



THE NORTHERN VIRGINIA MINERAL CLUB INC



The Mineral Newsletter

Next meeting: November 2

Time: 7:30 p.m.

Dunn Loring Fire Station, 2148 Gallows Road, Dunn Loring, VA



Chalcanthite

Canaveille Mine, Pyrénées Orientales,
France

Source: Wikipedia. Photo: Didier Descouens.

Deadline for Submissions

November 20

Please submit to the [editor](#) by the 20th of the month. Submissions received later might go into a later newsletter.

Volume 66, No. 9

November 2026

Explore our [website](#)!

November Meeting Program:

Snow Crystal Microphotography

details on page 13

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Mineral of the Month Chalcantite

by Sue Marcus

When I decided to write about [chalcantite](#) as November's Mineral of the Month, I knew I needed to start by learning two things.

One was how to pronounce the mineral's name. Chalcantite is pronounced cal-CAN-thite; the first "h" is silent, so "ch" is pronounced like chalcocite or chalcopyrite, not like chabazite. The name chalcantite means copper flower (*chalkos* is Greek for copper and *anathos* is Greek for flower). In other words, chalcantite grows from copper-rich rocks.

Geologic Environment

Next, I needed to determine whether chalcantite is a natural mineral or at least whether it could form without human intervention. The necessary components of chalcantite are copper, sulfur, and water. The copper can come from fluids leaching naturally from copper deposits and occurrences; or it can be leached naturally after human activity has disturbed copper deposits, which is usually called postmining deposition. Both means of chalcantite formation are natural, even though one requires human intervention.

Chalcantite can also form when people get the chemicals (doesn't take much!) and literally grow their own mineral. So, like salt and a few other, mostly water-soluble minerals, whether chalcantite is considered a "natural" mineral becomes a bit subjective.

Most chalcantite forms when copper dissolves from mined ores and then crystallizes, so it is usually a post-mining occurrence. I asked Dr. Pete Modreski, a friend and USGS retiree, whether chalcantite can form without human intervention. Pete said yes, adding that it occurs that way in his home state of Colorado.

Extreme Solubility

Chalcantite is a vibrant, electric blue, so it readily attracts attention when specimens are for sale. Caution should be used because it is so soluble in water. I guess that if your specimen dissolved, you could try recrystallizing it.

I was reminded of the mineral's solubility when a group of rockhounds, led by John Weidner, were conducting mineral activities for kids. We had a piece of

Happy Thanksgiving!



Northern Virginia Mineral Club members:

Our next club meeting will be on **Monday, November 2, 7:30 p.m.**, at our usual meeting place, the Dunn Loring Fire Station. We will join our speaker, Kathy Hrechka, for dinner beforehand at 5:30 p.m. at:

BJ's Restaurant & Brewhouse
8027 Leesburg Pike, Suite 100, Vienna, VA
Phone: 703-356-7305

Reservations are under Jennifer Grimes, Vice President, NVMC. If you plan to attend, please email Jennifer at vicepresident@novamineral.org by noon on the day of the meeting.



Chalcantite from Wheal Jane, Cornwall, UK, showing the stalactitic postmining growth of the mineral.

Source: Mindat; photo: Steve Rust.

pumice, the rock that floats, and a bowl of water to prove it. You can imagine the rest of the story as the adventuresome kids put various specimens in the water—including chalcantite. The water turned blue and the bowl was quickly removed from further activities.

Chalcantite can be confused with linarite, which is also a copper sulphate. Unlike chalcantite, linarite contains lead and is not soluble in water. Unfortunately, determining whether a specimen is one or the other can be easily done by testing its solubility—but the risk of damaging the piece is high if it is chalcantite.

Name

What's in a name?

Nobody is known to have named chalcantite—and, oddly, no one scientifically described it. According to the International Mineralogical Association's (IMA's) list of minerals, the name extends back to “antiquity” (whether Greek, Latin, or Egyptian is not specified). The IMA refers to the RRUFF minerals data system, which simply lists the name origin as, “For example: Dioscorides P, [Translated by Cornarius J, 1557] (70) Chalcantum. in De materia medica Libri V. Froben (Basileae) 451-453.” Clear as mud?

Localities

United States

Chalcantite is a copper mineral, so it occurs in copper-rich deposits. And since it is so soluble in water, most U.S. localities are in our dry Southwest.

Arizona. The [Planet Mine](#) in La Paz County is one of the best known U.S. localities for chalcantite. It was a significant ore of copper found at least 52 meters (170 ft) below ground. Single crystals of chalcantite are rare, although a photo posted on Mindat by Rob Lavinsky shows a terminated, gemmy single crystal that is 2 centimeters (0.8 in) long.

The mine started operations in 1864, with a town of 500 people growing to support it. Another phase of mining began in about 1884 and continued intermittently until about 1921, with another revival by 1937. Copper provided the bulk of the ore, with gold and silver as valuable byproducts. Hydrothermal replacement and possibly tectonic actions concentrated mineralization and could have facilitated deposition of chalcantite by natural processes.



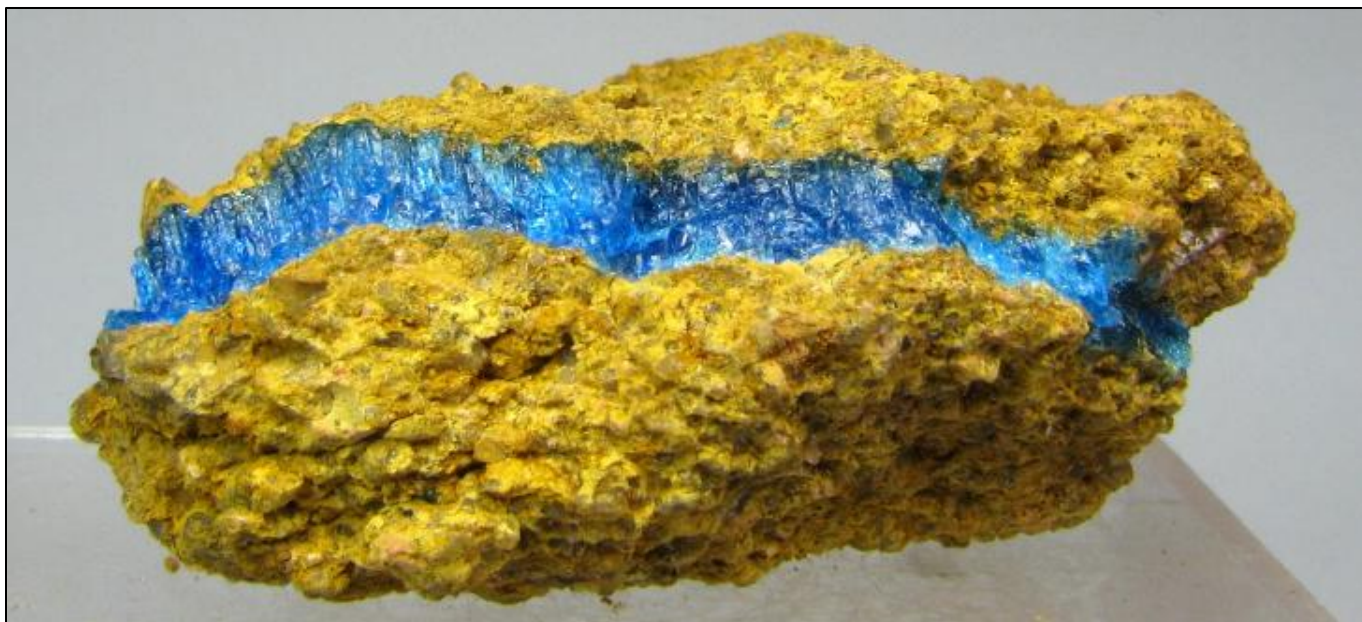
Chalcantite, Planet Mine, La Paz County, AZ.

Source: Mindat; photo: Kelly Nash.

A deposit in Santa Cruz County was developed in the early 20th century as the [Aztec Mine](#). It produced copper with byproducts of gold, silver, lead, and zinc from rhyolitic rocks that provided a conduit for ascending mineralized fluids. Chalcantite probably formed post-mining. Spiky and curved chalcantite formed specimens of up to 8 centimeters (3.1 in).

Many mines and prospects constitute the [Bisbee District](#), all major copper producers. Both underground and open pit production yielded 8 billion pounds of copper, along with 102 million ounces of silver and 2.8 million ounces of gold as well as other metals, according to the city of Bisbee. Chalcantite specimens shown on Mindat and other sites do not specify a mine source. However, Graeme (1981) reported specimens found in the Cole, Junction, and Campbell shafts: chalcantite stalactites closed a passage in the Junction shaft; a 1-meter-thick (3.2-ft-thick) stalactite several meters wide formed in the Campbell shaft at the 2400 level; and the Cole shaft contained compact fibrous growths 10 centimeters (4 in) thick.

Arizona is rich in copper, so chalcantite occasionally occurs at other sites as well.



*Chalcantite within a sandstone matrix, Posey Mine, Red Canyon Mining District, San Juan County, UT.
Source: Mindat; photo: Christopher O'Neill.*

Montana. [Butte](#) was a major copper producer. Chalcantite was found as micromounts and as a 14.3-centimeter (5.6-in) coating on a mine timber. Jenkins and Lorengo (2002) mentioned “stalagmites of considerable size” in underground workings.

Colorado. Mindat lists numerous chalcantite locations but shows few Colorado specimens. One piece, from the Sedalia Mine in Chaffee County, comes from the George Loud collection. (George is an honorary lifetime member of our club.) The specimen, [shown on Mindat](#), exhibits tufts of chalcantite scattered across a rusty matrix. Chalcantite has also been found in rare specimens from the [Cashin Mine](#), and it was reported anecdotally from other Colorado mining areas.

Utah. Several San Juan County copper localities produced a few chalcantite specimens. Sandstone is the usual matrix; uranium minerals were common associates. Nice microcrystals came from the [Blue Lizard Mine](#). A few macroscopic specimens with chalcantite coatings were also found there.

Chalcantite occurs in several forms at the [Posey Mine](#). Samples on Mindat show chalcantite filling a vein in sandstone and frost matrix specimens up to at least 7.5 centimeters (~3 in) in size.

Matrix specimens up to 7 centimeters (~3 in) in size were found at the [Markey Mine](#). Chalcantite forms

frosting on the surface of some samples, whereas others show veins of chalcantite. The matrix was probably fractured; fluids leached copper sulfides and then deposited chalcantite in the fractures.

A 6-centimeter (2.3-in) mass of chalcantite came from the [Bingham Mine](#) in Salt Lake County. This open pit mine, visible from space, is still active.

A single small specimen of chalcantite was collected from the [Hidden Treasure Mine](#) in Utah's Tooele County. It was found 1,000 feet underground, proving that postmining mineralization can occur deep below the surface.

Other Utah localities have yielded minor amounts of chalcantite.

Nevada. Crusts of microcrystals and microscopic curved blades of chalcantite were extracted from the [Majuba Hill Mine](#). Matrix samples up to 7.5 centimeters (13 in) in size were found. Some collecting was done underground, which implies postmining mineral formation.

Chalcantite formed thin crusts at the [Gold Quarry Mine](#). Other Nevada localities have produced the occasional small chalcantite specimen.

New Mexico. Copper-rich areas of New Mexico produced a few chalcantite specimens. Mineral collectors are unlikely to come across them, but some sites are worth mentioning. On Mindat, Rolf Luetke posted a beautiful translucent blue 1-centimeter (0.4-in) crystal from the [Lordsburg Mining District](#) in Hidalgo County. At the [Three Bears Mine](#) in Otero County, chalcantite specimens up to 2.6 centimeters (1 in) in size were collected from underground mine timbers in the 1950s. A 4.7-centimeter (1.8 in) matrix specimen studded with upright tufts of chalcantite came from the Kelly Mine in [Socorro County](#).

California. Related orebodies comprise the [American Girl property](#), which includes the Padre y Madre, Timco, and Oro Cruz mines and open pits in Imperial County. Gold was the economic catalyst for work here, with silver, copper, lead, zinc, and barite also occurring and possibly produced. Exploration and mining occurred in the 1880s, was reactivated and expanded in the 1980s, and ceased in about 1996. Several specimens of chalcantite were collected in 2012-13 from the south wall of the open pit. All specimens are micros not larger than 0.2 centimeters (0.08 in) and probably formed postmining.

Tiny translucent chalcantite crystals form thick crusts at the [Pioneer-Lilyama Mine](#) in El Dorado County. The two mines are about 600 meters (~2,000 ft) apart; they contained related copper-gold-silver orebodies. Short periods of mining began in the late 1880s, with reactivation in the 1940s-50s. Since there was underground mining and ore from the deposits was stockpiled, chalcantite is likely to have formed due to human activity.

Other States. Minor, probably postmining chalcantite occurs in [Missouri](#) and [Wyoming](#).

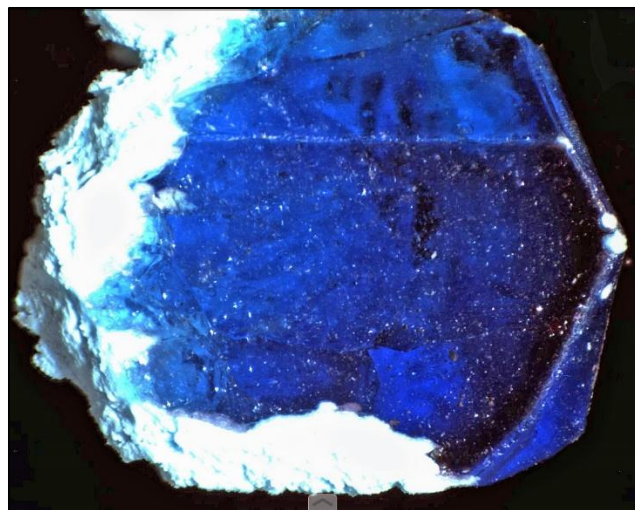
Other Countries

Australia

Mineral collectors found chalcantite in several old mining properties in Australia.

The [Surprise Mine](#) in Western Australia was a source of stunning small chalcantite specimens recovered in the late 1960s. The mine was active in the early 1900s and is now partly flooded. Chalcantite specimens grew on mine timbers, with some samples still exhibiting the timber “matrix.”

Blue crystals that are probably chalcantite were recovered from an “evaporating puddle” at the former



Chalcantite specimens. Top: Lordsburg Mining District, Hidalgo County, NM. Bottom: Pioneer-Lilyama Mine, El Dorado County, CA. Source: Mindat; photos: Rolf Luetke (top), Jake Harper (bottom).

[Teutonic Bore Mine](#) in Western Australia. What a novel type of rockhounding—finding minerals in post-mining puddles! Salt, gypsum, and other minerals form by evaporation (natural, postmining, and human-induced—for example, by pumping salty brines to the surface and then letting them evaporate). Puddles are a new twist.

Sculptural curls of post-mining chalcantite formed at the [Central Mount Balfour Mine](#) in Tasmania.

Sparse chalcantite specimens have been retrieved from other Australian copper deposits, such as the famous Broken Hill and Mt. Isa Mines.



Chalcantinite, Surprise Mine, Ravensthorpe, Western Australia. Source: Mindat; photo: Rob Lavinsky.

Bolivia

Postmining chalcantinite was recovered from the [Yarvicoya Mine](#) decades after mining ceased. This locality is worth mentioning because unusual solid masses up to at least 12 centimeters (4.7 in) in size were collected underground.

Bulgaria

Microcrystalline chalcantinite formed botryoidal crusts at the [Assarel Mine](#). Bright metallic pyrite crystals with attractively contrasting blue chalcantinite were collected in 2009 as 8-centimeter-long (3-in-long) specimens.

Chile

Chile is a major copper-producing country and the type locality for chalcantinite. The volume of known speci-

mens has been small. The type specimens came from the [Chuquicamata Mine](#). One of the specimens shown on Mindat is 15 centimeters (~6 in) long and encrusted with sharp chalcantinite crystals. Chuquicamata is reported to be the world's largest open pit mine. It has been producing copper since 1915.

An amazing specimen from the [Teniente Mine](#) is an exception in several ways. The specimen shown on Mindat is 13.4 centimeters (5.3 in) across, with one large crystal that appears to be more than 2 centimeters (0.8 in) long, with smaller crystals and coating covering the rest of the surface. The chalcantinite is translucent and is electric blue. The large crystal looks somewhat melted. Whether it formed pre- or postmining is impossible to tell; the photo description on Mindat discusses this. As of October 12, 2026, it was offered for sale for \$6,000 by iRocks.com.

Other Chilean localities produced a few specimens. There are likely many more around, mostly postmining in origin.

China

Uranium-bearing chalcantinite has been found in the [Dongchuan District](#) of Yunnan Province. The light blue fibrous crystals have been analytically verified. Most specimens posted on Mindat show the compact fibrous habit, although one 5.3-centimeter (2-in) sample exhibits small crystal on matrix.

Cyprus

The Latin phrase “aes Cyprium,” meaning “comes from Cyprus,” referred to the source of copper used to make bronze during the Roman Empire. [Copper mining in Cyprus](#) has been dated back to about 4,500 BC.

Due to the long history of mining, which left mine dumps and old workings, chalcantinite has been found in many places. All Cyprian chalcantinite appears to be postmining in origin.

Images at the [Mathiati Mine](#) on Mindat show chalcantinite coatings scattered across dumps and in the bottoms of dry streambeds.

An interesting specimen from [Troulloi](#) shows massive chalcantinite throughout a brown host rock. The host could be slag from old mine processing. According to Kassianidou (2013), chalcantinite from this locality was one of the main ores. It was also used for medicinal purposes and ink at least as long ago as 166 AD.

Democratic Republic of Congo (DRC)

Despite the plethora of copper deposits and mines in the DRC, chalcantite specimens are virtually unknown. However, chalcantite has been reported from the [Luishia](#) and [Kipushi](#) Mines. A coating of microcrystalline chalcantite from the Luishia Mine on a specimen of unspecified size is posted on Mindat.

England

Mining in [Devon](#) and [Cornwall](#) led to postmining chalcantite formation at several localities. Chalcantite is not abundant at any locality, perhaps—as one Mindat poster (G. Curtis) notes—because chalcantite “has a very short life span on a Cornish dump exposed to the rain.” Coatings grew on killas, a local term for metamorphosed, clay-rich sedimentary rocks.

France

Several localities scattered throughout France have produced a few chalcantite specimens. Collectors in the United States are unlikely to run across French specimens, most of which appear to be postmining in origin.

Germany

The [Clara Mine](#) is one of the world’s most famous among mineral collectors for the number of mineral species found there, ranking this locality with Tsumeb, Namibia; Franklin, NJ; and a few others for its mineral diversity. [Wikipedia](#) reports more than 375 different minerals from the Clara Mine.

Mining began at this property in 1726; the mine is still active and allows collecting on some of the dumps. Chalcantite is always postmining in origin at the Clara Mine, and it is always as microcrystals or as unique curlicues (pale blue rings and spirals). Microcrystals have been analyzed and determined to be chalcantite. To my knowledge, the curlicues have not been analyzed.

Chalcantite occurs at other German localities, usually as micromount specimens and crystals. A few larger specimens with chalcantite coatings were collected at the [Rammelsberg Mine](#), some possibly on old mine timbers.

Greece

[East Attica](#) has been a source of chalcantite as microscopical crystals, as compact fibers on matrix, and (less



*Chalcantite, Teniente Mine, Cachapoal Province, Chile.
Source: Mindat; photo: Rob Lavinsky.*

commonly) as coatings on matrix. Lavrion and especially the [Hilarion Mine](#) have produced specimens.

Mineral deposits in Lavrion have been worked since antiquity. Slag piles have produced many mineral species, and the mining waste products have been altered over millennia. Chalcantite, like most minerals occurring here, usually forms microscopic specimens. Many of these micromounts are very attractive curls of chalcantite.

Italy

The [Libiola Mine](#) exploited copper-iron lenses. One 11-centimeter (4-in) matrix specimen is partly covered by chalcantite; most specimens sport microcrystals. All are likely to have formed postmining.

Mexico

Chalcantite localities include the [La Caridad Mine](#) in Sonora.

Morocco

Chalcantite has been found in many forms at the [Jbel Aouam Mine](#), including as crystals and curved sculptural specimens, as well as on limonite matrix and matrix-free. All specimens shown on Mindat were posted by the same person, reportedly from the 1226-level of the mine (probably 1,226 meters (4,022 ft) below the



*Chalcantinite, showing formation on a mine wall. Le Mazega, Saint-Rome-de-Tarn, Occitanie, France.
Source: Mindat; photo: Yannick Vessely.*

surface). Matrix specimens up to 10 centimeters (~4 in) in size were recovered. Two orebodies have been developed; the lead-zinc-silver orebody is the most geologically likely to contain copper minerals. The mine was active in 2026.

Namibia

One of the mines best known to mineral collectors is the [Tsumeb Mine](#). Its large copper deposit contained rich oxide ores, which are relatively easy to process. The ore yielded mainly copper, although other extracted metals, including silver, lead, zinc, germanium, and cadmium, boosted the property's value. Tsumeb is the type locality for 76 minerals, with more than 360 minerals found here. Chalcantinite occurs as inclusions, coloring botryoidal aragonite in shades of blue.

New Zealand

Micromounters may be interested in [Kawau Island](#), where microscopic chalcantinite crystals were found at an old copper mine.

Norway

The [Tveit Mine](#), a former copper mine in Vestland, has produced crusts of chalcantinite up to 4 centimeters (1.6 in) in size on matrix. Since the Mindat reference

states that the mine is old and the specimens are crusts, the chalcantinite is probably postmining in origin.

Groups of chalcantinite crystals up to 25 centimeters (~10 in) in size, with individual euhedral crystals up to 2 centimeters (1 in) in size, were collected at the Folldal Mine in 1995 and came to market in 1996. These specimens could be among the finest examples of chalcantinite, yet I could find neither images of them online nor any of them for sale.

The locality has also been called the [Folldal Mines](#) and the Hedmark-Oppland Mine, the latter a name for the region that includes the mine. The property is now a tourist attraction with a museum.

Poland

The [Lubin](#) area is a source of chalcantinite and halite, two soluble minerals. Chalcantinite on matrix formed specimens up to 11 centimeters (4 in) in size.

Portugal

Relatively large (up to 12 centimeters (~5 in) in size) specimens came from the [São Domingos Mine](#). Based on Mindat photos, chalcantinite microcrystals form botryoidal samples with no evident matrix.

Peru

Peruvian chalcantinite shown online is generally unimpressive. A [notable exception](#) is a 14.5-centimeter (5.7-in) specimen from an unspecified locality for sale. It boasts translucent euhedral crystals that appear to be more than 1 centimeter (0.4 in) long. Most crystals are partly covered by an unknown yellow-green coating. The listing states that it is natural, not lab-grown, chalcantinite.

Club member Maria Nopo shared photos from a mineral show in Peru where dealers were selling chalcantinite specimens (see Maria's photo below). One specimen appears to be at least 40 centimeters long (~1 ft) long, although it's difficult to tell, with not much for scale. All of the specimens are covered with glossy, bright blue euhedral crystals. Some of the specimens look too good to be true. Natural? We don't know. Peru has many copper mines and large arid areas. That's a good setting for chalcantinite formation.

Romania

Romania is only worth mentioning due to a 40-centimeter (16-in) chalcantinite stalactite found at the [Cizma Mine](#). It was identified by portable X-ray fluorescence,



*Chalcanthite on display at a mineral show in Peru.
Photo: Maria Nopo.*

but the professor who posted the image (shown at right) stated that he was conducting other studies to confirm the identification.

Slovakia

Chalcanthite has been found in the [Banská Bystrica Region](#), with at least one identification confirmed by power x-ray diffraction. The specimen forms crusts of microcrystals on matrix in samples up to 7.7 centimeters (3 in) in size.

Spain

Mines in the Spanish autonomous communities of Andalusia have been the most prolific chalcanthite sources.

Chalcanthite at the [Rio Tinto Mines](#) occurs as beautiful translucent blue crystals, as rows of light blue compact fibers on matrix, and as coatings. Specimens up to 11 centimeters (4 in) in size are pictured on Mindat. The notes accompanying one image state that the specimen was purchased in 2023, so there may be more on the market.

A major international mining company, [Rio Tinto Group](#), got its start here in the 19th century. The mines in this area date back at least to the Phoenicians (about 1200-300 BC); the company's website indicates that mining might have begun as early as 3000 BC. The mines may still be active but under different ownership.



*Chalcanthite, showing stalactitelike growth in a post-mining environment. Cizma Mine, Poiana Botizii, Mariamureş County, Romania.
Source: Mindat; photo: Łukacs Kruszewski.*

In another part of Andalusia, the mines of the Rodalquilar region have produced lovely curvaceous chalcanthite along with groups and rosettes of crystals. Most of these are macroscopic specimens. At the [Maria Josefa Mine](#), at least one specimen measured 12 centimeters (~5 in), with chalcanthite scattered across the matrix. Chalcanthite, usually as microscopic specimens, has also been recovered from other Spanish mines.

Other Countries

Chalcanthite, usually formed postmining and sometimes deposited on underground timbers, has been found in minor amounts in the following countries: Argentina, Austria, Brazil, Canada, Czech Republic, Egypt, Hungary, Ireland, Russia, Serbia, South Africa, Ukraine, and Zambia.

Uses

Copper, a valuable metal, is primarily used in construction, transportation, and electrical wiring and electronics. Chalcanthite is a source of copper, but it is never abundant enough to be an economic source on its own. It can be mined with other copper ores that are



Chalcantithite, Rodalquilar, Nijar, Andalusia, Spain.

*Source: Mindat; photo: Nadia Géorgieva,
Quebul Fine Minerals.*

processed for copper extraction. The ores and the deposits in which they occur usually contain gold and silver in minute but recoverable amounts that can greatly add to the economic value of mining. Other metals like zinc and lead can also be economically extracted. Chalcantithite simply adds some copper.

Gems

In a word—don't. Chalcantithite has been faceted and probably cut into cabochons, but it is a very impractical gemstone because it is so soft and so very soluble.

Lab-grown chalcantithite would be the most suitable for lapidary work. The only example of chalcantithite I found online was a teardrop-shaped faceted piece of synthetic chalcantithite with poor luster and clarity, along with rounded facets due to its softness. The eBay seller was asking \$75 or best offer, reduced from \$160. The seller stated that the specimen was "untreated." It was synthetic! Prices were found online October 14, 2026.

Prices (2026)

There are many considerations to take into account before purchasing a chalcantithite specimen. Chalcantithite can form in three ways: entirely by nature, through

postmining effects, or by synthesis in a lab. It is therefore hard to determine the exact origin of specimens for sale—if it can be determined at all. So if that is something you care about, buyer beware!

Did a given specimen come from the stated locality? Was it altered or enhanced? If you want to purchase a chalcantithite specimen, my advice is to buy it from a very reputable dealer. Buying from the person who found the specimen might or might not give you more background information.

You could spend about \$13 for a lab-grown, crystallized specimen listed on Etsy. A 4-centimeter (1.6-in) crystallized chalcantithite specimen from the Planet Mine in Arizona was offered on Etsy for \$25. If you are a big spender, Arkenstone/iRocks has a \$6,000 specimen for sale. Or you could grow your own!

Prices were found online on October 14, 2026.

Technical Details

Chemical formula	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
Crystal system	Triclinic
Hardness.....	2.5
Specific gravity.....	2.286
Color:	Green, blue-green, light blue, dark blue; colorless to pale blue in transmitted light
Streak	White
Cleavage.....	Imperfect/fair
Fracture	Conchoidal
Luster	Vitreous, Resinous

Acknowledgment

Maria Nopo graciously responded to questions about chalcantithite in Peru. She found and shared photos posted online from a mineral show she attended in Lima, Peru, in 2021; her photos show many chalcantithite specimens for sale. She also recounted a conversation she had with a mineral dealer in Peru concerning the possible origin of the specimens.

Sources

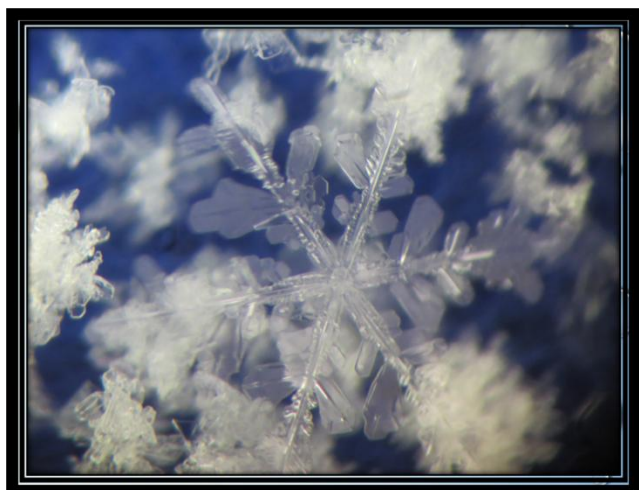
- Cooper, M.P. 1995. What's new in minerals. *Mineralogical Record*: 143.
- Cummings, J.B. 1946. [Exploration of New Planet iron deposit, Yuma County, Arizona](#). U.S. Bureau of Mines Rep. of Invest. 3982. Washington, DC: U.S. Bureau of Mines.
- The Diggings. N.d. (no date). [Pioneer-Lilyama Mine](#).

- The Diggings. N.d. [Troulli Copper Mine](#).
- Gibbs, R.B. 1985. Famous mineral localities: The Magdalena District, Kelly, New Mexico. *The Mineralogical Record* 20(1): 13-24.
- Graeme, J.L. N.d. [Bisbee history: Queen of the copper camps](#).
- Graeme, R.W. 1981. Arizona III—Bisbee. *Mineralogical Record* 12(5): 299.
- Hemingway, C.; Hemingway, S. 2004. [Cyprus—Island of copper](#). *The Met: Timeline of Art History*.
- Jenkins, II, R.E.; Lorengo, J.A. 2002. Butte, Montana: Minerals, mines and history. *Mineralogical Record* 33(1): 5-69.
- Jensen, M. 1985. The Majuba Hill Mine, Pershing County. *Mineralogical Record* 16(1): 57-72.
- Jensen, M. 1993. Update on the mineralogy of the Majuba Hill Mine, Pershing County, Nevada. *Mineralogical Record* 24(3): 171-180.
- Jensen, M.; Rota, J.C.; Foord, E.E. 1995. The Gold Quarry Mine, Carlin-Trend, Eureka County, Nevada. *The Mineralogical Record* 26(5): 449-469.
- Kassianidou, V. 2013. [The exploitation of the landscape: Metal resources and the copper trade during the age of the Cypriot city-kingdoms](#). *Bulletin of the American Schools of Oriental Research* 370: 49-82.
- Keith, S.B. 1975. [Index of mining properties in Santa Cruz County, Arizona](#). Arizona Bureau of Mines Bull. 191: 56.
- Moore, T.M. 2017. Moore's compendium of mineral discoveries: 1960–2015. *Mineralogical Record*: 371.
- Noble, D. 2002. [Mines of El Dorado County](#).
- Keith, S.B. 1975. [Index of mining properties in Santa Cruz County, Arizona](#). Arizona Bureau of Mines Bull. 191: 56.
- King, V.T.; Cureton, F.; Scovil, J.A.; Robinson, G.W. 1995. World review of mineral discoveries 1993–1994. *Mineralogical Record* 25(5): 486.
- U.S. Geological Survey. 2026. Mineral commodities summary. Copper.
- Wilson, W. 2019. [What's new in minerals](#). *Mineralogical Record*. Rep. 49.



*Chalcanthite samples, Planet Mine, La Paz County, AZ.
Source: Mindat; photos: Rob Lavinsky.*





Kathy Hrechka

Snow Crystal Microphotography November 2 Program

Our November speaker, Kathy Hrechka, was born in Wisconsin and grew up playing in the snow. Today, she is a retired flight attendant residing in Virginia. Her favorite hobby has always been geology. She collects microminerals, which require magnification for identification. Kathy is a volunteer editor of *The Mineral Mite*, a newsletter for micromineral collectors like herself published by the Micromineralogists of the National Capital Area (see www.dcmicrominerals.org). She also volunteers in the Geology Gems & Mineral Gallery at the Smithsonian's Museum of Natural History in Washington, DC.

In 2015, Kathy began observing snowflakes while using her microscope outdoors. Since snowflakes are tiny, magnification was required. She would set up her microscope, cameras, and collecting plates on her front porch during snowfalls. Mother Nature determined the schedule, so at times she was the first person in the neighborhood to be awake to study snow crystals when the snow started falling. The anticipation was like awakening on Christmas morning: she would wonder what kind of snow crystals would arrive at her microscope. Her results defied textbook images.

Kathy has prepared a PowerPoint presentation of her snow crystals. She has learned that each snowfall has its own signature snow crystal patterns based on temperature and humidity. ➤

Maryland Designates Megalodon As Official State Shark

by Adam Thompson

Editor's note: Abridged from CBS Baltimore, 1 October 2026. Thanks to Sue Marcus for the reference!

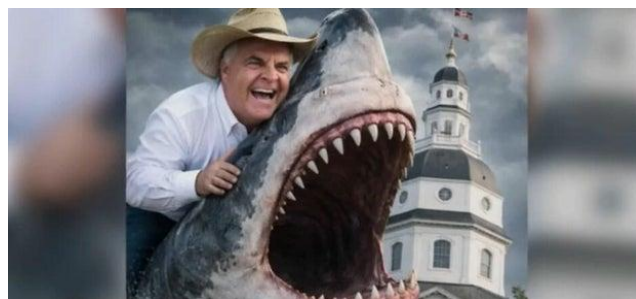
Maryland lawmakers voted to designate the massive prehistoric megalodon as the state's official shark. The legislation makes Maryland the first state to name an official shark.

The megalodon is an extinct species of shark, with each of its teeth roughly the size of a human hand. The teeth can be found as fossils in Chesapeake Bay around the shores of Calvert Cliffs in Calvert County.

Experts say the largest of the megalodons were up to 80 feet long.

"It lived here in Maryland for at least 15 million years," said Steven Godfrey, Curator of Paleontology at the Calvert Marine Museum. "That's a really impressive track record, that's an awesome run, because they're extinct, which should diminish the fact that they are this amazing icon."

Del. Todd Morgan, one of the bill's sponsors, posted on social media an A.I. image of him riding a shark, saying, "Happy to say megalodon is heading to the governor's desk for signature."



The megalodon was once the most fearsome predator in the ocean, living roughly 23 to 3.6 million years ago, according to the [Smithsonian's National Museum of Natural History](https://www.si.edu/explore/prehistoric-sharks).

Experts say the megalodon was the largest shark to ever roam the oceans, measuring about three times the length of a modern-day great white shark.

Godfrey said that Maryland played a big role in the megalodon's existence. ... [Read more](#).

Club Meeting Summary October 5

by Almas Eftekhari, Secretary

President Jason Zeibel kicked off the meeting while people were still placing bids for the club auction that followed. Jason noted that our club summer picnic in August, which he and his family so generously hosted, was a blast.

Jason said that we will hold our usual November meeting (see the program on page 12) but will also go over preparations for our annual club show (see details on page 17).

For the show, we need all hands on deck. Please use our [Signup Genius link](#) to volunteer for as many of the various tasks we need (setup, auction, and so forth) as you can. We will especially need volunteers on Friday afternoon and evening to bring our own equipment to the show, set it up, and help the dealers set up their own tables.

Jason introduced Show Chair Tom Taaffe, who brought stacks of new show flyers for members to take. The cards are good for \$1 off show entry for everyone in your party, and Tom asked members to post or distribute them out in early November at local shops, community centers, or wherever else people might see the flyer.

At our show, we will have a grand door prize of a splendid amethyst geode. We will also have 10 exhibit cases, with a prize for the best overall exhibit and best junior exhibit. Please let Jason know if you want to use a display case—only a few spots were left as of October!

We built a fluorescent case for the show this year (shown at upper right). Jason brought it to our October meeting for members to see. If you want to contribute your own fluorescents to the display case at our November club show, please let Jason know.

Jason announced our annual holiday party in December. We'll have prizes, games, foods, and a gift exchange for anyone interested—just bring something wrapped and go home with something unwrapped.

At our December meeting, we will also hold our annual elections for club officers. Jason is finishing his fourth and final year as club president, but he will always be here to help the next president. There are also



Brandnew case for displaying our club's fluorescent minerals at this year's annual show.

Photo: Jason Zeibel.

lots of other roles that members can volunteer for. It takes a whole team of people to run our club, so please consider volunteering for one role or another.

Club Treasurer Roger Haskins maintains a list of emails for club members. Please make sure that he has your email. Roger asked everyone to check the list he brought with him so he could correct it if needed.

Jason encouraged everyone to please read our award-winning newsletter! A lot of time and energy goes into our club newsletter, so please peruse it whenever it comes out.

Jason pointed out free stuff in the back of the room, inviting members to look through it and take some. He then invited visitors and new club members to introduce themselves. Jill said that she has been bringing rocks home since she was little, can't identify everything, but finds rocks beautiful and wants to learn more from people with similar interests. Camille said she's from Leesburg but originally from New Jersey and only recently got into our hobby. Carl Brown from McLean said he's new to our hobby and loves rocks.

Club Secretary Almas Eftekhari brought an order form for our new club hoodies and reported the latest news on club merchandise. Zipups will be available for purchase in November and will debut at our club show.

Jason went over the rules for our club auction—and then the bidding fun began! ↗



President's Message

by Jason Zeibel

Greetings, NVMC! Are you ready for a mineral show?

October has been a whole lot of fun in our household, but also one continuous wild ride. With both my girls in high school marching band but in two different schools, our house is a constant mix of getting ready for something band related or recovering from a band performance and trying to get all the homework done.

In addition, with the closure of the federal government's fiscal year 2026 and the beginning of fiscal year 2027 on October 1, my work has been quite busy. In the middle of all of that, we had a superfun mineral auction in early October and are in our annual ramp-up stage for our upcoming mineral show just before Thanksgiving at George Mason University.

We had over 50 folks show up for our semiannual mineral auction in October. Our numbers continue to grow, and there were a record number of people who went home with new treasures. This fall's auction featured some lots that were limited to new members or young collectors, in addition to all the usual lots. A big thank you to those who brought lots of specimens for sale because the auction is much more exciting with lots of nice things up for auction.

I also want to highlight the work of our youth coordinator team of Celia and Maria. They put together some really fun content on the auction on our Instagram page. I am very curious to see what they come up with as we head towards the show!

Whether you are a social media addict or tell stories about when you first heard of computers, I would encourage you to join our Facebook page and/or our Instagram page. Some of their content is shared here (fig. 1), but for the full multimedia experience you really should check us out online. Of course, with the anticipated graduation of the current dynamic duo, the youth coordinator position will come up for nominations after the conclusion of this academic year. If you are currently enrolled as a student, you could be our next NVMC influencer! Talk to Celia or Maria for the details.



Figure 1—Youth coordinators Celia and Maria put out entertaining posts about our club's activities, including the October auction.

Our annual club show is rapidly approaching. If you haven't already signed up for a volunteer role, please consider doing so via our [Signup Genius](#). You can also

reach out to our show coordinator Tom or to me directly. If all 50 folks who came to the auction pitched in for a couple hours, then we'd be more than set.

Now is the time to start spreading those \$1-off admission cards around the area. If you have friends and family who would be interested in our show, please share the info!

With the debut of the first 6 of our 10 new showcases at our 2025 club show, we really had an upgrade in the educational aspect of the show. This year, we will expand the number of showcases to get all 10 used. We have nine folks already signed up, and I'm hoping that we can use the 10th to again show off any new finds from NVMC field trips that members want to display.

In addition to these 10 regular show cases, I have been engaged in a spare-time project to upgrade the UV-mineral display at the show (fig. 2). Just after the picnic in August, I started putting together a fairly rugged UV case capable of disassembly. We will use it at the show, where we can't easily turn the lights off, to show off fluorescing minerals under SW, MW, and LW UV light. Fortunately, we received a donation of a three-tube Way-Too-Cool fluorescent light as a starting point (fig. 3).

In the process, I wanted to use whatever leftover supplies I had around my garage. After a couple months of doing a little bit here and there while using leftover plywood, paint, and wood trim, along with an old sheet of acrylic and some white LED light strings that were leftover from other cases, I believe that we have a good option for showing off rocks that glow. The only costs that I actually incurred (beyond the sunk cost of whatever materials I had on hand already) were the lag bolts to assemble it and the lock to secure it (well, that and the cost of my spare time). I brought the UV case to the auction for members to check out and got some positive feedback, so look for it at the show.

However, in order for this to have the best effect, we need some cool fluorescent minerals to put on display. So if you have a few fun glowing rocks that you want to exhibit, plan on bringing them (properly labeled, if possible). For both the UV case and the other 10 cases, setup will be Friday evening before the show.

At the November meeting, we will have a short program. Afterwards we will be go through a lot of logistics and planning to make sure everyone is tracking the



Figure 2—Club president Jason Zeibel spent months using spare materials in his garage to put together a UV mineral case capable of disassembly and reassembly for the upcoming NVMC show. The first trial run (bottom) went well. All photos: Jason Zeibel.

show details. This will be your primary opportunity to ask questions and hear details about all the moving parts that have to come together to make this a success. We do plan on having a virtual option for the November meeting, but coming in person is always encouraged.

One other fun thing that I want to highlight is a recent program by the local Gemological Institute of America (GIA) chapter, which invited the NVMC to participate. Thanks to arrangements made by our Vice President, Jennifer Grimes, several NVMC members went to a GIA chapter presentation on Mexican geode mining by geode hunter Jeff Smith of Pennsylvania. It was a fun talk, with lots of pictures and videos, as well as pretty geodes to hold, each with its own story (fig 4).

Since the calendar will keep moving even after the show, I would like to also spotlight the upcoming December holiday party and NVMC club officer elections. The holiday party is a way of celebrating all the fun things the club has done throughout the year. We will have a gift exchange and geology-themed quizzes and games while sharing a meal.

We also will hold elections for four club officers for 2027: President, Vice President, Secretary, and Treasurer. After 4 full years as President of the NVMC, I will be stepping down after the holiday party to let another able member take the lead.

When I took over as club President, we were just coming out of COVID restrictions and had maybe a dozen active members. Now we regularly get 50 or more members coming to our monthly meetings, and we have good attendance for our field trips.

A lot of the tasks that I initially had to do all by myself as President have fortunately been spread among several positions. The club is in great shape in terms of both membership and finances, and I look forward to seeing where it goes from here.

I have no intention of leaving or going anywhere and hope to remain a club member for years to come. But I am ready to let someone with new energy and ideas step forward to help lead the club.

It's been a great run! But you do have a couple more months with me as Prez!

Jason



Figure 3—UV showcase under assembly, with a donated three-tube Way-Too-Cool fluorescent light as the starting point. The light allows fluorescence under shortwave, medium-wave, and longwave ultraviolet light.

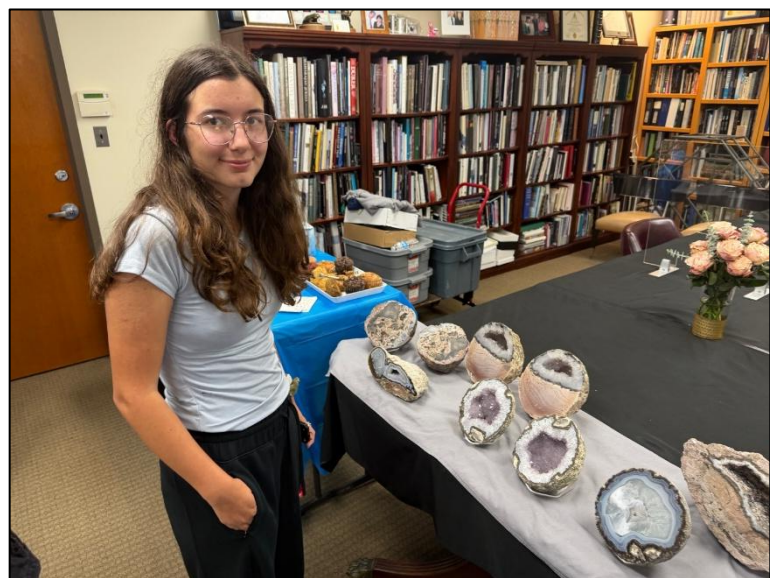


Figure 4—NVMC member Celia Zeibel at the Washington, DC, chapter meeting of the GIA, where Jeff Smith gave a talk about Mexican geode mining and showed a collection of lovely geodes.



Club Show This Month! November 21-22, 2026

by Tom Taaffe, Show Chair

The NVMC is holding our 34th Annual Gem, Mineral, and Fossil Show this fall at George Mason University (GMU) in Fairfax, VA. The show will be on November 21-22 and take place in Dewberry Hall, Johnson Center Building, on

GMU's Fairfax campus. This event has ongoing sponsorship by GMU's Department of Atmospheric, Oceanic and Earth Sciences through our GMU liaison, Dr. Jules Goldspiel, an assistant professor in the department.

Show hours will be from 10 a.m. to 6 p.m. on Saturday, November 21, and from 10 a.m. to 4 p.m. on Sunday, November 22. Admission will be \$6 for adults, \$4 for seniors (65-plus years old), and \$3 for teens (13-17 years old). Admission is free for children 12 and under who are accompanied by a parent. Admission is free for GMU students, faculty, and staff with ID. Scouts in uniform get free admission as well.

Show volunteers needed!!

Parking at the Show

Friday Show Setup. Dealers will arrive on Friday, November 20, to set up for the show, as will club volunteers to help out. Parking in GMU lot A will be free for both groups, but you will need to register beforehand using a QR code (link). When the show draws closer, we will make the link available. Stay tuned!

Saturday/Sunday Show Attendance. Whether you volunteer to help out or simply attend as a club member, you can park for free in GMU lot A on Saturday and Sunday. Simply scan the QR code on our show flyer on page 16, then enter your license plate number and email address. You can do so any time between now and the club show.

Staffing the Show

We will use [Signup Genius](#) to recruit volunteers and assign show tasks. All volunteer positions are shown if you click on the link above—please sign up early and for as many positions as you can manage!



Scene from our annual club show in November 2024.
Photo: Tom Taaffe.

What follows are ways in which club members can help with this year's show.

This year, we will have earlier access to the GMU Johnson Center for **show setup on Friday afternoon**, which will help everyone involved. We will need a group of volunteers to bring items from the club's storage unit to the Johnson Center. We also need lots of volunteers for the actual setup. Jason Zeibel will likely lead a team in assembling and positioning the club exhibit cases. John Weidner will need lots of help in setting up the Kids' Activity Room. Club volunteers will also be needed to help dealers and exhibitors unload their goods at the loading dock and bring them in. Other chores include placing directional signs on campus, setting up the admission tables, assembling the club's banner, and more.

You can also volunteer to help during actual show hours on **Saturday and Sunday**. We always need volunteers for the **Kids' Activity Room** to administer quizzes and rock-related puzzles and award specimens to kids who earn them. Volunteers field questions and help with mineral and fossil identification. The Kids' Activity Room can get a little crazy at times, but it's lots of fun and very worthwhile. Contact John Weidner at jfweidner@gmail.com if you have questions.

We always need volunteer help at the **admissions table**. If several club members take a shift or two, it makes the process less chaotic and more efficient. If you are interested in helping and have questions, please let Roger Haskins know at treasurer@novamineral.club.

When the show ends on Sunday, we will need volunteers to help with **teardown**. We specifically need volunteers to help pack up the Kids' Activity Room and gather all the club's equipment and gear. This includes disassembling exhibit cases and club banners and retrieving campus directional signs. We will need many helping hands and several vehicles to bring it all back to our nearby storage unit.

Donating Specimens for Kids

You can further contribute to the show by donating mineral and fossil specimens for our kids' mines in the Kids' Activity Room. The specimens should be suitable for children, nothing too big or small (1-3 inches in size and about 1-4 ounces in weight). The specimens should be somewhat interesting and somewhat attractive and hopefully have some educational value. No junk please!

Donated specimens should not be toxic, sharp, splintery, or otherwise dangerous. They would also be best in their natural unpolished state. Specimens from nearby localities are great choices, such as prehnite, amazonite, amethyst, and garnet.

Specimens for Door Prizes/Silent Auction

Once per hour during the show on Saturday and twice more on Sunday morning, we announce and award door prizes. (Door prize drawings come to an end before Sunday's Silent Auction.) We depend on club member donations to add variety to door prize offerings and to the Silent Auction.

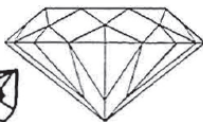
If you have specimens to donate that are suitable for either purpose, please bring them to an in-person club meeting (at the Dunn Loring Fire Station) and hand them directly to a club officer. If that is impractical, please contact one of the two club members who will be organizing the Silent Auction and door prizes, Craig Moore at crrocks77@icloud.com or Jeff Guerber at jeff@guerber.net. You can also contact Show Chair Tom Taaffe at rockellctr@gmail.com.

Exhibit Cases

Club President Jason Zeibel hopes to accommodate a few more club member exhibits at our show this year. If you are interested in designing and displaying an exhibit, please contact Jason at president@novamineral-club.org or Tom Taaffe at rockellctr@gmail.com and let us know what your subject matter would be. ↗

2026 Gem, Mineral, and Fossil Show: Participating Dealers

- R and L Minerals, Ron & Linda Tonucci, Waldorf, MD
- Jon Feigin, Old Bridge, NJ
- Crystal Luxe Lighting, Aldeane Josephs, Bethesda, MD
- Bob Farrar, Bowie, MD
- Alan's Quality Minerals, Mount Laurel, NJ
- The Garnet Group, Casper Voogt, Sterling, VA
- Dave Hennessey, Woodbridge, VA
- Ken Reynolds, Herndon, VA
- KBT Minerals & Fossils, Tom Taaffe, Vienna, VA
- Lars Krutak, Minerals, Washington, DC
- The Mineral House, Tom & Pam Kottyan, Bucyrus, OH
- Broken Back Minerals, Eric Meier, Wilmington, DE
- Andy Dietz, Ashland, VA
- Stone Soul Crystals, Jere Myers & Lee Anne Myers, Queenstown, MD
- Ken Rock, Rock's Rocks & Minerals, Oakton, VA
- Frank M. Smith II, Smith & Sons Fine Minerals, Roanoke, VA
- Nick Jacobs, Minerals, Carvings, Jewelry, Loose Stones, Silver Spring, VA
- Jeff & Kristin Gaulard, Fluorescent Minerals, Luray, VA
- Mineral Society of the District of Columbia, Washington, DC



34th Annual GEM, MINERAL AND FOSSIL SHOW

Presented by The Northern Virginia Mineral Club, Inc. | www.novamineralclub.org/show

Sponsored by the Dept. of Atmospheric, Oceanic and Earth Sciences at GMU

Date: November 21 & 22, 2026
Place: Dewberry Hall, Johnson Center
George Mason University - Fairfax Campus
GPS: www.bit.ly/3fBZfh8 (takes you to GMU's Lot A)
Hours: Saturday 10am-6pm, Sunday 10am-4pm
Admission: Adults: \$6, Seniors (65+): \$5, Teens (13-17): \$4
Children 12 & under, accompanied by adult are FREE
GMU Students & Faculty w/valid ID are FREE.
Scouts in uniform are FREE.



Scan This Code to Register for
Free Parking Permit in Lot A

Features: Demonstrations, Exhibits, Kids Activities, and Door Prizes.

Mini-mines for children to dig in and get free fossils and minerals.

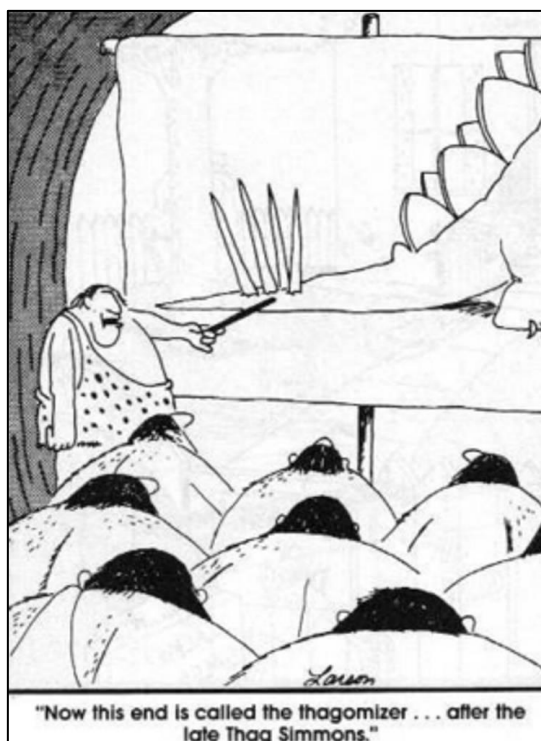
SILENT AUCTION on SUNDAY

Approximately 20 Dealers with Gems, Minerals & Fossils for sale.

\$1 OFF

Adult admission
with this card
(applies to all adults &
seniors in your group)

Enter Lot A @ Mattaponi River Lane off Patriot Circle
Look for our Courtesy Shuttle & Designated Walking Path to Mineral Show



"Now this end is called the thagomizer ... after the
late Thag Simmons."

Field Trip Update

by Katy Johnson, Field Trip Co-Chair

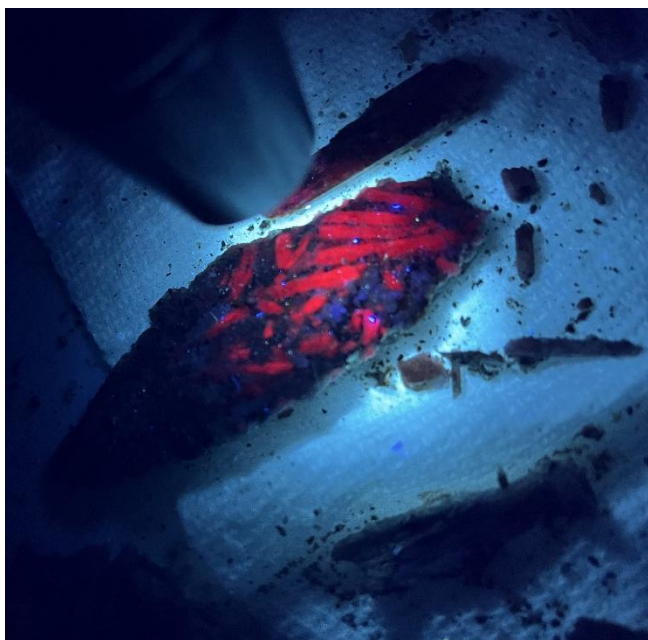
Just a brief recap of our recent field trips, with a few photos and news about the field trip coming up in December.

September: Special thanks to the Lynchburg club and the Kyanite Corporation for allowing us to join their Willis Mountain collecting trip, mainly for kyanite. It is always such a special day when clubs come together, and the weather could not have been more beautiful.

October: After the 3-hour drive to Willis, the best part about the Savage Stone field trip might have been that it took under an hour to get there. It was a first-time visit for the club, and we did not know what to expect. We all ended up with buckets full of black sparkly gabbro, some even coated with pyrite.

Both trips highlight what a great group of folks we have in the club, who come together in sharing such an amazing hobby.

December: We are confirmed for our Potomac marble history walk with Paul Kreingold on December 12 to search for the “perfect stone” (click [here](#) to find out what that means). The walk will be 2.2 miles each way, with a fairly steep rock scramble to reach the quarry. Field trips are for paid members, and this particular trip is limited to members ages 17+. Be on the lookout for signups about a month before the field trip. ↗



Denver's Annual Mineral Shows

by Sue Marcus

In case you've never been to Denver, CO, for the annual mineral shows there, here's a brief note to entice you to check them out.

Tucson, AZ, and Denver now style themselves as “mineral showcases” because they have so many venues, not just a single show. Tucson has the largest set of mineral shows in the world. Denver is second in number of venues (Munich, Germany, has the world's largest single show). Denver is large, with at least a thousand dealers, but it's also manageable and great fun.

Seven clubs join to host the Colorado Minerals, Fossils & Gems Show. Recently, it has been held in conjunction with the Hardrock Summit. The Summit features high-end dealers with sky-high prices and museum-quality specimens, although it sometimes has small “sleepers” that we mere mortals can afford.

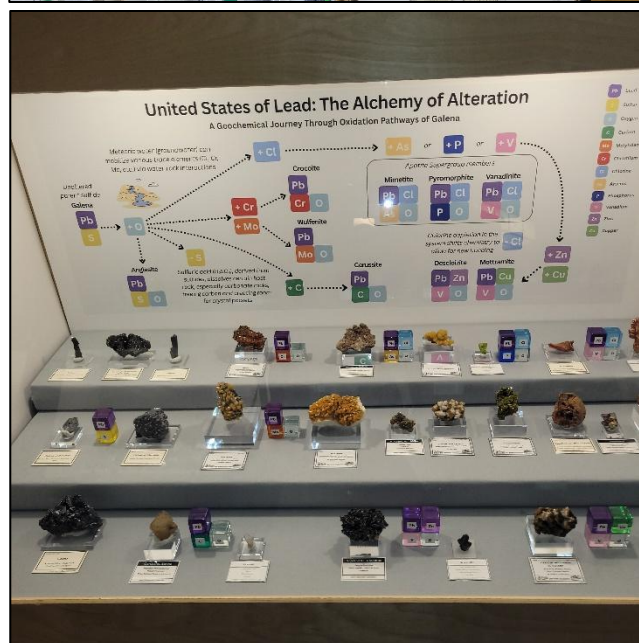
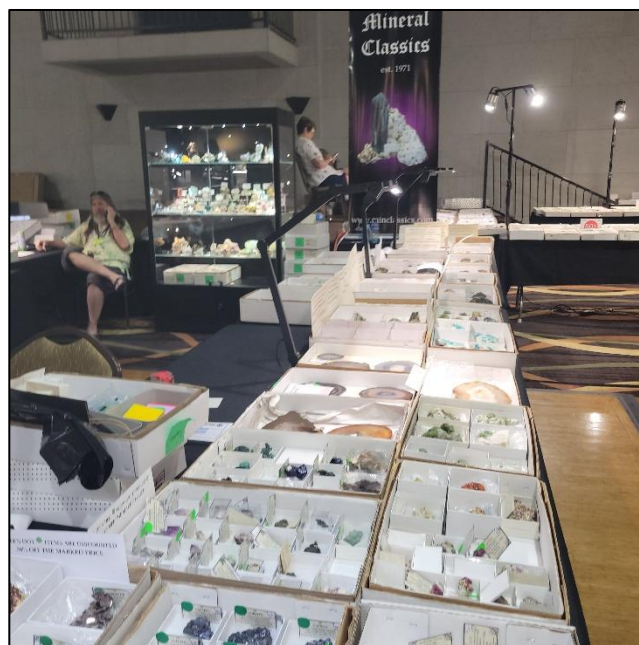
The joint venue has tents with many international vendors selling everything from 8-foot amethyst geodes to \$7 calcite crystals. Many of the outdoor dealers offer their entire stock for 50 percent off—sometimes even more. There are some great deals.

Another benefit: this joint show is the only mineral show where I've enjoyed free food! Bagels and muffins in the morning, sometimes sandwiches at lunch time, and little pastries in the afternoon. Don't stand in the way of the voracious crowd!

Across the city, other shows occur, either as long-held co-events or as recent additions. At the National Western Complex (NWC), dealers inside and outside sell fossils, jewelry, and lots of minerals. Again, many dealers have all or most of their stock at a 50-percent discount. You can also negotiate prices with many dealers.

As I was leaving the NWC show, my last stop on this trip, I spotted a specimen I liked for \$10. I was going to buy it, then saw that I only had \$7 left. The dealer took it and I was happily broke. You can use credit, debit, or other forms of e-payment at most vendors, though most strongly prefer cash and might charge less when you offer cash.

The NWC has a couple of buildings plus tents. I saw, but had no more room to haul, Moroccan ammonites



Scenes from the 2026 Denver shows.

All photos: Sue Marcus.

about 7 inches in size for \$5 to \$10. At other venues, there were mosasaur teeth for \$15. The Miner's Co-op and the Coliseum shows are more good places to browse.

Some dealers have warehouse shows, with good deals at their offices or storage areas. There are also shows at some of the hotels around town. If you haven't seen a hotel show, they do not have the usual ballroom-type layout. Often, dealers sell from tables in the lobby and



More scenes from Denver.

adjacent conference rooms. Then you go up to the rooms that usually house overnight guests. There can be floors where you go door to door, just peeking in or browsing carefully. Some vendors bring in fancy cases and display gorgeous and expensive specimens. Some have beds covered in flats to peruse. Most have signs outside the doors with the dealer's company name, so you can choose to visit or skip the jewelry, meteorite, mineral, or fossil rooms.

Denver has something for everyone, from gem rough and cut stones to fossils and minerals of every size and at every price. The best prices are often from dealers in the tents or in the hotel shows with ballroom venues. The best quality is at the Hardrock Summit, which is free for ogling. A car is handy to get from one venue to another.

Bring a bag or backpack to help you haul your treasures home. Pack them carefully in your clothes for the trip. And always remember: if you think you will regret passing up a specimen, go ahead and buy it—no regrets! I have bought a specimen, then found another of the same kind for less, so I bought the second one too!

The “main” Denver shows, the club show, and the Hardrock Summit are unusual in that they’ve moved several times. In 2027, those shows will all be at the Coliseum. I don’t know what that will do to the dealers who usually claim that space.

The events are always in September. ➤

Why Do Diamonds Come in Different Colors?

by Alice Sun

Editor’s note: The piece is adapted from LiveScience (4 August 2025).

Diamonds aren’t always colorless; they can also be blue, yellow, green, and even pink. But what makes these jewels come in varied hues?

At their base, diamonds are made of a single element: carbon. They typically form deep beneath Earth’s surface, more than 100 miles down in the planet’s mantle. Here, the pressure and temperature are extreme enough for the carbon atoms to bind together in a tight lattice.

After forming, diamonds need to rise to the surface very quickly for their lattice to stay intact. This usually happens when volcanic eruptions eject the rocks up from the depths. If a diamond stays in the deep, it can melt or transform into graphite over millions of years.

Most diamonds are colorless. But there are a couple of ways normal diamonds can turn into “fancy-color diamonds.”

First, like all minerals, diamonds can get impurities when they form. These flaws are elements other than carbon that get integrated to the gem’s structure. But because carbon molecules are so small and very tightly packed, few elements can get introduced. Nitrogen, carbon’s neighbor on the [periodic table](#), can sneak into the diamond’s lattice, making yellow or orange diamonds. ... [Read the full article](#).

Field Trip Into an Erupting Volcano

by Hutch Brown

Would you go into an active volcano to watch it erupt, up close and personal?

Not that you could: the National Park Service, which manages the land around the only active volcanoes in the United States, would never allow it. Officials in Hawai'i Volcanoes National Park on the Big Island of Hawai'i won't let you get close to erupting lava. The only lava flow my family and I ever saw was barely visible in the distance. We needed binoculars to see it.

Lure of Erupting Volcanoes

Not so in the 1800s, when well-heeled foreigners led by native guides in the Kingdom of Hawai'i could venture to the very brink of a lava-filled caldera. One of them was Isabella L. Bird, a wealthy Englishwoman who spent 6 months in Hawai'i (which she called the Sandwich Islands) in 1875. Bird wrote a travelogue in the form of letters back home, later published as a book. Accompanied by a British official and Hawaiian guides, she rode on horseback up to two active volcanoes on the island of Hawai'i (Mauna Loa and Kilauea). On her second visit to Kilauea (pronounced kee-lo-WAY-uh), she risked her life to reach the edge of what she called a "lake" of erupting lava.

"We have been all day in the crater," she wrote, "... and came up [out] with the guide, sore, stiff, bruised, cut, singed, grimy, with my thick gloves shrivelled off by the touch of sulphurous acid, and my boots nearly burned off. But what are cuts, bruises, fatigue, and singed eyelashes, in comparison with the awful sublimities I have witnessed today? ... [T]he sense of awe gave way speedily to that of admiration of the dancing fire fountains of a fiery lake; ... it was terror, horror, and sublimity, blackness, suffocating gases, scorching heat, crashings, surgings, detonations, half seen fires, hideous, tortured, wallowing waves. I feel as if the terrors of Kilauea would haunt me all my life"

While their Hawaiian guide waited at a safe distance, Bird and the British official who accompanied her got as close as they possibly could to the lava-filled caldera. Hanging over the molten lava was their dubious destination: "a ledge, only three or four feet wide." The ledge was separated from the "comparative terra firma of the old lava" by "a fissure of unknown depth, emitting hot blasts of pernicious gases."



Kilauea erupting in June 2023. Photo: USGS.

Risking certain death, Bird and her companion jumped to the ledge, then jumped back again to escape "an unendurable whiff of heat and sulphurous stench, or when[ever] splitting sounds from below threatened the disruption of the ledge." They spent the next 3 hours hopping back and forth across the fissure to the ledge, drawn by fascinating glimpses of "a central whirlpool of fire, wallowing at unknown depths," where the lava "dashed itself to a great height in fierce, gory gouts and clots, while hell itself seemed opening at our feet. ... No sight can be so fearful as this glimpse into the interior of the earth, where fires are forever wallowing with purposeless force and aimless agony."

Bird concluded her account by referring to the Southern Cross, a constellation of stars over Hawai'i. Despite the "awe and terror" of Kilauea ("Hellish is the only fitting term"), she saw the erupting volcano as typifying "the necessity which shall consume all evil: and the [Southern Cross] constellation, pale against [Kilauea's] lurid light, [signifies] the great love and yearning of the Father" After glimpsing "hell," Bird took comfort in the "heaven" proclaimed by the Christian missionaries she met in Hawai'i.

Celebrating the Sublime

Why would Bird thus risk her life? Based on my graduate studies in German literature, I can hazard a guess.

Raised in England in the mid-1800s, Bird espoused a world view called Romanticism, common at the time. Colored by Christianity, Romanticism was a European cultural movement originating in Germany in about 1800 as a backlash against the rationalism of the 18th-century Enlightenment.

The Romantics revered wild nature as "sublime," an expression derived from Latin *sublimis* ("uplifted"—

literally, “up [the stairs] to the threshold [of the house]”). For the Romantics, experiencing the sublime in nature opened a door to spiritual truth and higher being, an experience that was both terrifying and personally fulfilling. Romantics sought out unfiltered—even dangerous—experiences of wild nature, thereby escaping the humdrum of everyday life in search of new frontiers and ethereal (often Christian) insights. James Fenimore Cooper’s *Last of the Mohicans* (1826, made into a 1992 movie) is a prime American literary example of romanticized nature in the New World in tension with Old World civilization. Bird evidently sought and found her own satisfying ethereal experiences (“awful sublimities”) in the Kilauea crater.

Lasting Legacy

Romanticism was fading in Europe by the time Bird visited Hawai‘i, and many today (like me) might find her field trip foolhardy and her account of it bizarre. But Bird’s lurid imagery substituted for the paucity of cameras at the time, and her detailed descriptions of volcanic cones and other effects often show scientific insight. By the mid-1800s, realistic mindsets and literary realism in works by authors like Jane Austen and (later) Charles Dickens and Mark Twain were supplanting Romanticism.

Still, a fascination with wild nature and the Great Outdoors remains part of Western culture to this day, not least within our hobby. It all began with the Romantics and their literary predecessors in Germany. ↗

Acknowledgment

Thanks go to Sue Marcus for calling my attention to Bird’s book and then giving me a copy with pages flagged for one of Bird’s trips into the Kilauea crater. Interestingly, Bird stayed for multiple nights with an enterprising Hawaiian family in a modest inn on the edge of the crater. Catering to paying foreign sightseers like Bird, the property later became Volcano House, which still welcomes sightseeing tourists.

Sources

- Bird, I.L. 1906. The Hawaiian archipelago: Six months among the palm groves, coral reefs, and volcanoes of the Sandwich Islands. 3rd ed. London: John Murray, Albemarle Street.
- Brown, R.H. 1992. Nature’s hidden terror: Violent nature imagery in late eighteenth-century German writings. (Published Ph.D. dissertation.) Columbia, SC: Camden House.

Tyrannosaurus Trackway Discovered in North Dakota Badlands

by Eric Henderson

Editor’s note: Adapted from CBS Minnesota, 10 September 2026. Thanks to Sue Marcus for the reference!

Paleontologists have discovered the first known trackway made by a full-grown *Tyrannosaurus rex*: four connected footprints found in the badlands of the Upper Cretaceous Hell Creek Formation in southwestern North Dakota. The find is described in [a new paper published this week in the *Journal of Vertebrate Paleontology*](#). Before it, only two isolated adult *T. rex* footprints had ever been confirmed anywhere in the world, one in New Mexico and one in Montana. Neither showed how the animal was moving.

The trackway was found in July 2025 on land managed by the U.S. Forest Service near Marmarth, ND, by Kent Hups, a Colorado science teacher and a research associate with the Denver Museum of Nature and Science. Hups was volunteering on a dig led by a Denver Museum curator, Dr. Tyler Lyson.

The trackway is about 23 feet long and consists of four three-toed footprints, each roughly 3 feet long. Researchers used the spacing between the prints to estimate that the animal was walking about 3.5-4.5 miles per hour despite weighing more than 7 tons.

Researchers attributed the tracks to *T. rex* based on their size, their shape, and the fact that the surrounding rock has produced an unusually high number of tyrannosaur bones. The site was scanned in 3D by Denver Museum researchers. Three of the four footprints are set to be airlifted out by helicopter this fall and taken to the Denver Museum.

The tracks date to about 66.5 million years ago, near the very end of the Cretaceous Period, when scientists believe that an asteroid impact wiped out the dinosaurs. ... [Read the full article *here*](#). ↗



November 2026—Upcoming Events in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 NVMC mtg	3	4 MSDC mtg, Washington, DC	5	6	7 Show: Oaks, PA
8 Show: Oaks, PA	9	10	11 Veterans Day	12	13 Show: Raleigh, NC	14 Show: Raleigh, NC
15 Show: Raleigh, NC	16 GLMSMC mtg	17	18	19	20 Show: Columbia, SC	21 Shows: Fairfax, VA; NY, SC
22 Shows: Fairfax, VA; NY, SC	23 MNCA mtg?	24	25 MNCA mtg?	26 Thanksgiv- ing	27	28
29	30					

Event Details

2: Dunn Loring, VA—Northern Virginia Mineral Club; <https://www.novamineralclub.org/>.

4: Washington, DC—Mineralogical Society of the District of Columbia; <http://www.mineralogicalsocietyofdc.org/>

7-8: Oaks, PA—Annual show; Tuscarora Lapidary Society; Greater Philadelphia EXPO Ctr, 100 Station Ave; Sat 10-6, Sun 10-5; adults \$7, kids under 12 \$1, Scouts in uniform with Scoutmaster free; info: Linda Green, tuscaroralapidary@gmail.com, www.lapidary.org.

13-15: Raleigh, NC—Annual show; NC State Fairgrounds, 4285 Trinity Rd; Fri 12-6, Sat 10-5, Sun 10-5; \$10 admission; info: Treasures of the Earth, www.treasuresoftheearth.com.

16: Rockville, MD—Gem, Lapidary, and Mineral Society of Montgomery County; <https://www.glmsmc.com/>.

20-22: Columbia, SC—Annual show; Columbia Gem & Mineral Society; Jamil Temple, 206 Jamil Rd; Fri 10-6, Sat 10-6, Sun 12-5; adults \$7, kids 12 & under free; info: Patricia Stidom, 803-671-3118, pbstidon@yahoo.com, www.cgms.rocks.

21-22: Fairfax, VA—Annual show; Northern Virginia Mineral Club (see p. 17).

21-22: Hauppague, NY—Annual show; Suffolk Gem & Mineral Club; IBEW Local 25 Hall, 370 Vanderbilt Motor Pkwy; Sat 10-5, Sun 10-4; adults \$6, kids under 12 free; info: Ron Casanj, 631-377-8964, rtc.laser@gmail.com, www.suffolkgem.com.

23? 25?: Burke, VA—Micromineralogists of the National Capital Area (meeting date varies based on room availability); <http://www.dcmicromineralists.org/>.

The Northern Virginia Mineral Club, Inc.

Visitors are always welcome at our club meetings!

EXPLORE OUR [WEBSITE](#)! FIND US ON [FACEBOOK](#)!

Club purpose: To encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS—at <http://www.amfed.org/efmls>) and the American Federation of Mineralogical Societies (AFMS—at <http://www.amfed.org>).

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RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:

Roger Haskins, Treasurer, NVMC
4411 Marsala Glen Way, Fairfax, VA 22033-3136

OR

Bring your dues to the next meeting.

Dues: Due by January 1 of each year; \$20 individual, \$25 family, \$6 junior (under 16, sponsored by an adult club member).

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Meetings: At 7:30 p.m. on the first Monday of each month at the Dunn Loring Fire Station, 2148 Gallows Road, Dunn Loring, VA.* (No meeting in July or August.)

**Changes are announced in the newsletter; we follow the snow schedule of Fairfax County schools.*

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