TAR HEEL ROCKHOUND

APRIL 2026

Catawba Valley Gem & Mineral Club, Inc.

2026 Officers and Committees

President:	Ben Houston 704-284-2565	Education:	George Max 828-328-9107
Vice President:	Joan Glover 828-446-7633	Show Chairman:	Dean Russell 828-303-1448
Treasurer:	Terry Russell 828-303-1563	Scholarship:	George Max 828-328-9107
Secretary:	Dean Russell 828-303-1448	Field Trip:	
Editor:	Tracie Jeffries 828-430-1341		

Club Address: PO Box 2521, Hickory NC 28603-2521
Regular Meetings: Second Tuesday, 7:00 PM
St. Aloysius Catholic Church, 921 2nd St. NE Hickory, NC
Annual Dues: Family, $25, Individual, $18

The purpose of the Club is to increase the individual's knowledge of the earth sciences and to aid in the development of lapidary and related arts and skills; to promote fellowship and exchange of ideas; to hold exhibitions, contests, lectures and demonstrations for educational purposes; to help interest more people in the gem and mineral hobby; and to capture and preserve the beauty of nature, the arts, and the works of man.

CATAWBA VALLEY GEM AND MINERAL CLUB, INC.

Web Master: Mike Streeter

http://www.cvgmc.com

Editor: Tracie Jeffries,
3118 Barus Street, Valdese, NC
botanynerd89@gmail.com

CONTENT

PRESIDENT'S NOTE

The show was a great success, thank you to everyone who helped! Many new members have joined in the recent months, I look forward to share the vast knowledge we have with them. It is approaching milder weather, perfect for going out collecting!

- Ben

CVGMC MINUTES FOR MARCH 10, 2026

The March 10, 2026 meeting of the CVGMC was called to order by President Ben H. at 7:00 PM.

Program: "Gypsum and its many forms." By CVGMC member Tracie J.

Minutes: A motion was made by Tracie J. and seconded by Terry R. to accept the February 10, 2026 minutes. Motion was passed by the Club membership.

Treasurer Report: Bank balance was reported.

Education Committee: Tracie J. has accepted to do three programs for the library system.

Show Committee:

1. The CVGMC Annual Show for next year is April 9-11, 2027. We will be using the Hickory Room.
2. The Exhibit area was in the main hallway and it was a hit.
3. Thank you to our Facebook/Marketing team for the fantastic job they did.
4. The 2026 Show was a great success. Thank you to all the Club members who volunteered their time to help in the various areas.
5. Amanda R. is taking over the position of Show Chairperson starting immediately.

Field Trip Report: Cindy W. has volunteered to be Field Trip Organizer. She requests help from all members for ideas for future field trips.

Old Business: None

New Business:

1. The Board of Directors voted to approve the recommendation for the Club to vote on Harry P. to be designated an Honorary Member immediately. Harry Polly has been a CVGMC member since 1981, he has held the office of Club President a couple times over the years, served on the Board of Directors many times, was Field Trip coordinator for approximately twenty (20) years, was on the officer nominating committee for several years, hosted the Annual Club Picnic at his house for several years and has demonstrated at several Club Shows, among many other contributions as a CVGMC member. A motion by Keith P., seconded by Becky S., to bestow the status of Honorary Member to Harry P. Motion was passed by the Club membership.
2. The Club needs to replace Amanda R. as a Director at Large, because the Show Chairperson is also a Board of Directors position and the BOD needs to have nine members. Keith P. was nominated A motion by Harry P., seconded by Jimmy S., to have Keith P. fill the open CVGMC Director at Large position. Motion was passed by the Club membership.

Announcements:

1. CLUB PICNIC; Tracie J. needs help planning the club picnic in May. The picnic will be May 12th at 6 PM. The location will most likely be Glen Hilton Memorial Park in Hickory. I will need some people to arrive early and help set up the tables. I also need someone to cook the hamburgers and hotdogs. If you can help, please contact Tracie.
2. Door prize drawing for the 2026 Show volunteers. A 1232-gram Chalcopyrite from Mexico. Thank you again to those who volunteered to help with the show. The winner was Richard A.

Closing of Business: The meeting was adjourned at 8:19 PM

Respectfully Submitted,
Dean Russell, Secretary

APRIL PROGRAM

The program for April 14th will be, “A New Gem Mine in Mitchell County” by Ron Ruschman.

2026 CVGMC GEM, MINERAL, FOSSIL, AND JEWELRY SHOW

With Club members help, CVGMC put on a show with record-breaking attendance in March. I want to thank everyone who helped in set-up and take down, everything went very smooth and quick. It was great seeing the amount of people who helped.

- Thank you to all who put out (and hopefully picked up) the road advertising signs. Keep them for next year's show. (April 9-11, 2027)
- Thank you to George M. for organizing, with Exodus, the delivery and removal of the Club's stock. Also, Tracie J. for organizing the Club stock into the new storage unit.
- Thank you to Tracie J. for organizing the exhibit area and making sure it ran smoothly. I have never seen that many people spending time in the Exhibit Area.
- Thank you to Richard and Shelda A. for their awesome fossil display and for having it available all three days.
- Thank you to Rick and Joan G. for organizing and running the Children's Table all three days. Also, all those who assisted them at the Children's Table. It was a big hit as usual.
- Thank you to Rusty H. who worked at the Mini Mine all three days. The kids and parents loved it!
- Thank you to Jimmy & Becky S., Sandra C., Felicia B., and others for their time at the CVGMC Demonstration Table.
- Thank you to Ron T. at our "Ask the Expert" table for answering all the questions put to you.
- Thank you to Terry R. for organizing the Ticket and Grab Bag Sales and all those who sold tickets and grab bags, geodes and magazines.
- Thank you to Club members who helped out on the main floor assisting the vendors when needed, especially Keith P.
- Thank you to the Facebook marketing team of Jonte R. and Jeanne S. You knocked it out of the park with your work.
- It was nice seeing Club members wearing their new t-shirts at the show. It let everyone know who the Club members were. Thank you, David I., for all the time and effort you put in to making the shirts a reality.
- Thank you to Amanda R. for shadowing me, making suggestions and volunteering to take over the CVGMC Show Chair position next year. I know she will continue the tradition of great CVGMC Gem, Mineral, Fossil and Jewelry Shows, despite me trying to advise her.

MARCH 2026 GEM SHOW RESULTS

We tried something new this year for the Gem Show by making “free” coupons available through the Focus Newspaper, Facebook, and the club’s website. We also allowed the club members and the vendors to distribute unlimited passes. We wanted to bring in more foot traffic for the vendors and encourage people to join our club. I’ll be honest, I thought with all the “free” coupons and passes, paid admission tickets would be down significantly from previous shows, and just the opposite happened. We had 1,702 paid admission tickets, which surpassed last year’s show by slightly over 100. In fact, 5 of the last 7 shows had a lower count than this year. It was definitely a very successful gem show, and the vendors were very pleased. We also gave out purple wristbands to keep track of the total attendance (paid and “free” admission) at the show. We had just under 2,900 people come through the door. We also collected $1,078 from the sale of grab bags, geodes, magazines, and books.

EXTRA T-SHIRTS FOR PURCHASE

The club t-shirts looked great! A big thanks to David I for all his hard work and time. We do have a few extra shirts for sale, sizes and prices are listed below. Terry will bring the extra t-shirts to the meeting and requests that you bring the exact amount (cash or check) as she will not have any change with her.

- Women’s large - $15 each
- Women’s X large - $15 each
- Men’s large - $12 each

CLUB PICNIC

WHEN: Tue, May 12, 2026 at 6:30 PM

WHERE: Glenn Hilton Park Shelter #1 (next to parking lot),

2000 6th St NW, Hickory, NC 28601

WHAT: Cookout

The club will provide all the paper products and hamburgers, hot dogs, and buns. Club members will need to bring drinks, desserts, and sides.

SIGN-UP:

The picnic information and food sign-up is at:

Website - http://www.perfectpotluck.com

Coordinator last name: **Jeffries**

Password - **Rockhound**

GEOLOGY MADE EASY: GEOLOGY MADE EASY: WHAT IS CLEAVAGE?

Cleavage is a great characteristic to use at when trying to identify an unknown mineral. But what exactly is cleavage? Cleavage is defined as how a mineral breaks along a planar surface in one or more directions. Cleavage is a repeatable and predictable pattern of breakage based on the molecular structure of a specific mineral.

Let's look at two examples. Graphite is a mineral composed of pure carbon. Each carbon atom bonds to three other carbon atoms by strong covalent bonds. This forms flattened sheets of carbon atoms called graphene. The parallel layers of graphene are then interconnected by van der Waals forces (See image 1). Van der Waals forces are considered to be one of the weakest chemical forces/bonds. When force is applied, the weaker van der Waals forces break easily, allowing the parallel layers of graphene to slide over each other with little resistance. Since Graphite cleaves in one plane, it is said to have basal cleavage, similar to mica, which cleaves into flat sheets. The ability of graphene layers to easily slide over each other is why Graphite is often used as a lubricant.

Now let's look at Quartz. Quartz is composed of silica oxide (SiO_2). The silica oxide molecules bond together to form silicon–oxygen (SiO_4) tetrahedra (See image 2). The tetrahedra bond equally to each other in all directions, with strong covalent bonds, thus forming a uniformly strong crystalline structure (See image 2). There are no planes of weakness; therefore, Quartz does not cleave. When hit, Quartz will fracture randomly with a conchoidal pattern, rather than a planar surface, as seen with cleavage.

Graphite illustrates how some minerals tend to break or cleave along planes of weak bonds. Since the weak planes of bonding are an integral part of the mineral's molecular structure, they break, or cleave, in a predictable pattern. Depending on the specific mineral, there may be 1, 2, 3, 4, or 6 planes of cleavage (See Table 1). Minerals with no cleavage

planes, such as Quartz, do not cleave. Thus, cleavage, or the lack of it, is a major trait that can help identify a specimen.

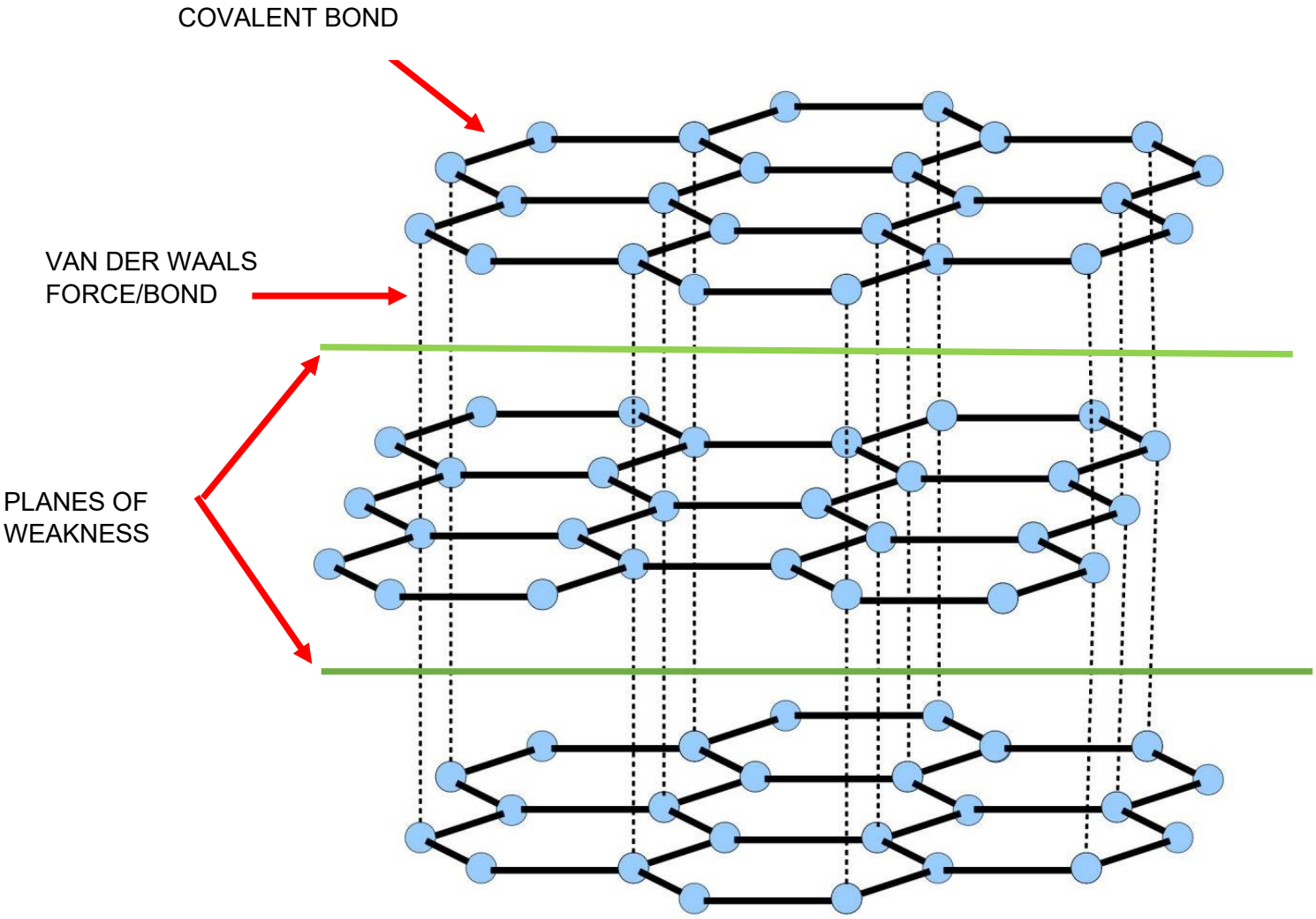
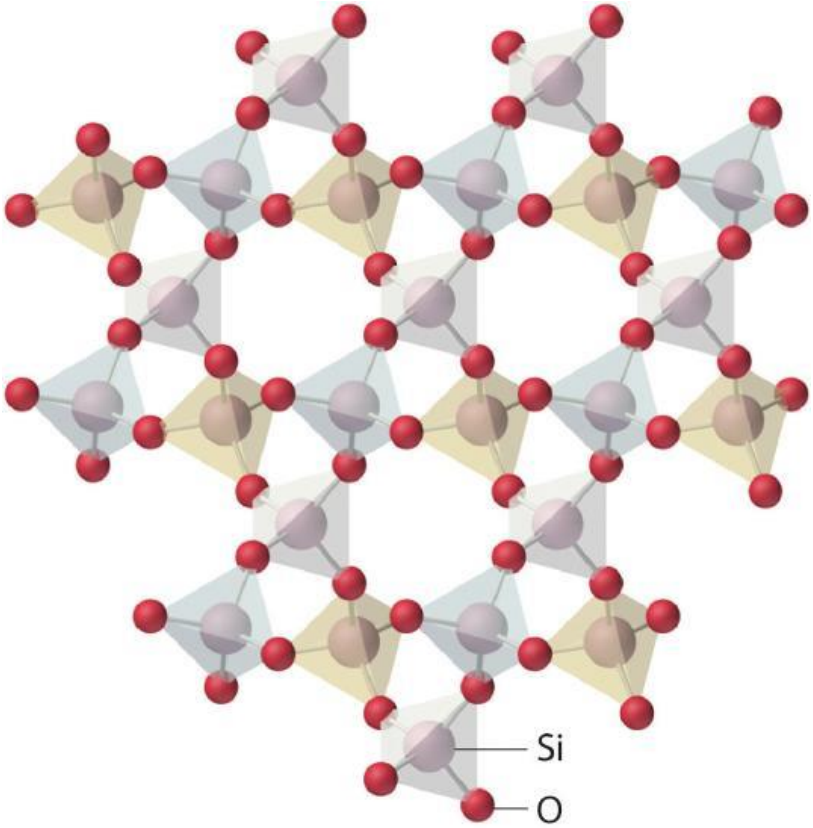


IMAGE 1: The crystalline structure of Graphite is shown above. Note how the carbon atoms are bonded to other carbon atoms by covalent bonds to form sheets called ‘graphene’. In chemistry strong bonds are drawn with solid lines and the shorter the lines the stronger the bond. The layers of graphene are interconnected by Van der Waals forces/bonds. Weaker bonds are shown as dotted lines, indicating that they break more easily. These weaker bonds allow Graphite to break or cleave along flat planar surfaces. https://www.electroboom.com/?p=835

IMAGE 2: The crystalline structure of Quartz is composed of tetrahedral units (SiO_4) that equally bond to each other in all directions. Therefore, there are no planes of weakness; hence, Quartz does not cleave. If you hit Quartz, it will fracture randomly with a conchoidal pattern, rather than a planar surface, as seen with cleavage.



https://chem.libretexts.org/Bookshelves/General_Chemistry/Map%3A_Chemistry_-_The_Central_Science_(Brown_et_al.)/11%3A_Liquids_and_Intermolecular_Forces/11.07%3A_Structure_of_Solids

To recap, cleavage is the tendency of a mineral to break along flat planes of weak chemical bonding. So how do you determine if a specimen is exhibiting cleavage? Look for clues such as flat, smooth, reflective surfaces, straight edges with well-defined corners, and geometric shapes (See images 3, 4, 6, and 9 – 13). Cleavage planes run parallel to each other and usually result in smooth, flat surfaces. Due to their flat nature, cleavage planes are reflective. As you view a specimen, look for flashes of light that will help determine if it has cleavage and how many planes of cleavage it may have. Determining the number of cleavage planes is not always simple. Some cleavage planes are more difficult to break/cleave, resulting in a rougher surface. Novices may not realize these rougher surfaces are cleavage planes. Minerals may also cleave in a stair step fashion, making it difficult to identify a cleavage plane (See image 4). In some minerals, such as Feldspar, one plane of cleavage may be very well defined, while the second plane may be less distinct. Be careful, not all flat, smooth, shiny surfaces are cleavage planes. Crystal faces can also be flat, smooth, and reflect light. Crystals form as a mineral grows, while cleavage is how a mineral breaks. They are related; both depend on the molecular structure of the mineral, but they are distinct. For example, Fluorite has cubic crystals but cleaves into octahedra (See images 5 and 6). Two notable exceptions are Halite and Galena. They have cubic crystals and also cleave along the same planes (See image 3 and 11).

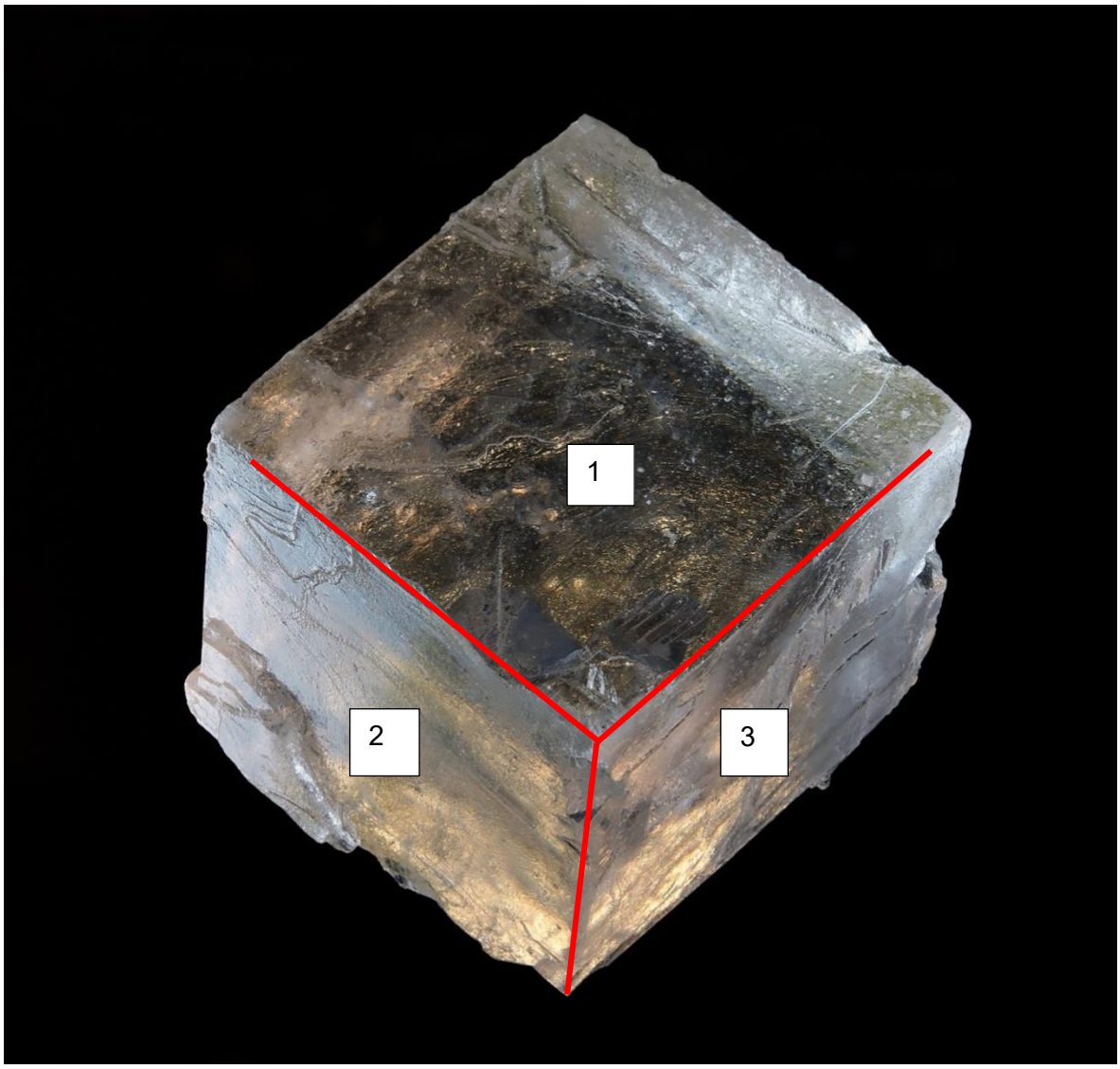


IMAGE 3: Halite has three cleavage planes and cleaves into a cube. Note how each surface is flat, relatively smooth, reflective, and there are sharp corners, and crisp edges where cleavage planes meet. Halite has six flat, smooth, reflective surfaces but only three cleavage planes. Why? Parallel planes of cleavage only count as one plane. The top and bottom of the cube are parallel and therefore, only count once. The same concept applies to the left and right sides and front and back of the cube. So six sides but only three planes of cleavage!

https://commons.wikimedia.org/wiki/File:HALIT_X_NaCl_Natriumchlorid_WÜRFEL_KUBUS_50P.jpg

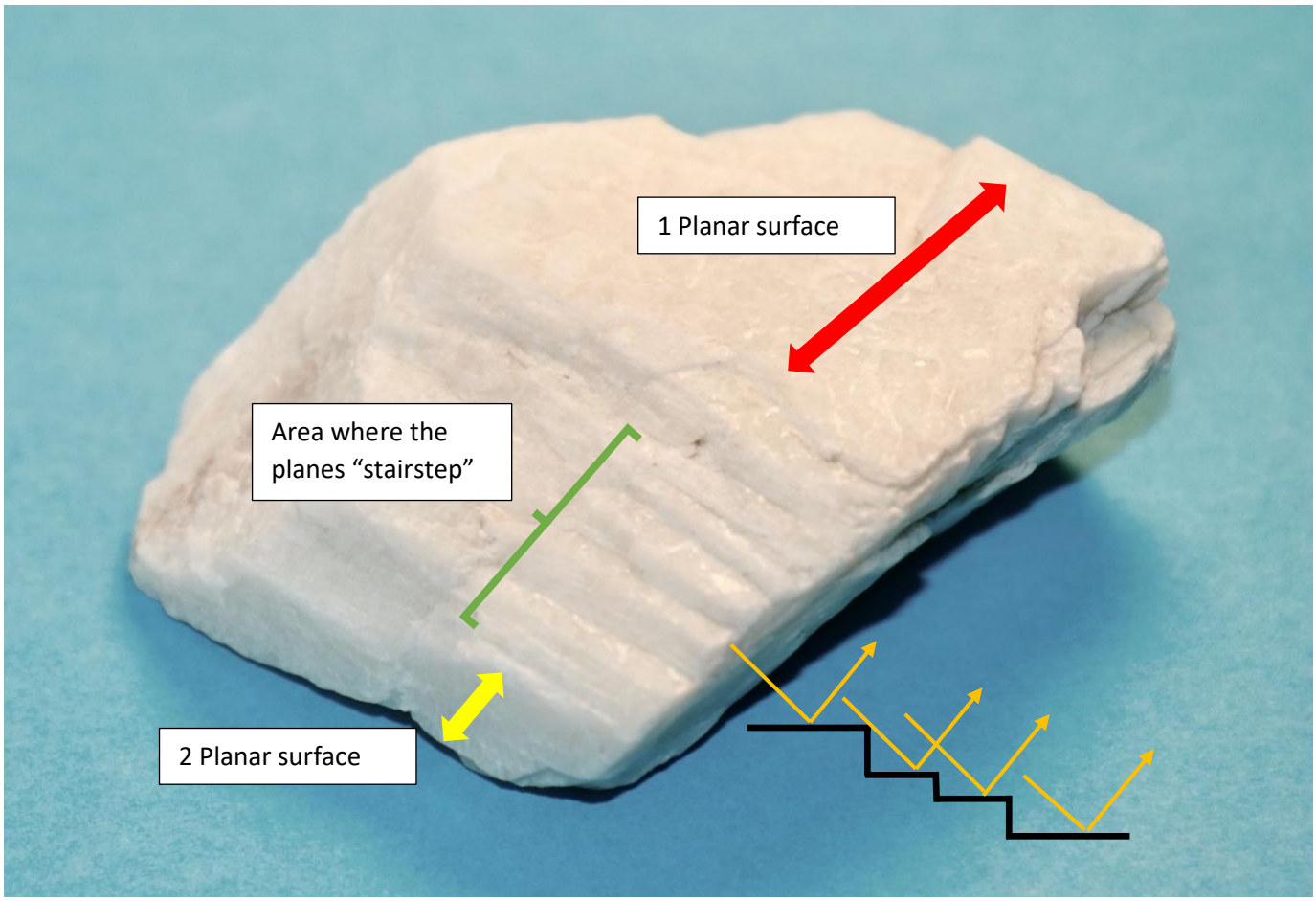


IMAGE 4: The Feldspar specimen above is showing an area where the cleavage planes are ‘stair stepping’. The surfaces will still catch and reflect light in the same direction thus indicating they are the same plane. Photo by Tracie J.

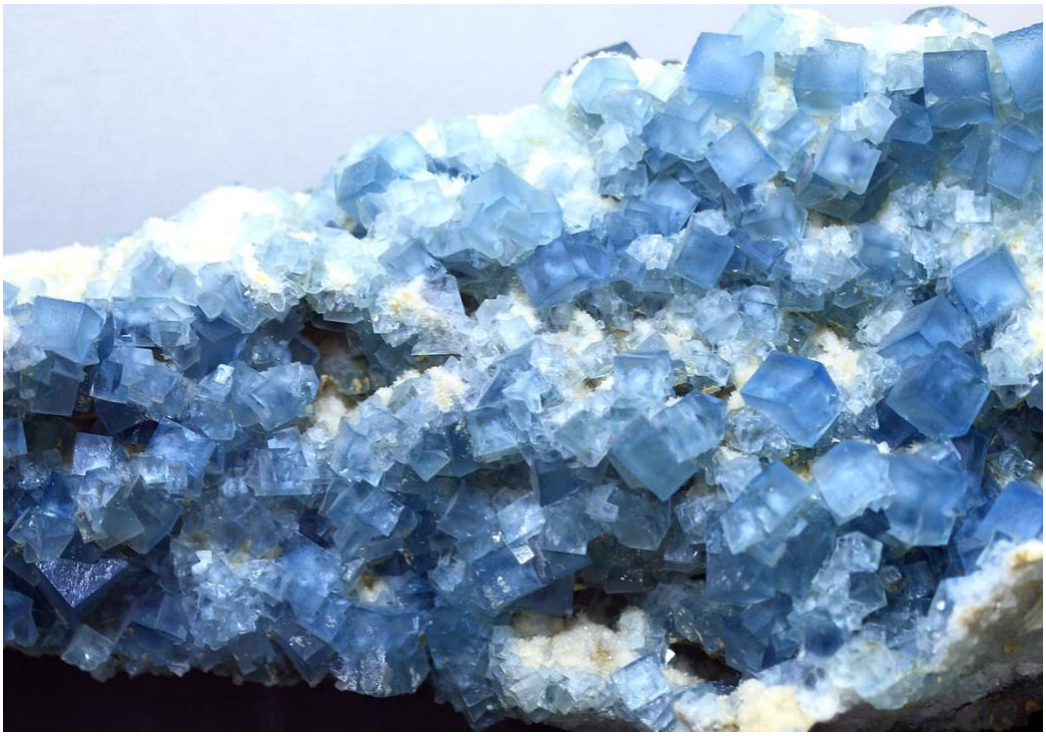


IMAGE 5: A beautiful specimen of blue cubic Fluorite crystals from the Blanchard Mine near Socorro, New Mexico.

https://www.flickr.com/photos/cobalt/8485051151

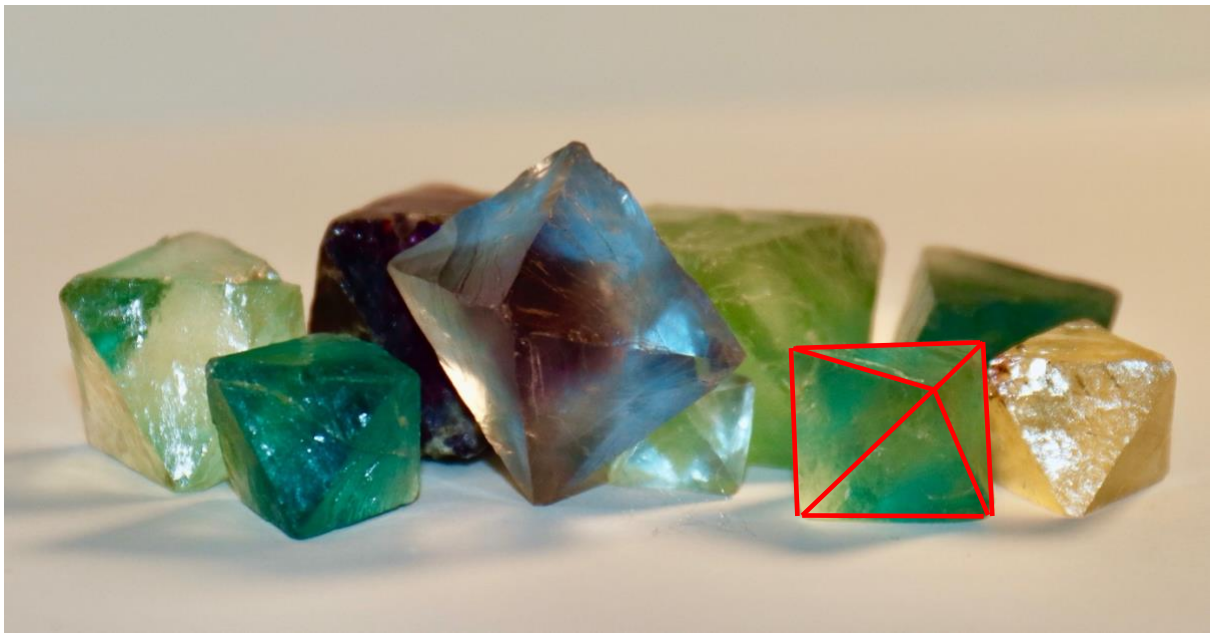


IMAGE 6: Here is a nice sampling of cleaved fluorite octahedra. Fluorite has 8 faces but only 4 cleavage planes. Each cleavage plane has a parallel plane, but they only count once. Photo by Tracie J.

Cleavage is described by several parameters: quality of cleavage, difficulty of producing cleavage, number of cleavage planes, and cleavage habit. Unfortunately, there is no standard set of terms used to rate the quality of cleavage. Below are some examples of terms, definitions, and examples. However, please note that the use of these terms and their definitions varies from source to source.

- Perfect_ The cleavage plane is very flat, smooth, and highly reflective. Edges and corners are well-defined. Examples include Calcite, Mica, and Galena.
- Imperfect (Good)_ The cleavage is not as smooth as in perfect cleavage, but is still easily observed as in Feldspar, Fluorite, and Hornblende.
- Fair_ This type of cleavage is even less smooth than imperfect cleavage, but it can still be seen with a hand lens. Examples of minerals with good cleavage include Pyroxene and Olivine.
- Poor (Weak)_ The mineral breaks more randomly and with a less defined edge and rougher surface. Apatite, Peridot, and Beryl have poor cleavage.
- No Cleavage: Not all minerals exhibit cleavage. Examples of minerals that don't have cleavage include Quartz, Pyrite, Magnetite, and Garnet.

The difficulty of cleavage describes how easy or difficult it is to produce cleavage planes. This reflects the quality of cleavage because difficulty depends on the strength of bonds perpendicular to the cleavage plane. Minerals such as Mica, Calcite, and Galena have very

weak bonds perpendicular to the plane. This allows them to be cleaved easily and have perfect cleavage. At the other end of the spectrum are Beryl and Peridot. They have stronger bonds perpendicular to their cleavage planes. This makes them more difficult to cleave and also results in poor cleavage.

The number of cleavage planes may be 1, 2, 3, 4, 5, or 6, depending on the specific mineral. It is also important to note the angles between cleavage planes. For example, both pyroxenes and amphiboles have two cleavage planes that do not meet at 90^{O}. Measuring the angles with a contact goniometer (See image 7) shows that Pyroxenes are 88-92^{O} and Amphiboles 56-124^{O}, thus helping to distinguish between the two. Information about the number of cleavage planes, angles, and examples is summarized in Table 1 and Image 7.

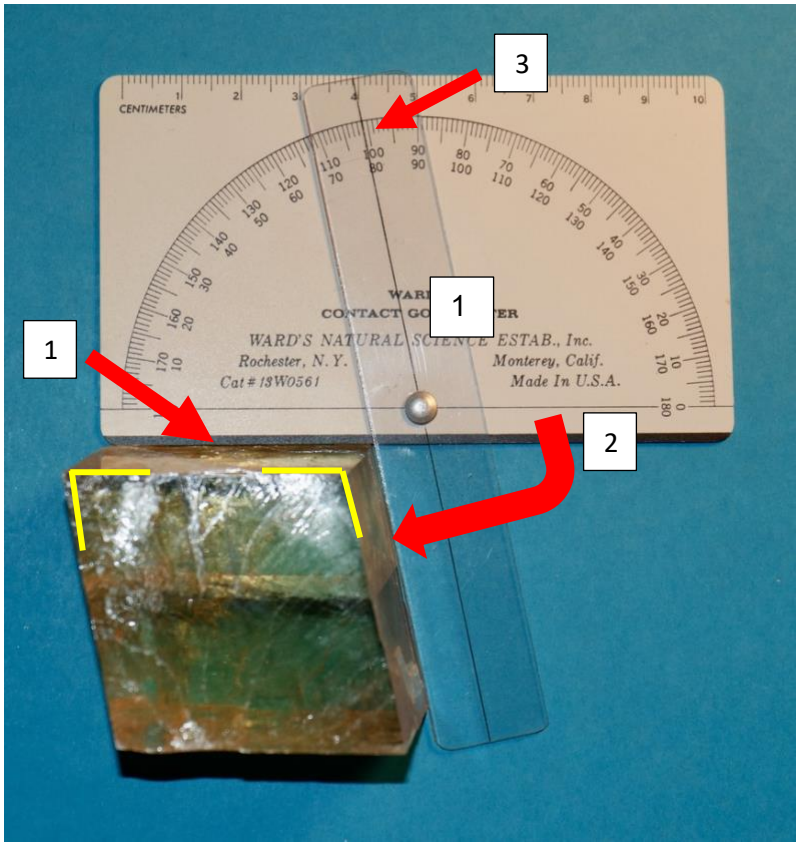


IMAGE 7: A cleaved Calcite rhombohedral being measured by a contact goniometer.

Step 1_ Line one cleavage plane of the Calcite along the bottom of the goniometer. Make sure it is even with the goniometer.

Step 2_ Swing the goniometer arm down to come in contact with the second plane, making sure it is flattened against the planar face.

Step 3_ Read the angle where the line on the arm meets the angle values shown on the goniometer. The goniometer above reads approximately 101^{O} for one angle and 79^{O} for the other angle. Remember, the two angles must equal 180^{O}. The flatter and smoother the cleavage planes, the more accurate the readings.

NUMBER OF CLEAVAGE PLANES

# OF PLANES	ANGLES	NAME OR **CLEAVAGE HABIT**	DESCRIPTIONS	EXAMPLES
1	Only 1 plane, so no angles	Basal or Pinacoidal Cleavage	Minerals break along a single set of parallel planes creating flat sheets, surfaces are typically very smooth and reflective	Micas, Graphite, Talc
2	90^{O}	**Prismatic**	Elongated forms that fracture along short rectangular cross sections	Feldspars
2	Not 90^{O}	**Prismatic**	Elongated forms that cleave along short parallelogram cross sections	Hornblende
3	90^{O}	**Cubic**	Produces cubes	Halite, Galena
3	Not 90^{O}	**Rhombohedral**	Cleavage planes are not perpendicular to each other creating a rhombohedral shape	Calcite, Siderite, Dolomite
4	Not 90^{O}	**Octahedral**	Less common, Minerals break along four planes, forming complex shapes such as octahedra	Fluorite, Diamond
6	Not 90^{O}	**Dodecahedral**	Rare, Minerals break along six directions, producing complex 12-sided shapes	Sphalerite

TABLE 1: A summary of possible number of cleavage planes, angles, descriptions, and examples.

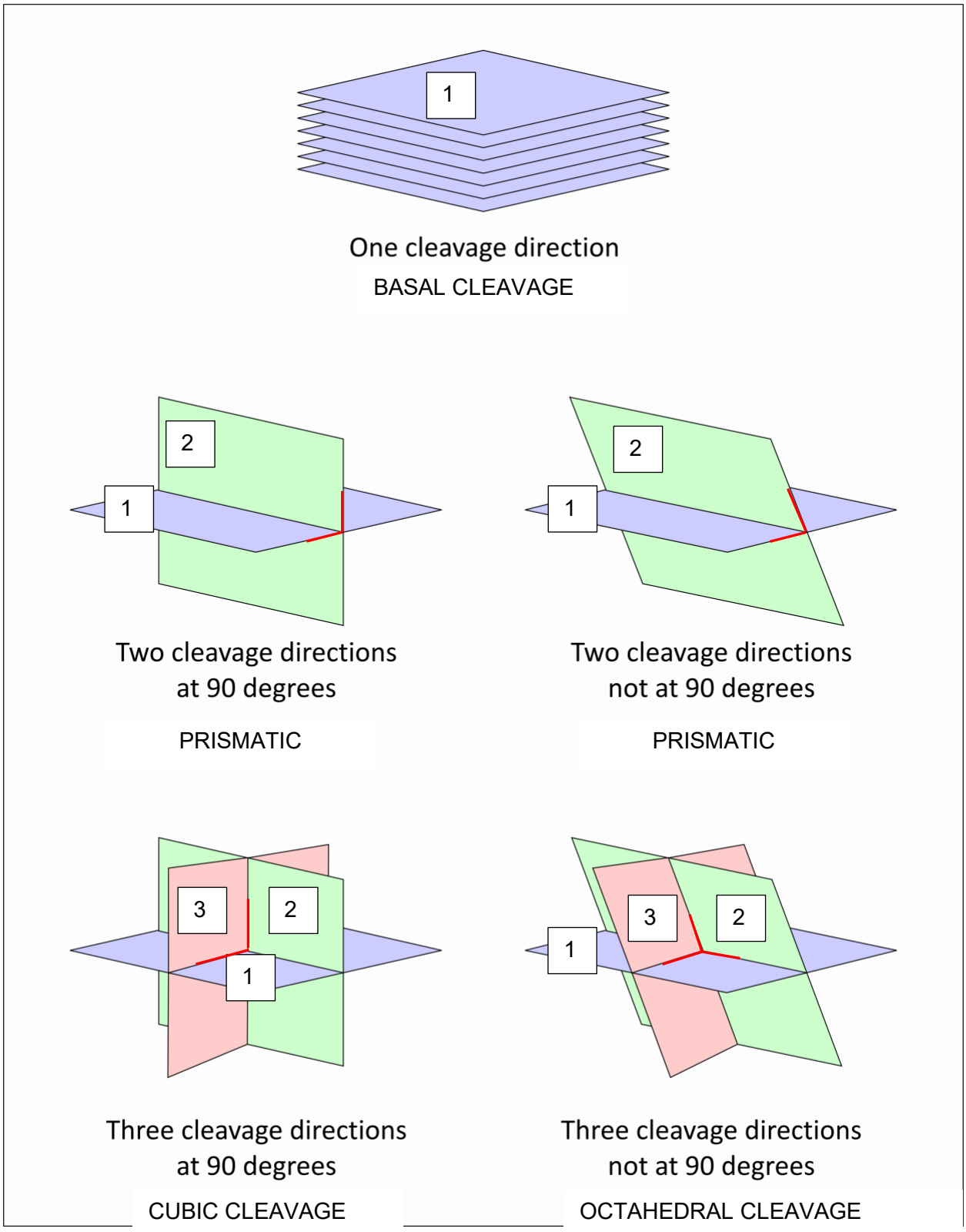


IMAGE 8: A nice illustration of cleavage planes and angles.

https://commons.wikimedia.org/wiki/File:Mineral-cleavage.gif

The last parameter is cleavage habit. Minerals, such as Calcite, Fluorite, and Halite, cleave into distinctive geometric shapes. These geometric shapes describe a mineral's cleavage habit (See Table 1 and Images 3, 6, and 10 - 13). For example, Fluorite has an octahedral cleavage habit, while Halite has a cubic habit.

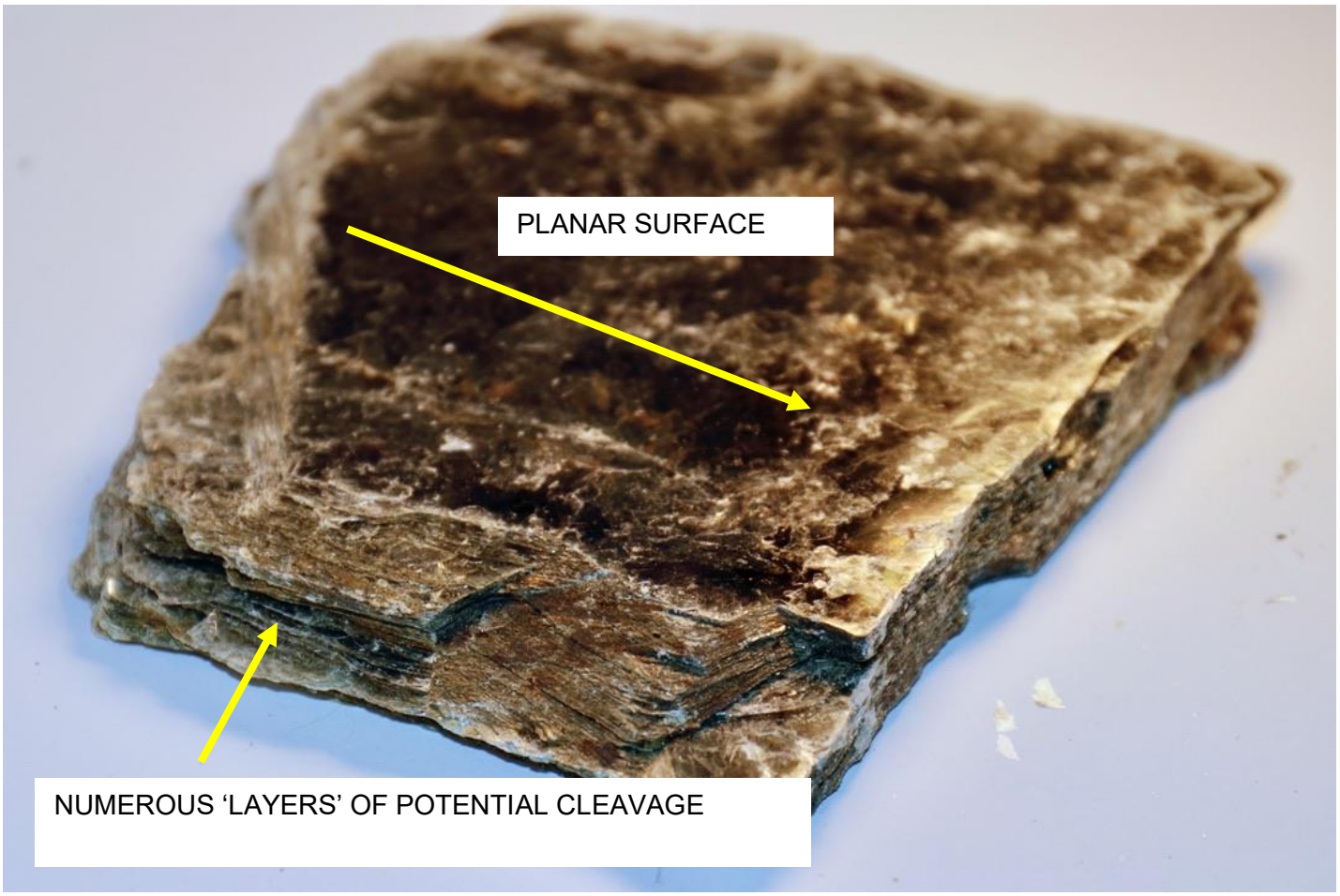


IMAGE 9: This muscovite mica shows basal cleavage. When cleaved the mineral forms flat, thin sheets, hence the term “book” of mica. Note the single direction of cleavage and the numerous layers of potential cleavage. Photo by Tracie J.

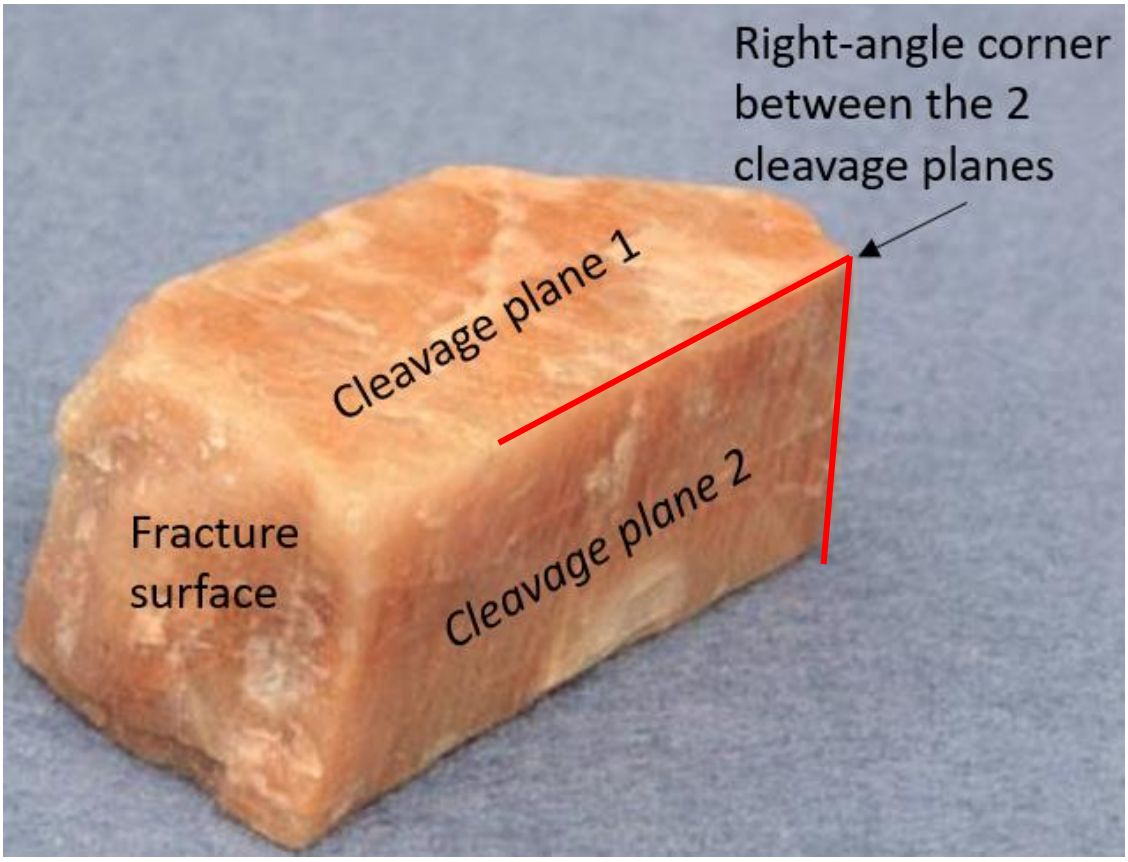


IMAGE 10: Feldspars demonstrate classic prismatic cleavage; two planes at 90^{O}. Note that the cleavage planes are well-defined, flat, and smooth. The non-cleavage/fracture surface is rough and uneven. https://opentextbc.ca/physicalgeology2ed/chapter/2-6-mineral-properties/

IMAGE 11: Cleaved cubes of Halite (salt) showing three cleavage planes at 90^{O}. Halite and Galena are unique in that their cleaved form is also their crystal form.

https://www.flickr.com/photos/jsjgeology/32237023905

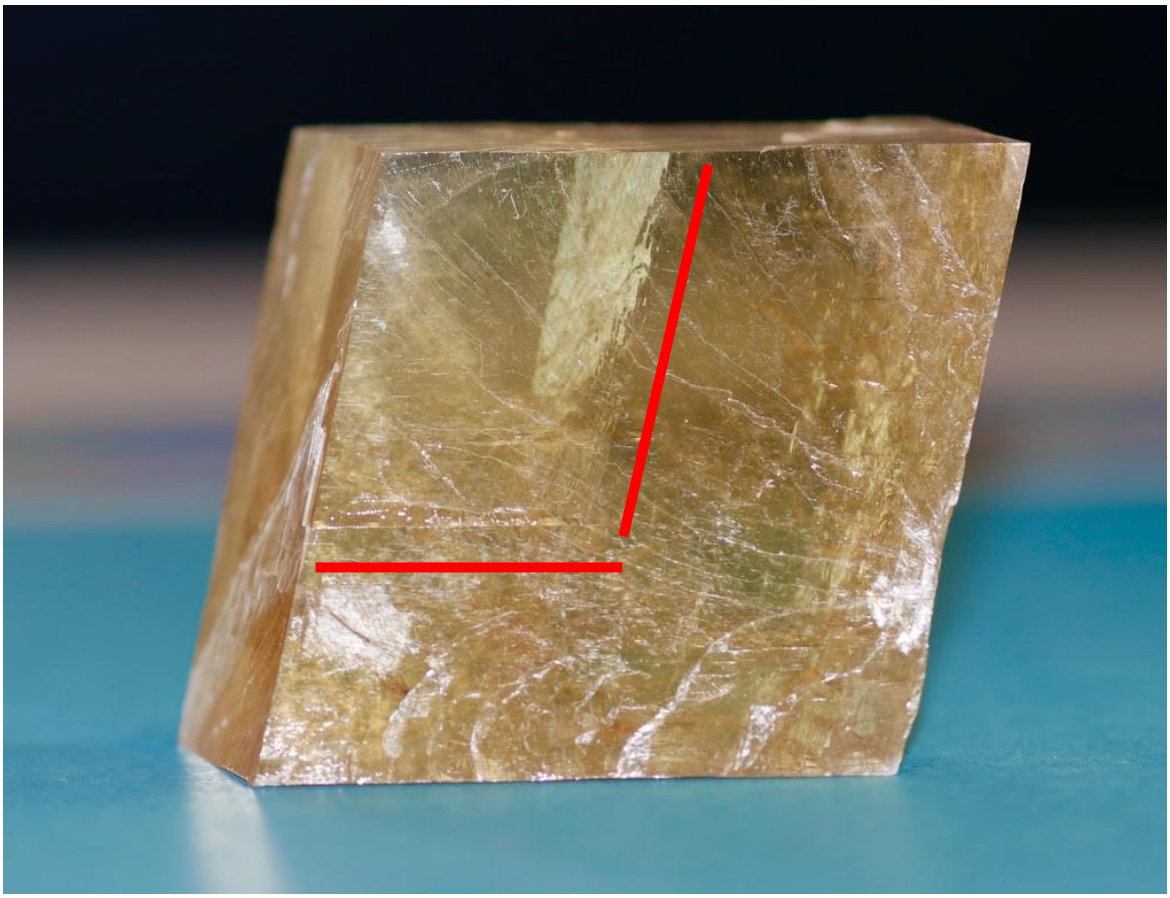


IMAGE 12: A beautiful honey-colored cleaved Calcite. Note the rhombohedral shape/habit formed by three cleavage planes that are not 90^{O}. If you look closely you can see where the specimen will cleave into another rhombohedral. Photo by Tracie J.

IMAGE 13: A natural 98.63 carat raw diamond. Note the tetrahedral shape. Found in Sakha Republic, Russia. Image by ALROSA.

Cleavage is only one of many characteristics that can be used to identify minerals. I will be working on a series of articles to help explain many observable traits such as color, luster, streak, fracture, and hardness to help readers become more adept at identifying minerals.

WHAT'S HAPPENING IN OUR AREA

WHAT	WHEN	WHERE
Franklin Gem & Mineral Society Show	MAY 8 - 10 Fri. and Sat. 10 - 6 Sun. 10 - 4	Robert C. Carpenter Center - 1288 Georgia Road Franklin, NC
G&LW Wholesale Gem Show	MAY 15 – 17 Fri. and Sat. 10 - 6 Sun. 10 - 3	6295 Sylva Road Watauga Festival Center Franklin, NC 28734
GRAVES MOUNTAIN DIG AND ROCK SWAP	April 17 - 19 Fir. – Sun. 8 AM to 6 PM	For directions and information go to: https://www.gamineral.org/ft/commercial/ftgravesmain.html

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Volume 56 Number 4

Club Meetings

2nd Tuesday of Month, 7:00PM

St Aloysius Catholic Church

921 2nd Street NE Hickory, NC

Tar Heel Rockhound
Tracie Jeffries Editor
PO BOX 2521
Hickory NC 28603-2521
http://www.cvgmc.com/

Organized 1969