Pleasant Oaks Gem & Mineral Club of Dallas, TX
Chips and Chatter

Member: South Central Federation of Mineral Societies

Affiliated: American Federation of Mineralogical Societies

May 2018

Vol. 52, Issue 4

1st Place, 2017 AFMS Mini-Bulletin
1st Place, 2017 SCFMS Mini-Bulletin

Quartz

Don Shurtz, Pleasant Oaks Gem and Mineral Club of Dallas

Warner will be giving a presentation on Quartz at our May meeting. I am sure that he will be passing around many quartz specimens for our viewing pleasure.

Before we get to the May meeting, perhaps we should look at the background of quartz. Quartz, also known as silica, is composed of one silicon atom and two oxygen atoms – SiO_2. It is the defining mineral for Mohs hardness of seven. Silicon is the second most abundant element in the earth's crust (around 27 % of the earth's crust by weight). Oxygen is the most abundant element in the earth's crust.

Most of the silicon and oxygen do not form as quartz; rather they form a silicate radical that has a tetrahedral shape. One such radical is the neosilicate where the tetrahedral shapes are isolated. Examples of neosilicates are the Olivine, Zircon, and Garnet Groups which includes the minerals Forsterite (Peridot), Spessartine, Almandine, Zircon, Kyanite, and Topaz (plus many more). Scorosilecates are double tetrahedral groups that include the minerals Axinite, Zoisite, and Vesuvianite plus others. Another variation of the silicate radical named Cyclosilicates where the tetrahedral shapes form rings that will join with other elements to form minerals such as Benitoite, Beryl, Sugilite, and Tourmaline (plus others). Still other variations of the silicate radical called Inosilicates where the tetrahedral shapes form chains that form with other elements to form minerals such as Dioptase, Jadeite, Spodumene, and Rhodonite (plus many others). Still another variation called Phyllosilicates where the tetrahedral form sheets and includes minerals such as Chrysotile (a serpentine), Talc, Biotite, Muscovite, Chlorite (plus others). Finally, we have Tectosilicates that includes Quartz group. Other Tectosilicates include the Feldspar family, the Zeolite family. The Tectosilicates compose about 75% of the earth's crust.

It took a while, but we finally got back to Quartz. Earlier we indicated its chemical composition was SiO_2, but if you picked any random silicon atom and looked at the surrounding atoms, it would appear that the silicon atom was attached to a silicate radical. Then if you looked at the silicon atom in the radical, it would look as though it was attached to a silicate radical. Everywhere it would look like silicon silicate!

Not all members of the Quartz group are Quartz. All the members of the Quartz group have the same chemical composition, but slightly different crystalline structures (polymorphs). Quartz is the most common member of the Quartz group and forms in the trigonal crystal system. It is the second most

abundant mineral in the earth's crust. Other members of the group include the high temperature polymorphs Tridymite and Cristobalite, a high pressure and moderate temperature polymorph Coesite, the polymorph Stishovite which has a very dense tetrahedral. It is very rare in the earth's crust but may be plentiful in the earth's lower mantle, the polymorph Moganite that forms in the monoclinic crystal system, and finally the polymorph Chalcedony that is a combination of Quartz and Moganite.

Quartz can be clear, but also comes in a variety of colors. I am guessing that Warner will be showing clear quartz crystals – I believe that they are his favorite. Generally, when you talk about quartz crystals you are referring to the clear variety.

Amethyst is the purple variety of quartz. The purple color comes from trace amounts of iron impurities in the matrix that have been irradiated (natural radiation).

Citrine is the yellow to brown variety of quartz. It also owes its color due to trace amounts of iron impurities. Natural citrine is rare, most commercial items sold as citrine are actually amethyst that has been heat-treated.

Ametrine is a variety of quartz with zoned areas of amethyst and citrine in the same crystal. Ametrine is often simulated by heat-treating amethyst while keeping a portion of the crystal cool (i.e., heat-treating half the crystal).

Smoky quartz is a transparent to translucent variety of quartz with a grey to brown to black interior. Smoky quartz gets its color from free silicon atoms in the matrix. The silicon comes from irradiation of the SiO2 to form silicon and oxygen atoms. Some smoky quartz also has iron and aluminum impurities in trace amounts in the crystalline matrix, but still requires irradiation to become smoky in appearance.

Milky or white quartz has crystal shapes like all quartz, but during the formation process the crystalline structure incorporated inclusions of air and water.

Rose quartz generally is found as a massive quartz formation. This variety of rose quartz gets its color from trace amounts of titanium, iron, and manganese it the quartz crystalline structure. However, some crystalline rose quartz has been found in Maine and in Brazil. This variety tends to fade in color when exposed to sunlight. The color is like result of trace quantities of phosphate and aluminum in the crystalline structure.
Parsiolite is a green variety of quartz. The green color is caused by trace amounts of iron in the crystalline matrix. Natural parsiolite is very rare; most parsiolite on the market is actually heat treated and irradiated amethyst or pale citrine.

Blue quartz is yet another variety. It derives its color from the inclusion of magnesio-riebeckite or crocidolite. Another variety of quartz that is often called blue quartz is actually Dumotierite quartz. It has a silky blue color that is derived from inclusion of durmotierite in the crystal.

Rutilated quartz can be clear or smoky quartz in inclusions of rutile needles in the crystal. The rutile needles are often golden in color, but they can also be black, silver, or reddish. It is interesting that inclusions in a crystal generally detract from the value of the specimen, but rutile inclusions in quartz add to the value of the specimen.

Lest we forget, there is a whole world of micro-crystalline quartz out there too. These are agate, jasper, and flint. We generally do not think of them as being a variety of quartz, but being microcrystalline quartz they are truly a variety of quartz. Most agate, jasper, and flint have other inclusions that cause the color that can be virtually any visible color.

Quartz and its numerous varieties are found virtually anywhere and everywhere in the world. The Minas Gerais district of Brazil is noted for the number of gem minerals to be found. It has a prolific production of many varieties of quartz. Arkansas is also noted for the mining of quartz crystals (clear and milky). Despite the abundance of quartz and the various varieties of quartz in nature, many varieties of quartz can be man-made - all of the transparent varieties of quartz can be artificially produced. Very pure natural quartz was used in the production of early semi-conductor electronic items. However, it did require very pure quartz and it was found that it could be more economically produced rather than mined. Virtually all quartz in today's electronics is artificial (man-made) quartz.

Reference:

- Gemdat.org, https://www.gemdat.org/
- Wikipedia, https://en.wikipedia.org/wiki/Quartz

Picture:

- Photograph by Didier Descouens, used under the Creative Commons Attribution-Share Alike 4.0 International license.

Shows and Activities – Upcoming Show and Activity Dates

- May 5 - 6, Lubbock, TX, SCFMS Convention/Lubbock G&MC Show, Lubbock Memorial Civic Center, www.lubbockgemandmineral.org
- May 26 – 27, Fort Worth, TX, Fort Worth G&MC, Will Rogers Memorial Center, www.fortworthgemandmineralclub.org

- Jun 1 - 3, Tulsa, OK, Gem Faire, Inc, Expos Square, http://www.gemfaire.com
- Jun 29 - Jul 1, Farmington, NM, San Juan County G&MS, McGee Park, San Juan County Fairgrounds, torycbonner@gmail.com
- **Jun 30 – Jul 1, Grapevine, TX, Arlington G&MC, Grapevine Convention Center, show@agemclub.org**

- Aug 18 - 19, Bossier City, LA, ARK-LA-TEX G&MS, Bossier City Civic Center, www.larockclub.com
- Aug 11 - 12, Gonzales, LA, Baton Rouge G&MC, Lamar Dixon Expo Center, www.brgemandmineral.org

- Sep 1 - 3, Silver City, NM, Grant Count Rolling Stones G&MS, Grant County Veterans Memorial Conf. Center, www.rollingstonesgms.blogspot.com
- Oct 5 - 7, Albuquerque, NM, Jay Penn, NM State Fairgrounds, www.albfallshow.wix.com/abq-fall-show
- Oct 12 - 13, Mount Ida, AR, Mount Ida Chamber of Commerce, Montgomery County Fairgrounds, 31st Annual Amateur World Championship Quartz Digging Contest, www.mountidachamber.com

- **Nov 17-18, Mesquite, TX, Dallas G&MS, Mesquite Rodeo Center Exhibit Hall, www.dallasgemandmineral.org**

Ref:

- March - April 2018 SCFMS Newsletter
- Rock & Gem Show Calendar, http://www.rockngem.com/show-dates-display/?ShowState=ALL

BENCH TIPS BY BRAD SMITH NO - MAR PLIER

from the March-April 2018 SCFMS Newsletter

Pliers can often leave nicks and scratches on your work. If this is giving you a problem, first take a close look at the pliers' jaws. New tools can be a little rough. I typically relieve any sharp edges, sand away any tool marks, and give working areas a quick polish. If that doesn't solve the problem, you probably need to cover the jaws. Plastic electrical tape provides a quick fix but can leave messy adhesive on the jaws, and dips don't seem to last very long. A quick and easy solution is to slip a length of 1/8 dia. vinyl tubing over each jaw. It works well and leaves no sticky residue. The tubing can be found in a store that sells aquarium supplies. Note that this will increase the size of the pliers' jaws a bit, but I haven't found that to be a problem.

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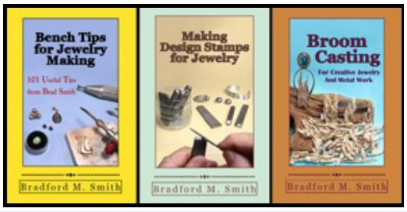


Visit an Area Club

Arlington Gem & Mineral Club, 1408 Gibbins, Arlington, TX, 1st Tuesday of each month at 7:30 pm
Cowtown G, M, & Glass Club, meets the 2nd Tuesday at 7:00 pm, Corp. Emp. Rec. Association (CERA) 3300 Bryant Irvin Rd. Fort Worth
Dallas Bead Society, meets 1st Saturday of each month at 10:00 am at The Point at CC Young, 4847 W. Lawther Dr., Dallas, TX
Dallas Gem & Mineral Society meets the 3rd Tuesday of each month at 7 pm, American Legion, 10205 Plano Rd, Dallas (next to their shop)
Dallas Paleontological Society, 2nd Wed. of each month at 7:30 pm, Brookhaven College, Building H, 3939 Valley View Lane, 75244
Fort Worth Gem & Mineral Club, 4th Tuesday of each month at 7:30 pm, 3545 Bryan Avenue, Ft. Worth
Oak Cliff Gem & Min Soc., 4th Tuesday of each month at 7:30 pm, Unitarian Universalist Church, 3839 W. Keist Blvd, Dallas,
Pleasant Oaks Gem & Mineral Club, meets the 1st Thur. of each month at 7:30 pm, Garland Women's Activities Bldg., 713 Austin, Garland,

Tiger Eye History and Facts

Article Provided by Top Gems, via The Palomar Gem 02/2005 with additions from the Internet, via Chips 'N Splinters 05/2016, via The Rockhounder 06/2016, via The Backbender's Gazette, 09/2016

First of all, tiger's eye, tiger eye, tigereye, and tiger-eye are all accepted ways to write this name. Tiger's Eye is a durable quartz composite with the usual quartz hardness of 7. It begins as the fibrous blue mineral called crocidolite, which is comprised of iron and sodium. Most of us know crocidolite as asbestos. The transformation begins when quartz becomes imbedded between the fibers of crocidolite. This process will result in one of two gemstones. A blue stone is called Hawk's Eye or the golden brown stone called Tiger's Eye.

During the process, the asbestos is completely dissolved. But the quartz takes on the fibrous formations and the blue color of crocidolite. This creates the parallel lines within the gem which gives it that ever shifting play of light and movement the stone is so loved for. This is also known as chatoyancy, the gleam that rolls across its surface, much like the eyes of a cat.

Even though the iron and sodium dissolve, traces of the hydrated oxide of iron deposit between the crocidolite and quartz, creating the golden color that is common to Tiger's Eye. How much of this hydrated mineral is deposited will determine how golden brown, red, green, or blue Tiger's Eye and

Hawk's Eye will be. The rarer blue Hawk's Eye will have only the slightest amounts. The varying amounts of hydrated oxide of iron actually cause several colors and mixes of color. When the color is a greenish gray, it is called cat's-eye quartz. A golden yellow reflection on a brown stone is called Tiger's Eye. If the stone is blue gray or bluish, it's known as Hawk's Eye. Reddish brown, or mahogany colored stones, are known as bull's-eye or ox-eye.

Up until recently tiger eye has been considered to be a pseudomorph, but new evidence proves otherwise. It has long been thought that the crocidolite fibers were replaced with quartz, much like the replacement that happens in petrified wood. New evidence proves this may not be the case and that quartz and the crocidolite co-exist.

Tiger eye has a fibrous structure, and in the lapidary shop must be oriented properly to get the chatoyancy and/or the "cats eye" effect. Cuts must be exactly parallel to the length of the fibers to get the full chatoyancy. If the saw cut is perpendicular, or 90% to the fibers, you end up with a lifeless, dark brown to black stone with no chatoyancy or light play at all. **Orientation of cutting is critical to getting good chatoyancy and color out of tiger eye.**

These fibers in tiger eye may be up to about two inches long and very thin. Most are only 0.001 millimeters, or 0.000039 inches in diameter and are not always straight, making it even harder at times to cut good chatoyant stones.

TREATMENTS:

In most cases, but not always, red tiger eye is not a natural occurrence. It is usually the result of heating and can be done using the kitchen oven. Here's a basic recipe for heat treating tiger eye.

To protect the tiger-eye from thermal shock during heating, cover slabs of ordinary, gold tiger eye in fine, clean silica sand, at least 3" all around the slab.

Place the metal container in a cold oven and increase the temperature by 50 degrees every hour until it reaches 400 degrees. Then turn the oven off and DO NOT OPEN THE DOOR. Allow plenty of time for the container to cool all the way through. (If you heat treat tiger eye to sell, BE SURE you let it be known it has been treated. It's only right, and it's the law.)

There are natural occurrences that tiger eye can be found with red color. And other known ways have been from brush fires where the deposits are found, and also when miners would build fires next to the seams to help crack it up into smaller pieces; remember, most of these miners had nothing but hand tools to work with.

Not long after tiger eye was first discovered for lapidary, the world famous Idar-Oberstein lapidaries discovered by using hydrochloric or oxalic acid, they could bleach tiger eye to an evenly colored light, translucent yellow. When cut properly, they produced "cats eye" stones that look much like the rare variety of chrysoberyl, but gemologists can very easily distinguish between the two.

Other treatments, but not usually done—never by me—but some do it, especially in pietersite and bighamite stones, it is very common to run into pits, cracks, or voids called vugs. These are sometimes filled with wax, super glue, or Opticon in the last steps of sanding and polishing the stone. I never do any of these treatments, but as I said, it is and has been done by others.

There are many other types of stones that display a "cats eye" or shimmering chatoyancy. The word "Chatoyant" comes from the French word for "cat" or to glow like a cat's eve.

Tiger eye is the anniversary gemstone for the 9th year of marriage

Editor's Note: Remember that tiger eye has asbestos, so always use a face mask and/or keep tiger eye under water when sanding and polishing.

President's Message

Ling Shurtz, POGMC President

IGEM was a big success. We got two new members while at the show.

Our May 3rd meeting will celebrate Cinco de Mayo with a taco bar. Come join in the fun. Warner will be giving a presentation about quartz.

Club Officers for 2018

President:	Ling Shurtz
1st VP, Programs:	Carolyn Grady
2nd VP, Field Trips:	David Dobson
Secretary:	Lee Elms
Treasurer	Del Grady
Editor:	Don Shurtz
E-mail:	don.shurtz@gmail.com, L.SHURTZ@gmail.com

Minutes of the April 5, 2018 Meeting

The meeting was called to order at 7:30 PM by the President, Ling Shurtz.

The Pledge of Allegiance was led by Ling.

Quorum: We had a quorum.

Visitors:

- Donnette and Scott Wagner, former POGMC members
- Mark Carter, also a former POGMC member

Minutes: The Minutes of the March meeting were not available and will be published in a future issue of the Chips and Chatter

Treasurer's Report: Del gave the Treasurer's Report. A motion to accept the report was made by Carolyn. The motion was seconded by Warner. The motion passed.

Old Business:

We discussed the April IGEM show set up and participation. Tickets for the show were available.

New Business

- The May meeting will start at 7:00 PM. We will be celebrating Cinco de Mayo with a Taco Bar. The club will provide the meat, everyone should bring something to contribute to the meal.
- The SCFMS Convention is May 5, 2018 in Lubbock, TX. Our President, Ling, will be the club's delegate
- Shows in the local area for April:
  - Apr 4 – 8, Raleigh, NC, AFMS Convention
  - Apr 7 – 9, Siloam AR, Northwest AR G&MS, Siloam Community Bldg
  - Apr 14 – 15, Abilene, TX, Central Texas G&MS, Abilene Civic Center
  - Apr 18, IGEM set-up at Market Hall, Dallas, TX
  - Apr 20 - 22, Dallas, TX, International Gem & Jewelry Show Inc. (IGEM), Market Hall
  - Apr 27 – 28, Ada, OK, Ada GM&FC, Pontotoc Agriplex
  - Apr 28 – 29, Waco, TX, Waco G&MC, Extraco Event Center

Break

Presentation: Following the break, Donnette Wagner gave a presentation about opal. Donnette talked about the different types of opal (common opal, fire opal, and precious opal) and the various locations where they are found. She also passed around many samples from her collection for us to view. Donnette also talked about the programs at Wild Acres. Wild Acres is a "live-in" school for lapidary arts run by the Southern Federation of Mineral Societies. Any member of the American Federation of Mineral Society (that includes members of POGMC) can sign up to attend. Classes, lodging, and meals are all included at a very reasonable price. Donnette encouraged all to sign up and attend if possible.

Raffle: Following the presentation we had the raffle

Adjourn: The meeting was adjourned at 8:45 PM

From notes by Don Shurtz

MEETING

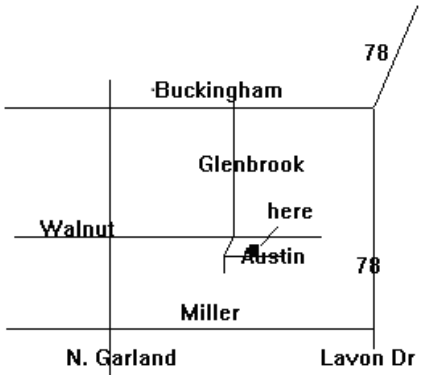
Our May 3, 2018 meeting will start early at 7:00 for a TACO bar! Warner Ragan will give a presentation about Quartz Crystals.

VISITORS ARE ALWAYS WELCOME

PLEASANT OAKS GEM and MINERAL CLUB of Dallas

Meetings
First Thursday of each month, 7:30 PM
Garland Women's Activities Building
713 Austin St., Garland, TX
(Northeast corner of Austin & Glenbrook

Membership
Single Adult: $16.50,
Junior: $5.00, Family: $27.50
(Plus badge fee for new members)



PURPOSE

The Pleasant Oaks Gem and Mineral Club of Dallas is organized for charitable and educational purposes to promote interest in the various earth sciences, particularly those hobbies dealing with the art of cutting and polishing gemstones, the science of gems, minerals and metal crafts, as well as their related fields. Pleasant Oaks Gem and Mineral Club of Dallas is a Section 501(c)(3) not-for-profit organization

CHIPS AND CHATTER
Pleasant Oaks Gem & Mineral Club
PO Box 831934
Richardson, TX 75083-1934

To:

VISITORS ARE ALWAYS WELCOME

Next Meeting: May 3, 2018, at 7:00 PM – Taco Bar to celebrate Cinco de Mayo.

Features

Notices

Monthly Columns