August, 2019
Volume 47, Issue 08

Tar Heel Tailings

A newsletter for Gem and Mineral enthusiast in and around the Raleigh, North Carolina area.

Special Interest Articles:

- Prez Sez
- History of Olivine and Epidote in North Carolina
- Door Prize Winners Recount their Prizes

Individual Highlights:

Prez Sez

By Anthony Andreoli

This month is our Annual Ice Cream Social, where members bring their favorite ice cream, cones, or toppings to share with the rest of the club. We also have a guest speaker this month. Cathy Young will be doing a presentation on "Collecting Fossils from the Ordovician to the Pleistocene Ages." I will also have the UV flashlights again this month for sale.

Thanks, hope to see you all on August 20th.

Anthony Andreoli, President
Tar Heel Gem and Mineral Club, Inc.

https://odditymall.com/soapstone-double-layered-ice-cream-bowl-koozie

History of Olivine and Epidote in North Carolina and Where to Find Them Today

This month, we explore two similar-looking green minerals, olivine and epidote. Both can occur in a transparent gemmy form or opaque mineral form, both produce a colorless streak when dragged across a rough surface, and both have a hardness of about 6-7 on the Mohs scale…so what is the difference?

Olivine is actually a group of igneous minerals "in which iron and magnesium substitute for one another in the same crystal structure." At opposite ends of the spectrum, fayalite is the version with the most iron, and forsterite has the most magnesium. They are hard to tell apart, and magnesium or iron levels can be different in sections of the same crystal! Olivine may be an "olive green to yellow-green" or brown. World-wide, olivines are often found on volcanic islands. Interestingly, quartz and olivine cannot form together, as quartz forms in silica-rich magma, and olivine forms in magma that is low in silica. The mineral serpentine is metamorphosed from olivines as well. Olivine breaks down easily at the surface of the earth, and the release of its iron and magnesium is part of what makes volcanic soil so fertile.

Epidote, unlike olivine, is created in metamorphic rock, and is found along with quartz and feldspar. It is often found in veins in granite, and as crystals in pegmatite. The color (caused by its iron content) may be similar to olivine,
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We're on the Web!
See us at:
www.tarheelclub.org

Membership applications may be mailed to:

Tar Heel Gem & Mineral Club, Inc.
Attention: Treasurer
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Program & Refreshments

REFRESHMENT SCHEDULE:
Coordinator: Open

August: TBA
Beverages: Renny Young

PROGRAM SCHEDULE:

January - Tom Todaro- Safety Briefing
February – Michael Frankilin
March - Grab Bags / Postcards
April - Post-show Discussion
May - Jeff Schlottman-Digging the Guibault Claim
June - The Challener Family- Mineral Identification
July – Smithsonian Collection
August - Cathy Young-Collecting Fossils from the Ordovician to the Pleistocene Ages
September – Paul Byrne
October - Grab Bags
November – Election

Remember, the club will reimburse you for up to $85 (bring your receipts to the treasurer).

August B-Day Members

Virginia Niver
Stacy Tarle
Stephanie Frazier
George Haga
Cody Dickson
Anne Strickland
James Tunney
Renny Young
Patricia Palmer
Ken Fersch
David Harter
Catherine Haynes
Kenny Williams

July Treasurer's Report

TGMC Treasurer Report - July 2019			
Beginning Balance:	7/1/19		**10,078.34**
Income:			
	Membership Dues	124.50	
		0.00	
	Total Income:		124.50
Expense:			
	Meeting Refreshments	68.02	
	Newsletter Printing	96.04	
	Show - Geodes (2020)	2,754.91	
	Storage Unit Rental	1,725.00	
	Stripe Fees (July)	4.93	
	Total Expenses:		4,648.90
Ending Balance:	7/31/19		**5,553.94**
CDs	32-90 day		5,377.70
	91-181 day		5,701.39
	Total CDs		**11,079.09**

Tar Heel Gem and Mineral Club, Inc. – July Meeting Minutes

Minutes 07/17/2019

Attendees (Members): 24
Visitors: 1
New Members: 0
TOTAL Attending: 25

Birthdays:

Membership table:

Food: Pizza-Beverly House

Meeting called to order at 7:30 pm by Anthony Andreoli president

Presentation: Smithsonian Gems
George Harris did a slideshow presentation about the Smithsonian Gem collection, based a visit he and his wife, Obsidian, took. He captured photos of some of the most famous pieces of jewelry and gems, including the Hope Diamond, the Marie Louise Diadem, Hooker Emerald and more.

Announcements:
1). Jacob and Charles at Mineralogy, located in the Triangle Towne Center, has generously offered all THGMC members 10% discount on purchases- you must present your THGMC ID badge in order to take advance of this offer.
Visit their website at: http://mineralogync.com/ phone: (919) 637-5489

2). Flashlights are available at the meeting today and the August meeting.

3). Life and Science Museum booth- August 2019. We need Club members to volunteer to cover this event. Additional information will follow at the next meeting.

4). Field Trips: We will be collecting material for the 2020 THGMC show—one gallon buckets will be distributed and members are encouraged to fill the buckets with grab bag material.

5). THGMC Show 2020- the date is set- April 3-5, 2020. Mark your calendars. We are already working on the show, to improve and expand our offering. Volunteers (LOTS of THEM) will be needed.

Donations: A generous donation of rocks and minerals was made by Margaret Hudacko for the THGM Show 2020- included was clear, smoky, and rose quartz, citrine, Dalmatian jasper, jaspers, aventurine, and more.
Thank you so much Margaret for your support!

Reminder Request:
The staff at NCSU Craft Center has noticed several incidents of the cabbing and faceting machines being damaged. If you see or find any damages or misuse please report this to the front desk immediately.

Door Prize Winner- Jonathan Barby

Next Meeting: Tuesday, August 20, 2019 7:30 pm

Respectfully submitted,
Beverly L. House, Secretary
Tar Heel Gem and Mineral Club, Inc.

Jonathan Barby chose Malachite as his prize.

Continued from page 1

described as ”yellow-green to pistachio” but could also be brownish green. A difference from olivine is that epidote tends to have a more “perfect” cleavage in one direction vs. olivine’s more “granular” multidirectional cleavage.

Chromite, Olivine - Micaville, North Carolina, USA. Wikipedia.com

As far as North Carolina’s history, both olivines and epidote have found. Joseph Hyde Pratt’s 1933 mineral survey describes that olivine occurs as the peridot variety “very abundantly throughout North Carolina as a constituent of peridotites.” He goes on to say that Jackson county was the best place to find gem quality olivine. Starting in 1933, forsterite (the magnesium rich variant of olivine) was used in factories as a refractory (heat resistant) material in kilns and furnaces. There was also research in the 1940s in extracting magnesium metals from olivine, and commercial ventures extracting magnesium salts. In modern times, olivine is less often used in industry as other materials can be more easily manufactured.

Epidote from the editor’s collection (see areas on right sides of stones) found in Seven Devils, NC.

Pratt’s mineral survey says less about epidote, but states that epidote’s product, serpentine, is found in the western half of the state, principally in Buncombe, Madison, Yancey, Wilkes and Caldwell counties. Unakite is a composite stone comprised “of pink orthoclase feldspar, green epidote, and generally colorless quartz,” named for the Unakas mountain region of North Carolina, on the Tennessee border. Today, Mike Streeter reports a few locations where epidote can be found on his site mcrocks.com—the easiest to access of which seems to be a quarry in Lenior, NC that has been known to grant field trips to the Catawba Valley Gem & Mineral Club.

Sources:

https://www.esci.umn.edu/courses/1001/minerals/olivine.shtml

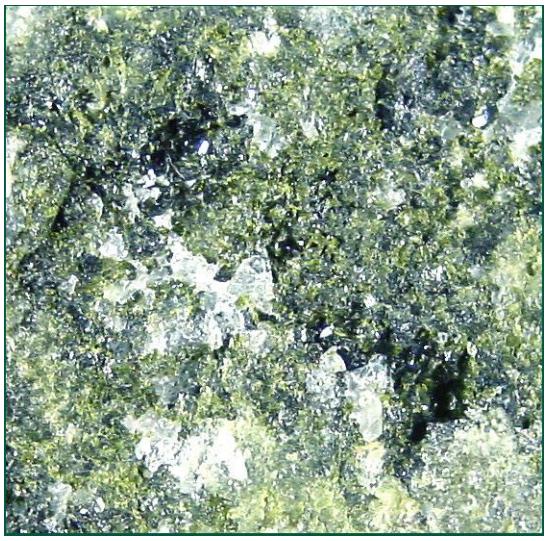
https://geology.com/minerals/epidote.shtml

https://www.pinterest.com/pin/361554676311951454/?lp=true

https://archive.org/details/forsteriteolivin00hunt/page/20

http://mcrocks.com/ftr07/StreeterAugust2007Lenoir.html

https://en.wikipedia.org/wiki/Unakite



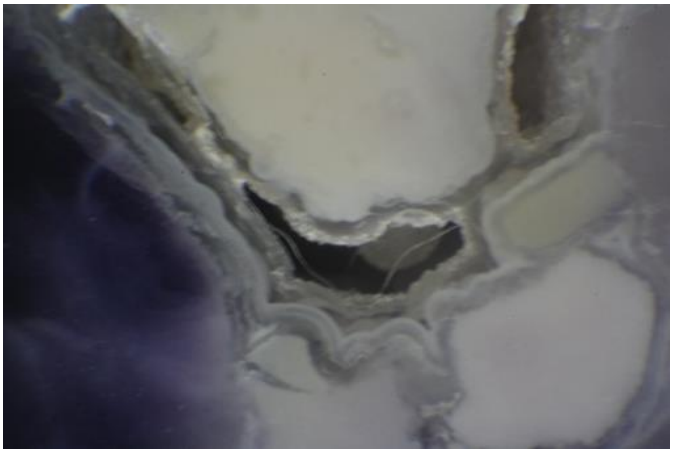
Epidote and prehnite on granite from Lenior, NC (close-up). Photo by Mike Streeter

Door Prize Winners: David Challener won Tiffany Stone

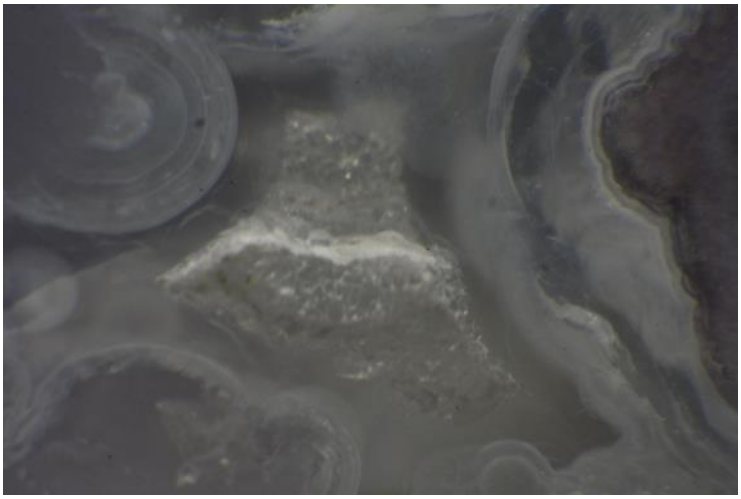
Tiffany Stone (aka Opalized fluorite, Bertrandite, ice cream stone, etc.), is a stone that is mined in a single beryllium mine in Utah. It only contains a small amount of the element beryllium, and as such is NOT bertrandite, which is yellow or colorless. The name “Tiffany stone” does not come from the Tiffany jewelry company either. The rumor is that that was the name of the daughter of the CEO of the mine, and that she liked to collect it.

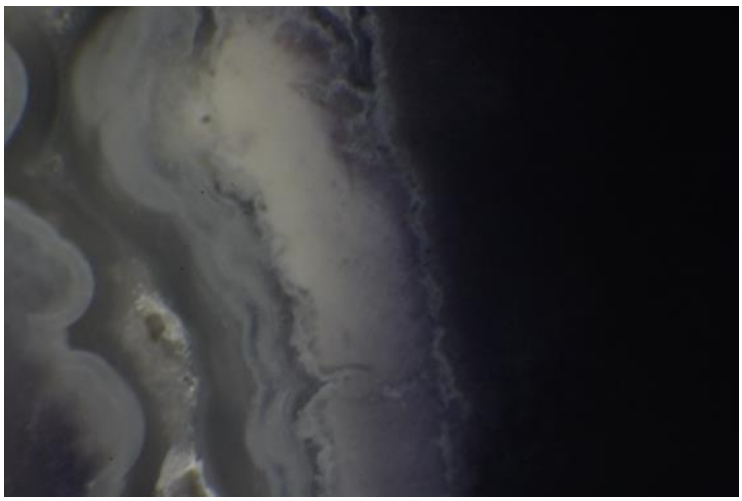
Independent of all of that, though, it forms a very nice mineral of mostly cryptocrystalline fluorite, that can have magnificent patterns throughout. A well cabbed piece of it may command prices similar to nice charoite or blue Biggs Jasper. Limited supply helps keep the price up. The stone itself is beautiful: It is typically cut to emphasize contrasting purple patterns throughout the stone, often in lines. This one does not have lines, but it has splotches that could be quite attractive once cut. As with many cabs, the pattern that remains after the stone is cut “makes” the cabochon.

We decided to use our gem microscope to see what it looked like under magnification. Under magnification, some areas are clearly crystalline, but some are not.



Tiffany stone presented in a standard view (top) and magnified.
Photos by David Challener





Door Prize Winners: Debbie Miller won Ammonite

Ammonites are a widely known fossils that lived in the sea about 250 million years ago and disappeared about 65 million years ago. They went the way of the dinosaurs – extinct. Merriam-Webster defines them as a class of extinct cephalopods especially abundant in the Mesozoic age that had flat spiral shells with the interior divided by septa into chambers. The National Geographic version sounds much more exciting; predatory, squidlike creatures that lived inside coil-shaped shells. They had sharp, beaklike jaws inside a ring of tentacles that extended from their shells to snare prey such as small fish and crustaceans. They could grow more than three feet across. Their shells grew as they did. The only living space was the outer chamber. A thin, tube-like structure called a siphuncle reached into the interior chambers to pump and siphon air, helping them move through the water. Their ancestors were straight-shelled cephalopods called bacrites that dated back to the Devonian period, about 415 million years ago. Their fossils are found all around the globe. Today, you can spend an enormous amount of money for a fossil specimen, or you can spend less than a $1 to buy a specimen and turn it into a necklace. People love the warm, variegated colors and it's simple to attach a bail to the fossil and wear it on a chain right away.

The fossil I selected was about 3-4 inches across. It's too heavy to wear as a jewel, but it has a lot of color and is an excellent specimen. I'm never going to be accused of writing scientific papers, I love to look at the play-of-color in rocks and fossils, enjoy using them in jewelry, and marvel at the ways we use their designs in furniture.

Unique Orange Sapphire with Golden Sheen Effect Reportedly from Kenya

By Tasnara Sripoonjan, Saengthip Saengbuangamlam, and Marisa Maneekrajangsaeng

Figure 1. This 4.34 ct transparent oval-cut orange sapphire displayed an attractive golden sheen effect. Photo by Tasnara Sripoonjan

Golden sheen sapphires from Kenya have been reported in this journal and elsewhere (e.g., T.N. Bui et al., "From exsolution to 'gold sheen': A new variety of corundum," Journal of Gemmology, Vol. 34, No. 8, 2015, pp. 678–691; N. Narudeesombat et al., "Golden sheen and non-sheen sapphires from Kenya," The Gem and Jewelry Institute of Thailand, July-August 2016, pp. 282–288). Those sapphires, however, were the cabochon-quality blue-green-yellow stones that exhibited a shimmering golden effect caused by the light reflection from hematite platelets and needle-like inclusions. No faceted transparent stones have been mentioned in the previous literature. Recently the Gem and Jewelry Institute of Thailand's Gem Testing Laboratory in Bangkok encountered a faceted orange sapphire with an attractive golden sheen effect that was reportedly from Kenya.

The sample was a transparent, 4.34 ct faceted mixed-cut stone of orange hue with attractive golden sheen effect almost throughout the crown facets (figure 1). Standard gemological testing revealed a refractive index (RI) of 1.765 to 1.775, a birefringence of 0.01 with a uniaxial negative optic sign, and a hydrostatic specific gravity (SG) of 3.98. The stone exhibited brownish orange and greenish yellow pleochroism and

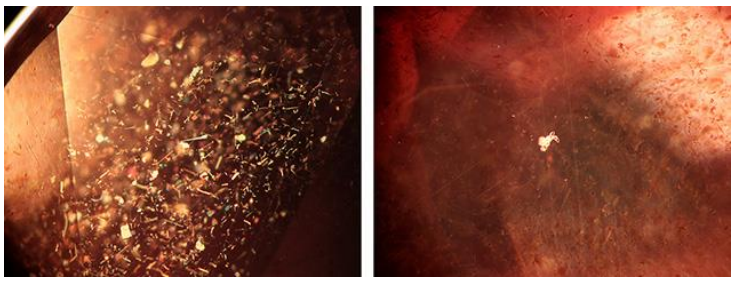


Figure 2. Internal features of the orange golden sheen sapphire: abundant metallic hematite platelets and rutile needles (left) and a cluster of zircon crystals (right).
Photomicrographs by Saengthip Saengbuangamlam; field of view 3.00 mm

was inert to both long- and short-wave UV radiation. Microscopic observation revealed abundant metallic hematite platelets and rutile needles (figure 2, left), confirmed by Raman spectroscopy, that were situated along the basal pinacoid face. A cluster of zircon crystals, as suggested by its crystal morphology, could also be found in the specimen (figure 2, right).

In previous studies, the golden sheen sapphires from Kenya were translucent to opaque, with yellow and blue bodycolor (Bui et al., 2015; Narudeesombat et al., 2016). They contained abundant internal features, such as exsolved intergrowth Fe-Ti oxide phases of hematite platelets and short ilmenite needles that gave the sheen effect, as well as inclusions of goethite, boehmite, and diaspore needles. They also had large surface-reaching cracks. The stone in this investigation is orange, transparent, and without surface-reaching cracks, though it also possesses a significant number of hematite platelets that are in part responsible for its golden sheen effect.

The polarized ultraviolet-visible (UV-Vis) spectra of the specimen displayed predominantly Fe^{3+}-related absorption bands at 378, 388, and 450 nm that are responsible for its yellow hue (e.g., J. Ferguson and P.E. Fielding, “The origins of the colours of natural yellow, blue and green sapphires,” *Australian Journal of Chemistry*, Vol. 25, No. 7, 1972, pp. 1371–1385), whereas the absorption band at around 557 nm (also at ~410 nm) is caused by a Cr^{3+} transition contributing to the reddish hue. As such, the stone coloration appears orange. R-line luminescence of Cr^{3+} near 693 nm also appears in the spectra. When compared to the more common non-sheen counterparts, the UV-Vis spectra yield only Fe^{3+}- and Fe-Ti-related absorptions (Narudeesombat et al., 2016).
The energy-dispersive X-ray fluorescence (EDXRF) results of the orange sapphire showed very high content of Fe2O3 (1.94 wt.%) with moderate content of Cr2O3 (0.05 wt.%) and TiO2 (0.04 wt.%). Ga2O3 and V2O5 were equal at about 0.01 wt.%. This result (particularly the iron content) is somewhat similar to those of the common golden sheen and non-sheen stones from Kenya in the previous work, which also suggests a similar magmatic source. Nonetheless, the Cr2O3 content in this orange sapphire is particularly distinctive, since such an oxide is almost undetectable in most golden sheen sapphires.

While Kenya is known to supply large amounts of golden sheen sapphires, some rare orange sapphires with sheen effect such as this one are also being supplied to the market. Sheen effect makes the stone distinctive compared to common orange sapphire from other sources, for example, from Songea in Tanzania (cf., originating from a metamorphic source and having somewhat lower iron content). However, the owner informed us that this specimen might eventually be subjected to heat treatment at a relatively low temperature to remove some silk-like inclusions and make it more transparent. Nevertheless, careful examination yielded no indication that this stone was heated. Its unique characteristics—heavily included hematite platelets and rutile needles that give rise to the golden sheen effect plus its high iron content—suggest a Kenyan origin.

https://www.gia.edu/gems-gemology/spring-2019-gemnews-unique-orange-sapphire-with-golden-sheen-effect-reportedly-from-kenya

Park in the Cates Ave. Parking Deck off Jensen Dr. Enter Thompson Building directly across from the parking lot.

Our Next Meeting is

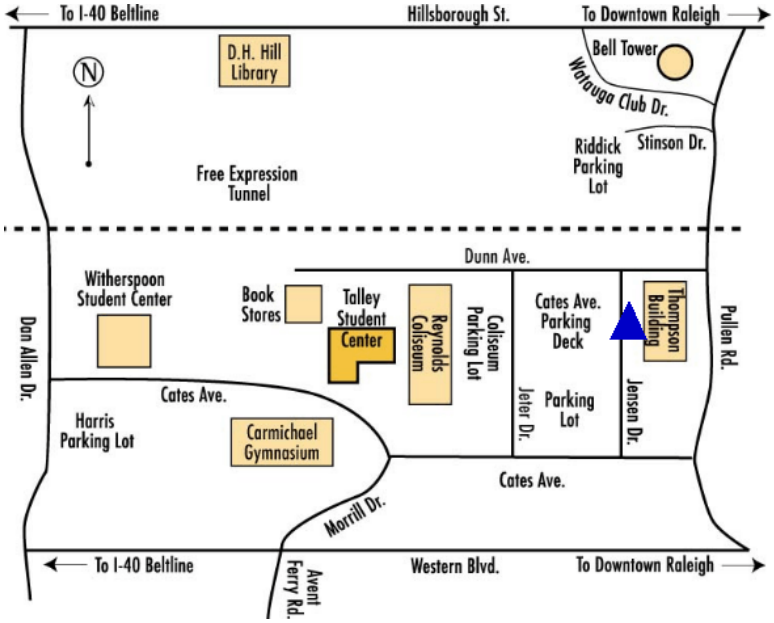
August 20, 2019 @ 7:30PM

Thompson Building / NCSU Campus.

About Our Organization…

The Tar Heel Gem and Mineral Club, Inc. was formed in 1974 as a nonprofit educational organization for people who enjoy the lapidary arts, earth sciences, and related subjects. The main objectives of the club are to investigate, preserve, and share knowledge of rocks, minerals, and precious stones, and to promote interest in mineralogy, paleontology, earth sciences, and lapidary techniques, among club members and among the general public. The club pursues these goals through publications, meetings, lectures, field trips, exhibits, demonstrations, and other activities.

Come and be a part of the Fun!



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