BRECCIA

Santa Clara Valley Gem and Mineral Society

Volume 72 Number 2, February 2025

Table of Contents

Events

February 25, 7:30 PM: The General Membership Meeting will feature **2025 Scholarship Recipient Presentations**. The Bragging Rights theme is **"Something FUN"**.

Come at 7:00 PM for the **Members' Sale** before the meeting.

March 4, 7:30 PM: Board Meeting on Zoom. All Members are welcome to attend. If you do want to attend, please contact **Jim Herbold**.

SCVGMS ANNUAL SHOW

March 14, 5PM: Setup

March 15–16, 10–5: Show

March 25: The General Membership Meeting will feature **Bruce Pohlman**: Ocean View Mine Trip Report.

April 1: Board Meeting on Zoom.

Volunteers Wanted!

Yes, our Club's annual show is coming soon. With that said, I am again the Volunteer coordinator and I NEED YOU.

This is our club's time to shine, and your help is needed to make it do so. The show is very popular, and has great attendance. We need members to help make it fun for the public, and for us.

We have all kinds of positions for our members to fill:

◊ Friday show set-up. A monumental task and lots of help is needed.

◊ A room monitor position, requires walking about the show making sure all is OK.

◊ Positions such as tickets or hospitality are for those members that would rather sit down.

◊ For members who have a craft that they would like to demonstrate, we have areas available. People are always interested in how things are made. Come share!

◊ Sunday, after the show is take-down. This is another huge job. Cases are taken down and all club equipment is loaded into the Club trailers.

Some members signed up at the January meeting and more will be signing up at the February meeting. If you have a favorite position that you've done in the past and want it again, call me!

Thank you all for helping to make the Santa Clara Valley Gem & Mineral Society 2025 show a success!

Volunteer Coordinator,

Margo Mosher

margomosher@yahoo.com

408 439-5639

{Editor's Note: See the next page if you want to share a display case at the show.}

SCVGMS Member and Guest Display Case Entry Form

Annual Festival Dates: March 15-16

Case setup on March 14 after Noon and case tear-down on March 16 at 5 PM

Name: _____

Address: _____

Telephone: _____

Email: _____

I will need to borrow a display case: ____No ___Yes More than 1 _____

If "No" My Case Depth: _____ My Case Width: _____

Display Description: _____

_____

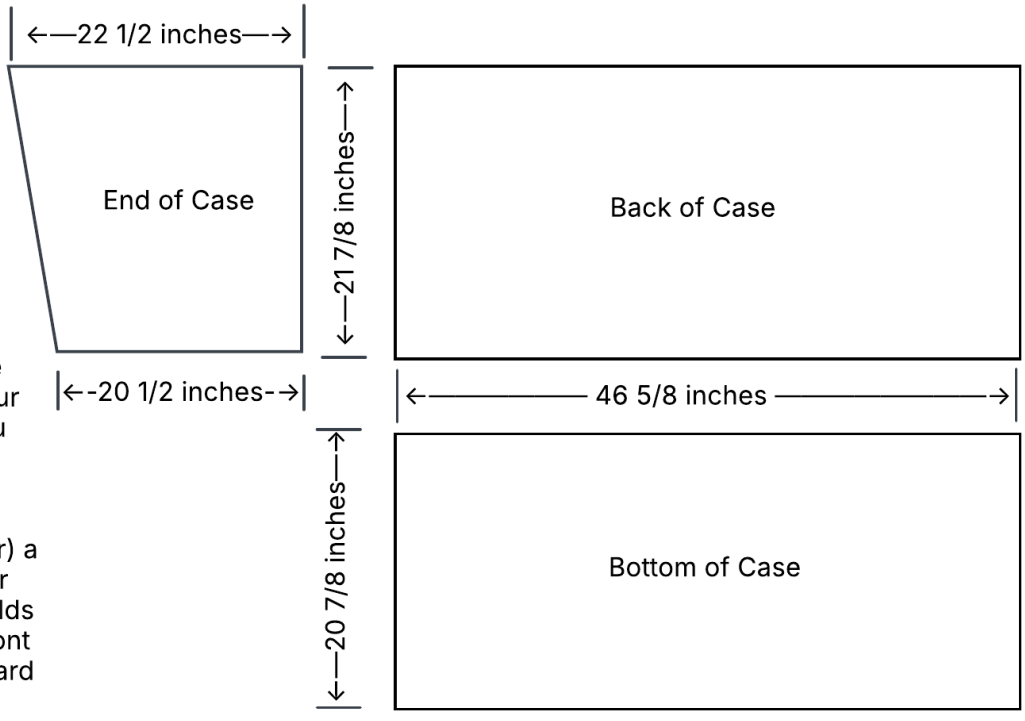
_____

Please send the completed form to:

Stephen May, 1092 Candlewood Ave., Sunnyvale, CA 94089.

Or fill in this Google Form online.

SCVGMS Display Case Dimensions



Please note—these are inside dimensions of our club display cases. You must cut your liner material (whether it be plywood, cardboard, hardboard, or whatever) a little smaller to allow for the liner cloth which folds over the edges. The front of the case slopes inward at the bottom.

Editor's Message

SCVGMS Annual Show

Club activities related to our Annual Show are in full swing. Don't be surprised if **Margo Mosher** calls to invite you to help out.

The flyers are ready to distribute, and we are looking for 19 more display cases.

East Bay Mineral Club

Steve is going to the East Bay Mineral Club's meeting to show them our display cases and to discuss partnering on their shop.

Member Sales

The next Member Sale will be at the February general meeting.

Let Jim Herbold know if you want to sell in March or beyond.

Do you have anything that other members might enjoy? Please contact me if you do.

Deb Runyan, Breccia Editor

editor@scvgms.org, 408-628-7789

Rockhound of the Month

Our rockhound of the month is **Jim Fox**, for picking up DRC stuff and always having cool stuff to display at meetings!

Sunshine

There is nothing new for Sunshine this month.

If you know of anyone needing some sunshine in their lives, please email **Margo Mosher at margomosher@yahoo.com.**

Field Trips

Dates pending: Davis Creek

April 5–6: Pala Chief Mine - pay to dig

There will be more information coming on both digs.
Contact: **Stephen May**, Stephenmay0990@gmail.com
Phone: 669-248-3993 or 408-306-6782

New Members

We welcome new members to SCVG&MS!

Theresa Cortese

Brian Picard

Steve Stalla

Federation News

The 2025 CFMS Show will be held at Lancaster, CA on May 10th and 11th. See the last date in the Shows listing for more information.

President's Message

Hello, everyone! I've just returned from a visit to Quartzsite, AZ. It was a lot colder this year, with temperatures dipping to nearly freezing at night and only up into the low 60s during the day. There were clouds in the sky only one day that I was there, which meant the sunsets were not as interesting as usual. But as the sun was setting each day with a vibrant orange glow on the western horizon, I couldn't help but think of the fires that have occurred in Los Angeles this past January. I can't fathom what people have gone through, but I hope that they find the strength and resolve needed to build their lives back up.

Quartzsite has always held a special spot on my favorites list, for three reasons. Firstly, there are many "Mom and Pop" dealers who are selling parts of their personal collections, often at very reasonable prices. Secondly, the dinosaur bone dealer and collector community gathers in Quartzsite each year. It's the best show to acquire high-quality agatized dinosaur bone fossils. I've been collecting this material since the mid 1990s, so the preponderance of "gembone" is a huge draw for me. Thirdly, the camping on the outskirts of Quartzsite is the best. The BLM land is flat and there's enough open space, so nobody is ever encroaching on your camping area. This keeps the noise down, and there are no bugs there this time of year to boot.

Here's a large specimen of a likely theropod femur. Theropods are the meat-eating ancestors of today's birds. The outer ring is known as permineralized cortical bone, and the hollow-cored bone is filled with red agate and calcite. The orange/red fluorescence is caused by the application of shortwave UV light to the calcite.

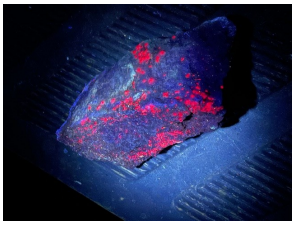
Having attended gem and mineral shows for so many years, I am aware that they necessarily change over time. Two changes in Quartzsite are notable. The first change is the rapid proliferation of dealers selling Moroccan material. I have no issues with Moroccan fossils and minerals per se, but all of these dealers are selling the exact same thing. I have been used to seeing lots of Moroccan material in Tucson in concentrated places, but it's arrived in Quartzsite since things reopened after COVID. I'd rather see less of this material. The second change is that the footprint of the PowWow is starting to shrink—there were definitely fewer dealers this year. I hope that this trend reverses and that dealers find these shows, including our own Annual Show, to be profitable ventures.

(Continued on page 7)

(Continued from page 6)

A nice section of "cat gut" red wood from Yellow Cat, Utah. The red wood casts are rare and highly-prized. The "cat-gut" tubular agate is the holy grail from this location. The Yellow Cat mines are primarily known as a source of uranium during the Cold War.

At the prompting of some friends, I also embarked on a search for a rare fluorescent mineral that is found at a location near Quartzsite. The material is zunyite, an aluminum sorosilicate. I was successful in finding a few examples of this material. I was not able to discern anything during a daylight visit to the exposure, but a nighttime visit with my shortwave LED flashlight was effective.



A specimen containing small, translucent isometric crystals of zunyite which glow red under shortwave UV light.

I am also planning to attend the beginning of the Tucson shows in early February. I enjoy this show because of the broad opportunity to find interesting fluorescent specimens. I'll report back on how things went in my next Breccia message!

Sunset to the west, ending another nice day in Quartzsite. Not my fifth -wheel camper!

Thanks and get yourselves ready for our Annual Show in mid-March!

Jim Herbold
SCVGMS President

Deep Question

How did doctors come to the conclusion that exercise prolongs life, when the rabbit is always jumping but only lives for around two years, and the turtle, that doesn't exercise at all, lives over 200 years. So, rest, chill, eat, drink, and enjoy life!

Bragging Rights

The January Bragging Rights Theme was **"Quartz"**.

1: Light Smoky Quartz Cluster, **Ella Persselin**

3: Smoky Quartz Crystals, **Bruce Poehlman**

4: Large Rose Quartz, **Jim Fox**

5: Quartz vein in Poppy Jasper, **Kyle Van Woerkom**

2: Herkimer Diamonds, **Joan Schramm**

Congratulations to **Joan Schramm** for her Herkimer Diamonds**!**

February's Bragging Rights theme is **"Something FUN"**.

Cesar Nuñez-Bragging Rights Chairman

Member Displays

Aventurine, and many polished rocks, **Bob Kout**

Halide from Searles Valley, **Dan Gehret**

Jaspers and Topaz from Topaz Mountain, **Kyle Van Woerkom**

Carbaroundum, **Simon G.**

Jaspers and Amazonite, **Brian Picard**

Honeycomb Ruby, **Jim Fox**

Please bring any type of rock, mineral, or fossil (identified or not), your latest project, information on a field trip, or anything to do with rocks.

Show off what you love, so that we can enjoy it with you!

Website Links

Your Window to the World of Important Websites

SCVGMS Website: https://www.scvgms.org/

SCVGMS Facebook Page: https://www.facebook.com/santaclaravalleygemandmineralsociety

American Federation of Mineralogical Societies (AFMS): https://www.amfed.org

American Lands Access Association (ALAA): www.amlands.org

BLM Rockhounding: https://www.blm.gov/programs/recreation/rockhounding

California Federation of Mineralogical Societies (CFMS): https://www.cfmsinc.org/

Mindat.org (world's largest open database of minerals, rocks, meteorites): https://www.mindat.org/

GemKids: https://gemkids.gia.edu/

Smithsonian Science How Webcast Archives: https://naturalhistory.si.edu/education/school-programs/grades-3-5/smithsonian-science-how/smithsonian-science-how-webcast-archives

Smithsonian National Museum of Natural History: https://www.youtube.com/@nationalmuseumofnaturalhistory

Membership Dues for 2025 Are Due

SCVGMS membership dues are due for the year 2025. Your dues are essential to the operation of SCVGMS.

Dues are $5.00 for Junior, $20.00 for an individual, and $30.00 for the household.

You can now easily pay online, at https://www.scvgms.org/product/membership-dues/

Or

Pay **Frank Mullaney** at a meeting

Or

Send your check to Treasurer, Santa Clara Gem and Mineral Society, Box 54, San Jose, CA 95103-0054, or to **Frank Mullaney**, 5705 Begonia Drive, San Jose, CA 95124

Thank you.

Information on Shows

February 15–16, 2025 - Antioch, CA
Antioch Lapidary Society
Contra Costa County Fairgrounds
1201 West 10th Street
Hours: Sat 10–5, Sun 10–4
Website: https://antiochlapidaryclub.com/

February 22–23, 2025 - Vallejo, CA
Vallejo Gem and Mineral Society
Solano County Fairgrounds McCormack Hall
900 Fairgrounds Drive
Hours: 10–5
Contact: 415-254-1506
Website: https://vjgems.com

March 1–2, 2025 - Ventura, CA
Ventura Gem & Mineral Society
Ventura County Fairgrounds
10 W. Harbor Blvd.
Hours: Sat 10–5, Sun 10–4
Contact: 805-312-8467, info@vgms.org
Website: www.vgms.org

March 7–9, 2025 - Stoddard Wells, CA
Victor Valley Gem and Mineral Club
I-15 toward Barstow. Exit #157, stay on Stoddard Wells Road. Follow the signs 7 miles to tailgate
Contact: 831-406-0214,
president@vvgmc.org
Website: vvgmc.org/

March 8–9, 2025 - Turlock, CA
Mother Lode Mineral Society
Turlock Fairgrounds, 900 N. Broadway
Hours: 10–5
Contact: 209-499-0533,
skitrish1112@hotmail.com
Website: www.turlockgemshow.com

March 15–16, 2025 - San Jose, CA
Santa Clara Valley Gem & Mineral Society
Santa Clara County Fairgrounds
344 Tully Rd.
Hours: 10–5
Website: https://www.scvgms.org

March 22–23, 2025 - Angels Camp, CA
Calaveras Gem and Mineral Society
Calaveras County Fairgrounds,
2465 Gun Club Rd.
Hours: Sat 10–5, Sun 10–4
Contact: 209-736-4892,
annachristiansen7132@comcast.net
Website: https://calaverasgemandmineral.net/show.html

March 22–23, 2025 - Torrance, CA
South Bay Lapidary & Mineral Society
Ken Miller Recreation Center
3341 Torrance Blvd.
Hours: Sat 10–5, Sun 10–4
Contact: 213-283-3448,
edwhitefire@gmail.com
Website: https://southbaylapidaryandmineralsociety.com/

April 12–13, 2025 - Mariposa CA
Mariposa Gem and Mineral Club
Mariposa County Fairgrounds
5007 Fairgrounds Rd.
Hours: Sat 10–5, Sun 10–4
Contact: mgmc@sti.net
Website: https://mariposagemclub.org

April 12–13, 2025 - Newbury Park, CA
Conejo Gem and Mineral Club
Borchard Community Center
190 N. Reino Road
Hours: Sat 10–5, Sun 10–4
Website: https://CGAMC.org

April 12–13, 2025 - Placerville, CA
El Dorado County Mineral & Gem Society
El Dorado County Fairgrounds
Hours: Sat & Sun 10–5
Contact: 530-676-2472
Website: https://edcmgs.org

April 12–13, 2025 - Thousand Oaks, CA
Canejo Gem and Mineral Club
Borchard Community Center
190 N. Reino Rd.
Hours: Sat 10–5, Sun 10–4
Contact: 805-908-1428
Website: https://www.cgamc.org

May 2–4, 2025 - Santa Ana, CA
West Coast Gem & Mineral Show
Holiday Inn-Orange County Airport
2726 South Grand Avenue
Hours: Fri & Sat 10–6, Sun 10–5
Contact: mineralshowslld@gmail.com
Website: https://www.mineralshowslld.com/

May 10–11, 2025 - Lancaster, CA
CFMS Convention
Antelope Valley Gem and Mineral Club
Antelope Valley Fairgrounds
2551 W. Ave H
Hours: Sat 9–5, Sun 9–4
Website: https://avgem.weebly.com

Rock Puns

The tectonic plates just couldn't maintain a relationship—there was too much friction between them.

Why did the granite rock get a tattoo of a volcano?

Because it wanted to look "igneous."

Why didn't the stone get back together with the rock?

He had too many faults.

You know the old saying—igneous is bliss.

Amethyst, the February Birthstone

{Editor's Note: Please see the end of the article for links to the sources of this information and more great photographs. Also, words in **purple** are used in the following crossword puzzle.}

Folklore

According to folklore and stories throughout history, many gemstones are thought to offer **mystic** healing to its wearer. **Amethyst** aids in the reduction of **insomnia**, arthritis, pain relief, and circulatory issues. Amethyst is considered the gemstone of meditation, **peace**, balance, courage, and inner strength. Leonard da Vinci once said that amethyst helps to quicken intelligence and get rid of evil thoughts.

Amethyst Gemstone Overview

Amethyst has been the preferred **birthstone** for **February** since the 15th century. The name comes from the Ancient Greek, derived from the word **methustos**, which means "intoxicated." Ancient wearers believed the gemstone could protect them from drunkenness.

⇦ *Amethyst from Hallelujah Junction, NV*
https://www.si.edu/object/quartz-var-amethyst:nmnhmineralsciences_14272092

Amethyst is **purple** quartz. It is a beautiful blend of violet and red that can be found in every corner of the world. Quartz is the second most abundant material found in Earth's crust. Amethyst gets its color from **irradiation**, iron impurities, and the presence of **trace** elements. Its hardness—a 7 on the Mohs scale—is the same as other quartz, which makes it a durable and lasting option for jewelry.

While amethyst is most commonly recognized to be a purple color, the gemstone can range from a light pinkish violet to a deep purple that can show more blue or more red, depending on the light. Sometimes the same stone can have layers, or color variants, so the way the gemstone is cut is important to the way the color shows in a finished piece.

Photos from https://pixabay.com/images/search/amethyst/?content_type=authentic

(Continued on page 14)

(Continued from page 13)

The amethyst is not only the February birthstone, it is also used to celebrate the sixth and 17th years of marriage.

Amethyst History

Throughout history, amethyst has been associated with many myths, legends, religions, and numerous cultures. Ancient Greeks and Romans believed this gemstone could ward off the intoxicating powers of Bacchus and keep the wearer clear-headed and quick-witted. English regalia were decorated with amethysts during the Middle Ages to symbolize royalty. Amethyst jewelry has been found and dated as early as 2000 BC.

For many years, amethyst was held to be one of the most precious gemstones, often favored by royalty or exclusively by the clergy as a symbol for the deity of Christ. It was even held for many years in the same regard as the diamond. It wasn't until the discovery of more abundant supplies of amethyst that it became a gemstone enjoyed by more than just the wealthiest buyers.

Sources

With permission, from the following:

Birthstones in Folklore, adapted from the American Gem Society, https://www.americangemsociety.org/birthstones-in-folklore/

February Birthstone, adapted from the American Gem Society, https://www.americangemsociety.org/birthstones/february-birthstone/

Birthstones, adapted from Rock & Gem, https://www.rockngem.com/birthstones-stick-with-the-standards-or-choose-your-own/

More Photos

https://www.mindat.org/min-198.html

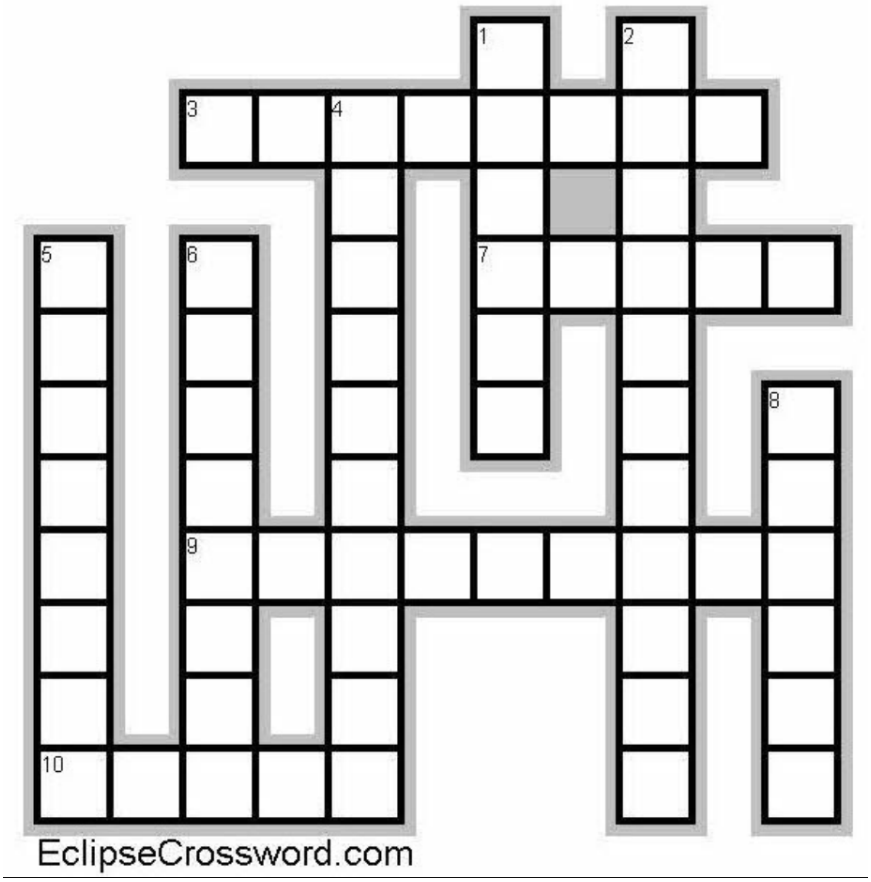
Jokes

The biggest joke on mankind is that computers have begun asking humans to prove they aren't a robot.

When a kid says, "Daddy, I want Mommy", that's the kid version of "I'd like to speak to your supervisor".

Amethyst Crossword Puzzle

All the words may be found in Amethyst, the February Birthstone. See here for the answer.



Across

3. The second month

7. Freedom from disturbance: tranquility

9. Greek for a state of sobriety or clarity

10. A very small quantity

Down

1. A color intermediate between red and blue

2. Exposure to radiation

4. Gemstones associated with a person's birth date

5. A type of Quartz

6. Difficulty falling asleep or staying asleep

8. A person who seeks to obtain unity with the Deity or the absolute

More Jokes

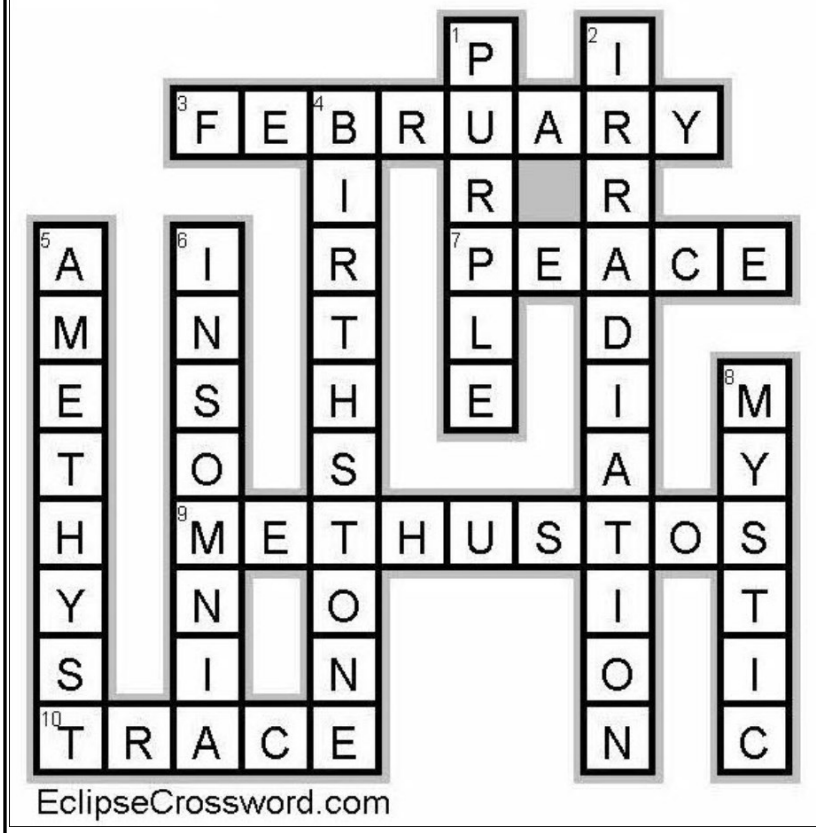
For those of you who don't want Alexa or Siri listening in on your conversation, they are making a male version, it doesn't listen to anything.

I took my suit to the cleaners, who wanted to charge me $40, so I gave it to the charity shop next door. They cleaned and pressed it and put it in the window. I bought it back for $15.

My wife said: "That's the 4th time you've gone back for dessert! Doesn't it embarrass you?"

I said: "No, I keep telling them it's for you."

Amethyst Answer Key



Rock Puns 2

Did you hear about the geologist who was reading a book about Helium?

He couldn't put it down!

I think my career as a geologist is really on the rocks.

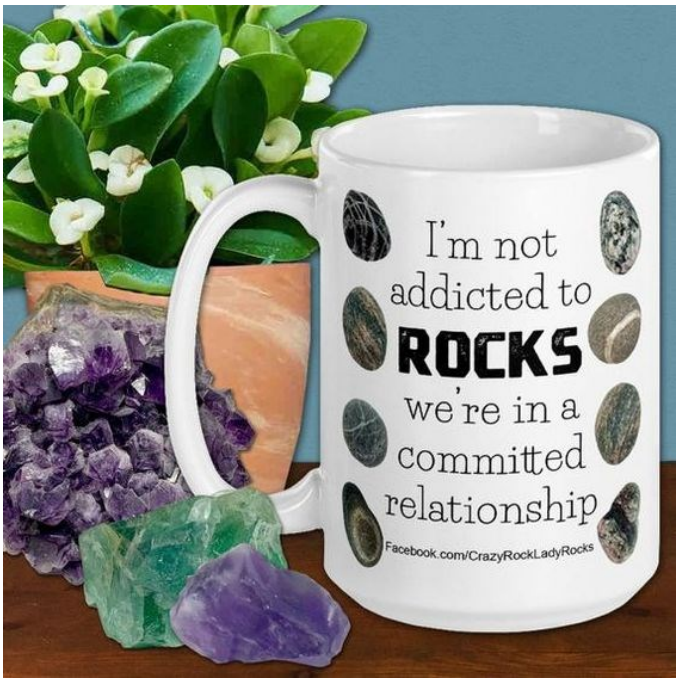
Old rock hounds never die, they just recrystallize.

What do rock hounds do when they find an empty cup?

Phyllite.

What does the water in a rock hound's cup do?

Evaporite.



Crystal Habits

By Prof. Philip R. Kesten, Ph.D.

Some rocks are found as crystals. Many are translucent, and some are transparent. The colors of these rocks, and, in particular, of these crystals, can be spectacular! Crystals often have regular shapes and most often have smooth sides… in this essay I will focus on the shapes—or habits—with which crystals present.

First, a step back. When you were young, you might have played with building blocks, smallish plastic blocks with protrusions on one side that enabled them to snap one into one or more other blocks. A variety of these blocks were (and some are still) sold; “Brix Blox” and “Legos” are two popular brands. And (oh my!), you could build houses and castles and trucks with these blocks. But could you build, say, a snowflake or a circular wheel? Sort of, but it would be tricky. And in each case, the result (as you can see from Fig. 1a. and Fig. 1b.) is really only an approximation of these shapes.

Fig. 1a. A snowflake made from Lego blocks, https://www.pinterest.com/pin/628393572850056666/

Fig. 1b. A circular “wheel” made from Lego blocks. https://www.pereanu.com/assets_projects/lego_circles_tall.jpg

Here is the point: Lego blocks are rectangular, so they fit together in a way that provides the right underlying structure for larger rectangular, blocky shapes. Shapes like buildings. In other words, Lego blocks are ideal for building things that are rectangular and blocky. But it is not so easy to build up, say, a snowflake shape from units that are rectangular—they simply do not fit together in the right way. Perhaps there are other building units, building units with shapes that are not rectangular and blocky, that can be connected together to form larger, complex shapes that are themselves not rectangular and blocky. And yes, there are… water molecules, for example!

Okay, not water molecules as water, but rather water molecules as ice. A water molecule is two hydrogen (H) atoms bonded to an oxygen (O) atom, that is, H2O. (See Fig. 2). The hydrogen atoms are shown in blue and the oxygen atom in red.) Each hydrogen atom is composed of one negatively charged electron held by an attractive bonding force to an atomic nucleus that consist of one positively charged proton. The oxygen atom is composed of eight electrons held to an atomic nucleus that contains eight positively charged protons.

(Continued on page 18)

(Continued from page 17)

(There are also eight neutrons, which carry no charge, in the atomic nucleus of an oxygen atom.) By sharing their electron with the oxygen atom, the two hydrogen atoms each give up a bit of negative charge, and in so doing, each acquires a net positive charge. By gaining a bit of the negative charge of the shared electrons, the oxygen atom acquires a net negative charge.

Fig. 2. A water molecule consists of two hydrogen atoms, shown in blue, bonded to an oxygen atom, shown in red. (made by prk)

Although there is no overall net charge on a water (ice) molecule, the sharing of the electrons associated with the hydrogen atoms means that they spend a bit of their time close to the oxygen atom. As a result, the regions of an H_2O molecule near the hydrogen atoms have, on average, a bit less than a full electron's worth of negative charge. And because the oxygen atom has borrowed a bit of the negative charge carried by the electrons associated with hydrogen atoms, the region of the H_2O molecule close to the oxygen atom has a bit more than eight electrons' worth of negative charge. The regions of the water ice molecule near the hydrogen atoms is therefore slightly positively charged, and the region near the oxygen atom is therefore slightly negatively charged.

And here is an important aspect of charge: negative charge attracts positive charge. So when two water ice molecules are close together, a slightly positively charged hydrogen atom on one end of one of the molecules is attracted to the slightly negatively charged oxygen atom in the other molecule. Two ice molecules, drawn together in this way, are shown in Fig. 3a. But, as suggested in Fig. 3b., six of these water ice molecules can be drawn together to form a closed, six-sided ring. And this ice ring is at the heart of every snowflake. Yes, snowflakes are always made of units that have six sides… which naturally means that all snowflakes have a six-sided symmetry! An atomic model of a snowflake is shown in Fig. 4a.; look carefully and you will see the six-sided units shown in Fig. 3b. that make up this snowflake. An actual, canonical, snowflake is shown in Fig. 4b.

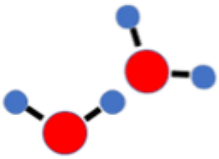


Fig. 3a. The slightly positive charge on one "end" of a hydrogen atom in a water ice molecule is attracted to the slightly negative charge on the oxygen atom in a nearby molecule. (made by prk)

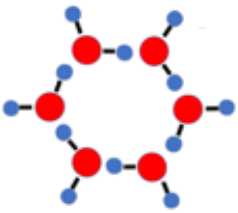


Fig. 3b. Six water ice molecules are drawn together—by the force between opposite charges—into a six-sided figure. This connection of water ice molecules is at the heart of every snowflake. (made by prk)

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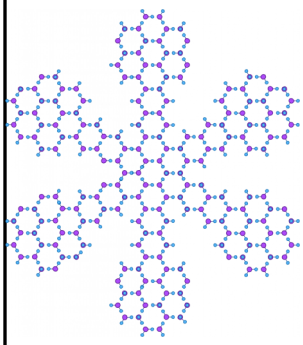

Fig. 4a. Rings of six water ice molecules connect to form snowflakes that also have a six-sided symmetry.

https://lasteamlab.com/wp-content/uploads/2020/10/snow-crystal-923x1024.png

Fig. 4b. All snowflakes exhibit a six-sided symmetry.

https://www.graylinealaska.com/wp-content/uploads/2016/04/snowflake.jpg

Legos… small units from which larger objects (objects like models of buildings) can be built. Rings of ice molecules… these are also small units from which larger objects (objects like snowflakes) can be built. But what do Legos and ice molecules have to do with rocks and crystals?

The answer: Just like models of buildings made from Lego blocks, and snowflakes built up from ice rings, rock crystals are made up of small units that are connected together. And beyond that, in the same way that the shape of Lego blocks determines the shape of the buildings that can be built with them, and in the same way that the shape of snowflakes is determined by the shape of ice molecules and rings of ice molecules that are connected to form them… the shape of a rock crystal depends on both the shape of the small units that connect to form the crystal, and also the way in which those small units are connected.

Consider fluorite. Because fluorite is found in a number of crystal habits and in literally every color in the rainbow – red, orange, yellow, green, blue, and purple – as well brown, black, white, and even colorless, fluorite tends to be a favorite among collectors. You night have one or a few specimens of fluorite in your collection.

The chemical name for fluorite is “calcium fluoride”; its molecules are formed from two fluorine (F) atoms bonded to one calcium (Ca) atom, to make CaF_2. The calcium atom has two electrons that are relatively loosely bound to the nucleus of the atom… It can easily share these electrons with other atoms. Each fluorine atom is one electron short of being highly stable; each fluorine atom “needs” one electron in order to become more stable. So the calcium atom shares its electrons, one each, with the two fluorine atoms.

(Continued on page 20)

(Continued from page 19)

But these calcium-fluorine groupings can also connect to other nearby calcium-fluorine groupings. The result is a box-like structure, as shown in Fig. 5. (In the sketch, calcium atoms are colored red, and fluorine atoms are colored blue.) These are the units that make up calcium fluoride. And because these units are shaped like boxes, CaF_2 crystals are also box-like. Box-like? CaF_2 crystals are cubic. So many fluorite crystals either are cubic, or cubes embedded within other cubes. A single, cubic crystal of fluorite is shown in Fig. 5b.

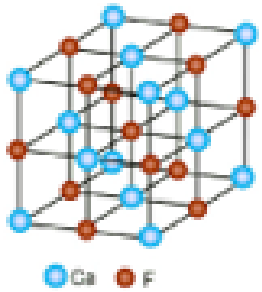

Fig. 5a. Calcium fluoride molecules bond together to form cubes. In the sketch, calcium atoms are colored red, and fluorine atoms are colored blue. (made by prk)

Fig. 5b. A cubic fluorite crystal.

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQVEv3ZHUlrSfv1eoX9xMrjMVdU5oveoVGYoA

Let us now consider beryl, a crystal with an hexagonal cross-section. Beryl can be found as a blue, blue-green, green, red, and yellow crystal. Emerald, a variety of beryl and considered a precious gemstone, is greenish and translucent, heliodor (sometimes called "golden beryl") is yellow and translucent, and red beryl is (surprise!) red.

The molecules from which beryl is formed are comprised of beryllium (Be) atoms, aluminum (Al) atoms, silicon (Si) atoms, and oxygen atoms connected by atomic bonds. (The chemical formula of the molecules in a crystal of beryl is $Be_3Al_2Si_6O_{18}$.) But hiding in that combination of atoms are six SiO_3 groupings, which have the three-side shape shown in Fig. 6a. These "trioxosilcates" can connect together, atomically, to form six-sided rings, and those rings are the units from which the varieties of beryl are built up. Six-sided rings? Crystals of beryl display six-sided symmetry. A crystal of aquamarine, a variety of beryl, is shown in Fig. 6b. Note the long, six-sided crystal shape. (This crystal is embedded in a pinkish rock matrix.)

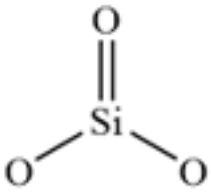

Fig. 6a. Three oxygen atoms and one silicon atom form trioxosilcate. (made by prk)

Fig. 6b. This bluish crystal of aquamarine, a variety of beryl, has six smooth sides. The aquamarine crystal is embedded in a matrix.

https://www.rockngem.com/wp-content/uploads/2023/01/beryl-696x452.jpg

(Continued on page 21)

(Continued from page 20)

By the by, rubies and sapphires also form as six-sided crystals. Rubies are red stones, and sapphires blue… but both are varieties of corundum. (Both natural ruby crystals and natural sapphire crystals have an hexagonal cross-section. But while natural ruby crystals are often barrel-shaped, natural sapphire crystals are most often tapered at both ends.) The chemical composition of corundum is Al_2O_3; these basic units pack together to form layers in which the aluminum centers shift back and forth, resulting in a six-way symmetry… and therefore a six-sided crystal. A tabular specimen of corundum is shown in Fig. 7.

Fig. 7. A specimen of hexagonal corundum.
https://www.aluminummanufacturers.org/wp-content/uploads/2020/03/corundum.jpg

So yes, the shape of a crystal depends on the shape of the atomic building blocks that bond together, chemically, to form it. And if you imagine that there are, oh so many shapes and forms of those fundamental building blocks—and therefore, oh so many crystal habits… you would be correct! Cubes, yes. But also box-like shapes in which either only two of the edges have the same length, or in which all three edges are of different lengths. And, yes, also box -like shapes in which all three sides are not mutually perpendicular. Some of these shapes are shown in Fig. 8.

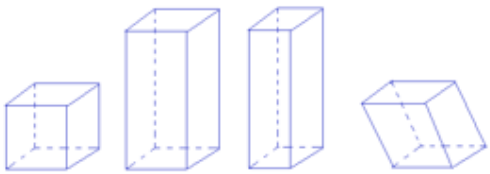

Fig. 8. Four examples of crystal shapes – a cube, a rectangular prism with two sides the same length, a rectangular prism with all three sides of different length, and a cubic shape in which one pair of sides is not perpendicular to the other two pairs of sides. (made by prk)

Four- and six-sided shapes that are capped at one or both ends with sides in the shape of a pyramid are also common. And my favorite crystal shape? That would be the crystal habit of cumengeite. This rarely found crystal is in the shape of six, four-sided pyramids back to-back. (See Fig. 9.)

Fig. 9. A specimen of cumengeite. Note its formation from six, four-sided pyramids back-to-back. (One of the six is hidden in this photo.)
https://i.pinimg.com/564x/4d/99/b4/4d99b4d6e7131b5e93a2a7c5388fe2b6.jpg

Prof. Philip R. Kesten, Ph.D.,
Department of Physics, Santa Clara University

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P.O. Box 54, San Jose, CA 95103-0054

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An Invitation

This society is pleased to invite guests to attend general meetings, study groups, and field trips. **General meetings are held the fourth Tuesday of every month with meet and greet time beginning at 7:00 followed by the meeting at 7:30 PM at 100 Belwood Gateway (the Cabana Club), Los Gatos, CA 95032.** Belwood Gateway is just south of Blossom Hill Road between Leigh Avenue and Harwood Road.

Our Society's Purpose: The inculcation of a love of rocks and minerals by the furtherance of members' interests in the earth sciences and by education in all facets of related educational activities with the promotion of good fellowship, proper ethics, and conduct.

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Our Newsletter, the Breccia, is published 11 times annually. The deadline for all articles is the Sunday after each general meeting. The Breccia editor is **Deb Runyan** who may be contacted by email at editor@scvgms.org and by phone at 408-628-7789. The Breccia is proofread by **Pat Speece** and **Sonia Dyer**.

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