

# DAISY MOUNTAIN ROCKCHIPS

The purpose of Daisy Mountain Rock & Mineral Club is to promote and further an interest in geology, mineralogy, and lapidary arts, through education, field experiences, public service, and friendship.

**VOLUME 4, ISSUE 10**

**NOVEMBER 2019**



FOSSIL SHARK TOOTH (*Hemipristis serra*), Late Miocene Hawthorne Formation, Brunswick, Georgia *Photo by Stan Celestian*

## FOSSILS: PART 1

Introduction: What are they? How to become a fossil? How to identify them?

By Susan Celestian

I decided to add another regular column to the newsletter -- fossils. (I know this article is a bit long -winded; I promise subsequent ones will be shorter.) During this series, I will address fossilization, and will describe the major phyla and classes, in hopes that this will help you to generally identify any ancient creatures you may unearth in your expeditions around the state -- and country/world. Maybe you'll even consider adding fossil hunting to your geological perambulations.

**What is a fossil?** Fossils are the prehistoric physical remains of organic life. By definition, *prehistoric* means older than 6000 years, although some people define the minimum age of 10,000 years before a specimen is called a fossil. Personally, I'm not sure an age limit is particularly necessary, as long as it isn't particularly recent.

**What good are fossils?** Fossils play significant roles in the unraveling of our geologic past.

- ▶ Using fossils, we can develop a history of lifeforms & increase our understanding of biological evolution.
- ▶ Fossils assist geologists in establishing a chronological order to geological events and strata.
- ▶ Fossils can be used to establish a relative age date<sup>1</sup> for a rock unit. This is best employed by using *index fossils* (fossils with short and distinct spans of existence) and unique *assemblages* of fossils (rather than individual fossils).

- *The Principle of Biotic Succession states that individual and groups of specific fossils succeed each other in a particular vertical order, and those individuals or assemblages can be used to help put rocks in chronological order.*

See Figure 1 on page 17.

<sup>1</sup> *Relative Dates are those that define the age based on chronological order and general position within the geologic time scale. It does not define the age in terms of absolute years.*

Fossils continued on page 17....

**SWAP!**  
**TRADE!**  
**BUY!**

The program, for the meeting on December 3rd, will be a **Super Social**. Bring rocks, minerals, supplies, machines, items you have silversmithed or wire-wrapped.....

<sup>z</sup> **CONGRATULATIONS** A Belated

To Nancy Gallagher for receiving an award, for the club's website, from both the Rocky Mountain Federation of Mineralogical Societies and the American Federation of Mineralogical Societies. Thanks Nancy for your hard work!

**JUNIORS -- GO TO PAGE 16 FOR FREE MINERALS!!!!**

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November 5, 2019

## Board of Trustees Meeting Minutes

- In attendance: Bob E., Claudia M., Cynthia B., Deanne G., Don R., Ed W., Howard R., Rebecca S., Stan C., Susan C., Tammy E., Tiffany P. and William F.
- Cynthia B. discussed our finances
  - o Not much activity for October
- Ed W discussed the civic building hour changes
  - o They will be closing at 8pm on Tuesdays
  - o They will keep it open just for us for a charge
    - ◆ Not sure what the charge will be yet
- Tiffany P. talked about our Gmail account
  - o Must pay an extra \$12/month for business account
    - ◆ This will prevent Gmail from capping the amount of emails we send out in a day
      - 500/day email cap right now
      - All in favor of paying extra
    - ◆ We will also get a square account and device setup
- The scholarship award was discussed
  - o Because Boulder Creek has denied us location access for show this year, we will get rid of the extra scholarship to be given out
    - ◆ There will only be one \$1,500 scholarship given out this year
    - ◆ Claudia M. will give paperwork to 3 schools to be distributed
    - ◆ All in favor
  - o Other options for money to be given to support geology include:
    - ◆ Educational materials for S.T.E.M. nights
    - ◆ Educational materials for classrooms
    - ◆ Teachers given awards was discussed, might be revisited later
      - These will be investigated as covering our 501c3 responsibilities as a charitable organization
- Ed W. discussed the show status
  - o Anthem school is the new location this year
  - o Friday March 20 th 2:15pm will be the start of setup
    - ◆ Will need as many volunteers as possible to help setup
  - o The new location will be outside and inside causing some logistic issues
    - ◆ Will need security overnight

*Board Minutes continued on page 4....*

November 5, 2019

## General Club Meeting Minutes

- Thanks to Jodi Brewster, Rocky Mountain federation liaison, for coming and talking with us
  - o She is giving up her position
    - ◆ If anyone wants to apply, they can
  - o Jodi discussed the conventions the federation holds
    - ◆ We can send delegates to vote
    - ◆ Anyone in the club can go to conventions
  - o The liability per person will go up to \$65
- Robin S. led the raffle, helped by Deanne G., Rebecca S. and Tammy E.
- Cynthia B. read the financial report, we are in good standing
  - o Rocky Mountain federation dues coming up, please give your dues to Tiffany P. or do so online
  - o \$237 made from raffle on Nov. 5th
- Patti Polk was a no show – this has never happened before
  - o So sorry for the inconvenience
- First show meeting to be held 11/17/19 at 7pm
  - o Marketing needed
  - o Tickets manager needed
- Bill F. discussed upcoming field trip
  - o Purple Passion mine
    - ◆ Sat. Nov. 16th
  - o Coalition field trip
    - ◆ Sat. Nov. 23rd
    - ◆ Sycamore Canyon
  - o Sheep's Bridge
    - ◆ Sun. Nov. 24th
- Doug D. did a great job with his show and tell items brought
- Next month will be show & tell, swap, sell meet
  - o Bring any items you would like to show, swap or sell

Respectfully submitted by Rebecca Slosarik

....Board Minutes continued from page 3

- o The new location will be outside and inside causing some logistic issues
  - ◆ Will need security overnight
- Bob E. discussed the lapidary equipment locations
  - o All other options are too expensive right now
    - ◆ Modular office
    - ◆ Buying office
    - ◆ Rental facility
    - ◆ Buying land
  - o Trailer is not a suitable location for facility
  - o Clark L. will help look for an affordable rental
  - o Survey will be given out at club meeting to help decide what to do next
- Claims on popular sites was discussed
  - o We want to consider 3 sites to claim
    - ◆ BLM land is great option
    - ◆ Typically, \$300/claim, about \$25/yr. to maintain
    - ◆ This is in consideration of growth of Phoenix
    - ◆ Would make available to rock clubs only
  - o Want volunteers to help pick locations
    - ◆ We are open to any location suggestions
- Christmas party location
  - o Clark L. is helping find location
  - o Follow emails with more information

Respectfully submitted by Rebecca Slosarik

**November 12, 2019  
Show Meeting Minutes**

- Open meeting, no attendance necessary
- Show March 20-22 at Anthem school on Freedom Way in Anthem
- Vendors: Jim R.
  - o Previous vendors get first come, first serve
  - o Hopefully all 31 will come back
  - o New location and layout will be difficult to work with
    - ◆ Will need floor plan before continuing with vendors
  - o Vendors will be emailed soon
  - o Deanne G. is helping with contract writing
  - o 156 tables sold last year, 180 most used
- Membership exhibit will be new
  - o Displays will be done by Lori and Mike
- Marketing: need volunteer
  - o Jessie C. and Debbie C. may co-chair
  - o Responsibilities include:
    - ◆ Getting movie theatre ad
    - ◆ Setting up highway sign
    - ◆ Getting word out to local businesses
    - ◆ Distributing flyers (with volunteer help)
      - Old POSTNET template will be used
- Posters: Stan C.
  - o Same as last year
- Fluorescents: Dave H.
  - o Same as last year
- Food trucks: Clark L.
  - o Burgers Amoré and hot dog cart
  - o Will work with Nancy G. to get same trucks back again
- Kid's Corner: Bill & Jeanne S.
  - o Will have everything ready
  - o Herb will be Dr. Rocks
  - o Volunteers will be needed
  - o Kid's corner discussed as outside location possibly this year
    - ◆ Might keep inside for volunteer's sake
- Admissions: need volunteer
  - o Duties include:
    - ◆ Collecting money
    - ◆ Tallying and survey manager
  - o Will be in the vestibule of the gym

Show Meeting continued on page 4 ....

**Words of Wisdom**

from our very own

**Bob Evans**



When I walk into a spider web I automatically turn into a black belt kung fu master.

....Show Meeting continued from page 4

- Raffle: Robin S.
    - o Same as last year
    - o Raffle will be comprised of vendor donations
      - ◆ Club members can bring in nice items as well
    - o Deanne G. will bring sound system for raffle
  - ATM: Jennifer G.
    - o Will get, same as last year
    - o We will also have Square capabilities this year
  - Security: Ed W.
    - o Volunteers needed
    - o Volunteers will be given vests
    - o Security will just walk around and observe, no weapons needed
    - o Overnight security will be needed
      - ◆ 2-3 hour shifts
      - ◆ Sit in parking lot and watch
      - ◆ Will have sign up sheet closer to show
  - Tables
    - o Price stays the same as last year, \$65/table
    - o Will have only 6' tables
      - ◆ Will be rented (approx. \$1,200)
      - ◆ Might try to get some from veteran's club to save on cost
    - o No price change for inside versus outside tables
- ▶ Next meeting will be some time after December club meeting, will be informed at meeting and through Email

Respectfully submitted by Rebecca Slosarik



Colorful cobbles at San Simeon Beach, CA by Stan Celestian

### November Speaker

Patti Polk was unable to attend, so there was no speaker.

### **ALERT! ALERT! ALERT!**

Recently, a member of the Wickenburg Gem & Mineral Club encountered AZ Game & Fish, while out for an ATV drive in the desert.

He said he was told only out of state visitors need to get an off road decal; however when I went to the Game & Fish website, it indicates that all users need the decal (residents probably already have one).

Turns out, that as of 9/1/2019, all out-of-state Off Highway Vehicles (OHV) must now display a valid OHV decal. There is no grace period, so unless you encounter an extra friendly agent, you will pay a fine, although I have been unable to determine the penalty.

The decal is \$25 + \$5 processing, is good for one year, from date of purchase. Decals are not transferable, so must be purchased for each vehicle. It is available **ONLY** online at <https://www.azgfd.com/ohv/decals/> There are also a lot of FAQs and information at that site.

**AND don't forget that you should also buy a State Trust Land Recreational Permit, annually. Especially as we often traverse State Trust Land to get to field trip sites. See December 2018 newsletter for details, and avoid a hefty misdemeanor trespass fine!**



My sincere apologies to Laurie Manifold, our wonderful artist member I misspelled the attribution on her cartoon in the October newsletter. Sue

HAPPY THANKSGIVING



Manifold '19

"I thought you said 'bring the Turquoise'!"

# DING DONG! DING DONG! HEAR YE, HEAR YE!!!

## Club Christmas Party

Saturday, December 14

5:30-9 pm

LOOK FOR AN EMAIL  
WITH DETAILS



**WHERE?**  
George's  
Famous Gyros &  
Pasta  
20206 N 27th Av,  
Phoenix 85027

**POTLUCK**  
Salads &  
Desserts  
**ALL OTHER  
FOOD/DRINKS  
PROVIDED**

**GIFT  
EXCHANGE**



# FIELD TRIP REPORT

## PURPLE PASSION MINE

### NOVEMBER 16, 2019

By Stan Celestian



Nighttime begins its advance over the Purple Passion Mine and the intrepid rockhounds. *Photo by Stan Celestian*

The Purple Passion Mine is locally famous for its fluorescent minerals. Prior arrangements were made with the claim owner, Bill Gardner, manufacturer of [Way Too Cool®](#) fluorescent lamps. It is a favorite locality for fluorescent mineral collectors. The Daisy Mountain trip was very well organized and precisely led by Bill Freese. Upon arriving at the mine area, Ed Winbourne greeted us with gourmet cheeseburgers and hot dogs that were cooked to perfection. The attending members all brought the culinary

accessories to make the meal one to remember. The only flaw in the amazing meal was that Ed did not bring ketchup for the burgers. As a result we were reduced to eating the burgers like animals.



Head chef Ed Winbourne tends to the tasty vittles. *Photo by Nancy Gallagher*

Shortly after dining, the Earth rotated far enough on its axis that the Sun was blocked by the western horizon, and the sky grew darker and darker. Jupiter and then Saturn appeared in the darkening sky. This was shortly followed by thousands of stars. With the unaided eye, it was very easy to observe the Andromeda Galaxy, which lies about 2.2 million light years away, and the Milky Way stretched from horizon to horizon. It was an absolutely beautiful star-filled night. BUT, the focus was not up -- it was down. Dozens of ultraviolet (UV) lights beamed downward to excite electrons in minerals, and cause them to glow blue, green, yellow and red. Everyone was able to find fluorescent minerals for their personal collections, with perhaps a few to share with friends. It was not a question of being able to just find a fluorescent specimen, rather it was which ones were keepers and which ones were to be left for other collectors.

Bill Freese and Ed Winbourne, along with a few members, brought along short-wave UV lights. These were much better for viewing the red color of the calcite. Ed's shortwave UV light was suspended by a network of ropes beneath an EasyUp canopy. With this engineered set-up, everyone was able to check their rocks for fluorescent color combinations.



....Purple Passion continued from page 8



The anxious rockhounds (and one rock pup) awaiting darkness pause momentarily for a group “selfie”. Photo by Nancy Gallagher and Ed Winbourne



Rockhounding, especially at night, requires alertness, stamina, a keen eye and nerves of steel. All obtained by the delicious meal provided -- worth the price of admission in itself. Photo by Nancy Gallagher



With just a few modifications, the Kitchen/Buffer Table became the Ultraviolet Room after sunset. Photo by Stan Celestian

Along with the abundance of fluorescent rocks, some things that fluoresced were on the move. Yes, there were scorpions. I am not sure whose job it was to clear the area of these little critters (normally that task falls to Nancy Gallagher). I counted 12 scorpions on the rock wall while I stood in one spot. Certainly, there were many, many more



A scorpion glows bright in UV light. Photo by Stan Celestian

just yards away. Incredibly, scorpions are edible. The [June 2013 issue of “field&feast”](#) has recipes for batter-fried and sautéed scorpions. They are also eaten raw. I have heard that they taste like “really good beef jerky, with a hint of fish”. I would have tried one, but sadly I was already full from the delicious cheeseburger, hot dog and salad that I consumed earlier... maybe next time. People also enjoy scorpions as toppings on salad and ice cream. (This may be a good idea for the up-coming Christmas party !)

....*Purple Passion* continued from page 9

By 7 PM, everyone had their share of fluorescent rocks, and began the dusty trek back to civilization. We left behind tons of fluorescent rocks, tasty scorpions, and starry skies.

A good time was had by all... and to all it was a good night.

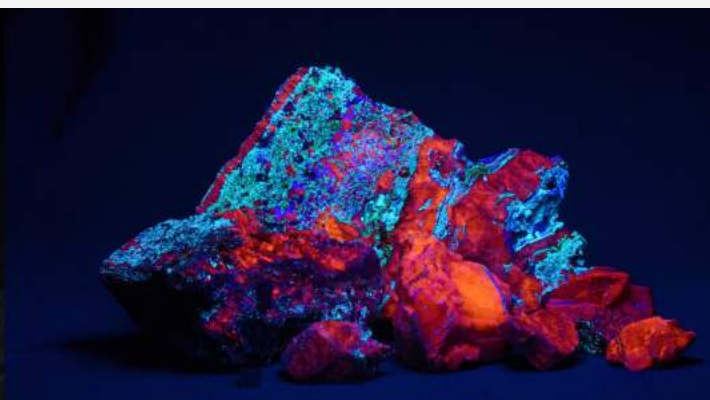


Members separate "Keepers" from "Leaverites". *Photo by Stan Celestian*



This is one of the "Keepers". Calcite (red), Fluorite (blue) and Willemite (green) glow brightly in shortwave UV light.

*Photo by Stan Celestian*



A rather dull pile of rocks (left) become an amazing collection of fluorescent minerals (right) when illuminated by an UV lamp. *Photo by Stan Celestian*

# FIELD TRIP REPORT

## DATE CREEK RANCH QUARTZ

### NOVEMBER 24, 2019

*By Stan Celestian*

Date Creek Ranch has been a rockhound collecting area for at least 60 years. Many great crystals have been collected in this desert locality, and yet there are still prizes for the persistent, sharp-eyed, and energetic collector. On Sunday November 24, Daisy Mountain Gem and Mineral Club ventured forth to collect quartz crystals and goethite pseudomorphs after pyrite, and enjoy fellowship with fellow club members.



The collecting area is about 2 miles along Date Creek Road, from Highway 93. This view shows the caravan of cars parked along Date Creek Road and the white ellipse is the approximate collecting area.

*Photo by Stan Celestian*

...Date Creek continued from page 11



A stunning day with mild temperatures, sunshine and interesting flora. Left picture is a Joshua Tree silhouetted against a blue sky, with a few cirrus clouds. Right picture shows a Desert Marigold taking advantage of the warm, sunny day. *Photos by Susan Celestian*



High clearance vehicles were not required, as the road was in very good shape... with just one bump, which required a slow-down to navigate. *Photo by Susan Celestian*

...Date Creek continued from page 12



Every good field trip starts with an orientation of the area's geology, and tall tales of collecting this area in the past. This orientation is being led by Stan Celestian who claims to have found fantastic quartz crystals just yards from this spot.

*Photo by Susan Celestian*



One of the best finds of the day was made by Tiffany, very early on in the outing. This beauty is a Goethite pseudomorph after Pyrite. Not only that, but it is a pyritohedron! This quality and crystal form is not common in this area. Well done Tiffany! (Will this be for the raffle?)

For those of you who were on the Camp Verde field trip, you know what a pseudomorph is and how they form. The term is broken down to **pseudo** (false) and **morph** (form). In this case it means that the crystal form (a pyritohedron) is that of a pyrite crystal (iron sulfide) that was replaced by a different mineral - goethite, an iron oxide. Most likely this replacement took place slowly, with the sulfur of the pyrite being leached out and replaced with oxygen (and a little water). *Photo by Susan Celestian*



Armed with a good knowledge of the area, what could be found, shovels, hammers and enthusiasm, the Daisy Mountain rockhounds venture out to look for prize specimens of Quartz. *Photo by Susan Celestian*

...Date Creek continued from page 13



## A DAY OF COLLECTING AT DATE CREEK

Here are some of crystals I collected with a few comments.

*All photos by Stan Celestian.*

**COMMON** - Small, terminated and somewhat clear Quartz crystals were found by nearly everyone. These crystals were scattered over the collecting area.

**LESS COMMON** - Larger, well-terminated crystals with some being clear were occasionally found.



**RARE** - Well-formed scepters with parallel overgrowths. These crystals are what people look for in this area. The picture on the left shows the crystal as found. Sadly, like topaz, amethyst tends to lose its color, when exposed to sunlight. Although collecting on the surface is easy, digging into the rock to find clay-filled pockets can yield unscathed crystals with amethyst color intact. The picture on the right shows what the crystal may have looked like 20 or more years ago.

...Date Creek continued from page 14



Along with quartz, goethite pseudomorphs after pyrite can be found. These were found within 20 or 30 yards from where the cars were parked. A quick 20-minute search resulted in these specimens.



As Sue and Stan prepared for their departure, a mystery presented itself. On the hood of their truck, lay a dead tarantula. How did this happen? From where did it come? Speculation was rampant. Was it aliens? Was it raining tarantulas, swept aloft by some distant storm? Did a kangaroo rat spit it up and out? Finally, it was concluded that a hungry seagull, or perhaps a spotted owl, eyed the hapless arachnid and dined on the best parts -- leaving the carcass, of mostly legs, behind. As the predatory bird took to flight, the tarantula, in its last moments, grabbed onto the bird. But its grip finally relaxed and it plunged back down toward the ground, only to be intercepted by the hood of the Celestian's truck. Perhaps we will never know for sure.

**ATTENTION JUNIORS !**

At the next meeting (Tuesday December 3) SANTA's SPECIAL HELPERS Stan and Sue Celestian, are bringing an extra treat.

**BEAUTIFUL MINERAL SPECIMENS**

**AND THEY ARE  
FREE**

Here's how it will work.

Each junior (17 and under) at the meeting will receive one dozen raffle tickets. One or all of the tickets can be placed in a cup that is next to one of the free mineral specimens. (Each specimen will have its own cup.) Then, a drawing will be made to see which junior has won that specimen. It is sure to be FUN!

HERE ARE THE MINERAL SPECIMENS THAT WILL BE GIVEN AWAY AT THE MEETING.

(STAN AND SUE SPECIALIZE IN THUMBNAIL MINERAL SPECIMENS.)

**BE SURE TO BE THERE !**

**JUNIORS FREE MINERAL DRAWING SPECIMEN PREVIEW**



Spessartine Garnet  
Aquarius Mtns, AZ



Wulfenite  
Red Cloud Mine, AZ



Wulfenite  
Red Cloud Mine, AZ



Bismuth Hoppers  
Synthetic



Amethyst Quartz  
Lake Blakhash, Kazakhstan



Orthoclase  
Crystal Pass, Nevada



Wulfenite  
Red Cloud Mine, AZ



Quartz  
Hot Springs, Arkansas



Vanadinite  
Mibladen, Morocco



Vanadinite  
Mibladen, Morocco



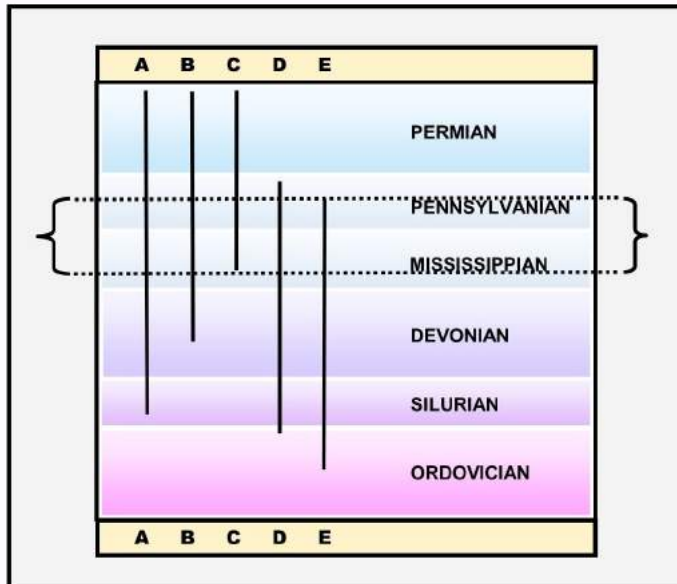
Topaz  
Topaz Mtn, Utah



Rhodochrosite  
South Africa



...Fossils continued from page 2



**FIGURE 1 RELATIVE DATING USING FAUNAL ASSEMBLAGES** By plotting the range of individual fossil species (A-E), the rock in which they are found can be relatively dated by determining the period of time in which they all existed. In the plot above, the ranges of the five species overlap during the Early Mississippian-Middle Pennsylvanian. Without any more specific information, the strata containing these fossils can be dated as Early-Mississippian through Mid-Pennsylvanian. *Graphic by Susan Celestian*

- ▶ Correlation (establishment of equivalency) of now disparate rock units can be established by identifying their included fossils. This is best employed by using index fossils (fossils with short and distinct spans of existence) and unique assemblages of fossils (rather than individual fossils).
  - The Principle of Biotic Succession (previously defined) can be used to identify rocks of the same age, now separated by wide horizontal distances.

See Figure 2 on page 18..

Fossils continued on page 18....



## Eucryptite

By Susan Celestian

Tying into our fluorescence field trip, the featured mineral is eucryptite. The name eucryptite was coined in 1880, by Dana and Brush. It derives from Greek for "well concealed", in reference to its oft intergrowth with albite (a feldspar).

**Chemical Formula** -  $\text{LiAlSiO}_4$   
(Lithium Aluminum Silicate)

**Crystal System** - Trigonal-rhombohedral (3 axes of equal lengths, oriented at  $120^\circ$  from each other in a single plane, and a 4th axis perpendicular to those 3: with 3-fold symmetry)

**Growth Forms/Habits** - Massive, granular, rarely distinct crystals.

**Hardness** - 6.5

**Color** - White, Clear, Light Tan, Light Gray

**Luster** - Vitreous to sub-vitreous, greasy

**Streak** - White

**Specific Gravity** - 2.67

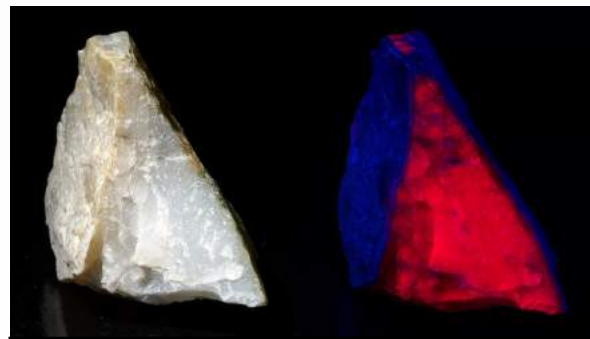
**Cleavage** - Indistinct in 2 directions

**Fracture** - Uneven to conchoidal

**Other** - Fluoresces magenta/pink/orange under SW ultra-violet light

**Associates** - Eucryptite is associated with other lithium-bearing minerals: kunzite, spodumene, lepidolite, cookeite, amblygonite, petalite; plus albite and quartz.

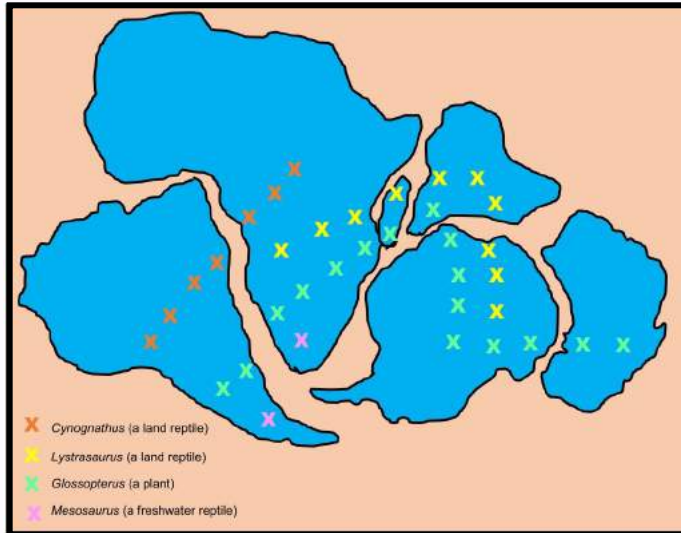
Eucryptite occurs in lithium-rich pegmatites, as a secondary mineral, derived from the alteration of spodumene, a lithium-aluminum pyroxene. Additionally, it can replace spodumene, as a pseudomorph. See Figure A.



**FIGURE A** Eucryptite from the Midnight Owl Mine in Yavapai County, Arizona On the left, in plain light, SW UV light on the right.

*Photo by Stan Celestian*

...Fossils continued from page 17



**FIGURE 2 CORRELATION USING FOSSILS** The major continents of our globe, are now widely dispersed, with large oceans in between. The diagram above illustrates how correlation, of rocks containing four fossils of land-based plants and animals, has allowed geologists to reconstruct the position of the continents during the Late Triassic-Early Permian convergence.

*Illustration by Susan Celestian*

- ▶ Paleo-environmental Reconstruction can be accomplished using fossils. Biological creatures often have specific or preferred environmental factors to ensure that they thrive. Knowing these, and in conjunction with the rock characteristics, fossils can be used to identify ancient environments of deposition (temperature, salinity, depth...). To define fossils' past requirements, we compare them to extant species preferences (necessarily making some assumptions about the accuracy of those comparisons) paired with observations about the sedimentary rock in which they are entombed (rock type, oxygen isotope data, their fossil associates...).
- ▶ And by using fossils to ascertain the environment of deposition, scientists can use fossils to determine ancient geography, more fully than that based on rocks alone.

**TYPES OF PRESERVATION:** These include the preservation of the entire organism, unaltered hard parts only, completely altered remains, replications, and evidence of past activity.

- ▶ Preservation of the entire organism is relatively rare, but holds a ton of exceptional information, such as internal organs, undigested stomach contents, maybe even DNA.
  - **Freezing:** embalment in ice or tundra bog (example: 20,00-45,000 year old mammoth remains in Siberian ice) <https://www.livescience.com/46773-mammoth-calf-mummy-deaths.html> Although rare, this is the 'ideal' preservation mode, as skin, hair, internal organs are found unaltered.
  - **Antisepsis:** embalment in fossil resin or tar (for example, fossil insects in Balkan amber or mammals of the La Brea Tar Pits, in Los Angeles, California. See Figures 3-4.



**FIGURE 3 ANTISEPSIS: AMBER**

This mosquito was entombed in Eocene amber, about 48 mya. Without exposure to oxygen, minute details can be seen. It may even be possible to recover blood samples.  
*Photo by Stan Celestian*



**FIGURE 4 ANTISEPSIS: TAR**

This is a block of dried tar from the La Brea Tar Pits, Los Angeles, California. Water pooled, on the surface of tar seeps, attracted mammals, who became entrapped. Many complete skeletons have been recovered.  
*Photo by Stan Celestian*

- **Mummification:** desiccation in very dry conditions (caves or peat bog) <https://www.sciencedaily.com/releases/2007/12/071203103349.htm>

...Fossils continued from page 18

- Preservation of **unaltered hard parts**, include original bones, teeth, shells, and pollen. The younger the fossil, the more likely this mode, as chemical alterations are quite common, and the older the fossil, the more opportunities for changes. See Figure 5.



**FIGURE 5 ORIGINAL HARD PARTS** This snail (*Astraea* sp.) is from the unconsolidated Early Pleistocene San Pedro Formation, in San Pedro, California. If you enlarge the page view, on the right-hand image, you can see the nacreous (shiny, iridescent) layer on the inside of the aperture. That layer is very quick to alter after the snail's death.  
*Photo by Stan Celestian*

- Preservation of altered remains, is the most common mode. The distinction between permineralization and replacement can blur, however they are as follows:

- **Permineralization** is the complete or partial filling of pore spaces in the original remains (shell, bone), by silica, calcite, pyrite, or other mineral, leaving at least some original organic material. See Figures 6-7.



**FIGURE 6 PERMINERALIZATION** This piece of petrified wood, from southern Arizona, preserved when quartz filled in the spaces within the woody tissue. The replacement kept the wood from decaying away, and fine details can be seen.  
*Photo by Stan Celestian*



**FIGURE 7 PERMINERALIZATION 2** This piece of petrified Red Oak wood, from Oregon, was also replaced ion for ion by silica (quartz). The preservation is so fine that you can see the cell structure -- making identification to genus/species possible.  
*Photo by Stan Celestian*

- **Replacement** is the ion-for-ion replacement of bone, shell, or wood by silica, calcite, pyrite, or other mineral. See Figure 8-9.



**FIGURE 8 REPLACEMENT** This is the Devonian brachiopod, *thedfordensis*, collected near Thedford, Ontario, Canada. While there are no obvious outward signs, you can almost assume that ancient fossils have been replaced in some way. Marine animals build their shells out of calcium carbonate -- in the forms of aragonite and calcite. However, aragonite is very unstable, and will recrystallize to calcite over time.  
*Photo by Stan Celestian*



**FIGURE 9 REPLACEMENT 2** This Devonian *Paraspirifer bownockeri* (Sylvania, Ohio) exhibits obvious replacement by pyrite.  
*Photo by Stan Celestian*

...Fossils continued from page 19

- **Carbonization** is the fixation of carbon during the decomposition of plant or animal remains. It leaves a shiny, black film. See Figures 10-11.



**FIGURE 10 CARBONIZATION** This is a fern fossil, out of the Permian Schnebly Hill Formation of Gila Co., Arizona. The once-green leaves have been reduced to a carbon film.

Photo by Stan Celestian



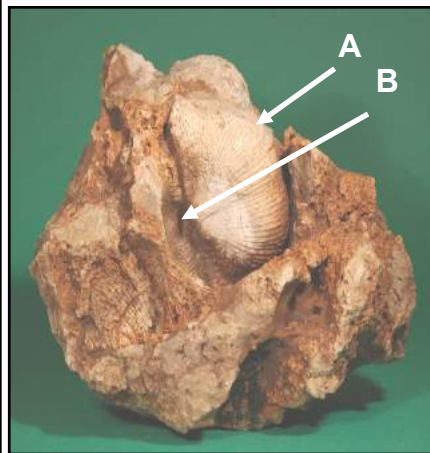
**FIGURE 11 CARBONIZATION 2** Fairly rare as a fossil, this carbonized frog is *Rana basaltica* from Shandong Province, China. Photo by Stan Celestian

- ▶ Replications include molds and casts -- often with little information beyond the existence of organisms.
- **Internal molds** are the 3-D impression of the interior of a shell. They are typically pretty smooth, lacking evidence of ornamentation. See Figure 12.



**FIGURE 12 INTERNAL MOLD** Mud filled in the coiled chamber of this snail, and lithified, before the shell dissolved away. Notice the lack of any ornamentation, as the snail occupied a smooth-sided tube. Locality unknown. Photo by Stan Celestian.

- **External molds** are typically concave, with the impression of the external surface of a shell, or other organic remain. See Figure 13.



**FIGURE 13 External Mold** This is actually both an internal (A) and an external (B) mold -- the gap is the space once occupied by the shell. *Penicularis bassi*. Permian Kaibab Fm., Gila Co., AZ.

Photo by Stan Celestian

- **Casts** are not common, but are 3-D replications created when an external mold is filled with a secondary mineral.



**FIGURE 14 CAST** This fossil is a solid replica, composed of quartz that filled in a cavity left when the brachiopod dissolved. *Ambocoelia* sp, Martin Fm., Yavapai Co., Arizona. Photo by Stan Celestian

...Fossils continued from page 20

**TRACE FOSSILS** (ichnofossils) are evidence of the activity of organisms. From them we know creatures occupied that area in the past, but remains of the shells, bones, or plants are not present.

- Coprolites are the fecal leavings of animals. Besides indications of animal presence, they preserve pollen, plant material, insect parts, and undigested bones -- thus providing more information about the environment and the habits of the inhabitants. See Figure 15.



**FIGURE 15 COPROLITE** Need I say more? Photo by Stan Celestian

- Gastroliths or stomach stones, are found in piles vomited out when in need of replacement, or may be associated with the gizzard or stomach of skeletal remains. They are rounded and polished, and provide informative biological information. (For example: gastroliths associated with large dinosaur skeletons, supply hints as to how they could process prodigious amounts of forage -



**FIGURE 16 GASTROLITHS** Photo by Stan Celestian

- they did not need to bother to fully chew it up, thus saving time for ingestion.) See Figure 16.
- Borings, Burrows, Tracks, and Trails are traces of the activities of organisms. First they indicate the presence of organisms, in the absence of remains; second they may indicate the availability of food; third they can indicate the gait of walking or running behavior; and fourth

they are clues to lifestyle (borings & burrows). See Figure 17-21.



**FIGURE 17 BORINGS** The tiny holes in this fossil clam are bore holes of a sponge. The sponge tunneled throughout the shell, creating the holes for access to the water -- and food. Photo by Stan Celestian



**FIGURE 18 TRAILS** These wandering trails are probably feeding trails, created when some creature systematically searched the muddy ocean floor for food. Photo by Stan Celestian



**FIGURE 19 BORINGS** This petrified is riddled with calcite-lined borings of *Teredo* sp -- a marine mollusk. Modern *Teredo* damage wooden boats, pilings, driftwood, and so on. Photo by Stan Celestian

...Fossils continued from page 21



**FIGURE 20 FOOTPRINT** This is actually a natural CAST of a dinosaur footprint, from the Price River Coal Company's mine in Spring Canyon, Utah. This one was once on display in Arizona's Mining & Mineral Museum.

Trackways of animal footprints can give insight into the lifestyle and capabilities of the animals. Stride -- both walking & running -- can be determined, speed may be calculated, stance can be determined (quadrupedal vs bipedal), and more.

*Photo by Stan Celestian*



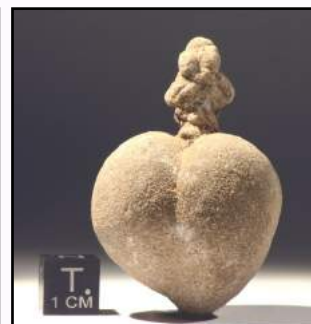
**FIGURE 21 FOOTPRINT 2** These reptile (or mammal-like reptile) footprints occur fairly commonly in the Permian Coconino Fm. of northern Arizona. Recent studies suggest that they were made under water. In that case the tail did not drag to leave a "drag mark", and claw marks are well-defined.

*Photo by Stan Celestian*

**DON'T BE FOOLED BY PSEUDOFOSSELS!**

Pseudofossils are rock objects that appear to be organic in origin; however are in reality inorganic in origin. Examples include:

- ◆ **Concretions:** In sedimentary rocks, there are often masses of usually-siliceous "lumps". Mineralization about a nucleus -- mineral grain or decaying organism -- accounts for their presence. They may be cannonball-round or more often irregularly-shaped. They are often mistaken for bones, dinosaur eggs, or other organic object. Sometimes you will find a fossil at its core, but the concretion itself is inorganic. See Figure 22.



**FIGURE 22 CONCRETIONS**

Lumps, masses, "fairy stones" and other enigmatic objects in rocks are very common. Most are not as interesting as these, but they are the result of inorganic processes.

*Photos by Stan Celestian*

...Fossils continued from page 22

- ◆ **Cone--in-cone:** Of generally uncertain origin, these look like adjacent stacks of cones, with the pointy end pointing down. One finds them in limestones and shales. See Figure 23.



**FIGURE 23 CONE-IN-CONE** These weird and unusual sedimentary features are from the collection of the Natural History Museum of Los Angeles County. Photo by Stan Celestian and by permission of NHMLA

- ◆ **Dendrites:** Manganese oxide often crystallizes as dendritic (branching) black features that are quite reminiscent of plant remains. See Figure 24.



**FIGURE 24 MANGANESE OXIDE DENDRITES**

These black squiggles covering the surface of a slab of rhyolite are from a locality close to the Grand Reef Mine, Graham Co., AZ. Photo by Stan Celestian

- ◆ **Pyrite suns or dollars:** Flat, round disks of pyrite from shales of Illinois have been mis-identified as sand dollars. See Figure 25.

**FIGURE 25 PYRITE SUN or DOLLAR**

Pretty much unique to the shales of coal mines, near Sparta, Illinois, these form as pyrite grows between thin layers of 350 myo rock, under the pressure of



being deeply buried.

Photo by Stan Celestian

- ◆ **Rock features:** Often interesting layers or weathering structures have a very organic look. See Figure 26.



**FIGURE 26** This one is a bit weird. It is a rock I collected from a quarry in Illinois, when I was about 12. Looks like a fossil lima bean, but is just the result of the way

the rock eroded. Photo by Stan Celestian

- ◆ **Pseudocoprolites:** These are a new one. They resemble coprolites (and are usually sold as such), but have recently been thought to be the result of silt/clay being extruded through knotholes in wood. See Figure 27.



**FIGURE 27 PSUEDOCOPROLITES** Sure look a lot like the real thing! Photo by Stan Celestian

## UPCOMING FIELD TRIPS

**WHEN:** Saturday, November 16 -- evening

**WHERE:** Purple Passion Mine

**WHAT:** Potluck & Fluorescent Minerals

**MEET:** TBA

**LEADER:** Ed Winbourne

**WHEN:** Sunday, November 24, 2019

**WHERE:** Date Creek Ranch area

**WHAT:** Quartz crystals, goethite ps pyrite

**MEET:** 8:45 at McDonalds in Wickenburg, leaving promptly at 9:00

**LEADER:** Stan Celestian

**WHEN:** Fri/Sat, December 6-7, 2019

**WHERE:** Red Cloud Mine/Geronimo Mine

**WHAT:** Wulfenite/Vanadinite

**MEET:** At mine or 7:30 am on Friday at Martinez Lake (More details in separate email from Dave)

**LEADER:** Dave Haneline

*DATES SUBJECT TO CHANGE*

*Stan and the field trip committee will be actively looking for productive spots for field trips. If you have any suggestions, you are encouraged to contact him at [stancelastian@gmail.com](mailto:stancelastian@gmail.com)*



Portion of a sceptered & castled amethystine crystal cluster, collected by Stan Celestian at Date Creek in about 1988.

*Photo by Stan Celestian*

**NEEDED: QUALITY MINERAL (or OTHER) DONATIONS WITH LABELS** -- for monthly raffle prizes; and for raffle, door prizes, and sales tables at the annual show. If you have specimens to donate, please see Robin Shannon. The Daisy Mountain Rock and Mineral Club is a 501(c)(3) non-profit organization, and will gratefully acknowledge your donation with a Tax Deduction Letter. Thank You!

## NOTE FROM THE EDITORS

Have a geological interest? Been somewhere interesting? Have pictures from a club trip? Collected some great material? Send us pictures -- or write a short story (pictures would be great).

Deadline for the newsletter is the 22nd of the month.

Mail or Email submissions to:

Susan Celestian

6415 N 183rd Av

Waddell, AZ 85355

[azrocklady@gmail.com](mailto:azrocklady@gmail.com)

## WIRE-WRAPPING CLASS

4:30-6:30 pm

Prior to the meeting

**Bring:** cab or stone, about quarter-sized or larger; 26 and 18 gauge copper-based wire; round nose pliers and flush wire cutter, beads (optional), little clamps, masking tape, E6000 jewelry glue.

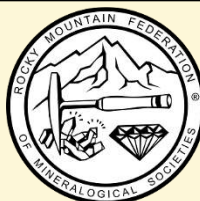
Free, but donations are appreciated.

Questions? Contact Jennifer at

[Jennifer@eliteshuttersandblinds.com](mailto:Jennifer@eliteshuttersandblinds.com)




This is the project Jennifer has planned for November!



Visit <http://rmfms.org/> for news about conventions, events, and associated clubs. If you are travelling, you might want to contact a club local to your destination. Maybe they have a field trip you could join, while in town.



**UPCOMING AZ MINERAL SHOWS**

**November 30-Dec 1 - Wickenburg, AZ** Wickenburg Gem & Mineral Society; Hassayampa Elementary School, 251 S Tegner St; Sat 9-5, Sun 10-4; Admission: Free. See poster on page 10. **They (we) are raffling off a 3-quart THUMLERS TUMBLER ULTRA VIBE 10 IND.** 

**January-February - Quartzsite, AZ** For a complete list of shows, go to <https://www.desertusa.com/cities/az/quartzsite.html#anchor832166>

Desert Garden January 1-February 28  
Pow Wow January 15-17  
Tyson Wells January 3-12

**January 3-5 - Mesa, AZ** Flagg Mineral Foundation; Mesa Community College, 1833 W Southern Av; Fri-Sun 9-5; Admission: free. See poster on page 17.

**January 10-12 - Globe, AZ** Gila County Gem & Mineral Society; Gila County Fairgrounds, 900 Fairgrounds Rd.; Fri-Sat 9-5, Sun 10-4; Admission: Adults, single \$3; Adults, couples \$5; children & students free.

**January 20-February 17** Go to <http://www.tucsongemshows.net/coming.html> for a complete list of Tucson gem, mineral & fossils shows.

**February 13-16 - Tucson, AZ** Tucson Gem & Mineral Society; Tucson Convention Center, 26 S Church Av; Thurs-Sat 10-6, Sun 10-5; Admission: Adult \$13, 14 and under free w/paying adult. See poster on page 18 -- discount coupon.

**March 21-22 - Anthem, AZ** Daisy Mountain Rock & Mineral Club; Anthem School, 40100 N Freedom Way; Sat 9-5, Sun 9:30-4; Admission:

If you are travelling, a good source of shows AND clubs is <http://the-vug.com/educate-and-inform/mineral-shows/> or <http://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=AZ> For out-of-the-country shows: <http://www.mindat.org/shows.php?current=1>

**Just a reminder...**

**DUES ARE DUE**



**FACEBOOK**

Visit and join the club page periodically. See what is happening, and boost our visibility on the web. Go to: [The Daisy Mountain Rock and Mineral Club](#). It is set up so you can post photos of outings or related items.

**AWARD-WINNING WEBSITE**

<http://www.dmrmc.com/>

If you have comments, contact Nancy Gallagher.

**GROUPWORKS**

As a DMRMC club member, your name should be available at <https://app.groupworks.com/#/login>, and you should receive an email linking you to registration. Create an account and receive reminders about club events, meetings, and important club information. You may post pictures and information -- all seen only by club members.

*Upcoming Meeting Programs*

Thanks to Ed Winbourne for scheduling the following speakers:

December 3rd is the swap, sell, trade session.

**Officers, Chairpersons, & Trustees**

- President:** Ed Winbourne.....[ewinbourne@gmail.com](mailto:ewinbourne@gmail.com)
- Vice President:** Stan Celestian.....  
[stancelastian@gmail.com](mailto:stancelastian@gmail.com)
- Secretary:** Rebecca Slosarik .. [rslosarik1@gmail.com](mailto:rslosarik1@gmail.com)
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- Editors:** Susan & Stan Celestian.....  
[azrocklady@gmail.com](mailto:azrocklady@gmail.com)
- Field Trip:** Stan Celestian... [stancelastian@gmail.com](mailto:stancelastian@gmail.com)
- Show Chair:** Ed Winbourne

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| Don R      | Bob S     |
|            | Rebecca S |

Meetings are held the **1st Tuesday of the month** at the **Anthem Civic Building**, 3701 W Anthem Way, Anthem, AZ 85086. Business meeting at 6:30 pm. We **do not meet in July or August.**

[DMRMCLUB@GMAIL.COM](mailto:DMRMCLUB@GMAIL.COM)

**Membership Dues:**  
First year \$30, then \$20.00 Adults per Person  
First year \$45, then \$25.00 Family (2 people)

**Meeting Dates for 2019**

Jan 8, Feb 5, Mar 5, Apr 2, May 7, June 4, Sept 3,  
Oct 1, Nov 5, Dec 3

# Wickenburg Gem and Mineral Show Nov 30, Dec 1 2019



Free Admission

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Raffle

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Forsterville var. Peridot - Peridot Mesa, San Carlos, San Carlos Indian Reservation, Gila Co., Arizona, USA  
CUT GEM: Don Boushelle - PHOTO: Don Boushelle | POLISH: Bill Yedowitz - PHOTO: Bill Yedowitz



Obsidian var. Apache Tears - Picketpost Mountain area, Superior Mining District, Pinal Co., Arizona, USA | Don Boushelle - PHOTO: Don Boushelle



Volcanic Bomb - San Francisco volcanic field, Coconino Co., Arizona, USA  
Bill Yedowitz - PHOTO: Bill Yedowitz



Natrolite - Hoeseshon Dam area, Mohave Co., Arizona, USA  
Bill Yedowitz - PHOTO: Bill Yedowitz

# ARIZONA VOLCANICS

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Shovel Cases, San Francisco volcanic field, Coconino Co., Arizona, USA | PHOTO: David Boushelle

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Tickets go on sale Thursday, January 17, 2020 at all TCC Ticket outlets or call the TCC Box Office at 520-791-4101, option 1 for more information.

Don't forget, you can buy your ticket at the door!

Admission is \$13.00

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Children 14 and under FREE with a paying adult

Friday, February 14, 2020 is Military (active & retired) and Senior Citizens Day (62 and older), receive \$2.00 off the regularly priced ticket (cannot be used with any other discount).

2-day tickets will be available for a cost of \$22.00 (cannot be used with any other discount).

Clip the coupon for \$2.00 OFF on one adult General Admission ticket (cannot be used with any other discount).

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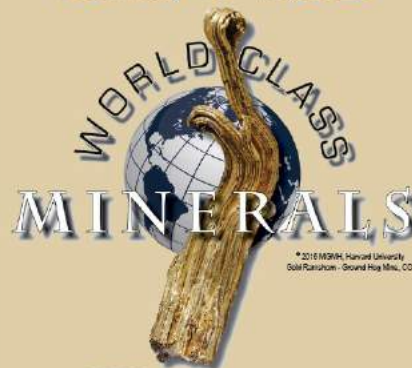


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