forget and ignore the needs of the less fortunate during the coming winter and spring. Our faith's command "What is required of us but to do justice and love mercy and walk humbly with God" Micah 6: 6-8

Photo of the Month

Christmas Card from Paul & Jennie Smith
Smectite on Pyrite wire Sugar Grove, WV 1990



Previous Meeting Minutes: 11/19/14

By: George Reimherr, Secretary

President Dave MacLean opened the meeting at 8:00 p.m. Twelve members attended the meeting. The minutes for the previous meeting on 10/22/14 were approved, as printed in the Mineral Mite. The treasurer gave his report.



Old business -- Disposal of the unsold micromounts from the Cynthia Payne collection was discussed. Recall, from the meeting minutes of 9/24/14, that 241 specimens were bought by the members, which left 537 micromount specimens that remained unsold. The issue was not resolved.

New business -- None.

Miscellaneous -- Three of our members attended the multiclub field trip to the Allegany Aggregated Quarry in Flintstone, MD, on last November 11th. They found some calcite crystals, and some small fluorites that were embedded in the calcite. Pictures were taken of the calcites and the quarry walls, and were shown to the members. On a historical note, we had members who attended the Montgomery club's field trip to that quarry on 5/13/05. Minerals found on that field trip included calcite and celestine crystals, and massive, yellow sulfur. The business meeting ended about 8:38 p.m.

Previous Program Reviewed 11/19/14

By: George Reimherr, Secretary

The program for the evening had Dave Fryauff discussing and showing photographs relating to the Rhein Property of Amity, Orange County, New York, including its geology, mining history, and mineralogy.



2015 MNCA Officer Elections December 15

President – Dave MacLean *VOTE For*
VP – Dave Fryauff
Treasurer – Michael Pabst
Secretary – George Reimherr

“Micromount Corner” GMU Show

By Kathy Hrechka, Editor

Our “Micromount Corner” was extremely busy during the Northern Virginia Mineral Club show on November 22-23 at George Mason University. Logan Babcock attended to the many students who admired the tiny minerals under our microscopes. David Fryauff set up his Dino-light, attached to a laptop for screen viewing.



Nevadaite

By Michael Pabst, Treasurer

At the recent Shenandoah Valley Gem and Mineral Show in Fishersville, Virginia, I bought an unusual vanadium mineral, Nevadaite, from Excalibur Minerals, which is based in Charlottesville, VA.



Nevadaite is a relatively new mineral, first described in 2004 in the following paper: Cooper MA, Hawthorne FC, Roberts AC, Foord EE, Erd RC, Evans HT Jr, Jensen MC (2004) Nevadaite, $(\text{Cu}^{2+}, \square, \text{Al}, \text{V}^{3+})_6[\text{Al}_8(\text{PO}_4)_8\text{F}_8](\text{OH})_2(\text{H}_2\text{O})_{22}$, a new phosphate mineral species from the Gold Quarry mine, Carlin, Eureka County, Nevada: Description and crystal structure. *Canadian Mineralogist*: **42**(3): 741-752.

As the paper states, Nevadaite is a (Copper and Aluminum and Vanadium) Aluminum Phosphate Fluoride, $(\text{Cu}^{2+}, \text{Al}^{3+}, \text{V}^{3+})_6\text{Al}_8(\text{PO}_4)_8\text{F}_8(\text{OH})_2 \cdot 22\text{H}_2\text{O}$, according to the formula in Mindat. The unusual valence state of 3+ for vanadium was determined by the crystal structure analysis, according to the paper. Unlike the vanadium minerals featured in my previous two articles, Cavansite and Sincosite, the vanadium in Nevadaite does not appear to be in the form of the intensely colored blue or green vanadyl ion, which contains vanadium 4+. Here perhaps the color is mainly due to copper.

Nevadaite is in the orthorhombic crystal system. There seems to be some confusion: Mindat (www.mindat.org) says it is *mmm*, which is dipyramidal, MineralienAtlas (www.mineralienatlas.de) says it is *mm2*, which is pyramidal hemimorphic, and WebMineral (www.webmineral.com) says it is *222*, which is disphenoidal (no mirror symmetry). If Nevadaite were *mm2*, it would be hemimorphic like Hemimorphite or Senegalite (two minerals that appeared in recent Photos of the Month). X-ray crystallography in the paper describing Nevadaite, cited above, says space group $P2_1mn$, which probably explains everything, if I knew what it meant! The crystals are too small to determine whether or not they are hemimorphic or symmetrical by visual inspection.

As far as I can see, the crystals appear to be rectangular prisms in habit, with maximum length <0.2 mm; and they are at least 10 times longer than they are wide.

Nevadaite is said to be pale green or turquoise. As the pictures below show, my specimen is definitely turquoise in color (“turquoise”, as in Bishop Mine turquoise crystals, not faux turquoise resin beads). The type locality for Nevadaite is the Gold Quarry Mine, Carlin, Eureka County, Nevada, although it was also reported in Kyrgyzstan in 2009. As is typical for the Nevada locality, my specimen also features Fluellite, which is sometimes colorless or purple or yellow. Fluellite is aluminum phosphate fluoride, $\text{Al}_2(\text{PO}_4)\text{F}_2(\text{OH}) \cdot 7\text{H}_2\text{O}$. Sometimes the Nevadaite is encased in Fluellite. You can see additional photos of Nevadaite on Mindat. I particularly like the pictures of the specimens with the Mindat ID numbers: minID 098-C04 and minID F0G-7C0 and minID MUQ-MVE.

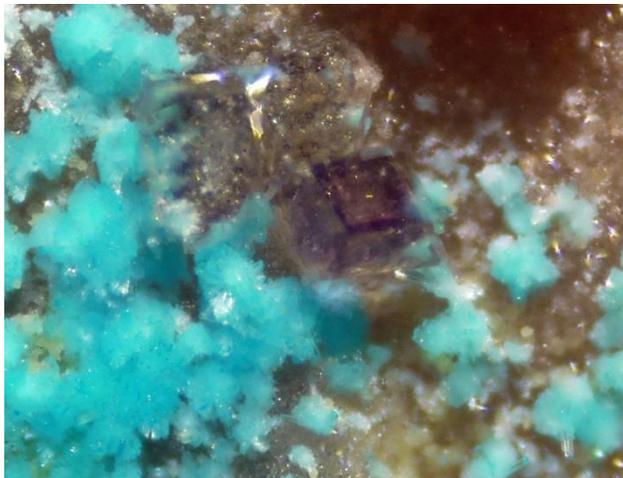
Photomicrography by Michael Pabst



Nevadaite (blue) and Fluellite (purple), Gold Quarry Mine, Carlin, Eureka County, NV. Field of view 70 mm



Nevadaite (blue) and Fluellite (purple-yellow). Gold Quarry Mine, Carlin, Eureka County, NV. Field of view 4 mm. Photos taken through my stereomicroscope. Four photos stacked with CombineZP.

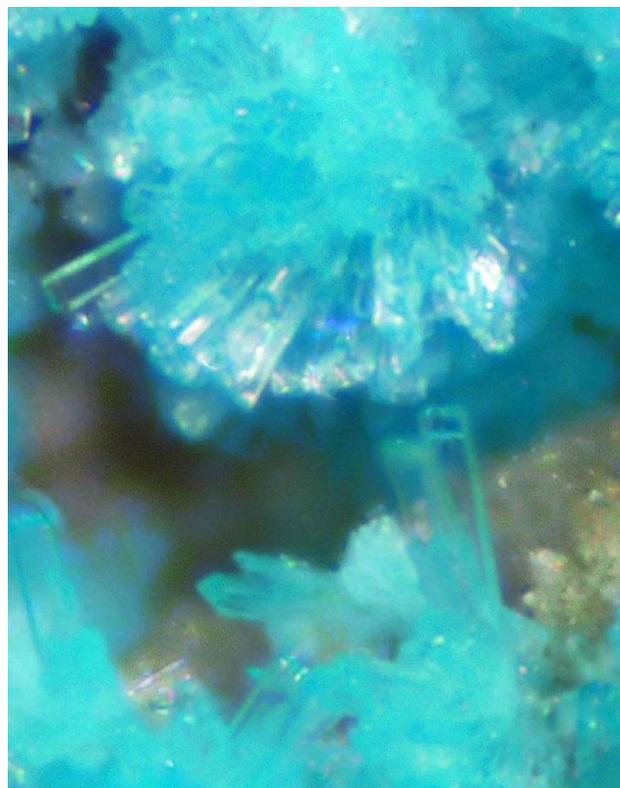


Nevadaite (blue) and Fluellite (one colorless crystal that is nearly invisible in the photo, and one purple crystal). Gold Quarry Mine, Carlin, NV. Field of view 1.5 mm. Photos taken through bellows with 40 mm Luminar lens. Eight photos stacked with CombineZP.



Close-up of **Nevadaite** from Gold Quarry Mine, NV. Field of view 1 mm. Photos taken through bellows with Luminar lens. Six photos stacked with CombineZP.

The role of vanadium in Nevadaite remains unclear, at least to me. Chemical analysis of the mineral says that vanadium is present at 4.24% by weight, but does vanadium perform an essential role? Does the vanadium just happen to be present, whereas, in theory, Nevadaite could exist with just aluminum and copper?



Enlargement of a section of the photo on left. Fov 0.3 mm.

The simplified formula given for the mineral's composition in Mindat does not appear to have balanced charges. There are in fact vacancies, represented by \square in the formula as it was written in the original article. The paper says that there are three distinct metal sites: M(1), M(2), and M(3). The full formula could be written as: $M^{(1)}(Cu^{2+}, \square)_2 M^{(2)}(\square, Cu^{2+}, V^{3+})_2 M^{(3)}(Al^{3+}, V^{3+}, Cu^{2+})_2 (OH, F)_2 (H_2O)_{22} [Al_8(PO_4)_8F_8]$. In the crystal structure, adjacent M(1) and M(2) sites cannot be occupied simultaneously, so half of the metal ion sites in the first two parentheses have to be vacant. So some parts of the structure would not contain vanadium at all. In fact, the last sentence of the paper states that $Cu^{2+}_2 \square_2 Al_2 (OH)_2 (H_2O)_{22} [Al_8(PO_4)_8F_8]$ is the end-member composition of Nevadaite. This formula contains no vanadium at all (but still lacks charge balance). Harrumph! I paid for a genuine vanadium mineral, and I am not sure that I got one. (However, Nevadaite is pretty!)

You can download the original paper by Cooper *et al.* from ruff.info, which is the Raman Spectrum project website. Please read the paper carefully, analyze the colorful figures, and then explain it to me!

Field Trip Write up, Flintstone Quarry, Allegany County, Maryland 11/11/14

By David Fryauff, Vice president

About fifteen members from combined EFMLS clubs in MD, DC, & VA made it out to the Flintstone quarry, Flintstone, Allegany Co., MD on Veteran's Day, November 11, 2014. Thanks go to Jonathan Harris, fieldtrip chairman of the GLMS-MC for setting this up and inviting other EFMLS clubs to participate. Driving time was about 2 hours to cover the approximately 100 miles from Germantown to the site. It was a beautiful day to appreciate the drive west into the Maryland highlands. Veteran's Day was selected as the field trip day because it was a regular work day for the quarry and the General Manager, Mr. J. Robert Smith, wanted to be present to give us a safety briefing and oversee our activities.



The Flintstone Quarry is owned and operated by Allegany Aggregates, Inc., a company based in Cumberland, MD that operates several other quarries in western Maryland & eastern West Virginia. All of the Allegany Aggregate Inc. operations quarry limestone of the late Silurian Tonoloway formation. This thick (250 m) layer of sedimentary marine bedrock extends through parts of PA, MD, VA, and WV. The well-known National Limestone Quarry at Mount Pleasant Mills, PA, is also digging into the Tonoloway Formation, and a variety of well-preserved marine mollusk fossils are found there in addition to such minerals as wavellite, strontianite, fluorite, and calcite.

We learned that the Flintstone Quarry produces aggregate for use in road construction and road

maintenance, but their main product is a finer grained limestone powder that is blown into the flue gasses of coal fire power plants to reduce or “scrub” out the sulfur (SO₂). A great product that helps us breathe easier!

Interestingly, Mindat, the world's best, and most complete mineral and locality database, records a number of mines, quarries, and mineral sites in Allegany Co., MD, but it does not have any records for the Flintstone Quarry, or for any of the other Allegany Aggregate quarries. Collecting trips had been made to the Flintstone Quarry by EFMLS clubs during 2004 or 2005, and members who attended those trips recalled the pleasant surprise of finding bright yellow native sulfur in the calcite. Esteemed friend and mineralogist Fred Parker, who was previously a GLMS-MC member, apparently made a number of field trips to the Flintstone Quarry, and thought it was a pretty good collecting site. Maybe Fred wanted to keep the place unpublicized, as collectors often do when they find it especially interesting or productive.....

My personal experience, however, based on just a single morning's searching, was a bit less than I had anticipated. My eyes were acutely trained on anything with a hint of sulfur yellow, but all I saw was the ochre of limonite & goethite. The quarry rock that we had access to was fine-grained, hard, dark blue-gray limestone with frequently bright white calcite veins.



Micromineralogists of the National Capital Area, Inc.

In a short time we were finding seams with calcite crystals, and occasional pods of deep purple fluorite. The fluorite seemed always to be totally enclosed within the calcite and I found very few pockets where it had formed crystals. Pretty good quantity of calcite, especially out of the mud seems that intersected the wall in numerous places. Some fluorite pods in massive calcite but only cleavage fragments & no well-defined xls. Not sure if anyone found any good fluorite crystal(s). I broke a good bit of calcite looking for vugs where euhedral fluorite might/could occur, and found just a few small (TN & micro) pieces that showed partial true crystal faces and not just cleavages.

All of us, I believe experienced the same thing, finding the fluorite already fractured within the calcite, even when it was found in a space large enough to allow crystal growth. Calcite, although softer than fluorite, was frequently found as good crystals and some of the pieces I found were surprisingly clear. This Flintstone calcite has strong yellow-cream colored SW & LW ultraviolet fluorescence, even when it is covered with goethite fibers. I found these limonite-goethite fibers & metallic balls forming frequent inclusions in the clear calcite crystals. This was kind of interesting, but kind of ugly. I found some very gemmy, clear calcite xls.

The quarry manager mentioned that Strontianite had been found, but I don't think anyone saw any at Flintstone that morning. No fossils either. I believe there was pink dolomite and pyrite also associated with the calcite seams but I did not see or hear of crystals being found. One of our members found what he believes to be realgar, but this identification is "disputed". With more than a dozen pairs of sharp eyes and a wide range of collecting skills, I was hoping that collectively, we would come up with sufficient data to open a page in Mindat for the Flintstone quarry. The Allegany Aggregates Inc. President-General Manager told us that he is fully agreeable to our establishing a Mindat site for his quarry, and gave permission for photos to be taken and used for this purpose.

Although our Veteran's Day morning of collecting produced only a few modest specimens, I suspect that collectively we might have suitable material for some photographs. If Fred Parker--comfortable in New Mexico these days--really does have such regard for the minerals that can be found in the Flintstone Quarry, I am hoping that he can contribute to this effort—even if it is only based on his recollections. Although none of us saw any hint of sulfur that morning, I saw the specimen George Reimherr found a few years back and I was impressed. The Flintstone quarry apparently has a big waste rock dump across the street from their entrance that we did not see. That waste pile might actually be a more interesting place to rockhound & might be made available to us on weekends because it is not in the active quarry work zone. We will check into this for possible future field trips. In summary, it was a great day to be outdoors and rockhounding in western Maryland.



Micromineralogists of the National Capital Area, Inc.



American Federation of
Mineralogical Societies

AFMS)
www.amfed.org



Eastern Federation of
Mineralogical and
Lapidary Societies

(EFMLS)
www.amfed.org/efmls

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

Communication and Involvement
Are the Keys to Our Success!

AFMS Code of Ethics for Collecting

(Sampling from November AFMS newsletter)

*I will respect both private and public property and will do no collecting on privately owned land without the owner's permission.

*I will keep informed on all laws, regulations of rules governing collecting on public lands and will observe them.

*I will to the best of my ability, ascertain the boundary lines of property on which I plan to collect.

*I will report to my club or Federation officers, Bureau of Land management or other authorities, any deposit of petrified wood or other materials

Go to AFMS website for complete code of ethics.

Geology Events:

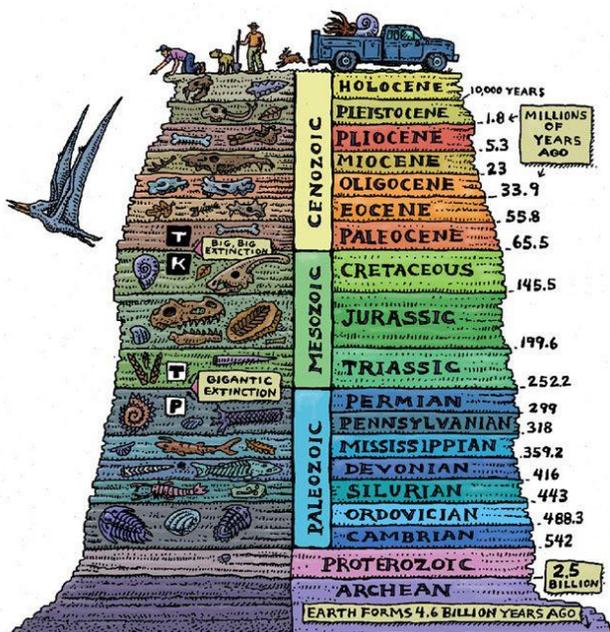
December:

15 - Holiday Party - 6:30 pm - 10 pm
Long Branch Nature Center, Arlington, VA
Combined with Northern Virginia Mineral Club

February 14, 2015 - "Field Trip to JMU" - 8:30am - 3pm Mineralogy Laboratories and Museum at James Madison University. Dr. Lance Kearns has again invited the MNCA Micromounters along with the NO VA Mineral Club and the DC Mineral Club to gather in his mineral lab.

Mark your calendar:

**Eastern Federation Mineralogical Society
Show & Convention, March 27-29, 2015
in Hickory, NC**



Wildacres; 2015 EFMLS Workshops
By Steve Weinberger, Wildacres Committee Chair

*Bob Jones, Sr. Editor for Rock & Gem Magazine will be with us in spring. May 18 -24, 2015.

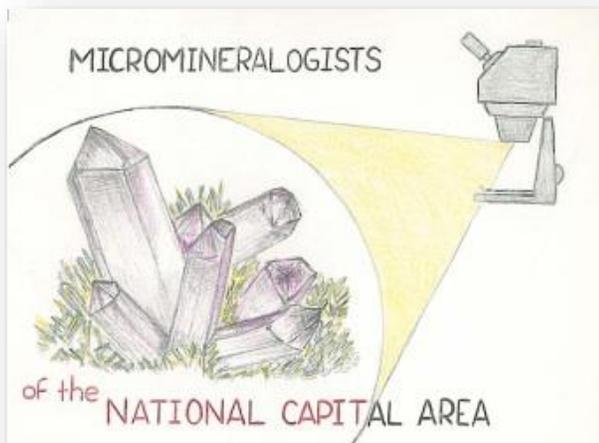
*Denise Nelson, jewelry appraiser and designer will be our fall speaker. No fall dates confirmed yet. Check EFMLS Wildacres website for details.



MNCA Weather alert: SNOW CONTINGENCY
If schools in Arlington County are to be cancelled, or let out early, because of weather on the day of our scheduled meeting, we will have no meeting. Call the MNCA President or a Board Member.

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 will be Robert Rothenberg 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

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.

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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

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 Notes:
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



December Articles:

*Michael Pabst
*Dave Fryauff
*Kathy Hrechka

