

## Special Interest Articles:

- Prez Sez
- History of Quartz in North Carolina
- Dinosaurs, Feathers and Amber

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

## Prez Sez

**By Anthony Andreoli**

This month's speaker will be Dr. Paul Byrne. He is a professor of planetary geology at NCSU. He will be doing his presentation on "Icy Satellites."

Beverly will be bringing pizza and beverages for this month's meeting.

Reminder!!!! Next month's meeting we will be building grab bags for the show in April! So please check your collections and bring what you can to help us get a good start on what I am hoping to be the most grab bags we have ever made for our show!!!

Thank you and see you all on September 17th!!

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

## History of Quartz in North Carolina and Where to Find Them Today

Gem hunters in North Carolina are usually very familiar with quartz, the common silicate crystal. Usually colorless, transparent or white, it can also come in purple amethyst variety, rose, yellow citrine, or gray-to-brown smoky quartz. What gem enthusiasts may not know is that quartz also has a rich history of practical uses in North Carolina.

In prehistoric times, quartz was used for in tool production by the native people of North Carolina. Quartz was a useful material due to the fact that, when chipped, it fractures in a conchoidal (shell-shaped or scalloped) shape and holds a sharp edge. You may remember from the jasper and chalcedony article that these materials were used to make arrowheads. White quartz was also used, and is actually the most common material to find in arrowheads. Clear quartz, known as rock crystal, is much rarer and is so popular among collectors  
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TheRedditRockhound on Reddit.com

Amethyst found at the Reel Mine in Iron Cross, NC

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**We're on the Web!**  
See us at:  
[www.tarheelclub.org](http://www.tarheelclub.org)

**Program & Refreshments**

REFRESHMENT SCHEDULE:

Coordinator: Open

September: Beverly  
Beverages: Beverly

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 Challenger Family- Mineral Identification  
July - Smithsonian Collection  
August - Cathy Young-Collecting Fossils from the Ordovician to the Pleistocene Ages  
September - Paul Byrne- Icy Satellites  
October - Grab Bags  
November - Election

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

**September B-Day Members**

- Susan McMillan
- Steven Kreidler
- Emily Brewer
- Bob Almond
- Randolph Jones
- Linda Searcy
- Louis Paradiso
- George Harris
- Mary Harbison
- Felix Gil
- Gary McCutchen
- Karen Santala
- Angela Karnes

**August Treasurer's Report**

TGMC Treasurer Report - August 2019			
<b>Beginning Balance:</b>	8/1/19		5,553.94
<b>Income:</b>			
	Membership Dues	130.00	
	UV Light Sales	350.00	
	<b>Total Income:</b>		480.00
<b>Expense:</b>			
	Table Cover	225.00	
	Newsletter Printing	96.04	
	Stripe Fees (August)	5.58	
	<b>Total Expenses:</b>		326.62
<b>Ending Balance:</b>	8/31/19		5,707.32
<b>CDs</b>	32-90 day		5,377.70
	91-181 day		5,701.39
	<b>Total CDs</b>		11,079.09



Membership applications may be mailed to:

Tar Heel Gem & Mineral Club, Inc.  
Attention: Treasurer  
PO Box 33783,  
Raleigh, NC 27636-3783

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

Minutes 08/20/2019

Attendees (Members): 32

Visitors: 5

New Members: 0

TOTAL Attending: 37

Membership table:

Food: Ice Cream Social

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

### Presentation: Collecting Fossils from the Ordovician to the Pleistocene Ages

Cathy Young did a slideshow presentation on collecting fossils. She shared various locations and some of her finding of various trips/digs she has taken as well as information about the youth camp, and future trips. For more information about those trips, please go to [www.fossilandnaturetrips.com](http://www.fossilandnaturetrips.com) or contact her directly at [cathy@fossilandnaturetrips.com](mailto:cathy@fossilandnaturetrips.com) Mid-Atlantic Fossil and Nature Adventures, LLC

### Reminders:

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 September 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. Anthony is looking at October to do the first round of grab bags for the show.

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.

Door Prize Winner- Glen Cutting

Next Meeting: Tuesday, September 17, 2019 7:30 pm

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



Cathy Young describes her fossil-hunting trips with photos and pieces from her collection



Glen shows off his vanadinite door prize

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Mindat.org—smoky quartz from Hiddenite, Alexander County, NC

that there is a counterfeit industry of glass and Brazilian quartz arrowheads. Smoky quartz, citrine, amethyst and rose quartz arrowheads have also been found.

In more modern times, a quartz mining industry evolved alongside the feldspar and mica mines in the Spruce Pine area. Quartz in this area of North Carolina formed in an unusual way—there was almost no water present in the rock. Water carries in impurities, and its absence makes Spruce Pine quartz some of the purest in the world. That makes



Mindat.org—citrine from Tate Boulevard Industrial Park, Hickory, Catawba Co., NC

this humble mineral more valuable to Spruce Pine's economy than rubies, garnets, sapphires or emeralds. Low-impurity quartz is an important part of electronics, and according to the Mountain Resources Commission, Spruce Pine "produces 90 percent of all the mined and processed quartz that the electronics industry uses" all over the world. It is also used to make solar panels, glass, and ceramics.

For those looking for quartz specimens, Joseph Hyde Pratt's 1933 survey in *American Mineralogist* gives some clues as to where to look. He starts with amethyst, one of the most popular varieties of quartz. "Macon, Lincoln and Catawba Counties" are noted to have the "best" amethysts, particularly in Macon county at "the headwaters of Tessentie creek." Wake County is also described as having amethysts and Pratt states that while all areas may not have amethysts of a quality for cutting, the amethysts are often "beautiful and interesting mineralogical specimens." Smoky quartz can be found, he says, in Taylorsville, Stony Point, and Hiddenite. The Hiddenite and Stony Point smoky quartzes are described as having crystals that are "highly and peculiarly developed" though he doesn't go into what is peculiar about them.

Rock Crystal, in this pre-computer time period, was used for art objects primarily. Some of the "best" and largest pieces were said to come from Ashe county from Long Shoals Creek and Phoenix Mountain. Cut pieces made from this stone included "perfectly transparent spheres 4 ½ inches in diameter, and slabs 6 inches square and ½ to 1 inch thick." Pratt also states that Alexander and Burke counties produced finished cuts of spheres about 2 ½ inches across. "Similar material" was described in Surry County and in Mitchell County, the future site of the Spruce Pine quartz industry.

Rutilated quartz, also known back then as "venus hairstone" was found "in Randolph, Catawba, Burke, Iredell, Jackson and Alexander Counties." Citrine, with what they describe as "good color," was known to be found in Taylorsville, and in "Burke and Catawba Counties." Finally, Pratt gives possible locations for rose quartz, such as Dan River in Stokes County, and "Iredell and Catawba Counties."

Today, besides hunting in these general locations, Emerald Hollow Mine is a paid location in which you can collect and dig on the surface and be likely to find clear or smoky quartz. Emerald Hollow's website also mentions that citrine and amethyst have been found there, but are more rare.

If you decide to search for quartz in any of the counties or areas described above, check to be sure you are on public land (or get permission on private land) and checking with the Bureau of Land Management is recommended (see: <https://www.blm.gov/basic/rockhounding>).

#### Sources:

<http://www.jimmausartifacts.com/stones-used-by-piedmont-indian/>

<https://www.smliv.com/stories/digging-deep-into-western-north-carolinas-mining-history/>

<https://www.emeraldhollowmine.com/>

<https://books.google.com/books?id=OhgtAAAAIAAJ&pg=PA226&hl=en#v=onepage&q&f=false>



Amir Akhavan—Mindat.org—transparent quartz from Hanson Stone Quarry (Rougemont Quarry), Rougemont, Durham Co., NC

## Tar Heel Gem and Mineral Club presence at Museum of Life and Science—Dino Academy Day

Club members shared fossils from their collections with kids (and some adults!) at the Museum of Life and Science event. This was a great opportunity to spread awareness of the club and show, and introduce kids to fossil hunting!

Our new table cover looked great, and will be an asset at other shows and events.

This event ran from 10am-3pm on August 24<sup>th</sup>. We will have other volunteer/outreach opportunities in the future, including our annual show.



## Dinosaurs, Feathers and Amber

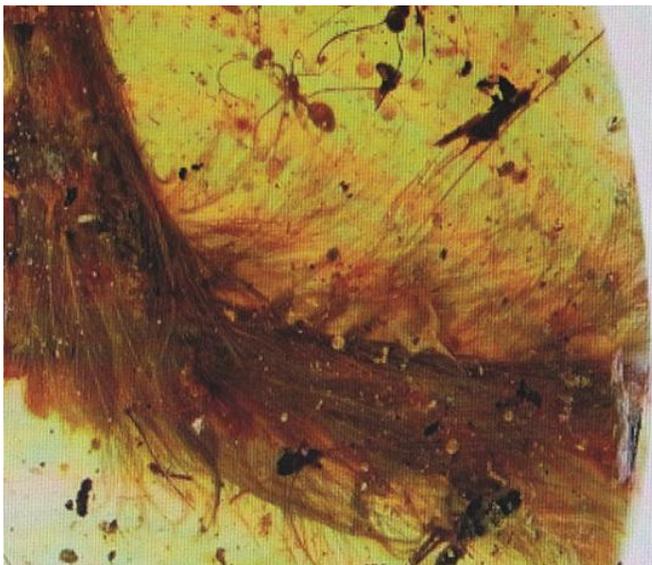
By Steve Voynick

Amber has preserved many ancient life forms in exquisite detail. In 2015, Chinese paleontologist Xing Lida, searching through an amber market in northern Myanmar, came across what is arguably the most remarkable amber fossil ever found. Lida's discovery was timely, for this particular piece of amber had already been roughly shaped and was about to be sold for jewelry use.

As described in a past issue of the journal *Current Biology*, this celebrated specimen is a 99 million-year-old, semitransparent, yellow chunk about the size of a dried apricot. Among its dozens of fossilized inclusions, mostly of insects and plant parts, is one that has astounded paleontologists: an inch-long section of a feathered dinosaur tail that represents the first positive association of well-developed feathers with dinosaurs.

### Feather Evidence

The fossilized tail is that of a coelurosaur, a tiny, sparrow-sized, carnivorous dinosaur. Its extraordinary degree of preservation was possible only within amber. While most fossils are created through the physical processes of mineral replacement or molded impressions, amber forms through the entirely different chemical process of molecular polymerization.



www.rockngem.com--Amber under microscope

Having neither a definite chemical composition nor an ordered crystal structure, amber is not a mineral, but an organic mineraloid. Chemically, it is an oxygenated hydrocarbon with a variable composition that consists roughly of 80% carbon, 10% oxygen, 9% hydrogen, and traces of sulfur and phosphorus.

Amber originates as tree resin, a solid or semisolid, organic hydrocarbon of vegetable origin. Certain trees exude resin primarily as a defense mechanism against fungal or insect attack. Although resin varies widely in composition and color, it is always a mix of organic acids, sugars, esters and terpenes; the last is a group of hydrocarbon compounds that is the key to amber fossilization.

### Near Immediate Fossilization

Newly exuded, soft, tacky resin begins to fossilize almost immediately as its most volatile terpenes evaporate. Next, the less-volatile terpenes slowly polymerize, linking into long molecular chains. Polymerization homogenizes and hardens the resin, while loosely organizing its molecular structure.

But to fully develop into amber, further fossilization must occur in an anaerobic environment. In conditions of long-term burial devoid of free oxygen, resin transforms first to copal, a subfossil or partially polymerized resin with an amberlike color. If copal remains anaerobically buried for millions of years, its terpenes continue to polymerize, which eventually results in chemically stable amber.

The first true ambers originated some 230 million years ago. But only during the Cretaceous Period (65 million to 135 million years ago) did resin-exuding trees become sufficiently abundant to produce the resin necessary for the fossilization of large quantities of amber.

### Resin's Role

Although amber forms from polymerization, the fossilization of life-form inclusions takes place by desiccation. Because of its tackiness, newly

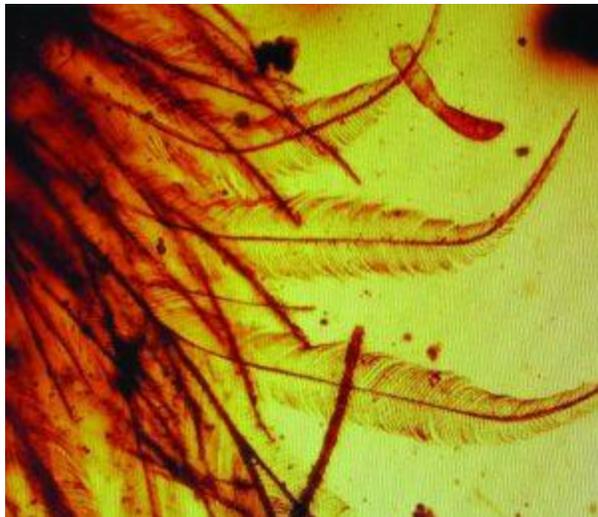
exuded tree resin is a natural trap for various plants and animals. For these life forms to be preserved, resin must be continuously exuded in layers to cover the trapped material, then enable the resin's hygroscopic sugars to draw away water to completely desiccate the inclusions and preserve them in detailed, three-dimensional form.

That tiny, feathered coelurosaur tail preserved in amber is now being studied by scientists. Computerized-tomography (CT) scans have revealed eight vertebrae within the tail, while chemical analysis has detected ferrous iron, a decomposition product of the blood hemoglobin that was originally present in the soft tissue. The amber also preserved pigmentation that indicates with a high degree of certainty that the actual feather colors of the living dinosaur were chestnut brown and white.

Dr. Ryan McKellar, of the Royal Saskatchewan Museum, coauthor with Xing Lida of the Current Biology paper, says that finding soft tissue and decayed blood within the fossil does not mean we can clone dinosaurs. That, Dr. McKellar emphasizes, "is still in the realm of science fiction."

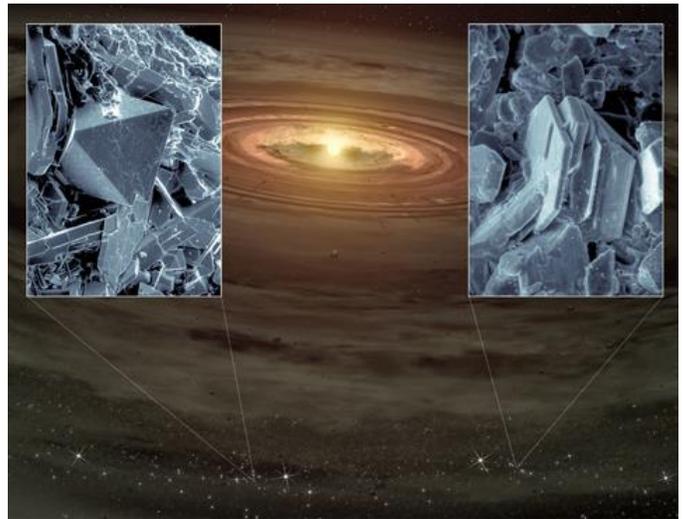
**Source:**

<https://www.rockngem.com/dinosaurs-feathers-and-amber/>



[www.rockngem.com](http://www.rockngem.com)--Magnified view of feather fossil encapsulated in amber

## Quartz-like Crystals Found in Planetary Disks



NASA's Spitzer Space Telescope has, for the first time, detected tiny quartz-like crystals sprinkled in young planetary systems. The crystals, which are types of silica minerals called cristobalite and tridymite, can be seen close-up in the black-and-white insets (cristobalite is on the left, and tridymite on the right). The main picture is an artist's concept of a young star and its swirling disk of planet-forming materials.

Cristobalite and tridymite are thought to be two of many planet ingredients. On Earth, they are normally found as tiny crystals in volcanic lava flows and meteorites from space. These minerals are both related to quartz. For example, if you were to heat the familiar quartz crystals often sold as mystical tokens, the quartz would transform into cristobalite and tridymite.

Because cristobalite and tridymite require rapid heating and cooling to form, astronomers say they were most likely generated by shock waves traveling through the planetary disks.

The insets are Scanning Electron Microscope pictures courtesy of George Rossman of the California Institute of Technology, Pasadena, Calif.

Image credit: NASA/JPL-Caltech

**Source:**

[https://www.nasa.gov/mission\\_pages/spitzer/multimedia/20081111.html](https://www.nasa.gov/mission_pages/spitzer/multimedia/20081111.html)

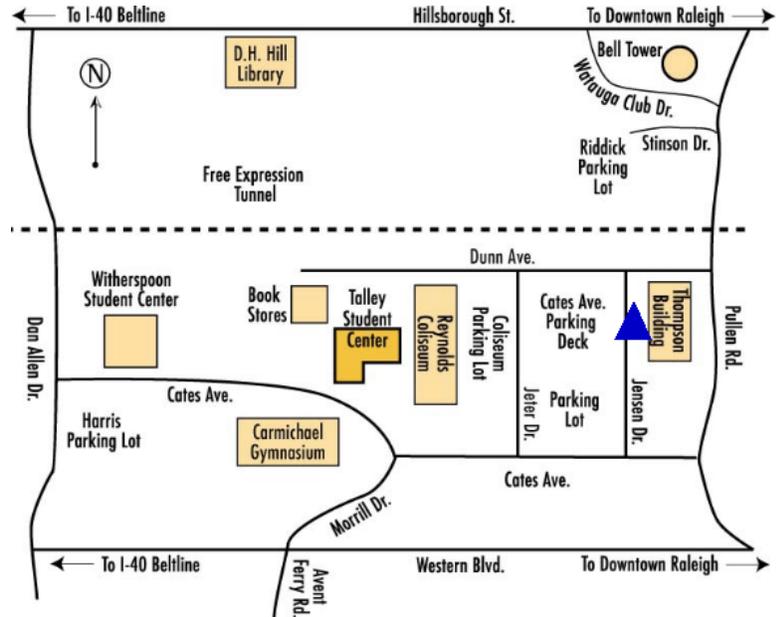
Park in the Cates Ave. Parking Deck off Jensen Dr. Enter Thompson Building directly across from the parking lot.

**Our Next Meeting is  
September 17, 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 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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