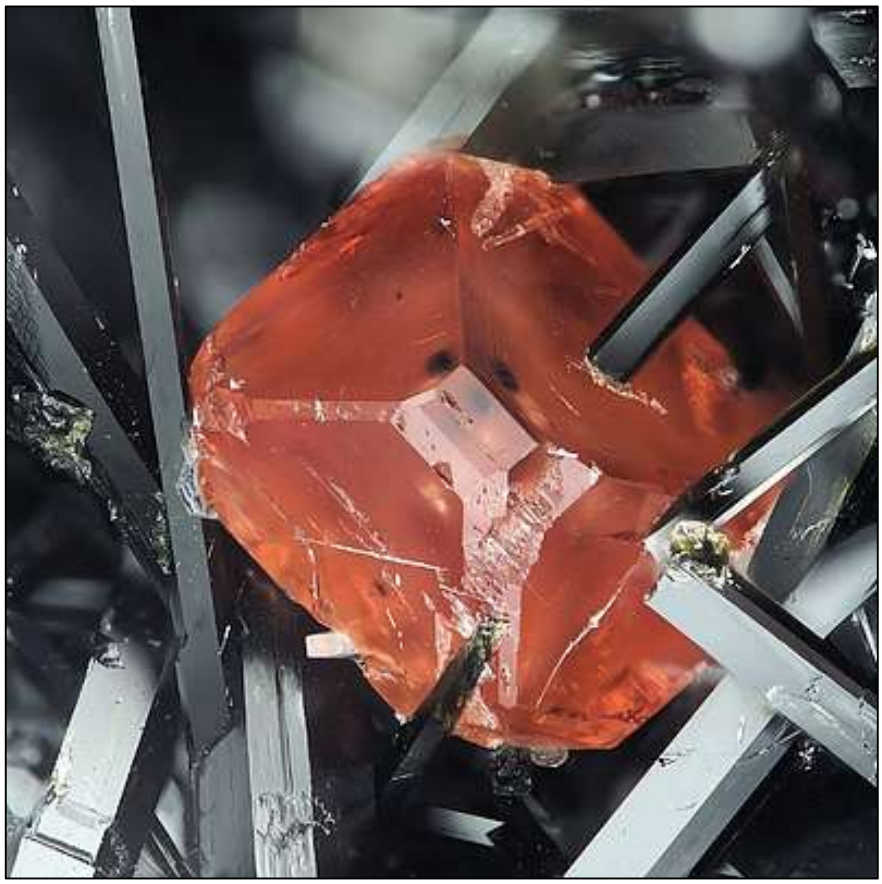
# THE NORTHERN VIRGINIA MINERAL CLUB INC

# The Mineral Newsletter

**Next meeting: January 5  Time: 7:30 p.m.**

**Zoom Only (meeting location is unavailable)**



## Eudialyte

*Poudrette Quarry, Mont Saint-Hilaire, La Vallée-du-Richelieu RCM, Montérégie, Québec, Canada*

*Source: Mindat.  Photo: Stephan Wolfsried.*

**Volume 66, No. 1**
**January 2026**
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**January Meeting Program:**

Virginia's Mineral Resources

*details on page 11*

## In this issue …

## *Mineral of the Month*
# Eudialyte

*by Sue Marcus*

As I complete this column a few days before Christmas, I think back on why I chose eudialyte as the Mineral of the Month. With only 314 photos posted on Mindat, I thought this would be a quick article to write—plenty of time for other December activities (you didn't think I'd have started earlier, did you?). Again, my chosen mineral surprised me. Turns out that Mindat may not have a lot on eudialyte but many other sources do. Let's see why.

## Name and Geologic Environment

Eudialyte was initially described in 1819 by Friedrich Stromeyer, a German chemist. Because eudialyte dissolves readily in acid, he chose the name based on the Greek words for well decomposable.

Eudialyte can degrade, breaking down into other minerals, although the eudialyte crystal form (or habit) can be retained. Catapleiite seems to be the most common alteration product, but zircon and several other minerals can also derive from eudialyte. One of the breakdown products can be aegirine, which can also occur as an original mineral not formed from eudialyte.

Alkaline intrusive rocks (especially syenite) are the host rocks for eudialyte. These rocks have higher-than-average sodium and potassium and are susceptible to having unusual elements in them, like rare earths and zirconium. These intrusive rocks can form geographically large "complexes" where the original fluids crystallize or differentiate into distinctive, often concentric or roughly concentric rock types. Nepheline syenite, particularly the especially sodium-rich type called agpaite (a rock type, not a mineral), hosts eudialyte and rarer minerals like lorenzenite, catapleiite, and more. Geologists studying the alkaline complexes have created their own terms to describe the unusual rocks they found.

This reminds me of advice I was given by a more experienced geologist when I went into the bush (field) in northern Manitoba. She told me that, if I didn't understand what I was seeing, I should map the different rocks as A, B, C, or in any other way to distinguish them, then bring back samples that others could identify. Apparently, the field geologists studying the unusual alkaline rocks gave them different names, depending on the country in which the geologists were working.

Rare earth elements may substitute for calcium or zirconium in some eudialyte occurrences. The amount or prevalence of the substitution varies, depending on the fluid composition at each locality.

The eudialyte group includes more than 20 separate mineral species of related cyclosilicates (silicates with a ringlike molecular structure). This column will focus on eudialyte, a specific mineral in the group named for

Happy New Year!

**Northern Virginia Mineral Club members,**

Our next club meeting will be on **Monday, January 5, 7:30 p.m.** Our usual meeting place is unavailable so the meeting will be Zoom-only. Our speaker will be Thomas Hale, who will give a remote presentation on Virginia minerals; see program details on page 11.

(***Note:*** We will not meet beforehand for dinner.)

*Eudialyte. Khibiny Massif, Kola Peninsula, Murmanskaja Oblast, Northern Region, Russia. Source: Wikipedia; photo: Rob Lavinsky.*

it. Specimens may be misidentified as eudialyte if they have not been analyzed.

## Localities

### *Greenland*

Greenland has been in the news recently due to interest in the rare earth minerals found there. These uncommon but not "rare" minerals occur in sodium-rich rocks in southwestern Greenland. Eudialyte is a possible ore there. The Ilímaussaq Intrusive Complex is a layered series of intrusive rocks that have been dated to about 1.1 billion years ago. This large body of rocks extends for approximately 17 by 8 by 3 kilometers (11 × 5 × 2 mi) deep, encompassing several mineral deposits, some of which contain eudialyte. Agpaitic nepheline syenite was initially described from the Ilímaussaq Complex. Eudialyte in Greenland contains small amounts of rare earth elements that could be worth extracting. Therefore, Greenland may have the world's only economic deposits of eudialyte, although similar eudialyte-bearing rocks in Russia's Kola Peninsula might also contain exploitable resources.

Many of the unusual rock types that comprise the Ilímaussaq Complex have names seldom found in other parts of the world, making this a rare geologic setting, with geologists creating names to distinguish what they see. It is beyond the scope of this column to describe the eudialyte-free rock types, but they can be found in the links and sources in this article.

One part of the Ilímaussaq Complex, the Tanbreez orebody, is valuable for its rare-earth-bearing eudialyte. The orebody is also called Kringlerne or Killavaat Alannguat. One source mentions a "conservative" estimate of 4 billion tons of rare-earth-bearing eudialyte. Tanbreez is named for the tantalum, niobium, rare earths, and zirconium found within it. These elements, along with yttrium and hafnium, are primarily found in eudialyte. There is even a rock type, kakortokite, composed of reddish eudialyte and white feldspars (orthoclase and microcline), occasionally with black to dark green nepheline and blue sodalite. Layering of the rocks as they crystallized formed bands of (1) dark, eudialyte-poor layers; (2) red, eudialyte-rich layers; and (3) white bands of primarily feldspar. Sequences of these progressions of crystallization repeat themselves, indicating multiple pulses of magmatic fluids. The bands themselves formed as different minerals crystallized from (or fractionated from) the magma.

*Eudialyte samples from Greenland.* ***Top:*** *Ilímaussaq Complex, Kujalleq.* ***Bottom:*** *Kangerluarsuk Fjord, Ilímaussaq Complex, Kujalleq. Source: Mindat; photos: Harold Moritz (top), Rob Lavinsky (bottom).*

Additional phases of crystallization formed rocks that are mostly barren of eudialyte. Evidence of the layered sequences can be more visible from a distance, becoming more diffuse when closer to outcrops or in drill cores. Eudialyte forms 30 to 40 percent of the red layers and less than 10 percent of the white and black layers. The red layers tend to be thinner than the black layers, with white layers being the thickest. Just the

eudialyte part of the Tanbreez project is estimated to contain 44.87 tonnes (49.47 tons) of eudialyte ore. This number includes ore that is geologically predicted to occur but has not been confirmed.

Kvanefjeld (or Kuannersuit) is another rare earth deposit within the Ilímaussaq Complex. It too is a potentially economic deposit, with the rare earth elements contained in the steenstrupine-Ce crystal lattice rather than in eudialyte. Steenstrupine-Ce is a new mineral to me and probably to most readers. Greenland has some very unusual minerals!

Many specimens for collectors are labeled as coming from the Ilímaussaq Complex, with no specific locality. The type (original) locality of Kangerluarsuk Fjord is probably part of what is now considered the Tanbreez deposit. Specimens include pink to red euhedral crystals and massive material as well as deep pink to purple masses. Colors range into yellow-brown, but the effects of the photographic environment might alter true colors. Crystallized matrix specimens can be up to at least 8 centimeters (3 in) across; massive specimens can be larger. Most eudialyte specimens are opaque, though some are glassy in places.

Other Greenland localities cluster in the southwestern part of the country, including Qaqortoq and Naujakasik (Naajakasik), At Naujakasik, eudialyte crystals grew to at least 5 centimeters (2 in) in size, with matrix pieces of eudialyte up to 12 centimeters (4.7 in) in size.

## *Canada*

Canada's Quebec Province is home to several eudialyte localities with different types of specimens. Regular readers know that the Poudrette Quarry in Mont Saint-Hilaire crops up frequently in these columns due to the wide variety of mineral species found there. More than 430 different species have been found; the quarry is the type locality of at least 70 minerals.

Eudialyte from the Poudrette Quarry could attract collectors to micromounts and to mineral photography. Eudialyte is usually found here as microscopic crystals ranging in color from yellow-brown through many shades of pink to deep red. Some of these crystals are exquisite, transparent, and gemmy, with finely developed crystal faces.

*Eudialyte, Kangerluarsuk Fjord, Ilímaussaq Complex, Kujalleq. Source: Mindat; photo: OT. Ljøstad.*

My favorites of these micro-treasures feature stocky, bright red or pink eudialyte crystals with lustrous black aegirine needles and superbly contrasting colors and textures (crystal habits). Specimens with red or pink eudialyte and with albite are lovely too. Rarely, macroscopic crystals larger than 1 centimeter (0.39 in) were recovered. These larger crystals, shown on

*Eudialyte, Poudrette Quarry, Mont Saint-Hilaire, Quebec, Canada. Source: Mindat; photo: Chris Emproto.*

*Eudialyte with gittinsite and vlasovite, Kipawa alkaline complex, Quebec, Canada. Source: Mindat; photo: Rob Lavinsky.*

*Eudialyte, Demix-Varennes Quarry, Quebec, Canada. Source: Mindat; photo: Stephan Wolfsried.*

Mindat, have apparently not been analyzed, so they might be members of the eudialyte group but not specifically eudialyte. The 1970s were the most prolific collecting era for eudialyte specimens from the Poudrette Quarry.

The geologic setting of the Poudrette Quarry consists of intrusions of nepheline syenite and anorthositic gabbro. Both of these rock types are high in felsic minerals (light-colored silicate minerals), with some darker minerals like aegirine and hornblende. These intrusive rocks were cut by later intrusions of alkaline pegmatite. Alkaline pegmatites are more enriched in sodium, potassium, zircon, and certain rarer minerals than the usual pegmatites. Miarolitic cavities in the pegmatites provided the open spaces for minerals like eudialyte to form.

At the Kipawa alkaline complex, also in Quebec Province, eudialyte looks quite different from specimens coming from the Poudrette Quarry. Most notably, Kipawa specimens are macroscopic, though usually massive. One bright pink piece shown on Mindat is 8.5 centimeters (3.3 in) long, primarily composed of eudialyte; another specimen of eudialyte with agrellite is 14.1 centimeters (5.6 in) long, with eudialyte covering most of the top surface. Eudialyte can be gemmy in parts of these large specimens, whereas smaller specimens can be completely translucent. This locality has produced a 2.4-centimeter (0.9-in) deep red translucent, matrix-free eudialyte sample; other pieces have been cabochoned or faceted.

The Varennes Quarry is close to northeastern Montreal and about 16 kilometers (10 mi) from the Poudrette Quarry. The mineralization is similar at both localities due to the similar geologic settings in alkalic rocks. The Varennes Quarry, owned by Demix, is noted for vugs (or "wormholes") containing crystals. The wormhole moniker denotes curving, amoeba-like miarolitic cavities that may extend up to a meter (3 ft). Microcrystals of pink eudialyte occur with albite and, less frequently, aegirine.

## *United States*

The United States is not known for eudialyte, although a few localities have produced specimens, notably lovely micromounts.

**Arkansas.** The Magnet Cove area of Arkansas is well known to mineral collectors, though more for titanium minerals (such as brookite and rutile) than for eudialyte. The unusual geology of the region includes syenite bodies, the geologic environment in which eudialyte occurs.

*Eudialyte with microcline and aegirine, Magnet Cove, Arkansas. Source: Mindat; photo: Kelly Nash.*

Some eudialyte specimens from Magnet Cove are massive and dark raspberry colored. Euhedral, salmon-pink crystals have also been found. The crystals are usually opaque and tiny, although a Mindat photo shows one that is 1.1 centimeter (0.4 in) across. Another photo shows a partly gemmy purplish-pink euhedral crystal. Most specimens are attributed to the generalized Magnet Cove locality.

A specific locality consisting of a roadcut and streambed produced at least a couple of specimens (as shown on Mindat). The locality, called Cove Creek and The Branch, is where Arkansas Highway 51 crosses Cove Creek and a nearby tributary stream locally called The Branch.

Another specific locality is the dormant Diamond Jo Quarry, where collectors extracted a variety of micro-minerals from miarolitic cavities in syenite. This quarry was the source of a beautiful micromount consisting of an altered opaque pink eudialyte crystal perched atop a colorless, elongated apophyllite crystal, which would enhance any micromounter's collection.

There is no explanation of why the eudialyte is described as altered or to what it is altered. Samples of "altered eudialyte" from other localities, shown in other Mindat photos, indicate the alteration product (mineral). I could not readily find references explaining what mineral or minerals would be the pseudomorphs or alteration minerals formed from eudialyte crystals. Scholarly articles on eudialyte alteration don't mention what minerals could retain the eudialyte crystal form.

**New Mexico.** Wind Mountain, in Otero County, is composed of nepheline syenite. Where that rock type occurs, the geologic environment is right for eudialyte. Wind Mountain eudialyte is always microscopic. Well-crystallized specimens exhibit colors including red, orange, pink, and brownish-yellow. Most crystals are transparent or have transparent to translucent areas. Aegirine, quartz, and feldspars are associated with eudialyte.

When I saw the Point of Rocks Quarry mentioned as a source of eudialyte, of course I thought of Point of Rocks, MD. I was wrong again. The Point of Rocks with eudialyte is in New Mexico's Colfax County. All specimens shown on Mindat are microscopic. Colors range from pale peach through pink, with one tiny crystal appearing to be reddish. Associated minerals include nepheline, aegirine, polylithionite, and more. Specimens were collected as recently as 2017.

## *Sweden*

Crudely crystallized to massive eudialyte was found on surface outcrops at Norra Kärr and in cores from drilling nearby. Associated minerals included albite and nepheline. A lovely translucent red euhedral 6-millimeter (0.2-in) crystal was found in 2008, hinting at more attractive specimens from this locality. On another specimen shown on Mindat, a euhedral eudialyte crystal grew to 8 millimeters (0.3 in) in size, but it is not as translucent as the smaller one. Eudialyte from here has been slabbed and used for lapidary work. Colors of eudialyte found at Norra Kärr range from pale purple through pink hues to red.

Considering the current international economic focus on rare earth elements, it will be interesting to see whether the Norra Kärr complex is developed and by what nation or nations. A 2025 paper reports that more than 95 percent of the rare earths found at Norra Kärr are bound up in eudialyte. Norra Kärr eudialyte is unusually rich in heavy rare earth elements. Sjöqvist and others (2013) identified three distinct forms of eudialyte. The distinctions are important for geologic exploration and potential mine development but not particularly significant for mineral collectors. Eudialyte colors here range from orange-brown and dark yellow to the more familiar pinks, according to geologic descriptions.

Like those studying many other eudialyte-bearing intrusive complexes, researchers at Norra Kärr have developed their own rock nomenclature.

## *Russia*

Several massifs on Russia's Kola Peninsula are significant sources of eudialyte crystals. A massif is a mountainous area that tectonically acts as block, moving as a unit. The Russian massifs comprise unusually alkaline igneous plutonic rocks which, as we've learned from other localities, are often the host rocks for eudialyte.

The Khibiny and Lovozero Massifs, both north of the Arctic Circle, are the most enriched in eudialyte. The Russian alkaline rocks are categorized by their own specific terms. There are parallels to the splits and differentiations created by geologists studying Greenland intrusives, although the geologists studying the Russian rocks naturally created different terms. Specific nomenclature matters to petrologists and researchers but not to mineral collectors seeking Russian eudialyte. Few of us are likely to do any self-collecting there, although Webmaster Casper Voogt did in 2017.

The Khibiny Massif is the world's largest nepheline syenite body. It is concentrically zoned and lenticular, narrowing downward. Eudialyte crystals from this locality are probably the world's finest. They can be partly gemmy to opaque. Colors can be many shades of purple-red or orangey-red, to so dark red as to appear almost black. Euhedral crystals appeal to most collectors.

Mount Putelichorr, part of the massif, has been the source of crystals up to 5 centimeters (2 in) in size. Aegirine is a common accessory mineral. The Kirovskii Mine has exploited apatite, but rare earth minerals are likely to excite more current economic interest. The mine processes ore from several deposits. Deep purple-red eudialyte in a black (aegirine?) matrix forms striking specimens. Most images of purplish and black specimens shown on Mindat appear to be slabbed rocks with eudialyte crystals firmly embedded in the matrix.

The Kirovskii Mine on Mt. Kukisvumchorr has also produced some beautiful euhedral eudialyte crystals that seem to have been carefully etched or worked from their matrix. Intergrown eudialyte crystals from Mt. Kukisvumchorr formed a 10-centimeter (4-in) mass that has been roughly polished.

The Lovozero Massif is extremely rich in eudialyte. It contains at least five eudialyte deposits towards the inner part of the zoned massif. It seems odd that a place that reportedly contains almost 7,300 kilotonnes (almost 8 million tons) of eudialyte has so little information on specimen or lapidary material. The eudialyte sector of the Lovozero Massif covers 500 square kilometers (193 mi$^2$), purportedly containing the largest zirconium resource in the world, along with world-class resources of rare earths, tantalum, and niobium.

*Eudialyte samples from Russia.* ***Top:*** *Putelichorr Mountain, Khibiny Massif.* ***Bottom:*** *Kirovskii apatite mine, Kukisvumchorr Mountain, Khibiny Massif. Source: Mindat; photos: Kelly Nash (top), Boris Z. Kantor (bottom).*

Academic papers give the following deposits as eudialyte resources: Karnasurt, Kedykvyrpakhk, Alluaiv, Angvundaschorr–Sengischorr, and Parguaiv; nothing is known about their specimen or lapidary eudialyte. Many of the minerals forming the eudialyte resources in these deposits may be minerals that are members of the eudialyte group but not specifically eudialyte.

Selsurt Mountain produced fine peach-colored microcrystals that are partly transparent. Other localities in this massif also produced a few microcrystals, along with macroscopic crystals. The largest of these macroscopic crystals shown on Mindat is 1.7 centimeter (0.7 in).

The Tomtor Massif in Siberia may also contain eudialyte, although I was unable to find definitive resources.

### *China*

China probably has the largest rare earth deposits in the world. It is reasonable to expect eudialyte to occur in either the actively mined rare earth deposits or in other geologically likely rocks. Eudialyte specimens for collectors and lapidaries probably exist, but I could not find any sources for them.

China's largest rare earth deposit, Bayan Obo, has a different geologic setting than most eudialyte-rich deposits. Although eudialyte might occur at Bayan Obo, it is not a rare earth ore, and no eudialyte specimens are known from there.

Conversely, the Bashisuogong deposit does have the syenite and alkaline rocks in which eudialyte forms. Two separate phases of eudialyte formation have been identified at Bashisuogong. They are distinguished by differing ratios of elements substituted in the eudialyte crystal lattice. Those ratios indicate crystallization during different phases as the fluids were cooling. It seems that eudialyte comprises a significant part of the deposit, although the forms (crystals, massive, disseminated, etc.) of this mineral could not be determined.

The group of eudialyte minerals comprises 5 to 10 percent of certain rock units in the Saima alkaline complex on the Liaodong Peninsula in northeastern China. As with other eudialyte-bearing deposits, economic sources of rare earths are driving interest in this deposit. Like Bashisuogong, the Saima complex has two defined phases of eudialyte formation. Again, no eudialyte specimens are known.

*Eudialyte with fluorlamprophyllite, Morro do Serrote, Minas Gerais, Brazil. Source: Mindat; photo: Giorgio Bartolozzi.*

My speculation is that the lack of Chinese eudialyte specimens shown on Mindat and available for sale may be due to the mineral's value as a strategic commodity. Allowing samples to be sold allows foreign researchers to analyze them and learn about the geology and possible economic value of the source rocks. It is interesting, from that perspective, that Russian samples are readily available.

### *South Africa*

Eudialyte occurs in the Pilanesberg Alkaline Ring Complex northwest of Pretoria, South Africa. The ring complex is large enough to be seen from space; it is about 30 kilometers (19 mi) in diameter. It does not seem to have been studied as much as other large alkaline complexes. Few specimens of eudialyte have been reported from this region, although more can be expected when there is more related academic research or when more mineral collectors are seeking them.

### *Other Countries*

Countries known to have eudialyte-bearing rocks as well as rare and sometimes unattractive specimens are Brazil, Guinea, Madagascar, Mexico, and Norway.

### Economic Uses

Eudialyte can be used as a gemstone and collected for its colorful macroscopic or microscopic crystals. It is more valuable as a source of rare earth elements.

*Box made with eudialyte in gray/black matrix from Kola Peninsula, Russia. Source: IGA; photo: Heritage Auctions.*

Therefore, finding eudialyte is being driven by the need for rare earths, which are necessary for all digital devices and in space technology. Rare earths are used in electric vehicles, in lasers, as catalysts, and for military equipment.

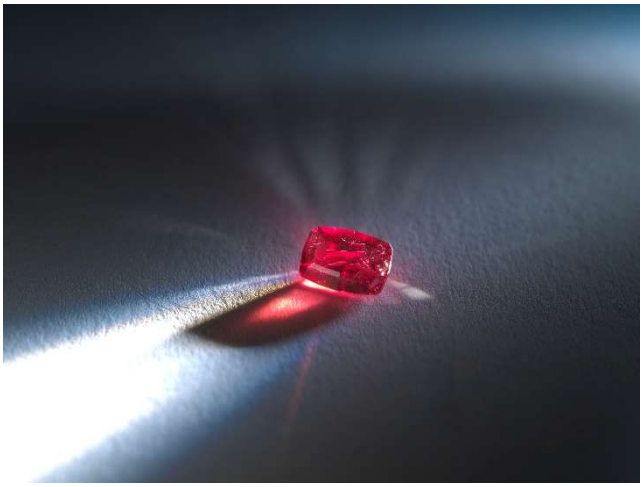
## Gems

Many forms of eudialyte can be fashioned into lapidary items. Russian material has been fashioned into spheres, boxes, eggs, beads, and other items, including jewelry. The Royal Ontario Museum own a 0.84-carat faceted stone that looks like a ruby.

## Prices (2025)

A beautiful pinkish red (eudialyte) and black (unspecified, probably aegirine) Russian box is listed for sale for up to $2,500, with spheres offered for about $50 to $1,900. Tumbled stones and cabochons go for less than $10 and up. Most worked eudialyte comes from Russia, although polished samples from Sweden and Greenland can also be found.

Faceted eudialyte is rare, probably because most samples have internal fractures that would prevent cutting or result in an unattractive cut stone. Specimens of crudely crystallized eudialyte may cost as little as $15; crystallized specimens are being offered for up to $2,500. Russia is the source of most specimens, but samples from other countries can be found. A 1-centimeter (0.4-in) specimen mostly consisting of a single deep red euhedral crystal from the Poudrette Quarry (Canada) is listed for $130, which seems like an excellent price for the specimen.



*Oval-cut eudialyte from Mont Saint-Hilaire, Quebec, Canada. Source: Courtesy of ROM (Royal Ontario Museum), Toronto, Canada; photo: Brian Boyle.*

Prices were found during online searches on December 21, 2025.

## Technical Details

Chemical formula.....
$Na_{15}Ca_6Fe_3Zr_3Si(Si_{25}O_{73})(O,OH,H_2O)_3(Cl,OH)_2$
*or*
$(Na_3Na_3Na_3Na_3Na_3)Ca_6(^{IV}Fe^{2+}{}_3)Zr_3[Si_3O_9]_2[Si_9O_{27}SiO][Si_9O_{27}SiO]Cl(H_2O)$
[According to Mindat, "This updated formulation attempts to better illustrate structural relationships to other members of the group (and is also charge-balanced)."]

Crystal form..... Trigonal

Hardness ..... 5-6

Specific gravity..... 2.74-3.1

Color..... All shades of pink and red, carmine red (described as red with some purple), yellow-brown, orange. Wikipedia and Mindat also list blue and green, respectively, but I have not seen specimens with these colors, so they may be referring to other minerals in the eudialyte group.

Streak..... White

Cleavage ..... 1 perfect, 1 imperfect

Fracture ..... Uneven

Luster..... Vitreous

## Acknowledgment

For this column, I would like to thank our editor, Hutch Brown, for not pressing me on the deadline.

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*Eudialyte with albite, Poudrette Quarry, Mont Saint-Hilaire, Quebec, Canada. Source: Mindat; photo: Tony Peterson.*

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*Thomas Hale*

## Virginia Minerals and Mineral Resources

### January 5 Program

Our presenter at our January meeting, Thomas Hale, will speak about minerals in Virginia. With over 430 unique mineral species, Virginia hosts a wide variety of mineral deposits. Thomas will talk about Virginia's geologic provinces and their various mineral resources and famous ore deposits, which contributed to Virginia's economic prosperity and provided mineral collectors and scientists with stunning specimens that told a story about Virginia's geologic past. Thomas will also give a brief history of Virginia's key mining developments, from stone-tool manufacturing to modern discussions about critical minerals and the future of the state's extractive industry. He will outline the best resources and literature available about Virginia's geology and mineral resources. No presentation on Virginia's mineral resources could be complete without an array of beautifully photographed images of some incredible mineral specimens collected here in the Commonwealth!

Thomas is a Ph.D. candidate in the Department of Geography and Spatial Sciences at the University of Delaware and a doctoral fellow at the United Nations University. He holds a B.A. in political science with a focus on mineral resources from Virginia Tech and an M.A. in Security Policy Studies and Conflict Resolution from George Washington University's Elliott School of International Affairs. Thomas advances the field of political geology by integrating physical and social sciences to examine how subsurface geologies shape strategic decisionmaking and political conflict. His research supports holistic mineral diplomacy by developing conflict mediation and communication strategies that improve environmental and social impact assessments. His work includes doctoral research on the geopolitics of critical minerals in South Greenland's Gardar Igneous Province. Beyond academia, he champions geoscience workforce development and leads a nonprofit organization focused on public outreach and education in mineral and materials sciences. Thomas is an avid mineral collector and science communicator and has supported multiple Norwegian science expedition cruises in Greenland as a guest geologist.


**Top:** *Thomas Hale in Greenland.* **Bottom:** *Amethyst crystal (2.2 centimeters high) from Prince William County, VA, part of the August Dietz collection. Photos: Thomas Hale (top); Connor Williams (bottom).*

# December Holiday Party and Club Officer Elections

## December 1

*by Almas Eftekhari, Secretary*

President Jason Zeibel welcomed everyone to our annual joint holiday party together with the Micromineralogists of the National Capital Area. Tables had plenty of food, and music played for one of the largest turnouts for a holiday party in club history.

Jason started by inviting visitors to introduce themselves. Jennifer Grimes just moved to Herndon from New York. She's a gemologist who likes to collect minerals and crystals. Mia DeNardi, a geographer, started rockhounding long ago and now does deep sea exploration. Noah Khan, an engineer, likes collecting fossils in areas like Calvert Cliffs.

Jason thanked Show Chair Tom Taaffe for arranging a great mineral show on November 22-23. He also thanked Sue Marcus for organizing and setting up the holiday party. He gave a shoutout to AV Coordinator Jake Broughton for being the club's very first "AV guy" and for debuting our new AV equipment at the party. Jason also praised Field Trip Co-Chairs Katy and Mickey Johnson for all their hard work in putting together multiple amazing field trips this year and in years past. We enjoyed watching their great video highlighting field trips in 2025.

Jason announced the traditional gift exchange at the holiday party, and club members enjoyed watching it happen. Jason told everyone that the fire station was undergoing construction in January, so the club meeting on January 5 might have to be remote only. Vice President Craig Moore announced that Thomas Hale will give the presentation at the January 5 meeting (see his program on page 11). Craig reminded club members to check the newsletter for updates and programs.

Jason noted that the club was creating a new youth coordinator position in charge of things like social media. Mickey Johnson announced the launch of a new youth Discord server, and he invited junior club members to reach out to him at fieldtrips@novamineralclub.org if they are interested in joining.

Next, we held club officer elections for 2026. Jason started by summarizing perks for the four elected club officers and the duties of club president. Craig Moore, Almas Eftekhari, and Roger Haskins then outlined the duties, respectively, of club vice president, secretary, and treasurer.


*Scenes from the 2025 NVMC/MNCA holiday party. Photos: Almas Eftekhari.*

Reelected by acclaim were Jason, Almas, and Roger; Jennifer Grimes, with support from Craig, was elected vice president. Jennifer Marks and Noah Khan volunteered as understudies to Almas in preparation for possibly standing as club secretary next year; similarly, Kirk Abriola will work with Roger as understudy for club treasurer. Of course, any club member (understudy or not) can stand for club officer election.

Club members enjoyed the great food along with raffles and games. I hope everyone had happy holidays, and I look forward to seeing everyone in the new year!

# President's Message

*by Jason Zeibel*

Greetings, NVMC, and welcome to the start of another amazing year with our club! This year starts with a lot of excitement because our membership is up, the activities that we are involved in are rising, and we just had a very successful 2025 mineral show. By all accounts, we are starting the year with a healthy and exciting club!

As I write this, it is just a few days until Christmas, and we are looking forward to lots of family and friends coming together for the holidays. While there are still lots of things to celebrate in the final few days of 2025, the new year and all the new opportunities to come are just around the corner. I hope that you will join me in sharing a sense of optimism that 2026 will be a banner year for us as a club, and I certainly hope that the same holds true for each and every one of you!

## 2025 Club Show

I don't want to jump right into 2026 without a little retrospective on all the activity of our club in the last month or so, beginning (of course) with our annual show. Our 33rd Annual Gem, Mineral, and Fossil Show at George Mason University (GMU) will be remembered not only as a great success but also as one of transition. With the retirement of our faculty sponsor and friend, Dr. Julia Nord, we were in organizational territory that we had not navigated in 25 years.

We got to know our new sponsor, Dr. Jules Goldspiel (fig. 1), who got to know us as well, along with the logistics of putting on a large event. Much of why our show is so successful has to do with the logistical choreography performed by GMU event staff. Dr. Nord had spent 25 years cultivating those relationships, and we had collectively relied on that institutional knowledge. This year, everything was new again, and everything from parking, to signage, to shuttles, to reserving hand carts had to be figured out anew.

Our show chair, Tom Taaffe, did a wonderful job making new connections, and Dr. Goldspiel helped immeasurably with navigating university procedures and permissions, many of which had themselves changed for 2025. That is not to say that there weren't some growing pains and hiccups along the way. However, the end result is that we collectively forged many new procedures and relationships that will hopefully carry us through 2026 and beyond.

**Figure 1**—*Club President Jason Zeibel together with our new GMU faculty sponsor, Dr. Jules Goldspiel, at the NVMC club table at our 2025 club show. All photos: Jason Zeibel.*

Our 2025 show also featured the debut of our new exhibit cases (fig. 2). The club funded the construction of 10 new wooden exhibit cases, with 6 of them making their debut at the show. We did not want to alter the floor plan too much, and potential exhibitors didn't receive enough notice for us to roll out all 10 cases, but we already know where the other 4 will go for the 2026 show! We discovered a few needed tweaks after the cases were set up, but several fixes have already been made, and the rest will be dealt with in the next month or so to be ready for our 2026 show. In addition, we will look into the possibility of getting a few more


**Figure 2**—*Club exhibits at the NVMC 2025 show.* ***Top:*** *All six showcases with various exhibits.* ***Bottom:*** *Celia Zeibel's geode exhibit in a club showcase.*

cases made and outfitted for fluorescent displays with black walls, mounts for ultraviolet lights, and toggles for white lights.

Acquiring new display cases has been one of my personal projects over the last year, and I was very happy to see it come together in time for the show. I heard lots of positive feedback and look forward to more club member exhibits in future years. We are also going to give some modest exhibit awards next year, so start planning now for putting your displays together, and watch out for a signup sheet for it in about September.

The Kids' Room (fig. 3, top), with its exhibits around the walls, is in many ways the hub of excitement for our show. The dealers, with all their wonderful treasures for sale, are obviously the lifeblood of the show, but I think our kids' area is one of the main draws. Our attendance numbers are buoyed by all the families and friends who come to enjoy and learn.

**Figure 3**—*Scenes from our 2025 show.* ***Top:*** *Kids' Room in full swing.* ***Center:*** *Dealer display tables.* ***Bottom:*** *President Jason Zeibel awarding door prizes to lucky recipients.*



**Figure 4—***More scenes from the NVMC 2025 show.* ***Above:*** *Treasurer Roger Haskins and club members Skylar Abriola and Lyra Zeibel staffing the admissions table.* ***Top right:*** *NVMC members John Sanborn and Ken Reynolds working at some of the dealer tables.* ***Bottom right:*** *NVMC Secretary Almas Eftekhari and Vice President Craig Moore staffing the club table.*

Like the rest of the show this year, the kids' area got an upgrade thanks to many hours of preparatory work by John Weidner. Of course, I am also very thankful to all the volunteers who spent hours in the Kids' Room patiently teaching and sharing their knowledge with the excited children and young adults. You guys are amazing!

In addition to staffing the Kids' Room, many other jobs have to get done to put on our show (see figure 4 for some of them). From carrying stuff from the storage unit, to unloading dealer cars, to manning the admissions table, to staffing the club table and conducting our silent auction—we got all of these things done, thanks to a small army of volunteers, and I thank all of you for the time and energy that you put into it!

## Holiday Party

Due to the calendar in 2025, our club's annual holiday party came right on the heels of our annual show. I was a little concerned that we would have somewhat of a letdown after the huge energy expenditure during the show.

My fears were clearly unfounded. The holiday party was a well-attended and festive event (fig. 6). Thanks go to Sue Marcus and Roger Haskins, who organized our potluck and the barbeque buffet as well as the festive decorations! We had a fun gift exchange, with lots of new treasures unwrapped. Our tireless field trip co-chairs, Katy and Mickey Johnson, delighted the audience with their video montage of field trips in 2025. Then I had the pleasure of presiding over a series of mineral-themed puzzles and games for prizes. I think club members got a new appreciation for the level of difficulty of some of the activities in the Kids' Room as we went through crosswords, word searches, and the ever-popular "which mineral doesn't belong" quiz. I had a wonderful time and think that everyone there had a good time too.


**Figure 5—***Scenes from the NVMC holiday party in December 2025.* ***Top left:*** *Club members enjoy a barbeque/potluck feast.* ***Center left:*** *Club members watch 2025 field trip highlights in a video montage put together by Field Trip Co-Chairs Mickey and Katy Johnson.* ***Bottom left:*** *Gift exchange table.* ***Above:*** *President Jason Zeibel presides over mineral puzzle competitions.*

## Club Officer Elections

One business item that we dealt with at our holiday party was the election of club officers for 2026. As you might know, we have had the same four elected officers for 2 to 3 years now, so it's time to start rotating out some of our hard-working volunteer officers and allow some new folks to step up. Due to the good financial health of our organization, it was decided—as an incentive to volunteers—that membership dues for elected officers will be waived starting next year. In addition, elected club officers are eligible for reimbursement of up to $100 in travel expenses while performing club duties such as going on field trips, organizing events, or handling other club business.

I'm happy to report that we have a new club vice president for 2026, Ms. Jennifer Grimes. Jennifer will take over from our departing vice president, Craig Moore, who has faithfully served our club by organizing our programs and arranging for our speakers for the last 3 years. A big thank you to Craig and to Jennifer for stepping up! I look forward to seeing some of the programs that Jennifer will bring us, and we will all help by offering ideas and suggestions.

Our other three elected club officers, including me, will serve one more year. But several club members have volunteered to learn the ropes from us and possibly stand for club office election next December. Of

course, any club member is welcome to stand for election to any club office next year, but it will be good to have some potential candidates who are able and willing to step forward when the time comes. I want to start by thanking Mr. Kirk Abriola for agreeing to work with Treasurer Roger Haskins as his understudy for the coming year. Without a good treasurer, we can't have a club, and it takes time to fully learn the duties of treasurer—dealing with bank accounts, tax filings, and other financial logistics. I also want to give an enormous shoutout to Roger for his many years of service to our club, including as treasurer for the past 8 years.

Secretary Almas Eftekhari will also be stepping down at the end of 2026. I am excited to announce that we already have potential volunteers to take over as club secretary in 2027. Acting as understudies to Almas in the coming year will be Ms. Jennifer Marks and Mr. Noah Khan. I look forward to working with them both!

That leaves club president. I hoped to step back at the end of 2025, but it seemed more appropriate to first get the house in order. Now that we have a slate of elected club officers who can take on all the functional roles in 2027, I am confident that we can have a smooth transition at the end of 2026, when I will step down as president. All we need is a volunteer to step up!

It has been my distinct pleasure to lead our club for the past 3 years—and for a fourth year to come. I ask you to spend some time considering whether you would be willing to lead our club in 2027. I'm happy to work with the incoming president, but it will be high time for some new ideas and new energy in the position—after what I hope will be a banner year in 2026.

On a personal note, I had the pleasure of meeting Mrs. Angela Bee, who won the grand door prize at our 2025 show, a 20-pound cluster of pyrite crystals from Peru.

*President Jason Zeibel meeting Ms. Angela Bee to bestow the grand prize from our 2025 show, a 20-pound cluster of pyrite crystals from Peru.*

## Other Club Business

In addition to the elected club officers, many volunteers in appointed positions are needed to keep the club running smoothly, including our show chair, webmaster, A/V coordinator, and more. If you would like to help out, then please consider volunteering for an appointed capacity. For example, our show chair is looking for an assistant for our 2026 club show!

In addition, the NVMC board voted to create a new appointed position for 2026, the position of youth coordinator. The youth coordinator(s) will be one or more junior club members (21 or under) in charge of organizing events for kids, writing an occasional newsletter article, and helping with outreach on social media. We already have two volunteers for this position, and I feel certain that we'll be able to announce them at the January meeting. Look forward to good things from our aspiring young geologists!

Construction has started on our meeting hall at the Dunn Loring Fire Department. The plans are to renovate the space, making it more open and inviting with new floors, new paint, and a raised ceiling. The downside is that our room will not be available for our January meeting. So, as we say in our household, "Semper Gumby"—always be flexible! That means pivoting to Zoom-only for January and looking forward to a shiny new meeting hall for February 2026.

One other item for consideration: we all need more NVMC-branded stuff! We will be placing yet another order for NVMC name tags right after our January meeting, so if you want a name tag, please send me an email at president@novamineralclub.org. We will also hopefully be placing a hoodie order with the new logo designs that Almas put together for us, so look for details about that. The club also has both patches and decals that can be purchased for a small fee. Consider getting some new swag with our name on it!

In the meantime, Happy New Year! And party like it's 2026!

*Jason*

## July 2024 Explosion Could Teach Us More About the Birth and Life of Geysers in Yellowstone

*by Michael Poland*

***Editor's note:*** *The article is from the* Daily Montanan*, 29 July 2024. Thanks to Sue Marcus for the reference!*

Shortly before 10 a.m. on July 23, 2024, an explosion of hot water, mud, and rock occurred from Black Diamond Pool in Biscuit Basin, Yellowstone National Park, only about 2 miles northwest of Old Faithful.

No precursors to the event were detected by monitoring instruments. Dramatic videos posted to social media showed a plume of water and rock fragments rising about 600 feet into the air as people ran for safety. The explosion heavily damaged the nearby boardwalk, and the basin remained closed as geologists assessed the activity. Thankfully, no one was injured.

Geologists examining the deposit noted that the rocks thrown out by the explosion were composed of glacial materials, sandstones, siltstones, and gravels that immediately underlie the silica sinter that forms a veneer on the surface. None of the rhyolite bedrock about 175 feet beneath the surface (based on drilling in the 1960s) was found, so the explosion originated at a much shallower depth. This is not surprising, because hydrothermal conduits in Yellowstone are mostly at shallow levels beneath the surface.

Hydrothermal explosions occur when water boils and converts to steam in the shallow subsurface. This sort of transition happens all the time in established geyser systems like Old Faithful or Steamboat Geyser, where well-defined conduit systems allow that steam and hot water to take an unobstructed path to the surface, resulting in a geyser eruption. But when the liquid-steam mixture is within a confined space that has become sealed and without that well-defined conduit system, pressure due to the expansion of steam bubbles eventually overcomes the strength of the rock, and an explosion occurs. … *Read more*.

## Sharing the Holiday Spirit

*by Jennifer Grimes, Vice President*

At our holiday party last December, Kathy Hrechka of the Micromineralogists of the National Capitol Area generously donated a variety of handmade jewelry pieces. I identified the stones, wrapped the gifts (see the photo below), and delivered them on behalf of both clubs to the Embry Rucker Community Shelter to help share the holiday spirit. As incoming NVMC vice president, I look forward to serving both the club and our community in the year ahead. Cheers to a new year filled with discovery, learning, and a little extra sparkle!

*Wrapped jewelry gifts donated by the MNCA and NVMC to the Embry Rucker Community Center for Christmas 2025. Photo: Jennifer Grimes.*

## My Rockhounding Journey

*by Katy Johnson*

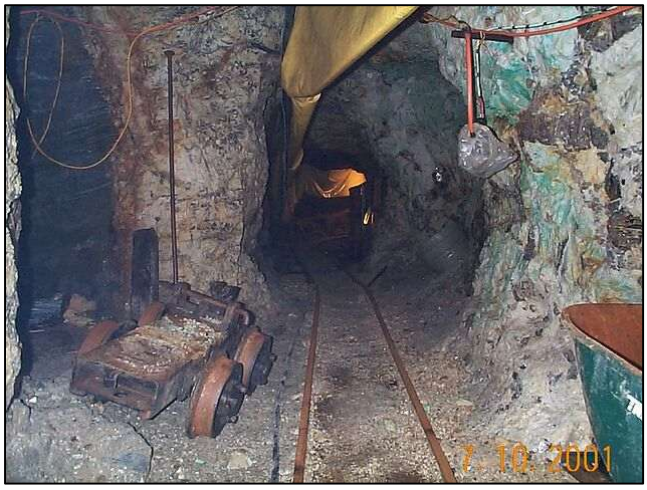
***Editor's note:*** *Club members are invited to submit articles about how they got involved in our hobby and club. Field Trip Co-Chair Katy Johnson tells her story here.*

It all started when my dad would take me and my niece (who, oddly, is the same age as me) to a lapidary shop off of Columbia Pike near Mason District Park in Annandale, VA. We started going to what we lovingly called "the rock shop" even before we began kindergarten. I remember staring at little pewter fairies sitting on a perfect amethyst and leaving with a polished stone or two every time we went. Another hotspot was Lake Accotink, where we would pick up little pieces of coal dropped from the train tracks. But my favorite regular family adventure was visiting the Natural History Museum in Washington, DC, where I would make a beeline to the Morefield exhibit, then to the fluorescent minerals before finishing up at the Hope Diamond and other pretty gems that my niece loved. These are some of my favorite childhood memories!

We moved to Spotsylvania, VA, in the summer before I entered third grade. I played every sport imaginable, so my rockhounding journey took a very long pause. My plan had always been to start training to try out for the U.S. Masters Field Hockey Team at 48, and it took 2 years of solid and focused training to prepare. But my plans took an unexpected turn when I joined an unsuccessful fight to save the North Fork of Accotink Creek in the city of Fairfax from being buried. I traded in my U.S. Masters Field Hockey dreams to become a Virginia Master Naturalist.

My master naturalist training reawakened my love of all things mineral. After 12 weeks of training, each trainee gives a final presentation. I have always been fascinated by Virginia's Gold/Pyrite Belt, which runs from Fairfax County down to Appomattox County, and during a conversation about it someone told me that "there is gold in every creek in Fairfax County." To check that out, I chose "Gold in Virginia" for my final presentation.

More than just about gold, my presentation turned into a journey through Virginia's rich mineral history to its current status as industrial powerhouse. My journey led me to Monroe Park, Virginia's official gold mining interpretive center in Goldvein, VA. I also took rockhounding courses offered online by Thomas Hale's




*Morefield Mine, known for its mineral-rich pegmatite, including blue-green amazonite (a variety of microcline feldspar). Source: Mindat; photo: Mark Joseph Wylie.*

Friends of Mineralogy Virginia, now called Minerals in Context (MIC). We learned about Virginia's geology, mineral localities, and mineral history. We also learned about international localities, critical minerals, and mineral supply chains. Every class piqued my interest even more. We learned about the importance of labeling our finds and taking care of them. We learned about safety and went on field trips, which I really liked.

Because I value what I have learned and believe in giving back to those who gave so much, I now volunteer with MIC as volunteer coordinator and liaison to the Master Naturalists, and I sit on the MIC board.

The highlight of my rockhounding journey was quite possibly spending 4 hours in Morefield Mine photographing every nook and cranny before it was closed and flooded. Being inside the mine was the strangest feeling of deja vu I could ever imagine after making so many visits to the museum and imagining what the mine would be like. (See my video with photos here.)

My rockhounding courses from MIC encouraged each of us to join our local mineral clubs. After years of gaining knowledge and realizing that I still have so much to learn, I finally joined the NVMC. The club had no field trips at the time, so my son Mickey and I volunteered to be field trip co-chairs. It has been an amazing journey, and being able to share it with my son has been awesome. I am now trying to get my niece to join. She still enjoys looking at pretty gems, but now as a registered gemologist appraiser.

## Annual Newsletter Contest

*by Hutch Brown, Newsletter Editor*

You might have heard NVMC President Jason Zeibel refer to "our award-winning newsletter." But it's been so long since we last got an award—or even participated in a contest—that I thought I should explain.

Each year, the regional and national club federations (the Eastern Federation of Mineralogical and Lapidary Societies and the American Federation of Mineralogical Societies) hold a contest for newsletters from the previous year. Newsletter editors are invited to submit the best examples of their club newsletters for that year, along with the best articles in various categories (adult articles, junior articles, written features, drawn features, poetry, and so on).

Then the judging begins. At the regional level, the Bulletin Editors Advisory Committee (BEAC) uses an established set of criteria to select the best newsletters for the year and the best articles in each category (first place, second place, and so on). The top three newsletters, along with the top articles in each category, are then forwarded to the national federation for another round of judging by the national BEAC.

In 2017, our newsletter came in first at the regional level and third at the national level, which meant that it wasn't allowed to compete for the next 2 years. In 2019, the last year we participated in any part of the contest (this time for articles only), club member Mike Kaas came in third at the regional level and ninth at the national level for his technical/educational article "Profile of the Kennecott Mine in Alaska."

So why did we stop participating after 2019?

The decision is entirely up to the editor because the editor does everything involved—the selecting, copying, mailing, and recordkeeping, which amounts to an awful lot of work. I had been doing it every year since 2013, and I was frankly tired of it.

Also, our newsletter had come in first and third in 2017, so we had little left to prove. Moreover, most of our newsletters (like this one) began to exceed the length limit of 20 pages for a "large newsletter." And COVID hit in 2020, another complicating factor.

One more factor figured into my decision to stop. The BEAC criteria for judging newsletters are arbitrary and sometimes capricious. For example, why should we have to have an article on safety in every issue? If you don't, you lose points in the contest. I get the importance of safety, but good articles on safety are hard to find and the rest are hardly worth reading. Cluttering our newsletter with mandatory banalities (Wear eye protection!) that no one reads strikes me as silly.

However, if anyone would like us to participate again in the annual Bulletin Editors' Contest—maybe you write an article for our newsletter and want it to compete?—I would be happy to consider it. We have had top contest winners in the past: in 2017, for example, Sue Marcus came in second at the regional level and first at the national level for her technical/educational article "Mineral of the Month: Sphalerite."

Just let me know!

### GeoWord of the Day

*(from the American Geoscience Institute)*

**riprap**

(a) A layer of large, durable fragments of broken rock, specially selected and graded, thrown together irregularly (as in offshore or on a soft bottom) or fitted together (as on the upstream face of a dam). Its purpose is to prevent erosion by waves or currents and thereby preserve the shape of a surface, slope, or underlying structure. It is used for irrigation channels, river improvement works, spillways at dams, and seawalls for shore protection.
(b) The stone used for riprap.

(from the *Glossary of Geology*, 5th edition, revised)

## Wildacres in Spring

Wildacres is a fantastic retreat located on Pompeys Knob just off the Blue Ridge Parkway about an hour north of Asheville, NC. Signing up for the May 11-17, 2026, session will give you the opportunity to take classes and hear excellent talks from the speaker-in-residence, Robert Weldon, one of the world's most prominent gem and jewelry photographers. You will also be able to participate in a variety of other activities. All classes are 4-day.

You can register and read about classes on the EFMLS Wildacres website. The speaker-in-residence and the courses listed below are firmly lined up for May.

### Coming to Wildacres in May 2026 …

**Cabochon Cutting** (*Rick Marshall*): Learn the basics of creating a cabochon from a slab of rock or how to improve the quality of your cabachons. Class fee $75; materials fee $0-??. Slabs provided, along with supplies and a handbook. Additional slabs available for purchase or bring your own. Bring Optivisor or safety glasses and apron. No experience needed.

**Faceting** (*Bernie Emery*): Learn how to take a rough piece of gem material and turning it into a gemstone, with many flat planes (facets). Explore how to select rough for cutting and how to evaluate it to get an idea of the size and dimensions for a gem. Learn how to use a faceting machine to properly cut, place, and polish facets with proper angles and degrees to produce a standard round brilliant gemstone. Finish one stone. Bring Optivisor, if you have one. Kits with all tools provided, including loupe. Materials cost is $40-$60, depending on size and type of rough. No experience needed.

**Fused Glass** (*Carol Zodrow*): Learn how to manipulate glass components into your personal creations. Use glass sheet, frit, stringers, and confetti to cut and shape pieces to fire in a kiln. Add in dichroic glass to make it sparkle. You will work with millefiori, copper sheet and wire, mica powders, decals, stencils, and more.

**Geology of Pegmatites** (*Mike Wise*): First 2 days—general introduction to minerals, rocks, and physical characteristics of pegmatites. Last 2 days—overview of pegmatite chemistry, genesis, and exploration techniques. Lab exercises complement lectures. Field trips, weather permitting, to illustrate pegmatite features; limited walking required. Bring hand lens or other magnifier, hiking boots or sturdy shoes, and outdoor clothes. Class fee $25. No experience needed.

**Inlay Introduction** (*Chuck Bruce*): Construct inlay box pendant, box ring, small Texas toothpick knife, and carved Texas toothpick knife; after these, student choice. Tools provided. Bring or purchase 2-3 slabs of rock. Lab fee $225 for 4 projects; additional materials $100-$300. Prerequisites: Cabochons and Silver 1 or Silver 2 preferred; can be taken with no experience but students could struggle.

**Metal Clay-Silver** (*Susan Brooks*): Learn to use fine silver metal clay and copper/bronze to create beautiful pieces of heirloom-quality jewelry. Learn basic skills (texturing, cutting, joining, stone setting, creating embellishments, and bail making) and explore various techniques to take your skills to another level. Class size limited to 8. Bring reading glasses or optivisor. Basic class kit fee $275; additional clay available for purchase. Lab fee $50. No experience needed.

**Silversmithing, basic** (*Richard Meszler*): Learn to work silver sheet & wire to fabricate jewelry. You get a kit with metals/supplies & a step-by-step description of each project. Materials fee $100. Optivisor an Materials fee $100. Optivisor and apron recommended. d apron recommended. No experience needed. 2-day class, semester 1.

**Silversmithing, intermediate** (*Richard Meszler*): Learn to make a bezel setting & bail for setting a cabochon to make a pendant. You get a kit with all you need. Materials fee $100. Optivisor and apron recommended. Basic silversmithing experience, including soldering. 2-day class, semester 2.

**Viking Knit** (*Val Johnson*): Learn a technique used nearly 1,300 years ago by Vikings for ropes, jewelry, clothing, and netting. Using few tools, make a stunning necklace (or 2 bracelets) and learn to weave beautiful pendants around cabochons. Optivisor helpful but not mandatory. Materials fee: sterling silver $120; copper $60.00.

**Wirewrapping, advanced** (*Jocelyn Campbell*): Reinforce previously learned traditional, structured skills and learn new skills, including use of half hard and dead soft gold-filled or sterling silver wire, pattern wire, and design concepts for non-oval or freeform stones, simple prongs, and decorative sculpting. Complete 8-10 projects. Tools/materials provided; additional tools/materials can be purchased in class. Prerequisite: traditional structured wire classes.

# Luminescent Calcite Collected Near New Winsor, Carroll County, MD

*by Calvin Harris*

Mineral collectors currently have scant information about the luminosity of calcite found near New Winsor in Maryland's Carroll County, despite the availability of mid- and longwave ultraviolet (UV) light sources developed in recent years. This paper describes the fluorescence and phosphorescence of New Winsor calcite under shortwave (254 nm), midwave (312 nm), and longwave (351 nm and 370 nm) UV light sources. Additionally, luminosity is described using an unconventional UV source. I purchased the two calcite specimens in figure 1 on the Internet; although the sample is small, the results suggest some possible outcomes.

## Geological Setting

Although the exact collection location for the two calcite specimens is unknown, information can be gained from the geology of Carroll County. The county has a range of geologic units, including Cambrian and Ordovician limestones. The adjacent Triassic strata are primarily clastic (sedimentary rock from eroded terrestrial materials). The Triassic strata are partly made up of detrital (eroded) carbonate rocks consisting of Frederick and Grove limestones with diabase intrusions (diabase is an igneous rock).

Frederick limestone, a rich source of fossils, is easily accessible in outcrops and quarries. It is currently used as aggregate as well as for producing cement and lime. The unit is about 200 feet thick.

Grove limestone, dark gray to a muted light gray in color, is also highly fossiliferous. Some of it contains significant amounts of quartz, The unit, which lies conformably (without a time gap) on top of Frederick limestone, is from 300 to 2,000 feet thick.

The diabase intrusions in the Frederick and Grove limestones are a vital source of rare earth elements such as europium (Eu) and Neodymium (Nd), which serve as inorganic activators in calcite. (Activators are foreign elements that cause fluorescence in calcite ($CaCO_3$).) Organic activators, such as fulvic and humic acids, derived from decayed vegetative matter percolating through the limestones. These chemicals are often present during calcite formation, and their combination with inorganic activators can produce interesting colors and patterns.

**Figure 1**—*Calcite specimens from near New Winsor, MD, tested for luminosity under UV light.* ***Top:*** *Specimen A, about 10 × 8.5 × 6.5 cm in size.* ***Bottom:*** *Specimen B, about 8.5 × 9.5 × 8 cm in size.*

## Mineral Description

**Specimen A** (fig. 1, top) is cabinet size, measuring 10 by 8.5 by 6.5 centimeters (about 4 × 3.4 × 2.6 in). Its shape is pyramidal, with partially developed hexagonal cleavage forms. In general, it appears white, with areas of reddish-brown.

**Specimen B** (fig. 1, bottom) measures 8.5 by 9.5 by 8 centimeters (about 3.4 × 3.7 × 3.1 in). Its shape is also pyramidal, with partially developed hexagonal cleavage forms. In general, it appears light gray to white with areas of dark reddish-brown.

## Test Procedures

Ultraviolet lamps manufactured by UVSYSTEMS, INC., based in Renten, WA, were placed 3 to 4 inches from the specimens to observe fluorescence and 2 to 3

inches away to observe phosphorescence. I observed phosphorescence before fluorescence to eliminate the need for my eyes to readjust to the dark. I used a DC (direct current) electric source to operate the lamps.

I used a Vivitar 283 photographic flash unit to determine *flash* (or brief intensity phosphorescence). *Flash* is an indication that manganese and lead are in sufficient quantities to produce this type of phosphorescence.

## Results

Figure 2 shows the fluorescence of each specimen under UV light. Tables 1 and 2 describe the results for each specimen by UV wavelength for fluorescence and phosphorescence and for the *flash* test.

## Observations and Notes

The results illustrate the possible luminescent characteristics of calcite specimens from Carroll County, MD. Future specimens collected from the same area will provide a more complete characterization of luminosity.

The UV radiation produced a variety of colors and patterns. Colors appear most prominent under shortwave (251 nm) and midwave (312 nm) UV light. Longwave radiation produced similar results under both wavelengths.

The results, based on conventional UV sources, indicate that the inorganic activator ions manganese ($Mn^2$) and lead ($Pb^2$) are present due to the red-orange response. The other colors suggest that certain rare earth elements and organic activators play a role in specimen luminosity. The results of the *flash* test confirm the presence of manganese and lead ions.

Interestingly, the two calcite specimens appear very similar to calcite specimens collected from Deming, NM, and the Halecombe quarry in Somerset, England; they might have similar luminescent properties.

## Selected Sources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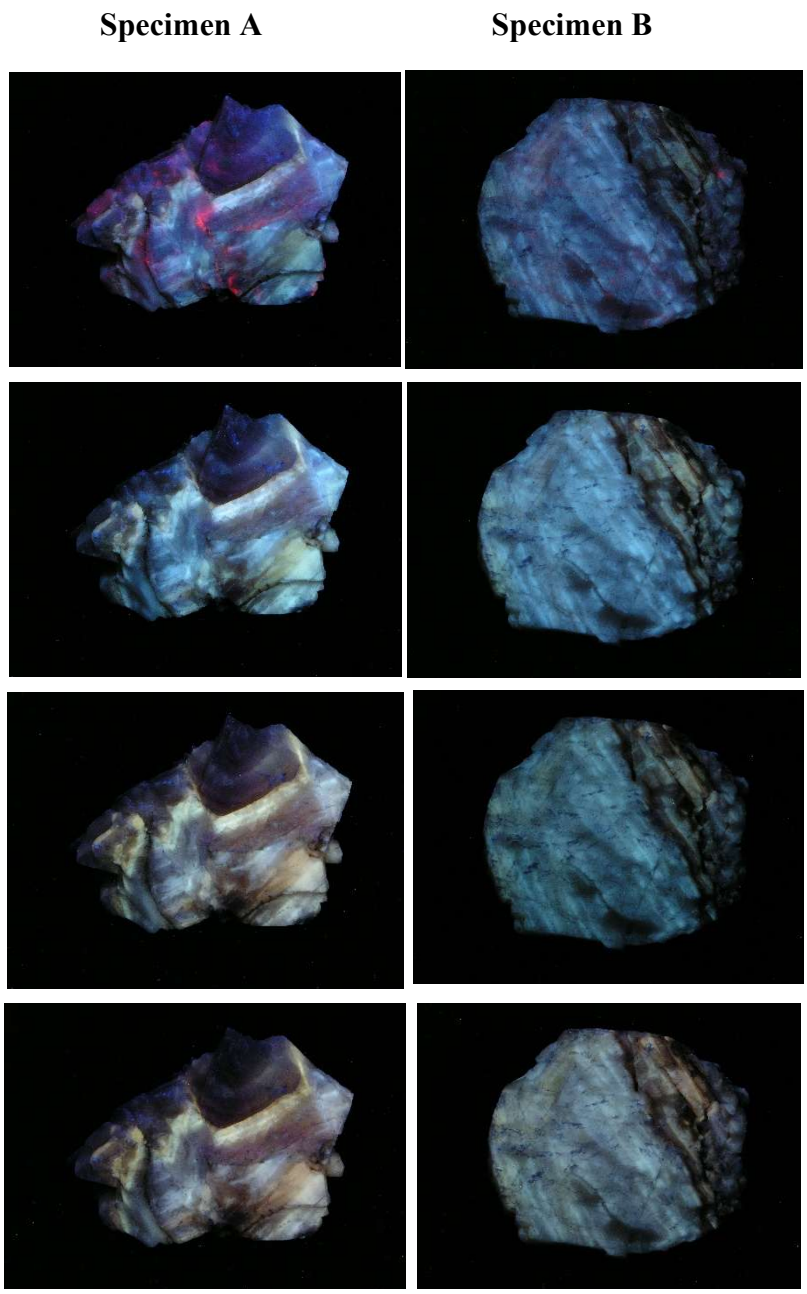



**Figure 2**—*Calcite specimens showing fluorescence under UV light. From top to bottom, row 1 = shortwave (254 nm); row 2 = midwave (312 nm); row 3 = longwave (351 nm); and row 4 = longwave (370 nm). For comparative descriptions, see tables 1 and 2 below.*

**Table 1**—Specimen A, fluorescence and phosphorescence by wavelength.

| Wavelength | Fluorescence | Phosphorescence |
|---|---|---|
| Shortwave (254 nm) | Moderate intensity, red-orange patches & lime-green bands. | Moderate intensity, lime-green bands, 12-second duration. |
| Midwave (312 nm) | Moderate-bright intensity, cream with green tint. | Moderate-bright intensity, lime-green bands, 13-second duration. |
| Longwave (351 nm) | Moderate-bright intensity, cream with greenish tint, muted green compared to midwave (312 nm). | Moderate-low intensity, gray with slight greenish tint, 7-second duration. |
| Longwave (370 nm) | Similar to longwave (351 nm). | Similar to longwave (351 nm). |
| ***Flash* test:** Moderate-bright intensity, red-orange color in small, central area of specimen. Outer areas: moderate-low intensity, red-orange color. At least four attempts were needed to determine *flash* due to interference caused by phosphorescence produced by photographic flash unit. | | |

**Table 2**—Specimen B, fluorescence and phosphorescence by wavelength.

| Wavelength | Fluorescence | Phosphorescence |
|---|---|---|
| Shortwave (254 nm) | Moderate intensity, cream with greenish tint, tan, purple colors. | Moderate-low intensity, lime-green color, 9-second duration. |
| Midwave (312 nm) | Moderate-bright intensity, colors similar to shortwave (254 nm). | Moderate-low intensity, cream with greenish tint, 13-second duration. |
| Longwave (351 nm) | Similar to shortwave (254 nm). | Low intensity, cream color, 10-second duration. |
| Longwave (370 nm) | Similar to longwave (351 nm). | Low intensity, gray with cream tint, 6-second duration. |
| ***Flash* test:** Moderate intensity, red-orange color limited to small area on right side of specimen. | | |

## Extraordinary Large Bicolor Natural Rough Diamond

***Editor's note:*** *The article is excerpted from GIA News*, 15 October 2025. *Thanks to Sue Marcus for the reference!*

The Gemological Institute of America (GIA) received a highly unusual diamond with distinct pink and colorless sections in its Botswana lab. Sourced from Botswana's Karowe Mine, the 37.41-carat stone measures 24.3 by 16.0 by 14.5 millimeters. Nearly all natural pink diamonds derive their color from the 550-nanometer absorption band, which is generally accepted as a byproduct in the diamond when stress, such as from mountain-building events, results in plastic deformation of the stone. The pink section was likely initially colorless and then plastically deformed, resulting in its pink color. The colorless section presumably formed at a later time after the stress-causing event. *Read the full story.*

## Unique Way of Depicting the Mohs Hardness Scale

*by Julie R. Peasley*

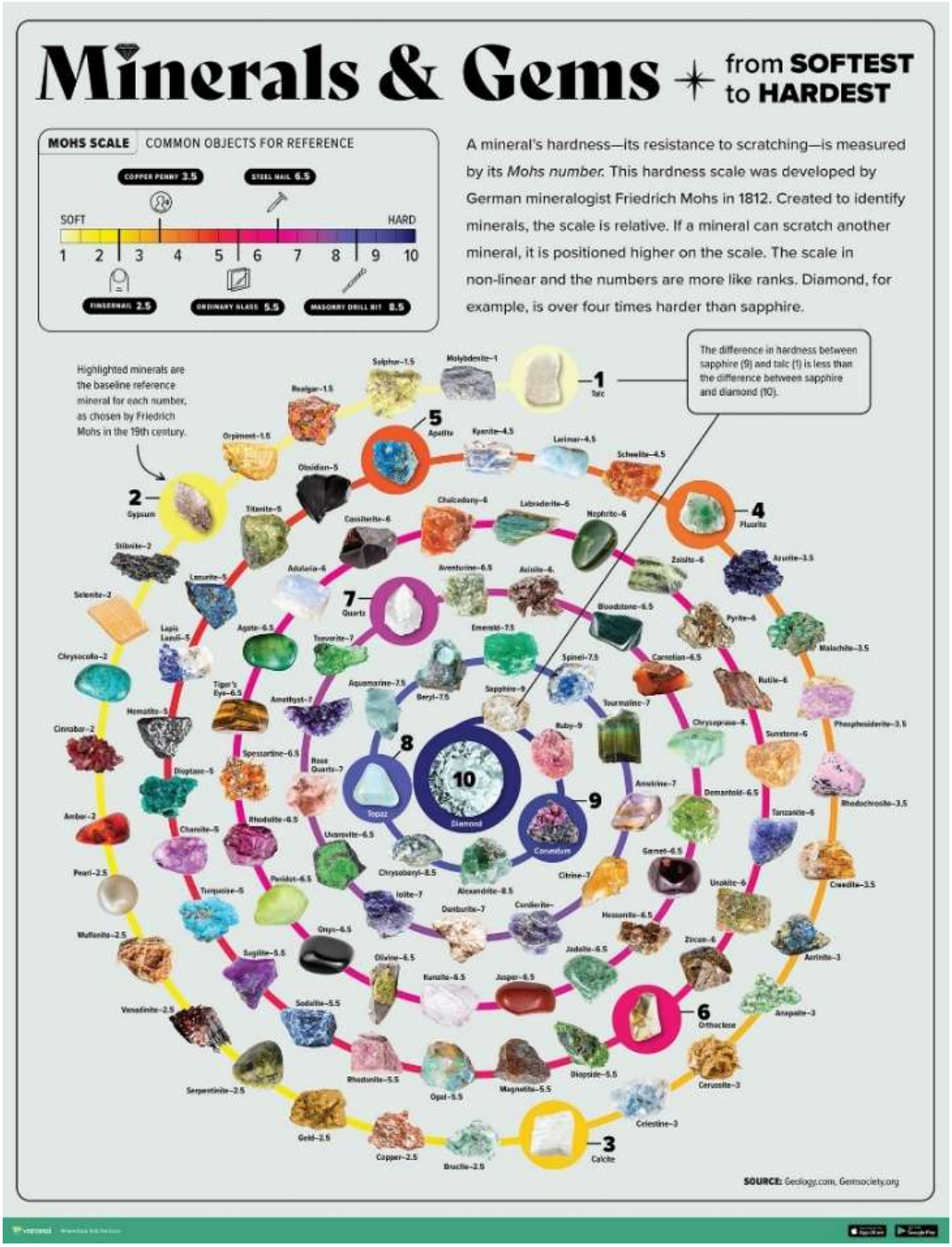
***Editor's note:*** *The piece is adapted from Visual Capitalist, 21 September 2025. Thanks to Sue Marcus for the reference!*

A mineral's hardness—its resistance to scratching—is measured by its Mohs number on a scale from 1 to 10. The hardness scale was developed by German mineralogist Friedrich Mohs in 1812. Created to identify minerals, the scale is relative. If a mineral can scratch another mineral, it is positioned higher on the scale *[brackets show where scratching devices fall on the scale]*:

1. Talc
2. Gypsum
   *[fingernail]*
3. Calcite
   *[copper penny]*
4. Fluorite
5. Apatite
   *[glass]*
6. Orthoclase (feldspar)
   *[steel nail]*
7. Quartz
8. Topaz
   *[masonry drill bit]*
9. Corundum
10. Diamond

The scale is nonlinear, and the numbers are like ranks. Diamond (10), for example, is more than four times harder than sapphire, a form of corundum (9). That alone is more than the difference in hardness between corundum (9) and talc (1).

Other minerals can be ranked in hardness along the scale from 1 to 10. The diagram at right in the shape of a wheel lets you visualize the placement of more than 100 minerals on the Mohs Hardness Scale. To see a blowup of the diagram, click here.



## January 2026—Upcoming Meetings/Shows in Our Area (see details below)

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | 1 New Year's Day | 2 | 3 |
| 4 | 5 NVMC mtg | 6 | 7 MSDC mtg | 8 | 9 | 10 |
| 11 | 12 GLMSMC mtg | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 MLK Day | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 MNCA mtg | 27 | 28 | 29 | 30 | 31 |

## Event Details

**6: Dunn Loring, VA**—Northern Virginia Mineral Club; https://www.novamineralclub.org/.

**8: Washington, DC**—Mineralogical Society of the District of Columbia; http://www.mineralogicalsocietyofdc.org/.

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

**27: Burke, VA**—Micromineralogists of the National Capital Area; http://www.dcmicrominerals.org/.

**No known shows in our area this month.**

# 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).

*Please send your newsletter articles to:*
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hutchbrown41@gmail.com

**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).



## 2026 Club Officers

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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 Rd., Dunn Loring, VA.* (No meeting in July or August.) September meeting (Labor Day) is Zoom only.

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