

Club News

March, 2022



We are pleased to announce resumption of monthly meetings with the March meeting, which will be held at 10:00AM March 12 in the gym of the Lake George Charter School. The school is located about ½ mile east of Lake George, just south of US 24 (watch for the sign).

Steve Veatch will talk about Spencer and Julie Penrose. A summary is presented below. Please join us at our new (maybe temporary?) venue. The Lake George School gives us more room to spread out and better ventilation.

- **New members have until March 31 to join. Old members (that's me?) don't pay this year.**
- **We would like all members (and especially new members) to complete a membership application so that we can keep our rolls up-to-date.**
- **See the back of this newsletter for an application form (which you can mail to the address given), or go to the LGGMC website to fill out current information.**

NOTE:

November through March meetings start at 10:00 AM.

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Scheduled Programs at Club Meetings:

Besides Steve Veatch's program, we will resume our traditional silent auction in March. Please bring minerals, fossils, or other items (and cash!) that you'd like to donate to help fund Club activities.

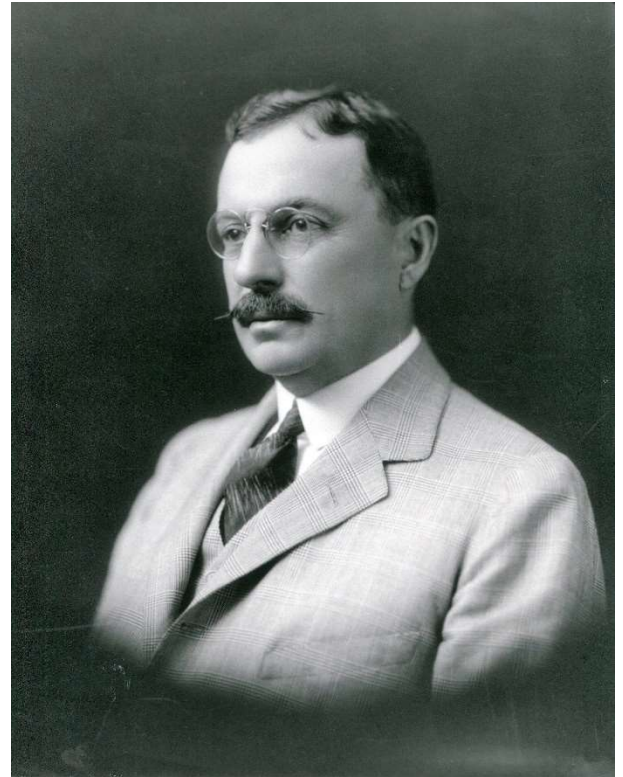
Election of officers has been postponed. Please contact one of the current officers (listed at the end of this newsletter) if you would consider running for a 2022 office.

- [Here's the abstract for Steve Veatch's talk at the March LGGMC meeting:](#)

Things Left Behind: An Intimate Time with Spencer and Julie Penrose

Spencer Penrose made a fortune mining gold in Cripple Creek and then copper in Utah. After investing his money, he molded the Pikes Peak region into a tourist mecca by building the Broadmoor Hotel and other attractions. Both Spencer and Julie Penrose made significant contributions to the business, social, and philanthropic communities of the Pikes Peak region. Join Steven Veatch as he shares Penrose rocks, gold-ore, stories, historic photographs, and artifacts from when his grandfather was the private secretary for Spencer Penrose and, later, Julie Penrose. Veatch relies on these Penrose artifacts, charged with emotion and memories, to provide an intimate look into their lives and personalities.

Steven Veatch is a member of the Colorado Springs Mineralogical Society, the Lake George Gem and Mineral Club, the Cañon City Geology Club, Grand Traverse Area Rock and Mineral Club, and the Central Michigan Lapidary and Mineral Society. He is a 2015 National Rockhound & Lapidary Hall of Fame inductee. He volunteers at the Cripple District Museum and the Benzie Area Historical Society and Museum. He spends time at his cabin near Divide Colorado and on the shores of Duck Lake, Michigan.



Presented by the Lake George Gem and Mineral Club

Date: March 12, 2022

Time: 10 am

Location: Lake George Charter School gym



- [Here's a March events list from Pete Modreski:](#)

Thurs., Mar. 17, 7:00 p.m., Colorado Scientific Society meeting, via Zoom, all are welcome:

Comparing Stratigraphic Architecture and Petroleum Systems Across the South Atlantic Margin, by Katie-Joe McDonough, Friso Brouwer, Brian W. Horn, and Kyle R. Reube; and **Atlantic**

Lake George Gem & Mineral Club

March, 2022

Volcanoes: Activity in 2021 and challenges for geoconservation, by Thomas Casadevall, U.S. Geological Survey. See the CSS website for login links; <https://coloscisoc.org/> .

Fri-Sat-Sun, Mar. 25-27, Fort Collins Gem and Mineral Show, at The Ranch/Larimer County Fairgrounds, Thomas M. McKee Building, 5280 Arena Circle, Loveland, CO. 4-8 p.m. Friday, 9-6 Sat., 10-5 Sun. Sponsored by the Fort Collins Rockhounds Club.

- **Carol Kinate sent this info about the 2022 LGGMC Mineral & Gem Show:**
- SAVE THE DATE – August 19-21, 2022 (LGGMC Annual Show)
- A word from Show Chair, **Carol Kinate** – I am reaching out to all members looking for additional help with this year's Annual Show. I am listing the **current positions needed to be filled** to make our show a success. My contact information is listed below.
- **Show Host** (vendor/someone who can preferably stay on the grounds Thursday thru Sunday during show)
- **Volunteer Coordinator** (shift assignments during show and field setup/takedown)
- **Signage** (installation/takedown of signage - currently (7) locations)
- **Field Layout Coordinator** (marking of field weekend before show starts)

Thank you for your time and consideration. Please contact me with any questions whatsoever. Looking forward to a GREAT show!

Carol Kinate, Show Chair
kinatec@aol.com
719-648-9015 (call/text)

- **Dave Alexander sent this info about upcoming field trips:**

This year's joint trips

- 1) We are planning a joint trip with RAMS to Dotsero for pyrite pseudomorphs on 6/18.
- 2) We are planning a joint trip to Utah on 4/22-24 with RAMS and Canyon City (sending out invites soon) and these events are posted. If anyone has any dugway geode specimen pictures, please send my way.
- 3) We have been invited to the RAMS club picnic in July and will be limited to 20-25 participants. After talking with Richard, we felt the "fairest" way to make this limited-attendance trip available was a meeting-only sign-up; i.e. no website registration (I'll still create an event, and we'll socialize in the newsletter too). Since I can't be at the June meeting, I'd like some help with the signup at that meeting, and if additional space is available we can also post at the July meeting. I'll get everything ready.
- 4) I'll schedule a reciprocity trip with RAMS to our claims this summer. I'm working with Kyle Warner (Chris Rayburn's helper and hopeful replacement) to schedule this soon.

Field trips update

Field trips are getting scheduled nicely. Cory Miller has offered to help me coordinate this year and has been active in not only doing coordination but offering to lead several trips so far. Tons of thanks!!

We used to do a trip with Dick Lackmond to collect Bi-Pyramidal Quartz near Breckenridge. I believe this was on private land from a person called 'Nada'. I was not able to join on that trip, so I don't know **if it is worthwhile to pursue still? Does anyone have this contact information?**

ADDITIONAL COMING EVENTS OUTSIDE THE LGGM CLUB: (Nearby gem, mineral, fossil and geology events that you may enjoy.)

Please check the websites to find out current status of club meetings.

- **Cañon City Geology Club**, meets on the 2nd Monday of the month at 6PM in the United Methodist Church, Cañon City
- **Columbine Gem & Mineral Society**, meets on the 2nd Thursday of each month, 6:30PM in the meeting room, Mt. Shavano Manor, 525 W. 16th (at J St.), Salida
- **Colorado Springs Mineralogical Society**, meets on the 3rd Thursday of each month at 7PM in the Mt. Carmel Veteran's Service Center, 530 Communication Circle, Colorado Springs;
- **Pueblo Rockhounds**, meets on the 3rd Thursday of each month at 6:30PM in the Westminster Presbyterian Church, 10 University Circle, Pueblo.

Mar. 25-27, Fort Collins Rockhounds Show, Larimer County Fairgrounds, Longmont, CO

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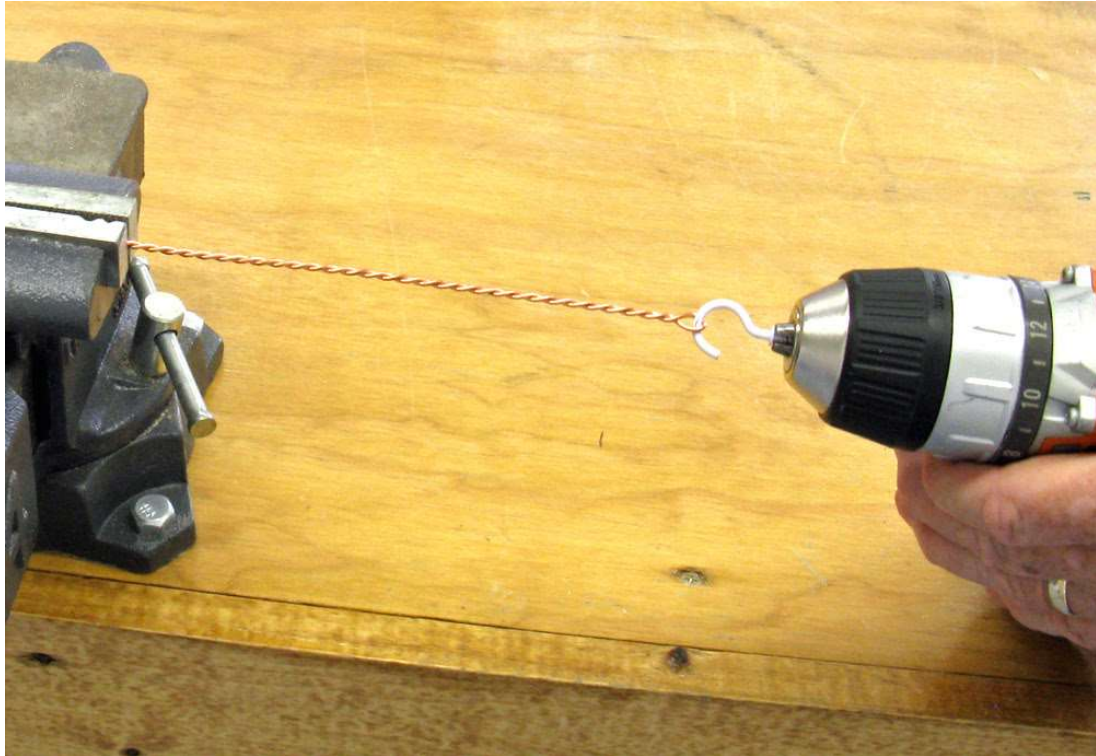
Wayne Orlowski sent the following interesting links about geology and mineralogy:

- **Aftermath of the biggest volcanic eruption ever caught from space: Tonga:**
<https://www.youtube.com/watch?v=sZZVVwqZ0rs>
- This History Channel video has the geology of the canyon and a couple of theories on the canyon's formation nicely explained. *The Grand Canyon Explained / History Channel, How the earth Was Made Series, S2 E!*
<https://www.youtube.com/watch?v=LaxaE7tcwu4>

...and here are a few links I found

- If you thought the Jan. 15 eruption in Tonga was unusual, you're right. Read this article to find out how:
https://www.nature.com/articles/d41586-022-00394-y?utm_source=Nature+Briefing&utm_campaign=fc24659dde-briefing-dy-20220210&utm_medium=email&utm_term=0_c9dfd39373-fc24659dde-46614810
- There will be two Cumbres and Toltec geology trains this summer:
<https://coloradogeologicalsurvey.org/2022/767-cumbres-toltec-geology-train/>
- Newmont Mining will have a public open house, via Webex, on March 9. Here is the information on how to attend:
 - **CC&V Virtual Community Open House**
 - Date: Wednesday, March 9, 2022
 - Time: 6:00pm to 7:00 PM
 - Location: Computer & Phone Conference
 - by Cisco Webex Meetings
 - Please follow these directions if you would like to attend...
- For computer/smartphone video access with your choice of computer or phone audio, please click the link below, up to 10 minutes before 6:00 pm, and follow the directions:
 - [Join Webex meeting](#)

- Here is the latest installment of “**Bench Tips**” by **Brad Smith**: (www.BradSmithJewelry.com)



TWISTING WIRE

Twisting wire can be done with an old hand drill but goes much faster with a power tool. My preference is to use a screw gun, although a Foredom should do well.

Just make a little hook out of coat hanger wire (or use a screw-in cup hook) and chuck it up in your screw gun. Grip the free ends of the wire in a vice and slip the looped end onto your hook. Keep a little tension on the wires as you twist.

Note that a power drill is too fast a tool for this unless you have one with variable speed.

Smart Solutions for Your Jewelry Making Problems
[Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)



Notes from the Editor

Bob Carnein

Newsletter Editor
ccarnein@gmail.com

This month, I decided to write an article about a topic that seems to cause confusion among Club members: the group of minerals collectively known as “garnet”. I hope it clarifies some of the mystery!

The GARNET Group

Bob Carnein

LGGMC members often collect garnet on Club field trips. Examples of localities where garnet is abundant include the Sedalia mine, near Salida; the Gold City claims, west of Lake George; and the Arroya Gulch locality, in Fremont Co. When I tell a member that they have a nice specimen of almandine or grossular, they sometimes give me a puzzled look, thinking they found garnet. Like many things in mineralogy, “garnet” is something that’s a bit more complicated than a beginner might think.

“Garnet” is actually a group of silicate minerals with the same structure and the generalized chemical formula $X_3Z_2(SiO_4)_3$. In this formula, X and Z represent positively charged ions. $X=Mg^{+2}$, Ca^{+2} , Fe^{+2} , Mn^{+2} , and other ions with a +2 charge. $Z=Al^{+3}$, Fe^{+3} , Cr^{+3} , and other ions with a +3 charge.

The simplest classification of the members of the garnet group breaks it down into 6 garnet *species*, as shown in Table 1. As you can see, there are many other informal names for varieties that are recognized by gemologists for particular colors (e.g. rhodolite, hessonite, tsavorite). As the table suggests, some varieties are “mixtures” of two or more species. For example, rhodolite is a garnet of mixed composition between almandine and pyrope. This can cause even more confusion, and results from the fact that ions of similar size and charge can substitute for each other in the garnet structure.

As a result, the formulas listed in Table 1 are simplified, because, in reality, most actual garnets have more variable compositions. So, almandine and pyrope are completely gradational (see “rhodolite” on Table 1), with every variation from pure magnesium aluminum silicate to pure iron aluminum silicate. Similarly, pyrope and spessartine are gradational (see “Malaya” on Table 1), from pure magnesium aluminum silicate to pure manganese aluminum silicate. As you might guess, the color of a particular mixture varies, depending on the composition. However, other impurities affect color, so **you can’t identify a garnet species just by looking at the color.**

Notice that, in Table 1, the 6 garnet species are grouped into two categories: aluminum members and calcium members. These are sometime also known as the pyrope-almandine-spessartine) and the ugrandites (uvarovite-grossular-andradite). This reflects the gradations in composition—the aluminum members are gradational in composition, and the calcium members (except for uvarovite) are also gradational. This is shown, diagrammatically, in Figures 1 and 2. Note that, as shown by colored areas on these figures, there is

Garnet Minerals					The Garnet Group		
Mineral	Composition	Specific Gravity	Hardness	Colors	Aluminum Members	<ul style="list-style-type: none"> ● Almandine ● Pyrope ● Spessartine 	
Almandine	$Fe_3Al_2(SiO_4)_3$	4.20	7 - 7.5	red, brown			Mixed Varieties
Pyrope	$Mg_3Al_2(SiO_4)_3$	3.56	7 - 7.5	red to purple			<ul style="list-style-type: none"> ● Rhodolite Pyrope + Almandine ● Malaya Pyrope + Spessartine
Spessartine	$Mn_3Al_2(SiO_4)_3$	4.18	6.5 - 7.5	orange to red to brown	Calcium Members	<ul style="list-style-type: none"> ● Andradite ● Grossular ● Uvarovite 	
Andradite	$Ca_3Fe_2(SiO_4)_3$	3.90	6.5 - 7	green, yellow, black			Color Varieties
Grossular	$Ca_3Al_2(SiO_4)_3$	3.57	6.5 - 7.5	green, yellow, red, pink, clear			<ul style="list-style-type: none"> ● Demantoid ● Melanite ● Topazolite
Uvarovite	$Ca_3Cr_2(SiO_4)_3$	3.85	6.5 - 7	green			<ul style="list-style-type: none"> ● Hessonite ○ Leuco Garnet ○ Hydrogrossular ○ Merelani Mint ○ Mali ● Tavorite

Table 1. Members of the garnet group. (geologyin.com)

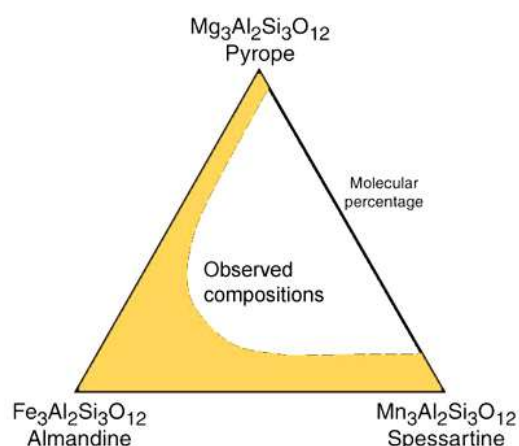


Figure 1. Triangular diagram showing gradations in compositions of the pyralspites (colored area). (skyfallmeteorites.com)

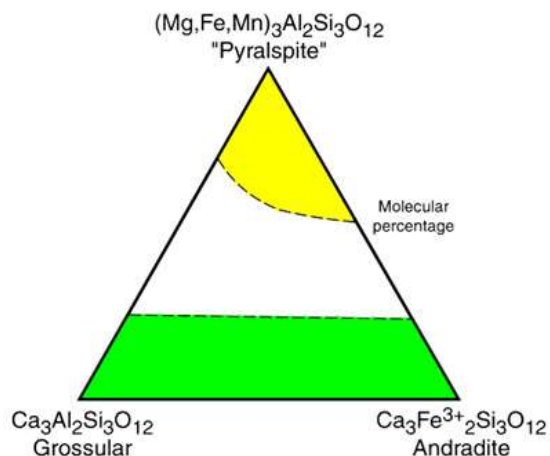


Figure 2. Triangular diagram showing gradations in compositions of the ugrandites (green area). (skyfallmeteorites.com)

almost no gradation in composition between pyrope and spessartine (Figure 1) and little gradation between the pyralspites and grossular and andradite (Figure 2). Uvarovite, although it's included in the naming of "ugrandite" doesn't grade into anything else. This is because it's a rare chromium garnet, and chromium doesn't readily substitute for aluminum or iron (the variable cations) in the ugrandites.

Luckily, a mineral collector can make educated guesses about which garnet he or she has found, based on the kind of rock it occurs in and the associated minerals. (This is why it's important to learn the basic rock types and the minerals that occur in them!) For example, if you find a garnet in a mica schist or granitic gneiss (common metamorphic rocks; Arroya Gulch, Sedalia mine), it's likely to be almandine. But if you collect garnet from a lime-silicate gneiss (e.g. Gold City claim), it's likely to be grossular. Many, but not all, pegmatites contain spessartine.

Andradite often occurs in skarns, which are contact-metamorphic rocks that are rich in iron. However, absolute identification of a garnet species requires measuring the indices of refraction or other technical testing.

Shown below are a few examples of typical garnets. Notice that many of them have similar crystal habits. Many of the other properties (e.g. luster, hardness) are also similar. This is because different species have essentially the same structure. Note, however, the color variations, and remember that color is often the least reliable property to use in mineral identification!



Uvarovite, Russia



Tavorite (grossular), Tanzania



Andradite, Arizona



Spessartine, Colorado



Spessartine, Tanzania



Spessartine, Tanzania



Grossular, Mexico



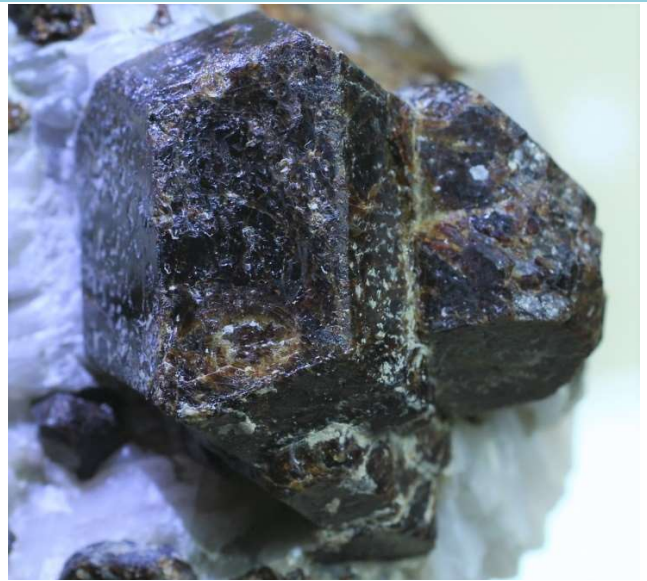
Grossular, Mexico



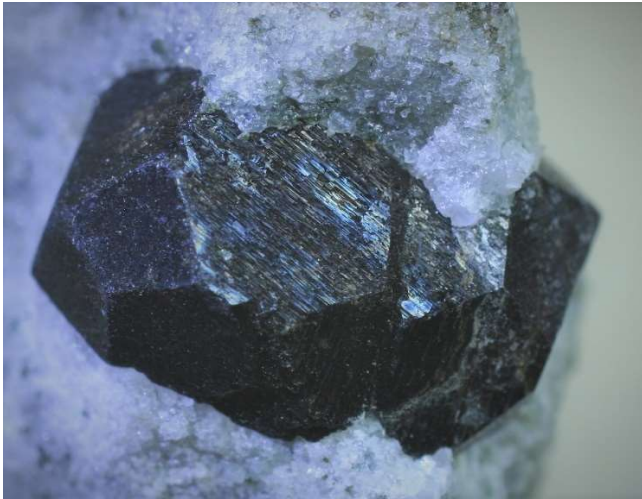
Grossular, Russia



Almandine, Alaska



Andradite, New Jersey



Andradite, Pennsylvania



Andradite, Mali



Pyrope, Arizona (Nevada Outback Gem)

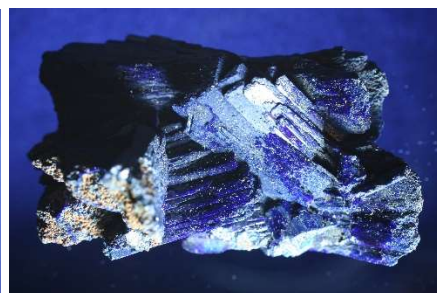
Monthly Mineral Quiz

Last Month's Mineral: Celestine, SrSO_4 .



Once called celestite, last month's mineral commonly occurs in cavities in marine sedimentary carbonate rocks (limestone, dolostone), in geodes (most famously, up to 35 feet across in northern Ohio), and occasionally in hydrothermal veins (as at the Cresson open pit, Cripple Creek, CO). Its name derives from the Latin for celestial, a reference to its sometimes delicate blue color. It's a tough mineral to identify because of its similarity to baryte and its variable color. A strontium flame test can help. Powder a tiny (rice-grain size) piece of the mineral. Obtain a short length of platinum or Nichrome wire. Make a small loop on the end of the wire. "Clean" the wire by dipping it into a gas flame (stove-top flame will work). Leave the wire in the flame until yellow flame disappears. Without touching the loop with your fingers, dip the loop into the acid/unknown solution, then touch the wet loop to the powdered mineral. Then dip this into the flame. If the mineral is celestine or another strontium mineral, you will see a brilliant red flash. If it's baryte, the flame color will be greenish yellow. If calcium, it's orange; sodium yields yellow. **When doing a flame test, be sure you use an oven mitt or glove to protect your hands from burns due to heat conduction by the wire.**

March Mineral (Carnein photos and collection)



The mineral for March is another one of those common secondary minerals found in mixed-sulfide deposits. Its blue color is typical, and so it's a favorite among collectors. However, handle with care—this mineral is soft ($H=3\frac{1}{2}$ to 4), has perfect cleavage, and is brittle. SG is relatively high (about 3.8), reflecting the presence of a metal as a major component. It's sometimes used as an ore mineral, but heat damages it; it doesn't make a good stone for lapidary work. There are many minor localities in Colorado, so you can expect to find where metallic veins occur. This mineral gives a greenish blue flame test (see above). What is this common mineral?

Eckel, E.B., 1997, *Minerals of Colorado, Updated and Revised by R.R. Cobban, et al.*: Golden, Colorado, Fulcrum Publishing.



The Lake George Gem and Mineral Club is a group of people interested in rocks and minerals, fossils, geology and history of the Pikes Peak/South Park area, Indian artifacts, and the great outdoors. The Club's informational programs and field trips provide opportunities to learn about Earth science, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The Club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The Club normally meets on the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter, we meet at 10:00AM. From April through October, we meet at 9:00AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain, and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral Show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems, or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are \$15.00 for an individual (18 and over), and \$25.00 for a family (parents plus dependents under age 18). New memberships and renewals are only accepted Jan 1 through March 31 each year.

Our Officers for 2022 are:

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Divide, CO 80814
719-748-8152
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Lake George Gem & Mineral Club
PO Box 171
Lake George, CO 80827
www.LGGMClub.org

Membership Application/Renewal, 2022

Name(s) _____ Date: _____

Address _____ City _____ State _____ Zip _____

Telephone() _____ - _____; e-mail: _____
(please print; e-mail address needed to receive newsletter)

Names/ages of spouse/minor members (if family membership) _____

Dues for Jan. 1 through Dec. 31 are ___\$15 (individual, 18 and over); ___\$25 (family)

Current year membership renewal and application occurs Jan. 1-March 31, after which membership is closed for current year. Membership list will be purged April 1 for current year.

MEMBERSHIP MUST BE CURRENT TO PARTICIPATE ON ANY FIELD TRIP OR USE CLUB CLAIM.

I agree to abide by Club constitution, by-laws, and rules regarding field trips and Club-claim visits:

Signed _____ Date: ____/____/____

Is this a renewal? ____ (yes); ____ (no) (**IF RENEWAL, NO DUES ARE DUE FOR 2022**)

My interest areas include (check all that apply): ____ minerals; ____ fossils; ____ lapidary
____ micromounts; ____ Colorado geology; ____ Pebble Pups (ages 7-17); ____ mining history;
____ field collecting; ____ crystallography; ____ other (please specify):

I am willing to help with the following: ____ Give a talk at a Club meeting; ____ Give a presentation for
Pebble Pups; ____ Run for a Club office; ____ Newsletter editor/writer; ____ Local Show/Show Committee;
____ Field-trip Planning; ____ Art (member badges); ____ Membership Coordinator; ____ Website
Assistance; ____ Pebble Pups; ____ Other (be specific) _____

Questions about Club or Activities? Visit our website or contact a Club officer.