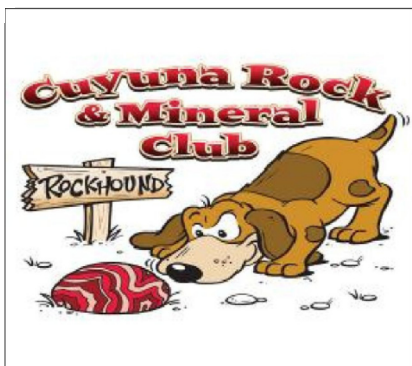


The Agate Explorer

February 2024



IT'S TIME!



DON'T DELAY, RENEW YOUR MEMBERSHIP TODAY!

Dues are due!

The yearly dues of \$20 per household are due. Please pay online at www.cuyunarockclub.org, bring it to a meeting (if you are paying cash, PLEASE put it in an envelope with your name on it, so your account will be credited), or mail it to:

Cuyuna Rock, Gem, and Mineral Society,
1001 Kingwood St., Ste. B-40
Brainerd, MN 56401.



Franklin Art Center

Club Information

Website-www.cuyunarockclub.org
Email-cuyunarockgemclub@gmail.com

Meeting Place

Lower level
Franklin Arts Center
1001 Kingwood St, Brainerd, MN 56401

Directions

.4 mile east of Business Hwy. 371 & Hwy. 210 intersection. (Castle turret water tower.)

Date/Time

the 2nd Saturday of each month at 2 p.m. unless otherwise noted.

Club Dues

\$20/ family
Free /unaccompanied juniors
Membership runs from Jan. 1-Dec. 31st.

February 10th Meeting

10:00—Clubhouse, Rock Room
Open & Rock Wrappers
(wire wrapping group)

12:00 noon—Board Meeting

2:00— General Meeting
Speaker Steve Huber
on rock carving



Rock Wrappers

Open gathering for wire wrappers starting at 10 a.m. on meeting Saturdays.

Hang out with other wrappers, and work on your projects.

(Bring all supplies needed.)
Learn tricks to make wrapping easier, a new design, or perhaps a new place to find supplies.

All skill levels welcome!

Help Needed!



The Club is looking for someone to monitor the show Facebook/Meta page. It will be active from probably mid-March until the show starts (this year is May 11-12). Most importantly, the person needs to respond quickly (24 hours or less most of the time) to any questions.

Anyone interested can contact Marcia Opatz at theisma@hotmail.com or 320-250-8120.

Club Calendar

February 10—meeting date, speaker Steve Huber on rock carving

March 9—meeting date

April 13—meeting date

May 4—meeting date—show prep

May 10—show set up

May 11-12—Cuyuna Agate and Mineral Show

June 7—Pebble Pup Day Camp

June 8—Pebble Pup Agate Pick and Club meeting date

Information subject to change.



Club Purpose:

To foster an interest (& encourage young & old) to study earth science, enjoy the art of lapidary, hunting for rocks, and semi-precious stones. We also strive to use what we know and acquire to further educate everyone who has an interest in our hobby.

We are a not-for-profit organization.

Board Meeting

Call to Order- The meeting was called to order at 10:30am by President Ed Opatz. Present were: Vice-President Lori DuBois, Secretary Joanie Hanson, and Board Members-at-Large Judi Laurence, Jo Schwalboski and Vern Iverson. Also present was Board Member elect Mike Stanwood.

A motion was passed to approve the minutes from the November meeting.

Treasurer's report - 128 households currently. The report will be posted at the rock club.

A motion was passed to approve payment for computer maintenance.

Franklin facility use schedule for 2024. Ed will set up our schedule of our facility use with the school district. Kevin paid our rent for 2024.

Memorial for Sharon/ silent auction- There will be a memorial for Sharon at the rock show.

Food vendors- We are looking at several food truck possibilities for the rock show.

Advertising- Facebook, Rock & Gem Magazine, area news outlets,

The vendor layout at the show was reviewed. Vendor registration will open January 15th.

Discuss door prizes/ ticketing.

2024 field trips- Plans are open for discussion on where we want to go this year.

Pebble Pups date- will be June 7&8, 2024

Rock club spring cleaning- Joanie would like to do some clubhouse cleaning.

Meeting adjourned at 11:30 am.

General Meeting

Holiday/Christmas Party
39 members present today.

Respectfully submitted,
Joanie Hanson



Gem Encyclopedia Kyanite

Kyanite is an aluminum silicate mineral that's notoriously difficult to facet because of its perfect cleavage and variable hardness, even within the same crystal. When cut parallel to its (long) c-axis, it has a hardness of 4 to 4.5. When cut perpendicular to its c-axis, it has a hardness of 6 to 7.5.

Kyanite is polymorphous with andalusite and sillimanite. These gems share the same chemistry but have different crystal systems.

Faceted kyanites as display pieces or jewelry stones should appeal to collectors of unusual gems or aficionados of the art of gem cutting. If faceted by expert gem cutters, kyanites can make beautiful gemstones. However, they will typically contain many flaws and inclusions, especially in larger sizes.

Blue kyanites are popular with collectors, but these gems can occur in many other colors, including green, pink, yellow, and orange.

Some stones may have color zones. Color change in some stones, from greenish blue in daylight to purple under incandescent light, has also been reported. In rare cases, cabbed kyanites may display chatoyancy.

Due to their variable hardness, kyanites in rings should have protective settings. These gems make great options for other jewelry uses, such as in earrings, pendants, and brooches.

Some kyanites have been presented as blue sapphire lookalikes. Although some specimens do display comparable colors, gemologists can readily distinguish these gems. Sapphire and kyanite have differ-

ent refractive indices, optic character, and specific gravity values. Of course, kyanite's hardness values also distinguish it from sapphire. However, scratch testing isn't recommended on finished gemstones.

If you're considering a kyanite as a sapphire substitute, please keep in mind that kyanite is less durable than sapphire (but also much less expensive).

In the 1970s, scientists successfully synthesized kyanites for research into their coloration. However, the challenges kyanite poses to gem cutting make the chances for a viable jewelry market for a synthetic version very improbable. Furthermore, kyanite isn't a rare mineral. It has many industrial uses, in fields such as abrasives, automotive brake materials, ceramics, and electronics.

Nevertheless, you might find so-called "synthetic kyanites" for sale online, especially as beads. Most likely, these are just lookalikes rather than lab-created kyanites. These may be instances of the term "synthetic" being used in the popular sense of "not real."

Many localities around the world produce kyanites. Some of the most notable sources of gem-quality material include the following:

United States: Connecticut; Georgia; Massachusetts; Yancy, North Carolina (deep blue or green crystals up to 2 inches long, some facetable); Vermont; Virginia.
Brazil: large blue and blue-green crystals.
Kenya: fine blue color, facetable; Machakos District (large blue crystals, banded with green; also colorless).

<https://www.gemsociety.org/article/kyanite-jewelry-and-gemstone-information/>

The Club is always looking for places to pick Lake Superior agates or other Minnesota rocks. If you know of somewhere that we can get permission a group to pick, please call Ed Opatz at 320-250-1363. A stipend is paid to the landowner.

2024 Field Trips

Trips are in the planning stages. Where would you like to go? When would you like to go?



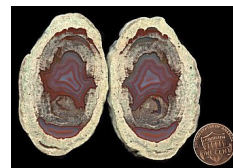
The Club is also looking for field trip coordinators. These people would look for locations to rockhound and organize the trip. It would not be necessary to go on every trip.

Assistance given by Board members.
Call/text Ed Opatz at 320-250-1363.

Agates From Around The World

French Thundereggs

Frejus, France



Several locations around Frejus at the Provence of France close to the border of Italy produced a wide variety of small but colorful thundereggs. The typical colors are red to pink, with the most desired color combination being red and blue.

Esterel area produced small thundereggs with small cavities that are usually filled with horizontal bands. Not much are available from the area since the area is mostly private lands and a nature reserve.

<https://www.sailorenergy.net/Agates/AgatesThundereggFrance-FrejusEggs01.html>



We're on Facebook!
Cuyuna Rock,
Gem & Mineral Society

*is a closed group, so you must ask to join.
After being approved you can
follow the members' posts and add your own
information.*

Colorado State Fossil



Fossil: Dinosaur (*Stegosaurus stenops*)

Age: Jurassic

Year Designated: 1972

The spike-tailed *Stegosaurus* is one of the most iconic and recognizable dinosaurs. It's rare fossils can be found in the Jurassic aged Morrison Formation of Colorado. It is believed that a typical *Stegosaurus* weighed five to ten tons but had a brain that was only about 2 ounces (the size of a walnut). But no, it did not have two brains. While probably not the brightest of the dinosaurs it had a formidable array of armored plates, and a spiked tail with which to defend itself.

<https://www.fossilera.com/pages/state-fossils>

Amazing Find at Crater of Diamonds State Park

An Arkansas man who picked up what he thought was a piece of glass at a state park says he later learned his jelly bean-sized find was something much more valuable: It was a 4.87-carat diamond.

Jerry Evans visited Crater of Diamonds State Park in Murfreesboro, Arkansas, for the first time with his girlfriend last spring, he told park officials.

Evans says about 10 minutes after they arrived, he spotted what looked like glass a few feet away on top of a plowed ridge, according to a news release.

Though he pocketed the pyramid-shaped find, he wasn't sure if it was a diamond, Evans said in the release.

"It was so clear. I really didn't know," Evans said. "We were picking up everything thinking it was a diamond."

Crater of Diamonds, which became a state park in 1972, is known as a source of diamonds from their original volcanic source, according to park officials.

After later returning home about 250 miles away in Lepanto, Arkansas, Evans says he pondered whether the small object could be something more than glass, so he sent it to the Gemological Institute of America for help identifying it.

The nonprofit California-based institute specializes in gem and jewelry research and education, according to its website.

Evans heard back from the institute a few weeks later, when they informed him he had found a near-colorless diamond, according to

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Bench Tip

On the flat side of a honeycomb soldering block, draw grid lines with a fine point sharpie marker to help you line up your pieces symmetrically. The sharpie lines hold up pretty well to the heat but do fade and will need touching up. Taking the time to draw them on is worth it in time saved by getting clean angles the first time!



<https://tips.metalsmithsociety.com/tips/BsdFJ8fgueb>

the release.



"When they called and told me it was real, I was tickled to death!" he said.

Evans then contacted the park about the discovery. His diamond became the largest one registered

at the park since Labor Day of 2020, when Kevin Kinard of Maumelle, Arkansas, found a 9.07-carat brown diamond there, according to park officials.

"While I get many emails from people wanting me to identify something they've found here, to my recollection, this is the first time someone has contacted me after they've had a diamond identified by the GIA," Waymon Cox, assistant park superintendent at Crater of Diamonds State Park, said in the release.

Park visitors find an average of one to two diamonds there daily, and 798 diamonds totaling more than 125 carats have been registered at the park in 2023, according to the release.

More than 75,000 diamonds have been discovered at Crater of Diamonds since the first diamonds were found in the area of Pike County, where the park is located, in the early 1900s, according to the park's website.

<https://www.cnn.com/2023/12/24/us/arkansas-diamond-park-discovery-trnd/index.html#:~:text=Jerry%20Evans%2C%20who%20found%20a,his%20discovery%20the%20Evans%20Diamond.&text=Evans%20heard%20back%20from%20the,diamond%2C%20according%20to%20the%20release>



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Minnesota Rock Shops

Agate City 721 7th Ave., Two Harbors
218-834-2304

Agate Trails of Fellerer Creations 471
Arrowhead Ln, Moose Lake 320-279-3553

AM Rock Shop 710 E River Rd, Anoka
763-421-2807

Art & Soul 5124 202 Main St Stillwater,
651-275-0255

Beaver Bay Agate Shop 1003 Main St.,
Beaver Bay 218-226-4847

Christy's Crystals 407 N Riverfront Dr,
Mankato 507-720-1061

Designed In Stone 841 Forest Ave E Suite
110, Mora 651-248-8768

Dream in Jasper Crystal Shop 107 N
Meridian St, Belle Plaine 763-301-1058

Enchanted Rock Garden 1228 E 66th St,
Richfield 612-866-1140

Jon's Gem Emporium 184 North Hwy
10, Motley 218-640-1047

Magic Mushrooms in the Crystal Garden
171 Lake St N, Big Lake 612-805-7111

MO'R Designs 2100 Snelling Ave N
Suite 13, St Paul 651-294-3069

Naturally Unique 137 Western Ave N,
Park Rapids 701-429-0409

Rock and Art Shop 1700 W St. Germain,
St. Cloud 320-217-2757

Rocks and Things 201 N Rum River Dr,
Princeton 763-389-0979

**Rocks & Tools SeashellsbyShelly Rock
and Crystal Shop** 2625 County Rd 37 NE,
Monticello 763-295-2440

Sacred Sage and Crystals 118 Broadway
E, Little Falls 320-360-3611

Sample's Agates Gem and Mineral Shop
18581 MN-371, Brainerd 218-821-6623

Taylor's Falls Bead Store 364 Bench St,
Taylor's Falls

Those Blasted Things 924 Kniss Ave.,
Luverne 507-283-4027

Twin Pines Trading Post 31049 Front St,
Pequot Lakes 218-839-0829

Uncle Tom's Rock Shop 2746 Hoffman
Dr. NW, Owatonna 507-451-2254

ZRS Fossils and Gifts 3018 Lyndale Ave
S, Minneapolis 612-824-1068

Rocks Gems Fossils Minerals

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Is Ice a Mineral?

It's transparent to translucent, usually colorless or white, but sometimes slightly bluish. It has a vitreous luster, a widely variable hardness, and low specific gravity of less than 1.0. It occurs in both massive and crystalline forms and is unstable even at moderately elevated temperatures.



So, is ice a mineral? Yes. Ice is a mineral — not the first thing that comes to mind when discussing minerals.

Ice is something we either love or hate. It's great for figure skating, iced tea and bourbon, but not for water pipes, windshields and highways. Ice is often thought of as “frozen water” rather than a mineral, and certainly not as a collectible mineral. But those who do collect ice travel thousands of miles, endure difficult conditions and spend millions of dollars to do it.

Why Is Ice a Mineral?

Minerals are defined as natural, inorganic, solid materials with definite chemical compositions and orderly atomic structures. Ice is a natural, solid dihydrogen oxide (H_2O) that crystallizes in the hexagonal system. To further its mineral credentials, it is assigned the Dana mineral classification number 04.01.02.01 and rates four pages of mineralogical description in the 7th edition of Dana's System of Mineralogy.

Dana's System of Mineralogy

Is ice a mineral? This can be confusing because water, which makes up ice, is not a mineral, being liquid at ambient temperatures and lacking both solidity and a crystalline structure. (Mercury is a grandfathered exception to this rule.) Like opal and obsidian, water is a mineraloid—a mineral-like material that fails to meet all mineral qualifications. The transformation of liquid water to solid ice and vice versa is explained by molecular structure and hydrogen bonding.

Color and Crystals

How do minerals, like ice, get their color? Hydrogen bonds absorb more of the red light wavelengths than of the blue. Although small bits of ice appear colorless, large masses of ice, such as icebergs and glaciers, have a bluish cast. Ice has many diverse habits.

Massive ice, which forms when water freezes quickly or ice crystals are compressed, is seen in frozen lakes, glaciers, icebergs, stalactites (icicles) and concentrically banded concretions (hailstones).

Crystalline ice forms when water freezes slowly or when water vapor deposits directly as a solid. Ice crystals have delicate, complex dihexagonal-dipyramidal shapes and occur in 80 morphological types. Examples of crystalline ice are dendritic growths on windows;

flat, lathlike crystals of pond skim ice; skeletal or hopper-shaped frost prisms; and the hexagonal stellar dendrites and sectorial plates of snowflakes.

Snowflakes develop when water freezes onto airborne pollen, or dust particles, to create seed crystals where water vapor crystallizes in an orderly deposition governed by ice's hexagonal structure.

Snowflake shape is determined by atmospheric temperature and humidity, time aloft and wind. Warm-air formation produces simple shapes, while cold air creates intricate, complex shapes. Because of radically varying formation conditions, no two snowflakes are exactly alike.

Ice, the Rock

While many wonder if ice is a mineral, the United States Geological Survey mineralogists also classify ice as a rock. The ice in frozen ponds is a solidified melt, just as basalt and rhyolite solidify from magma. Just as in rocks, the cooling rate of water determines the grain size of ice.

Slowly cooled water becomes coarsely textured massive ice. But when frozen quickly, the ice has a much finer texture. Extremely rapid freezing produces “ice glass” with no texture at all, just as the rapid solidification of granitic magma produces obsidian, a natural glass.

Snow is comparable to a sedimentary deposit with a texture similar to that of sand dunes. As the snow thaws and refreezes, it compacts and consolidates much like sedimentary rock. Ice can also cement sand or soil particles together into hard masses, just as silica binds many sedimentary rocks. This cementing action is seasonal in temperate regions but creates permanently frozen permafrost in arctic climes.

When deeply buried in glaciers or ice caps, pressure can recrystallize ice into a metamorphic form. The texture of glacial ice resembles that of such fine-grained metamorphic rocks as marble and quartzite. Glacial weight and movement can contort and convolute ice into the same forms seen in metamorphic gneiss and schist.

Like many rocks, ice is also quarried. The Inuit of the Arctic construct dome-shaped igloos from ice. In northern Europe and North America, ice palaces are built for winter festivals. Huge tonnages of ice were once cut from northern lakes and shipped to warmer climes as a refrigerant. And ice is also a

sculpting medium for seasonal ice-carving events in many northern regions.

Glaciology

Glaciology, from the Latin *glacies* meaning “frost” or “ice,” is the study of glaciers and other ice-related phenomena.

Glaciers are perennial accumulations of ice, snow, rock and sediments that originate on land and move downslope by their weight and gravity. They range from huge continental ice sheets to isolated alpine glaciers. Fast glaciers can travel as far as 100 feet per day, the slowest only a few inches. Glaciologists estimate the average daily travel at 12 inches per day, a rate that is increasing rapidly with global warming.

Some Alaskan glacier ice is only 30,000 years old, while parts of Greenland's ice cap are 200,000 years old. The oldest ice, found in Antarctica, contains trapped air bubbles from Earth's atmosphere 2.7 million years ago.

Ice Cores

In the 1960s, scientists began sampling glacial ice by core drilling. Ice layers consist of sequential layers, each representing a year of snowfall. Similar to tree rings, these layers can be accurately dated. Each layer is a chemical and physical record of the atmospheric conditions that existed when the ice was created.

“Reading” Ice

By measuring oxygen-isotope levels in the air within ice-core bubbles, scientists have compiled a consecutive record of global temperatures for the past 250,000 years. During this time, the Earth's climate has been mostly unsettled. The exception is the unusual climatic stability of the past 10,000 years.

Ice layers rich in volcanic ash and sulfur indicate major volcanic eruptions, while those rich in carbon and biological matter are evidence of large forest fires. Sequences of sulfur- and lead-rich ice layers dating to the second century CE represent the atmospheric record of the extensive silver and lead smelting conducted during Roman times.

The ice-core record shows that the cataclysmic eruption of Alaska's Okmok volcano in 43 BCE spawned decades of global cooling, agricultural failure, famine, political instability and social unrest. Historians say this contributed to the collapse of the Roman Republic in 31 BCE.

There is much more to ice than meets the eye. So, is ice a mineral? Natural ice is a mineral, a rock, an object of great beauty and an invaluable record of the Earth's past atmospheric conditions.

<https://www.rockngem.com/is-ice-a-mineral/>

Rare Mammoth Fossil Found by Coal Miners in North Dakota



Coal miners in North Dakota made an incredibly rare find earlier this year: a well-preserved, seven-foot-long tusk of an ancient mammoth.

The North Dakota Geological Survey (NDGS) said in a press release on Monday, Dec. 18, that the miners discovered the fossil at the Freedom Mine near Beulah over the Memorial Day weekend.

A team led by paleontologists from the NDGS recovered more than twenty bones from the mammoth skeleton, including ribs, a shoulder blade, a tooth, and parts of the hips. The team spent 12 days excavating the old streambed where the skeleton was buried.

“Most of the mammoth fossils known from North Dakota are isolated bones and teeth,” said Clint Boyd, a senior paleontologist for the NDGS. “This specimen is one of the most complete mammoth skeletons discovered in North Dakota, making it an exciting and scientifically important discovery.”

After being stabilized in protective plaster jackets, the bones were transported to the Paleontology Lab at the North Dakota Heritage Center & State Museum in Bismarck. There, they will undergo the slow and meticulous process of cleaning the attached sediment and stabilizing the delicate bones. While that work continues, staff from the NDGS and the Freedom Mine are working together to develop a plan to integrate these fossils into an educational outreach program.

The goal is to ensure as many people as possible can see this specimen and learn what it tells us about life in North Dakota during the Ice Age.

Mammoths lived in North Dakota during the Pleistocene Epoch, commonly called the Ice Age, and went extinct around 10,000 years ago. Several species of mammoth lived in North America, including the Woolly Mammoth and the Columbian Mammoth. They lived alongside other iconic animals like saber-toothed tigers and giant sloths.

Once the bones are fully cleaned, paleontologists will be able to identify which species was collected from the mine.

<https://fox59.com/news/national-world/rare-mammoth-fossil-found-by-coal-miners-in-north-dakota/>



There are Club members who teach lapidary related classes at the Paramount in St. Cloud. Here are the upcoming classes:

More information is available at:
www.paramountarts.org



**Wire Wrapping Stones
Saturday, Feb. 24
9 a.m.—3 p.m.
\$95**

**Instructor:
Jo Schwalboski
Beginner, no prior experience needed
Ages 14+**

How To Adjust Earring Backs

There are many types of backs available to hold earrings securely in place. Clutch, friction or butterfly backs are discs with curled-up tabs that oppose one another, acting as springs that pinch the ear post. The post has notches on it that function as stops so the clutch backs can hold the earring in place. Adjusting the tension of these springs so the earrings fit comfortably and securely is a routine service task for the bench jeweler.

Loosening the tension in the curled springs reduces the friction on the post but makes the catch less distinct, posing a very real risk of losing the earring. Tightening the curled springs, on the other hand, increases the friction on the post and gives the catch a better connection. But this can make it uncomfortable, even painful, for your customer to put on and take off the earrings.

Simply deepening the grooves on the ear post also has limitations, because the post is weakened without a noticeable effect on the catch. The curled springs bridge the notches, leaving a barely noticeable stop.

Here is a better way to tighten earring springs. First, you need to make the curvature of the springs smaller at the point of contact with the post. This allows the curls to sink deeper into the notches and create a more secure catch. Mark this point of contact on the outside thickness of the clutch back with a marker. Next, open the curled springs to the point where they can be grasped with the appropriate pair of pliers and give each



spring a little extra curl at the mark you made. Then restore the original curvature to the remainder of the spring, adjusting for the desired tension as you

go. In many cases, this sufficiently enhances the hold of the catch.

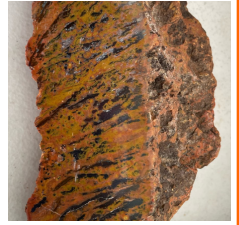
This may not be tight enough for some, so use a 1.0 to 1.3 mm ball burr to make miniscule indents in the curled springs of the clutch back. This will enable them to sink even deeper into the ear post notches and make the catch considerably more pronounced. Working from the top of the clutch back, simultaneously rest the ball burr on both springs as you cut a tiny indent dead center. Repeat this step from below the connection with the ear post. You will likely have to pinch the shaft of the burr between the curled springs and pull back on the burr to avoid excessive widening of the hole in the disc.

Bear in mind that commercially available clutch backs can be less than 0.2 mm thick, so it takes little to burr right through them. But very small indents can create secure stops that are safer than even the strongest possible tension between the curled springs. If properly positioned, these indents should stabilize the position of the clutch back on the post.

<https://www.gia.edu/bench-tip-how-to-adjust-earring-back>

The World of Jasper

**Tiger Tail Jasper
Chihuahua
Mexico**



Tiger Tail Jasper can also be called Flash Jasper because when it is the hematite swirls cause glints of light to bounce off the stone. It's typically yellow and oranges with streaks of the metallic hematite.

<https://www.outofarizona.com/rocks/category/64#:~:text=Tiger%20Tail%20Jasper%20comes%20from,streaks%20>

Sunshine Requests

If you know someone who could use a little sunshine—birth, illness, surgery, family death—please contact Joanie Hanson at 218-831-2665.



**Cuyuna Rock, Gem,
& Mineral Society**
on the Web

www.cyunarockclub.org

Scientists Solve Major Puzzle in Moon's Geology

Surprisingly high concentrations of the element titanium (Ti) in parts of the lunar surface have been known since NASA's Apollo missions, back in the 1960s and 1970s, which successfully returned solidified, ancient lava samples from the Moon's crust.

More recent mapping by orbiting satellite shows these magmas, known as high-Ti basalts, to be widespread on the Moon. In a series of high temperature lab experiments with molten rocks and sophisticated isotopic analyses of lunar samples, University of Bristol's Professor Tim Elliott and his colleagues identified a critical reaction that controls the composition of these distinctive magmas.

This reaction took place in the deep lunar interior some 3.5 billion years ago, involving exchange of the element iron in the magma with the element magnesium in the surrounding rocks, modifying the chemical and physical properties of the melt. "The origin of volcanic lunar rocks is a fascinating tale involving an 'avalanche' of an unstable, planetary-scale crystal pile created by the cooling of a primordial magma ocean," Professor Elliott said.

"Central to constraining this epic history is the presence of a magma type unique to the Moon, but explaining how such magmas could even have got to the surface, to be sampled by space missions, has been a troublesome problem. It is great to have resolved this dilemma."

"Until now models have been unable to recreate magma compositions that match essential chemical and physical characteristics of the high-Ti basalts," said Dr. Martijn Klaver, a researcher in the Institute of Mineralogy at the University of Münster.

"It has proven particularly hard to explain their low density, which allowed them to be erupted some three and a half billion years ago."

"We managed to mimic the high-Ti basalts in the process in the lab using high-temperature experiments," the researchers said.

"Measurements of the high-Ti basalts also revealed a distinctive isotopic composition that provides a fingerprint of the reactions reproduced by the experiments."

"Both results clearly demonstrate how the melt-solid reaction is integral in understanding the formation of these unique magmas."

<https://www.sci.news/space/lunar-titanium-rich-basaltic-magmas-12607.html>

Rock Room

This Club is unique because it has its own rock store. Here is an inventory of what is available for Club members to purchase. Stop in when you come to the Clubhouse!

Grit and Polish
Oregon Geodes
Chalcedony
Plume Agate
Owyhee Picture Jasper
Brazilian Agates
Amethyst
Hauser Bed Geodes
Thundereggs
Mexican Geodes
Montana Petrified Wood
Montana Moss
Tee Pee Canyon Agate
Slabs of all sizes and types
Septarian Nodules—Utah
79 Bed Geodes—Oregon
Moroccan White Agate
Small Botswana Agate
Smokey Quartz crystals - Colorado
Snowflake Obsidian
Utah Petrified Wood
African Blue Lace Agate
Carnelian Agate

Tiger Eye—red and blue
Tiger Eye—gold & blue Variegated
Miscellaneous Obsidian
Condor Agates
Blue Forest Petrified Wood
Polychrome Jasper
Sunset Jasper

Noreena Jasper
Tiger Iron
Kumerha Jasper
Swazi Agate
Calandria Agate (Mexico)
Bear Canyon Agate
Royal Imperial Jasper
Dino Bone
Coyamito Agate
Grape Agate
Root Beer Selenite
Gold Diggins
Red Cloud (Fluorescent)
Pumice
Mookaite



Kids' Corner

Make Your Own Quick Sand

Quick sand is a fascinating substance, make some of your own and experiment on a safe scale. Amaze your friends by demonstrating how it works.

What you'll need:

1 cup of maize cornflour
Half a cup of water
A large plastic container
A spoon

Instructions:

This one is simple, just mix the cornflour and water thoroughly in the container to make your own instant quick sand.

When showing other people how it works, stir slowly and drip the quick sand to show it is a liquid.

Stirring it quickly will make it hard and allow you to punch or poke it quickly (this works better if you do it fast rather than hard). Remember that quick sand is messy, try to play with it outside and don't forget to stir just before you use it.

Always stir instant quicksand just before you use it!

What's happening?

If you add just the right amount of water to corn flour it becomes very thick when you stir it quickly. This happens because the corn flour grains are mixed up and can't slide over each other due to the lack of water between them. Stirring slowly allows more water between the cornflour grains, letting them slide over each other much easier.

Poking it quickly has the same effect, making the substance very hard. If you poke it slowly it doesn't mix up the mixture in the same way, leaving it runny. It works in much the same way as real quick sand.

<https://www.sciencekids.co.nz/experiments/quicksand.html>

Major Meteor Showers in 2024

<u>Shower Radiant</u>	<u>(and its rough direction)</u>	<u>Date(s)</u>
Quadrantids Boötes	(NE)	Jan. 4
Lyrids* Lyra	(E)	April 22
Eta Aquariids Aquarius	(E)	May 5, 6
Delta Aquariids Aquarius	(S)	July 25 - Aug. 5
Perseids Perseus	(NE)	Aug. 12
Orionids* Orion	(SE)	Oct. 21, 22
Taurids Taurus	(overhead)	Oct. - Nov.
Leonids* Leo	(E)	Nov. 18
Geminids* Gemini	(E)	Dec. 13, 14
Ursids Ursa Minor	(N)	Dec. 22

* Strong moonlight will interfere.

<https://skyandtelescope.org/astronomy-news/the-best-meteor-showers-in-2024/>

The Basics of The Rolling Mill Process

Rolling mills are one of the more common jeweler's tools seen in small and medium-sized workshops. In essence, the rolling mill machine is a simple one that shares many traits with a mangle. The traditional jewelry rolling mill will have steel rollers; this means that, when metal is passed between them, it becomes compressed, changing the gauge or even the shape of the piece. For example, a steel rolling mill will change a circle into an oval shape.

As a rough guide, when halving the thickness of the rolling sheet, you will double the length (if rolling in one direction). Rolling sheet metal should be a gradual process, and the resulting compression of the metal will mean that the metal will work harder. Therefore, in between each stage of rolling, the metal will need to be annealed.

In addition to rolling sheet, many of today's rolling mills for jewelry making can roll wires into square or D-shaped sections – this feature is ideal for creating a tapered or shaped effect. Smaller rolling mill machines are more practical for a home workshop with one pair of rollers. Larger and automatic rolling mill machines are available for larger workshops. However, like all rolling mills for jewelry making, they must be secured to a firm and steady surface – many manufacturers recommend a dedicated stand bolted to the floor.

Rolling sheet is a common and extremely useful feature. First, ensure your sheet is prepared for rolling – this means that it should have been annealed, cleaned and dried. Once this is ready, adjust the width of the rollers – many rolling mill machines have a dial gauge to aid precise rolling gap measurement. As a

physical test, try pushing the sheet between the rollers. If the sheet passes through, the rollers should be adjusted until it will not pass between them.

Once the rollers are in the correct position, the mill is ready to roll down the metal. When using a rolling mill, the sheet should be supported in one hand, whilst the other turns the handle, thus drawing the sheet through the rollers. The sheet should be caught as it comes through, and its thickness checked using a vernier/caliper. Then, using a rolling mill machine again, re-roll your sheet to achieve the required thickness.

To create an oval shape using a rolling mill: Take a silver disc and set the rollers as you would for rolling sheet and feed the disc through.

Once the disc has been through the steel rolling mill, check the thickness and length of the piece using a vernier or a caliper, and repeat the process as necessary.

When feeding the oval through the rolling mill again, ensure that it is fed through the rollers in the same direction to ensure it elongates the oval.

Using a rolling mill with square grooves allows jewelers' to shape metal into a square and taper round wires. Before starting the process, the wire must be annealed, pickled, cleaned and dried thoroughly. The wire is then pushed between the square grooves and the handle turned so the wire is drawn into the grooved section of the rollers – this then shapes it. To ensure the required shape is achieved by using a rolling mill, turn the wire each time by 90 degrees.

Steel rolling mills with D-shape channels al-

low D-shape wire to be formed, & follow similar principles as shaping. The wire is fed through the D-shape section rollers &, once it has passed through, the thickness can then be checked. If it is not of the required thickness, simply repeat the process until complete.

When using a rolling mill, consider the following best practice hints and tips:

- ✿ Always use dry metal – any dampness will leave marks on the rollers and risk pitting.

- ✿ Roll metal gradually as too much pressure may result in the piece cracking when next annealing.

- ✿ Keep your rolling mill machine well maintained and oiled – to prolong the life of the machine.

- ✿ Remove any marks on the rollers – clean with a damp cloth & acetone to remove dirt. For more stubborn marks, carefully remove with fine wet & dry paper & fine steel wool.

- ✿ Keep the mill covered when not in use – this protects the rollers from any workshop debris.

Rolling mills are one of the more expensive jewelers' tools, and although simple in nature, the rolling mill can be put to many uses. When buying a rolling mill machine, like many tools, you should buy the best mill you can afford, with the better rolling mills being more robust and having heavier and stronger rollers.

<https://www.cooksongold.com/blog/learn/how-to-use-a-rolling-mill/>

The Club has a rolling mill that can be used by members.



Two Alien Minerals Unknown to Earth Found in Meteorite

Geologists have recently discovered two alien minerals unknown to Earth in a meteorite in Somalia. A small, 2.5 ounce (70-gram) fragment of the fifteen thousand kilogram fallen comet known as El Ali revealed the alien ore. Scientists stumbled upon the unknown mineral in the meteorite while sampling a slice. It was only after analyzing the segment in a lab that they realized they had discovered something completely new.

Researchers, scientists, and geologists are excited by the revelation, as it might help them understand more about asteroids and how they form as well as the possibility of locating more.

Live Science magazine reports the curator and professor in the Department of Earth & Atmospheric Sciences at the University of Alberta Chris Herd as having stated: Whenever you find a new mineral, it means that the actual geological conditions, the chemistry of the rock, was different than what's been found before. That's what makes this exciting: In this particular meteorite you

have two officially described minerals that are new to science.

Herd named one of the alien deposits 'elaliite' after the El Ali meteorite. The other he termed 'elkinstantonite' after Professor Lindy Elkins-Tanto, the vice president of the Interplanetary Initiative at Arizona State University. Elkins-Tanton is also the chief investigator of what they call the 'Psyche' mission, part of the NASA operation to reach the Asteroid Psyche 16 by 2023.

Elkins-Tanton is famous for her work on the formation of asteroids, which the foreign elements may help in deciphering. For that reason, Herd named one after her, saying that: Lindy has done a lot of work on how the cores of planets form, how these iron nickel cores form, and the closest analogue we have are iron meteorites. So it made sense to name a mineral after her and recognize her contributions to science.

The El Ali meteorite is composed of more than three hundred unfamiliar IAB elements and iron. Nevertheless, the discovery of something non-native to Earth came as a surprise to all. This is something that Herd's colleague,

Dr. Andrew Locock, affirmed.

"The very first day he did some analysis he said 'You've got at least two new minerals here,'" Locock said.

Herd called upon his colleague, Locock, to study the segments they found. Locock is an expert in identifying formerly unknown minerals and possesses a wealth of knowledge on how asteroids form.

Researchers came upon the El Ali meteorite in 2020. That, apparently, was when most of the world found out about it.

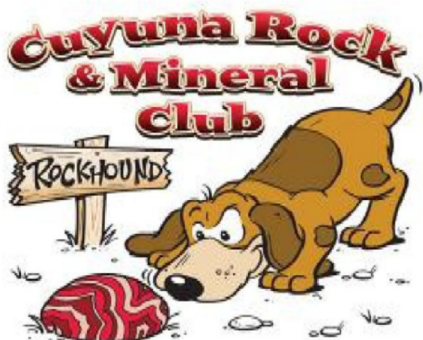
According to IFLScience, however, it had had a long history in the oral culture and ancient folklore of the Saar people of Somalia eons before Western scientists learned about it. The Saars sang songs of its mystery, mightiness, and magic for over five centuries. They also glorified it in poetry and dance and even used it to sharpen their knives, perhaps out of practicality.

<https://greekreporter.com/2024/01/08/two-alien-minerals-unknown-earth-found-meteorite/>

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Notes from the President

Ed said he didn't know what to write about this month, so I decided to take over.

I would like to describe what it's like to go to Tucson, or any other rock show, with my extraverted husband. He knows so many people! He's saying hi to those he knows, and checks on whether they have new rocks to sell. He makes friends with those he hasn't met before and is exchanging cards in no time. He's checking on where he or the Club can look for rocks, be it in Minnesota or anywhere that can be traveled by car. He even befriended a German vendor who organized trips to an African country. I could see Ed's wheels turning.....is there an overseas adventure in our future?

This networking phenomenon is advantageous to us, as a couple and a rock business, but also for the Club. Need a source for a particular kind of rock? Ask Ed. Want to take a rock trip and need to connect with someone in that location? Ask Ed. If he doesn't have a source, he has a source who knows a source. It's a BIG web of connections!

Even today, at one of the Tucson shows, he saw a rockhound friend who needs help so she doesn't lose her mining claims to a park reserve takeover. Ed had a source to share who deals with the BLM and similar institutions.

Thanks, Ed! It's kind of like having a personal rock Google.



Marcia Opatz