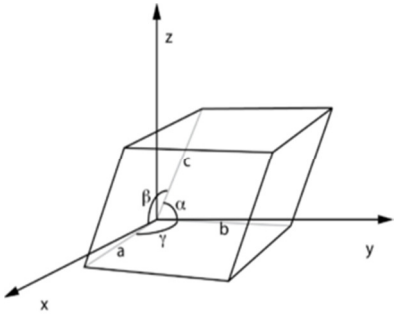
Mid-Georgia Gem Clips
Official Bulletin of the Mid-Georgia Gem and Mineral Society
www.midgagms.org **Vol. 18, Issue 3, April, 2018**

April Meeting At the Museum of Arts and Sciences on Monday, April 02, 2018 at 7:30pm.

Speaker for the April Meeting is Tina Perkins. Tina will be talking about "Fairy Crosses and Other Oddities"

President's Message

There were a lot of questions as to the understanding of what the crystal lattices are as a result of my comments last month. In crystallography, crystal structure is a description of the ordered arrangement of atoms, ions or molecules in a crystalline material. Ordered structures occur from the intrinsic nature of the constituent particles to form symmetric patterns that repeat along the principal directions of three-dimensional space in matter. The smallest group of particles is referred to as the unit cell. This unit cell defines the symmetry and structure of the entire crystal lattice, which is built up by repetitive translation of the unit cell along its principal axes. The repeating patterns are said to be located at the points of the Bravais lattice- or the lattice points.



Unit cell definition using parallelepiped with lengths a , b , c and angles between the sides given by α , β , and γ

Crystal structure is described in terms of the geometry of arrangement of particles in the unit cell. The unit cell is defined as the smallest repeating unit having the full symmetry of the crystal structure. The geometry of the unit cell is defined as a parallelepiped, providing six lattice parameters taken as the lengths of the cell edges (*a*, *b*, *c*) and the angles between them (α, β, γ). The positions of particles inside the unit cell are described by the fractional coordinates (*x*, *y*, *z*) along the cell edges, measured from a reference point.

It is only necessary to report the coordinates of a smallest asymmetric subset of particles. This group of particles may be chosen so that it occupies the smallest physical space, which means that not all particles need to be physically located inside the boundaries given by the lattice parameters. All other particles of the unit cell are generated by the symmetry operations that characterize the symmetry of the unit cell. The collection of symmetry operations of the unit cell is expressed formally as the space group of the crystal structure. The planes of the crystal are expressed in the *Miller indicies*. Miller indices form a notation system in crystallography for planes in crystal lattices, but we will discuss them later.

I hope this helps you understand the concept of the lattice in the crystal patterns and their groups. I will continue the other crystal groups later.

If anybody has any questions, comments or suggestions, please feel free to contact me or any other club official;

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478.454.7273

Bill Mayer- Vice president
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678.621.3457

Susan Hargrove- Treasurer
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478.837.5327

Jay Batcha- Editor & Field trip chairman
rocky1s@cox.net
478.957.5002

March Minutes

The meeting was called to order at 7:42 PM by Jim Souter with 18 members/guests present.

Old Business

The treasurers' report was read and approved. We signed up two new members. We are still requesting that members collect extra material on digs for grab bags. The science Olympiad is scheduled for March 17 at Rutland middle school, three members volunteered to be available for the event.

New Business

This month's mineral was septarian nodules and several members brought in specimens to share. We are having a club dig at the Red Oak quarry on April 21st. There is also a Cobb County mineral society rock swap also on April 21 at their rock shop in Marietta.

Jim Souter gave a short talk on crystal morphology which simply means the general shape of the crystals. They generally fall into six different classes such as: cubic, tetragonal, hexagonal, orthorhombic, monoclinic and triclinic. Some minerals due to trace elements can exhibit several different crystalline structures. The crystal formations form many different sizes from microscopic to much larger.

Our own Tuell Walters was our speaker for this month. He talked on

Petrified wood and some of the different phases involved in the petrification process. Petrified wood is actually plant fossil material and sometimes encompasses animal material also. He also brought along a number of wood specimens that he has collected from all over the country. Some of the prime states to collect wood are Arizona, Utah, Texas, Alabama and Georgia. There are a number of petrified forests around the US but you are not allowed to collect in any longer. The talk was quite informative and provided some insights into where various different types of wood came from. A question and answer session was provided at the end of his talk. The meeting was adjourned at 8:44 PM.

Ref: Rocks & Fossils by Robert R. Coenraads, Arthur Busbey III, David Roots and Paul Willis

By: Richard Arnold

A field trip report on our DMC sponsored dig for Clarkesville Kyanite

The Mid-Ga GMS sponsored DMC dig in Clarkesville, Georgia to collect Kyanite went very good or even "great" as Tony the tiger would say!

There were 45 people attending the field trip. The weather ended up being just right, not too cold nor hot and the rain did not show up until after 2:00pm. We ended the field trip at 2:00pm before the rain came in. Everybody found plenty of Kyanite. We had 12 members at the field trip with everyone helping out. Richard brought lots of bottle water to hand out to everyone. Bill brought bags of cookies to feed everyone. AL, Dan, and I brought Door prizes for the drawing. Bill, Jim, Al, and I worked the table for door prizes and signing in. Charles setup the dig for us to go to. Thanks to everyone else that helped out with this fieldtrip!

Some people dug holes up to 4 feet deep to find Kyanite clusters and a couple of very large clusters were found with many small clusters found. The Kyanite blades were everywhere lying on the hillside. So what a day!!!!

By: Jay Batcha

A giant Kyanite cluster found

Al tending to our water cookies and door prizes

Looking and digging for Kyanite

Mineral of the Month Kyanite

Al_2SiO_5 Nesosilicate

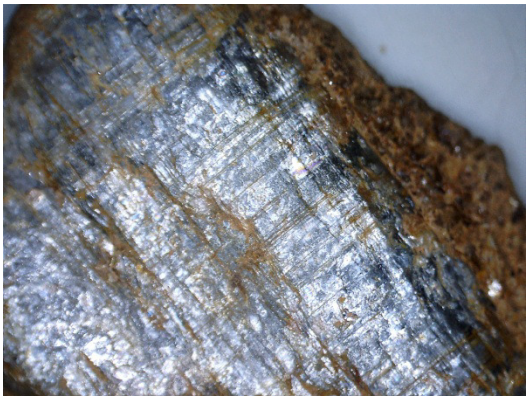
Kyanite is a typically blue silicate mineral, commonly found in aluminum-rich metamorphic pegmatites and/or sedimentary rock. Kyanite in metamorphic rocks generally indicates pressures higher than four kilobars. Although potentially stable at lower pressure and low temperature, the activity of water is usually high enough under such conditions that it is replaced by hydrous aluminosilicates such as muscovite, pyrophyllite, or

kaolinite. Kyanite is also known as disthene, rhaeticite and cyanite.

Kyanite is a member of the aluminosilicate series, which also includes the polymorph andalusite and the polymorph sillimanite. Kyanite is strongly anisotopic, in that its hardness varies depending on its crystallographic direction. In kyanite, this anisotropism can be considered an identifying characteristic.

At temperatures above 1100 °C kyanite decomposes into mullite and vitreous silica via the following reaction: $3(Al_2O_3 \cdot SiO_2) \rightarrow 3Al_2O_3 \cdot 2SiO_2 + SiO_2$. This transformation results in an expansion.

Its name comes from the same origin as that of the color cyan, being derived from the Ancient Greek word κύανος. This is generally rendered into English as *kyanos* or *kuanos* and means "dark blue".



Kyanite from Clarkesville, Georgia

Kyanite is used primarily in refractory and ceramic products, including porcelain plumbing and dishware. It is also used in electronics, electrical insulators and abrasives.

Kyanite has been used as a semiprecious gemstone, which may display cat's eye chatoyancy, though this use is limited by its anisotropism and perfect cleavage. Color varieties include recently discovered orange kyanite from Tanzania.The orange color is due to inclusion of small amounts of manganese (Mn^{3+}) in the structure.

Kyanite is one of the index minreals that are used to estimate the temperature, depth, and pressure at which a rock undergoes metamorphism

Kyanite's elongated, columnar crystals are usually a good first indication of the mineral, as well as its color (when the specimen is blue). Associated minerals are useful as well, especially the presence of the polymorphs of staurolite, which occur frequently with kyanite. However, the most useful characteristic in identifying kyanite is its anisotropism. If one suspects a specimen to be kyanite, verifying that it has two distinctly different hardness on perpendicular axes is a key to identification; it has a hardness of 5.5 parallel to {001} and 7 parallel to {100}.

Kyanite occurs in gneiss, schist, pegmatite, and quartz veins resulting from high pressure regional metamorphism of principally pelitic rocks. It occurs as detrital grains in sedimentary rocks. It occurs associated with staurolite, andalusite, sillimanite, talc, horneblende, gedrite, mullite and corundum. Kyanite occurs in Manhattan schist, formed under extreme pressure as a result of the two landmasses that formed supercontinent Pangaea.

Kyanite forms in clusters and degrades into individual blades

LET'S GO DIGGING!

A Mid-Ga Gem and Mineral Society field trip at Martin Marietta's Red Oak Quarry On April 21, 2018 at 10:00 am

Red Oak, Georgia

Registration Required

Location: This field trip is near the Atlanta Airport at the intersection of I-285 and I-85, and Hwy 14 on the south side of Atlanta.

COLLECTING: Grossular garnet, epidote, pyrite, calcite, and possibly amphiboles, apophyllite, chabazite, diopside, and titanite (based on mindat.org).

SAFETY REQUIREMENTS: You must have the following safety equipment or you will not be allowed into the quarry: hard hat, safety glasses, steel toed boots , safety vest (orange/yellow) and gloves.
CHILDREN (No): Must be 18 or older. PETS (No): No pets allowed.

BRING: Not allowed are sledgehammers (big or small), pry bar, chisels. Allowed are rock hammers, paper or aluminum foil for wrapping specimens, buckets, and a dolly or hand truck. A four-wheel or all-wheel drive vehicle is recommended but not required.

VERY IMPORTANT!!! Field trip attendees must be escorted at all times by quarry personnel, so we will caravan into and out of the quarry as a group. If you have an emergency and have to leave before the trip is over, you must be escorted out by quarry personnel. **YOU CANNOT ENTER OR LEAVE ON YOUR OWN.** DIRECTIONS: Directions will be sent via email to registered attendees only.

Must RSVP with Jay (cell# 478-957-5002) to find out meeting location and directions!

Massive epidote and garnet

Graves Mountain, Lincolnton, GA

Collecting Rutile, Kyanite, Lazulite, Iridescent Hematite, Pyrophyllite, Pyrite, Ilmenite, Fuchsite, Barite, Sulfur, variscite, woodhouseite, crandallite, strengite, phosphosiderite, cacoxenite, blue quartz, quartz crystals, etc.

Rock Swap & Dig

April

8 am to 6 pm, Friday, April 27, 2018
8 am to 6 pm, Saturday, April 28, 2018
8 am to 6 pm, Sunday, April 29, 2018

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"You are invited to field collect minerals at Georgia's premiere mineral location!"

The caretaker in charge of Graves Mountain, Clarence Norman Jr., has announced plans to hold a three day dig and rock swap on the Mountain during April and October. He will have the mountain open to collecting from 8 am to 6 pm each day. All participants must stop at the welcome table in the Hospitality tent to sign a liability release and make a small contribution to defray the cost of opening the mountain and providing port-o-lets. There will be several golf cart type, four wheeled vehicles available to transport those participants who have trouble walking long distances. The dig will cease and everyone is expected to be off the mountain by around 6 pm each day. Participants will be allowed to park in a designated area on the mountain.

Rock Swap and Hot Food/Drinks:
Junior will set aside an area in the upper parking lot for tables to be setup for daily rock swaps. Anyone who would like to setup a table(s), please contact Junior at the phone numbers listed below. Hot food cooked on the grill, cold drinks and chips will be available for purchase on the mountain during all three days of these events.

Contact Information:
Clarence Norman Jr. (Junior) - 706-359-1544 (his business) or 706-401-3173 (his cell)
THESE DIGS ARE OPEN TO ALL
NO NEED TO SIGN-UP, JUST SHOW UP FOR ALL "ROCK SWAP AND DIGS"!
Mark your calendar and tell all your friends about these two great events!
DIRECTIONS: From Atlanta's I-285, take I-20 east to the exit for Washington, GA SR 78 (SR 10, SR 17) and turn left.

Travel north to Washington, turn right onto SR 378 and drive 11 miles to the Graves Mountain area. The entrance to Graves Mountain is on your right about 8/10 mile past the Lincoln county line sign.
-OR-
Just after you exit onto SR 78, turn right onto GA 43 and drive towards Lincolnton about 13 miles. Take a left onto GA 220 going Northwest for about 3 miles to SR 378. Take a left on SR 378 and go about 2 miles. The entrance will be on your left.

The entrance is a paved road that goes through a gate and up a hill. Please park along the access road and then proceed to the "Welcome Tent" at the end of the pavement to obtain a liability release form and to make a donation for the portable bathrooms, etc.
Graves mountain is accessible and open for mineral collecting by colleges, universities, and gem and mineral societies. Groups as small as two INDIVIDUAL mineral collectors can now reserve the mountain!

In order to gain access, (except for the two yearly "Rock Swaps and Digs") you will need to contact the caretaker, Clarence Norman, Jr (Junior) at 706-401-3173 (his business) or 706-401-3173 (his cell). Give him a call and he can reserve the mountain exclusively for your group. All of the mineral societies that come here to collect, offer the caretaker a donation for his trouble and effort in keeping the mountain open and assessable to them. Please consider what it is worth to your mineral society to be able to field collect minerals at Georgia's premiere mineral location!

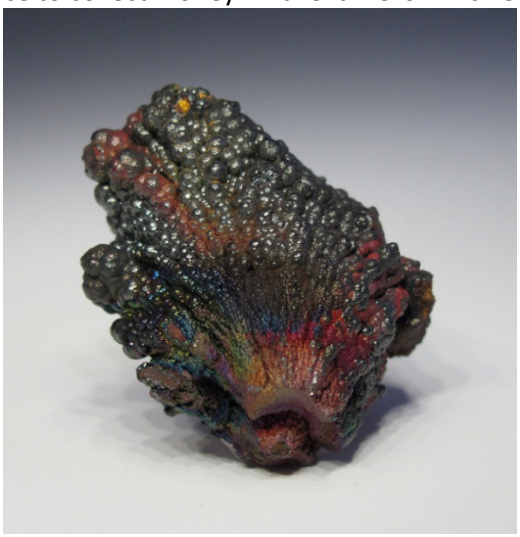
Graves Mountain code of conduct!

Park your vehicle in the designated area(at the end of the paved access road but not much beyond the woods to the right of this road).
NO child under the age of 12 years old is to be allowed on the mountain because of all the dangers involved.
ALL CHILDREN WILL BE ALLOWED DURING THE"Rock Swap and Digs"IF EACH CHILD IS UNDER STRICT ADULT SUPERVISION!
ALL pets must be kept under control and on a leash.
The caretaker, Junior Norman, has final and absolute say as to where you may safely work.
Ladders or power tools of any kind will not be allowed. (HAND TOOLS ONLY!)
STAY AWAY FROM ALL HIGH WALLS!!
NO RAPELLING OFF OF ANYTHING!
NO ONE IS ALLOWED TO DRIVE THEIR VEHICLE ON ANY PART OF GRAVES MOUNTAIN BEYOND THE PARKING AREA!
(The caretaker must accompany anyone driving beyond the parking area!)

EVERYONE NEEDS TO BE OFF THE MOUNTAIN BY DUSK. (Absolutely no one is allowed on Graves Mountain after dark.)

Please protect our ability to field collect at Graves Mountain!
Report violations to:
Clarence Norman, Jr
Norman C E Wrecking Co
3333 C E Norman Rd
Lincolnton, GA 30817-3110
706-359-1544 (his business)
or
706-401-3173 (his cell)
All reported violations will be held in strict confidence.

DIRECTIONS: From Macon, Ga. Starting at I-75 and I-16, take I-16 east to Spring St. exit (less than 1 mile). Turn left on to Spring St. (Highway 129) towards Gray Ga., Stay on 129 until you get to Eatonton Ga. (around 40 miles). Once you get to the square turn right onto highway 16, turn left on to highway 44 (around 1 mile). Stay on highway 44 until you get to Washington Ga. (around 54 miles) turn right onto highway 78 business and go through town (highway 47 will merge in with 78 from the right, Don't turn here)(around 2 miles). Take highways 47 / 378 towards Lincolnton Ga. (about 12 miles) once you cross into Lincoln County, you will pass a church on the right, turn right into the second driveway after the church. Someone should be at the entrance to collect money. Travel time is 2 hrs 45 mins.



Iridescent Hematite from Graves Mountain

Rock Swap and Sale at Cobb Gem and Mineral

Please let your club members know about our Rock Swap and Auction coming up Saturday, April 21, 2018 from 10a-4p.

More information about the event (especially for small vendors) can be found at this link on the club's website:

https://www.ccgms.org/ccgms-annual-rock-swap/

A Rock Swap is an informal way for Rockhounds, Lapidary (Jewelry) Artists, and sometimes Mineral Dealer to come together to show, sell and trade their stuff. As it suggests, sometimes people simply trade their items for those that another trader brings. Other times, things are bought and sold in a normal buyer seller exchange. Sometimes people come just to display things they are proud of. Anyone is welcome to participate.

What kinds of things can you find or bring to a Rock Swap? Well, you may have duplicate specimens in your rock collection. Maybe you are a jewelry maker who sells online and would like to have a fun afternoon selling at the Rock Swap. Have you been out collecting fossils? Bring your extras. I've seen people bring columnar basalt from Washington State that they have found at a landscape site. We had a person who had interesting local mineral specimens that he acquired while he lived in Kosovo. We have people who have slabbed

rocks for use in lapidary and people who have purchased things in bulk from mines around the country. You can see, there are lots of different types of related items for sale/trade.

And, of course, there is no obligation whatsoever to bring things to trade or sell. You can just show up to see what treasures await.

Last year we conducted a small mineral and lapidary material auction along with the other activities. It was such a hit that we have decided to do that again. One more reason to not miss the CCGMS Rock Swap.

Thank you for your help in sharing this information.

Best Regards,
Tamara Watkins

Check website
http://www.amfed.org/sfms/
For more shows coming up in the Southeast and other great information!

April 2-3, 2016
Lexington Rock Gem & Jewelry Show (Annual Show)

Lexington, KY
Clarion Hotel, 1950 Newtown Pike, Lexington, KY. Near Exit 115 off I-75/I-64.
Hours: Sat April 2, 9AM-6PM, Sun April 3, 11AM-5PM.

Show includes minerals, jewelry, equipment dealers, exhibits, KY Agate, fluorescent displays, hourly prizes.
Admission: $2 Adults, $1 Children, $5 Max Family. Scouts in uniform free.

Info Jane Volk - lexgemshow@outlook.com, Allen Ferrell - kyrock2010kentucky@yahoo.com, or www.bggamc.homestead.com.

April 28-29, 2018
Memphis, TN.
Memphis Mineral, Fossil, Jewelry Show

"The Earth Wide Open"
Memphis Archaeological and Geological Society
Memphis International Agricenter, 7777 Walnut Grove Rd. Memphis, TN
Saturday, April 28 9-6:00 and Sunday, April 29 10-5,

Adults $5.00, 2 day pass $8.00, Children 12 and under $2.00. Scouts in uniform free

Dealers, Exhibits, Demonstrations, Grand and Hourly door prizes. Kids Area with Rockzone featuring Gem and Fossil Dig, Geode Bowling, and Rocks Around the Clock. Includes "The MAGS Rock Banquet" a table full of rocks that look like real food. Developed and maintained by the club since 1980

web: www.TheEarthWideOpen.com
email info[]theearthwideopen.com.
Show Chair James Butchko 901 743-0058
Dealer Chair WC McDaniel 901-274-7706, 901-490-3575

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Macon, Georgia

The Club meets on the First Monday of each Month, at The Museum of Arts and Sciences, in Macon, Georgia.
Except: No meeting January, July, and August. The annual Christmas Party is the first Monday in December. September the first Tuesday of the Month

Purpose: To promote the earth sciences, the lapidary arts, and the collection, study and display of rocks, minerals, and fossils; to promote the public awareness of these efforts in educational and recreational activities.

Club Officers:

President / Web Master: Jim Souter,
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Vice President: Bill Mayer,
ph. 678.621.3457, orebilly@gmail.com

Secretary / Photographer, Richard Arnold,
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susanbphilh@pstel.net

Editor / Programs: Jay Batcha,
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Education Chairperson: Tuell Walters,
ph. 478-922-7200
firecomet46@gmail.com

Club year begins November 1st, a grace period of three months will be given before membership lapses.

Mid-Georgia Gem & Mineral Society Application for Membership

Name(s)_____
_____
_____
_____
_____
Address_____
_____
City_____
State____ Zip Code_____
Phone_____
Adult(18+) $10.00 Junior $2.50 New
_____
Renewal _____
E-mail
Address_____
_____
List your interests and reasons for joining_____
_____
_____
_____

Make checks payable to:
Mid-Georgia Gem & Mineral Society
Mail to the Treasurer (listed on this page) or bring to a meeting.

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Macon, Georgia

Member of Southeast Federation of Mineralogical and Lapidary Societies
Member of American Federation of Mineralogical Societies

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