

# The Lake George Gem and Mineral Club -

**Club News, August, 2013**



**Regular Meeting of the Lake George Gem & Mineral Club**  
**Saturday, August 10, at 9:00AM**  
**Lake George Community Center**

After a brief business meeting, we will drive to the lot next to the Lake George Post Office to mark off the dealer spaces for the Club Show. All participants will be treated to lunch at Lake George Pizza. An item of business that we will discuss is the proposed \$5 per year membership fee for Pebble Pups/Earth-Science Scholars who are not already members of the Club.

**Dues are due....see membership application at the end of this Newsletter. You must be a paid member to attend Club trips.**

## Coming Events

- Columbine Gem and Mineral Society**, 6:30PM, Monthly meeting, Mt. Shavano Manor, 525 W. 16<sup>th</sup> at J St., Salida. ... **August 8**
- Dinosaur Discovery Day**, Dinosaur Ridge, Morrison. Features live birds and reptiles from the Denver Zoo. Go to [www.dinoridge.org](http://www.dinoridge.org) for more information. ... **August 10**
- Colorado Springs Mineralogical Society**, monthly meeting, 7PM, Colorado Springs Senior Center, 1514 N. Hancock, Colorado Springs. ... **August 15**
- 30<sup>th</sup> Annual Contin-Tail Rock & Gem Show**, Buena Vista Rodeo Grounds (free). ... **Aug. 8-11**
- Annual Lake George Gem & Mineral Club Gem & Mineral Show**, In the field next to the Post Office, Lake George (free admission and parking). ... **Aug. 16-18**
- Denver Coliseum Gem Show**, 4600 Humboldt St. Free admission and parking. ... **Sept. 7-15**
- Colorado Mineral and Fossil Show (Fall)**, Ramada Plaza Hotel, 4849 Bannock St. (free admission, shuttle to other venues, and parking) ... **Sept. 11-15**
- Denver Gem & Mineral Show and Colorado Fossil Show**, Denver Merchandise Mart. Theme: Tourmaline. Admission charge. ... **Sept. 13-15**

## **Welcome New Members!**

Jessica Bise  
Bob Dwyer  
Philip "Bud" Hawken  
Roy Kirby  
Laura Kleinschmidt  
Paul Moore  
Dan Schoenstein

James Smith  
Jim Tillery  
Kevin Witte  
Club News

▶ The Forest Service has not yet responded to the letter sent to them by the officers in May, in response to their "cease and desist" order relative to the Club claim. **Please do not visit the Club claim until further notice. Any violation may result in a fine or prosecution.**

▶ Here's the current list of **field trips** that have been scheduled so far. Please contact **Richard Kawamoto** at [kawahome@wildblue.net](mailto:kawahome@wildblue.net) for details, and watch the Club website for updates.

August 11: St. Peters Dome fluorite trip (**Paul Combs**)

▶ **Richard Kawamoto** sent this account of the July 20 "Ace in the Hole" trip, with photos by **Frank Rosenberg**:

The Ace in the Hole fieldtrip of July 20 turned out to be an exciting experience for Richard Kawamoto and Frank Rosenberg. Rich Fretterd showed them the Joker is Wild pocket, where he had found a large pocket of fluorite crystals last year. He noted that the tailings from the pocket would have fluorite and speculated on the possibility of more fluorite buried beneath the pile. Richard and Frank spent much of the day moving the tailings, effectively remediating the Joker is Wild pocket while finding pieces of fluorite. By afternoon, they had moved the tailings and were digging into untouched ground, when they found a substantial quartz vein. After about 2 hours of removing large quartz chunks and not much else, they considered quitting when Rich came by to check the progress. Within a few minutes of digging, Rich uncovered a quartz chunk with well defined quartz crystals on the surface, the first indication of a possible pocket. Reinvigorated, Richard dug further into the loose red gravel, hoping to find a trend and quickly found a 2-inch smoky quartz, which Rich thought indicated the beginnings of a pocket. As Richard scooped out handfuls of gravel, he pulled out a large, blocky rock. Noting the heft, he handed it to Rich, who immediately identified it as a large fluorite crystal. Sensing we might have uncovered a large pocket, Rich jumped in with plastic tools to probe the gravel. Within minutes, he exposed a well defined cubic face that quickly grew from an inch across to about 5 inches. Suspecting that this was a substantial fluorite crystal, Rich decided it should be recorded for the "Prospectors" program to demonstrate the proper way to extract a substantial mineral specimen. The dig was halted and resumed 2 days later with a film crew. Richard is holding a fluorite crystal of over 3 pounds from the now dubbed "King of Hearts" pocket. The larger fluorite from the same pocket weighs nearly 5 and a half pounds. You just never know what might turn up when you dig on a club fieldtrip.



(Left): Richard Kawamoto looks pretty psyched! (Right): The larger crystal, excavated on July 22. The large face in the upper right is actually part of a large smoky quartz we were also able to extract.



The two Rich's discussing strategy.



"Prospectors" film crew documenting the find.



Is it one piece?



It is!!

► Here's some great news from **Steve Veatch** about some Earth-science Scholars who will present their research at the Denver Gem & Mineral Show.

**DENVER GEM AND MINERAL SHOW SPEAKERS FOR SATURDAY, SEPT 14, 2013  
PIKES PEAK PEBBLE PUPS IN SPEAKERS' ROOM AT NOON**

*LINEUP OF SPEAKERS, TITLES OF TALKS, AND THEIR BIOS*

**The World of Tourmaline**, By Luke Sattler



Luke is an avid rock, mineral, and fossil collector. He is a member of the Colorado Springs Mineralogical Society and participates in the youth division. He has written a number of papers on the geosciences and has been published throughout the nation. He is in 10th grade and lives in Castle Rock, Colorado. He is a member of the Colorado Scientific Society.

**Unimaginable Fossils from the Depths of the Cripple Creek Volcanic Complex in the Cripple Creek and Victor Mining District**, by Zach Sepulveda

Lake George Gem and Mineral Club

**August, 2013**



Zachary Sepulveda attends Palmer Ridge High School in Monument, Colorado. He is from Southern California, and has always been interested in geology, paleontology and biology. He is looking forward to making a meaningful contribution to the field of science. His other interests include creative writing and drawing. Some of his poetry and drawings have been published in magazines such as Deposits and in local newspapers. He wrote and published a scientific article with Steven Veatch about a Florissant fossil spider discovery. Zachary is a member of the Colorado Springs Mineralogical Society (CSMS) and participates actively in the Pebble Pup/Junior program. He is also a member of the Colorado Scientific Society.

### **An Introduction to Garnets, by Jenna Salvat**



Jenna is a 7th grader at Thomas Maclaren and is fascinated by science, particularly the field of geology, entomology, and archaeology. She hopes to study geology and entomology later in life.

### **An Update on the Florissant Fossil Beds National Monument, by Blake Reher**



Blake has earned his black belt in Kempo Karate, and is active in Boy Scouts. Blake's real passion is paleontology and geology. He attends both Cheyenne Mountain Junior High and the Hill Springs Learning Center. He is an active Junior Member in the Colorado Springs Mineralogical Society. He volunteers in Science Fairs, and other outreach programs. Blake has written several poems and articles that have been published in newsletters. Although writing is a challenge for Blake he really likes the accomplishment of researching topics and completing papers.

#### Notes:

- Each speaker will have 13 minutes to present
- Presentations will be MS PowerPoint
- A commemorative poster to honor the youth and future of our hobby will be provided free to all attendees. The original artwork is by an award-winning pebble pup / Earth Science Scholar of the Pikes Peak Pebble Pups who attends the Lake George, Colorado unit.
- The program will start at 12 noon
- The presenters will be available for a few questions after the session.

▶▶ Here's a reminder from **Dan Alfrey** about our upcoming gem and mineral show:

Reminder: Your annual Gem & Mineral Show, *sponsored by The Lake George Gem and Mineral Club membership*, is AUGUST 15-18, 2013. There will be a JumpStart on Tues, Aug. 13th.

YOUR CLUB NEEDS YOU:

Lake George Gem and Mineral Club

**August, 2013**

(Sat) Aug. 10th for the Show SETUP! Volunteers are welcome to our traditional Pizza Lunch following the show layout :)

Plan Ahead:

MAKE YOURSELF AVAILABLE some time during the show!! You can pass out free Rock/Mineral specimens to the Kids & inform guest visitors about our awesome hobby in the earth sciences!

Details can be found on the club website. See the 'dealer packet' link & check often for updates. [www.LGGMclub.org](http://www.LGGMclub.org)

*Please help get the word out. :D*

▶ Here are this month's "Bench Tips" from Brad Smith:  
Unfortunately, Brad's "Bench Tips" for August wouldn't copy into the newsletter. I'll try again next month. -ed.

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More Bench Tips by Brad Smith are at [facebook.com/BenchTips/](https://www.facebook.com/BenchTips/)  
or see the book "Bench Tips for Jewelry Making" on Amazon.

### ***Earth-Science Scholars/Pebble Pups Corner***

Earth-Science Scholars and Pebble Pups meet **from September through May** on the **third Tuesday of each month at 6PM in the Lake George Community Center**. Be sure you check regularly at [www.LGGMClub.org](http://www.LGGMClub.org) for details and updates. If you have suggestions for topics for the 2013-14 program, or, if you would like to help out, please contact Steve at [steven.veatch@gmail.com](mailto:steven.veatch@gmail.com).

**Remember**, new students and their parents are always welcome; Earth-Science Scholars and Pebble Pups are welcome on LGGM Club field trips.

#### **NOTES FROM THE EDITOR**

Bob Carnein, Editor  
[ccarnein@gmail.com](mailto:ccarnein@gmail.com)  
719-687-2739



As most of you know, I have been (slowly) completing a series of articles about the minerals of Mohs' Hardness Scale. We're up to number 7: Quartz.

## Quixotic Quartz by Bob Carnein

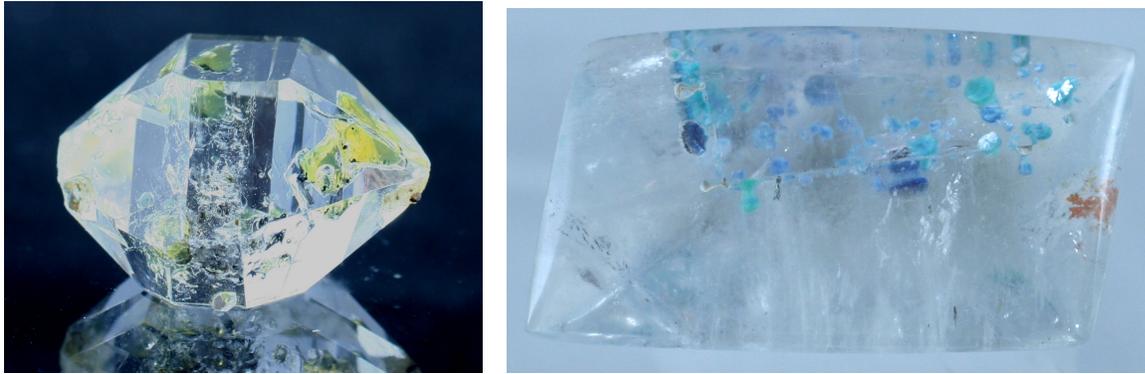
Quartz is mineral number 7 on Mohs' hardness scale. However, like many minerals, quartz has directional properties because of its asymmetrical internal structure, and its hardness varies slightly with direction. It well illustrates the fact that the hardness minerals were chosen for their "commonness". The casual collector will encounter it in all three major rock groups (igneous, sedimentary, and metamorphic), as well as in hot spring (sinter) and hydrothermal ore deposits. Quartz is also the most common mineral in geodes and "thunder eggs".

About the only place where quartz rarely occurs is in the parts of Earth that are underlain by oceanic (basaltic) crust. Although quartz-rich sediments occur in the oceans, they are mostly derived from weathering and erosion of continental rocks. (The exceptions are some organic sediments made up of radiolaria or diatoms.) Quartz's hardness and chemical stability make it one of those minerals that accumulate after the other components of continental rocks (e.g. granite and gneiss) break down. As sand- or silt-sized particles, it may survive several cycles of weathering, erosion, and redeposition.

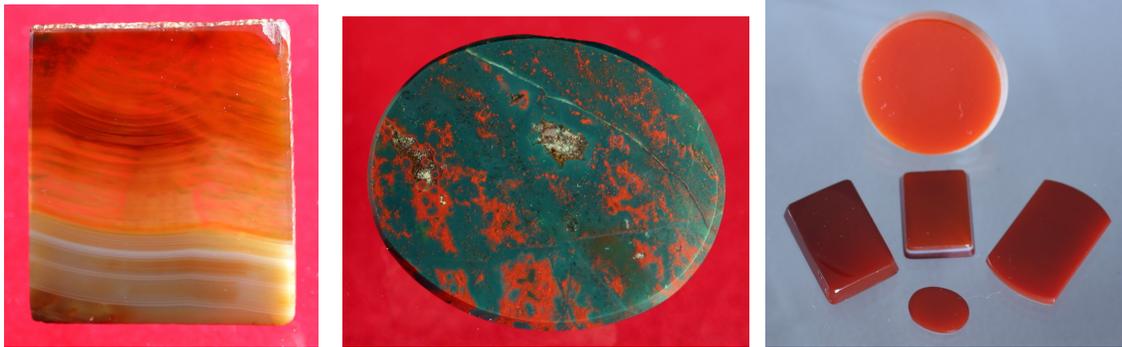
The varieties of  $\text{SiO}_2$  are nearly endless, and, as a result, some mineral fans specialize in collecting only specimens of quartz. For example, one could spend one's whole life collecting quartz crystals containing other minerals as inclusions or phantoms (Figures 1, 2). If you're into lapidary, gem varieties of quartz include rose quartz (some with stars or cats' eyes), smoky quartz (a.k.a. "smoky topaz", Cairngorm stone, morion), amethyst, citrine, ametrine (an oriented intergrowth of amethyst and citrine) and "rock crystal" (colorless quartz). Gemmy smoky quartz and amethyst, of course, occur in central Colorado. Other gem varieties include agate, aventurine, bloodstone (heliotrope), carnelian (sard), chalcedony, chrysoprase, onyx, and plasma (Figures 3, 4). These mostly microcrystalline or cryptocrystalline varieties make attractive, colorful, durable cabochons. Opal ( $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ ), although chemically similar to quartz, is not a variety because it is not crystalline. Similarly, tridymite, cristobalite, stishovite, and coesite all have the same chemical formula as quartz (they are polymorphs) but have different structures. Hence, they, also, are not included as varieties.



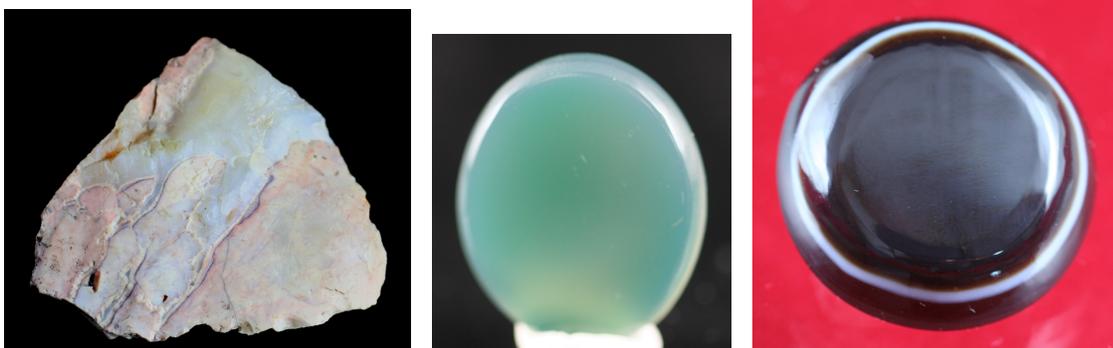
Figure 1. Quartz with phantoms (left 2 photos) and inclusions (right 2 photos) Carnein collection and photos.



**Figure 2. Quartz with inclusions of petroleum (left) and gillalite (right). Carnein collection and photos.**



**Figure 3. (Left to right): Agate, bloodstone, carnelian. Carnein collection and photos.**



**Figure 4. (Left to right): Chalcedony (in pink flint from Flint Ridge, OH); chrysoprase; onyx. Carnein collection and photos.**

Quartz's durability was early recognized by native peoples world-wide, who sought out chert, flint, and jasper (all technically microcrystalline quartz rocks) for tool making. Besides hardness, the key property that made these rocks so important is conchoidal fracture—the ability of the rock to break along smooth, curved surfaces (Figure 5). Flint knapping is still a popular pastime among enthusiasts of native-American culture.

Besides being harder than glass, quartz can be distinguished from other common minerals by several other properties. It exhibits conchoidal fracture and sometimes shows poorly developed rhombohedral (3-direction) cleavage. On a fresh surface, its luster varies from vitreous (especially on crystal faces) (Figure 6) to greasy. Micro- or cryptocrystalline varieties may look waxy or dull (Figure 4). Specific gravity averages about 2.65—close to the average for continental rocks. Color is so variable that it isn't a reliable property.



Figure 5. Conchoidal fracture in quartz. (pbase.com)



Figure 6. Glassy luster in quartz from Pennsylvania. (Carnein collection & photo)

Crystallographers generally assign quartz to the hexagonal crystal system. Crystals are very common and often consist of 6 prism faces (the  $m$  faces in Fig. 7) that are terminated by 2 unequally developed rhombohedrons (faces labeled  $z$  and  $r$  in Fig. 7). Other, usually minor, faces may be present (e.g. those labeled  $s$  and  $x$  in Fig. 7), and those are useful in recognizing *handedness* and *twinning* in quartz. Diagrams labeled 725 and 726 in Fig. 7 illustrate right- and left-handed crystals, respectively, recognized by the direction from the prism face on the front of the crystal to the nearest  $s$  face.

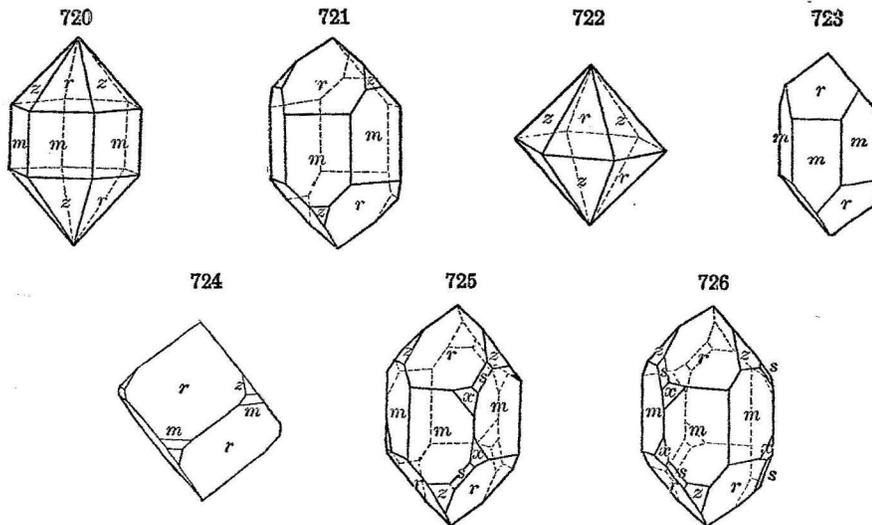
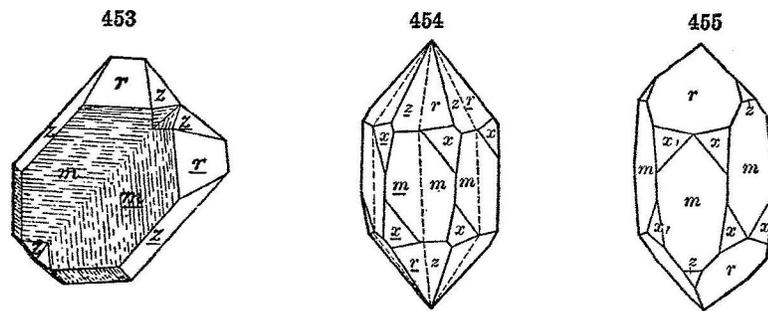


Figure 7. Typical quartz habits. Crystal faces labeled "m" are prism faces; "r" and "z" are rhombohedron faces; "x" are trigonal trapezohedron faces; and "s" are trigonal pyramid faces. (Dana and Ford, 1949)

Numbers 454 and 455 in Figure 8 illustrate common Dauphiné and rarely seen Brazil twinning, recognizable by distinctive repetitions of the  $x$  faces. In addition, twinning according to the Japan law is fairly common (No. 453 in Figure 8, and Figure 9).



**Figure 8. Types of twinned quartz crystals. No. 453 is twinned according to the Japan law; 454 is a Dauphiné twin; and 455 is a Brazil twin (compare to Fig. ). (Dana and Ford, 1949)**

A whole variety of terms have evolved to describe particular habits (or general shapes) of quartz crystals (e.g. Cumberland habit, needle quartz, Dauphiné habit, Tessin habit, Muzo habit, pseudocubic habit, etc. (Fig. 10; see [www.quartzpage.de](http://www.quartzpage.de) for more illustrations). Other terms you may encounter include artichoke, cactus, pineapple, eisenkiesel, gwindel, faden, scepter, and fenster (or window) quartz. Some of these terms are well understood by crystallographers (e.g. gwindel, scepter, and faden; Fig. 11) while others are more commonly used among the crystal-magic crowd.



**Figure 9. Japan twin, New Mexico.**



**Figure 10. l: Cumberland habit, UK; r: pseudocubic habit. Carnein collection and photos.**



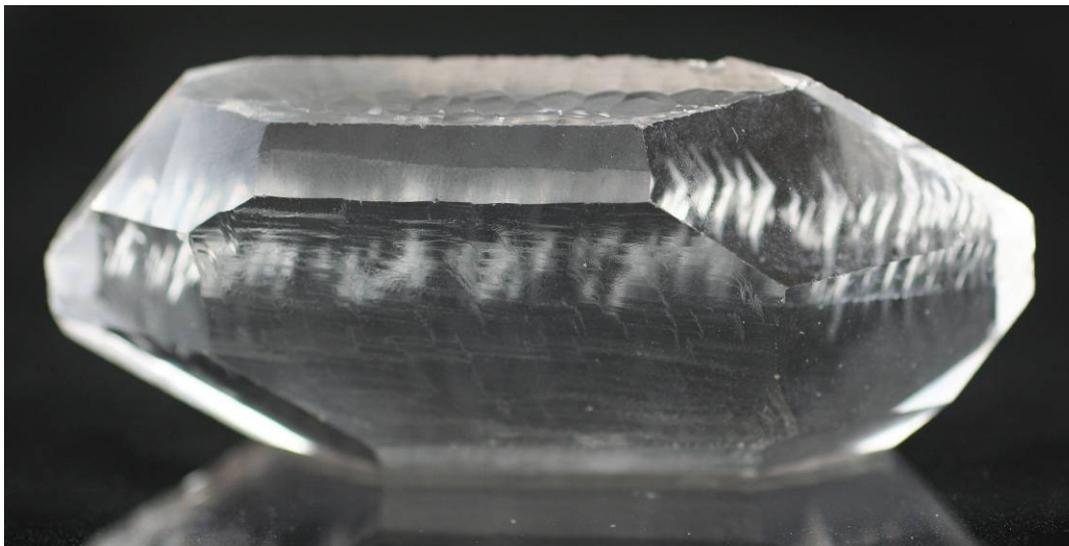
Despite its simple chemistry, quartz's internal structure is pretty complex. This accounts for one of its most useful properties: *piezoelectricity*. Piezoelectricity is so important that quartz was once a strategic mineral, and much money was spent learning how to synthesize it in order to reduce our reliance on foreign sources (Fig. 12). Discovered by brothers Paul-Jacques and Pierre Curie, piezoelectricity is the formation of an electrical charge on the surface of a quartz (or other) crystal that is being mechanically deformed (e.g. squeezed or compressed). The reverse is also true—quartz deforms when placed in an electrical field. Depending on the orientation of the stress, the crystal develops a measurable positive charge on one side and a negative charge on the other. This is most effective when the stress is applied parallel to the "a" axes (the crystal axes that are perpendicular to the prism faces). A host of technologies, from frequency controllers in radios to crystal oscillators in so-called quartz watches and clocks and other electronic devices, have evolved to take advantage of this property.

Besides the gem and electronics industries, quartz (mostly in the form of pure quartz sand) is used in manufacturing all kinds of glasses and ceramics, and, as impure sand,



**Figure 11. l to r: scepter crystal; faden crystal; fenster crystal. Carnein collection and photos.**

for sand blasting, concrete manufacture, and various landscaping and agricultural uses. In the U.S., diatomaceous earth (diatomite) is used as a filter medium (especially in swimming pools), a mild abrasive (in toothpaste), and in insecticides and desiccants. It occurs in Tertiary and Quaternary marine sediments in CA, MD, and VA. Fresh water deposits occur in NV, OR, WA, and CA. Made up of dead remains of single-celled algae, diatomite consists of billions of microscopic opal structures (similar to minute shells) that accumulate in areas where volcanic ash is also abundant (and serves as the source of the silica). Although the Florissant lake beds contain abundant diatoms, they are somewhat degraded and are mixed with weathered volcanic sediments. As a result, they have no commercial value.



**Figure 12. Synthetic quartz crystal. Carnein collection and photo.**

**Reference Cited**

Dana, E.S., and W.E. Ford, 1949, A Textbook of Mineralogy, with an Extended Treatise on Crystallography and Physical Mineralogy, 4<sup>th</sup> Edition: New York, John Wiley & Sons, Inc.

# August 15-18, 2013

14th Annual

# Lake George

## Gem and Mineral Show

[www.LGGMclub.org](http://www.LGGMclub.org)

Located in Beautiful Lake George, Colorado!



*Minerals • Fossils • Local Specimens • Jewelry • Lapidary*

**Free Admission**  **Free Parking**



**Join Us!**

**9am to  
5pm**

**DUES ARE DUE! DUES ARE DUE! DUES ARE DUE! DUES ARE DUE!**

Lake George Gem and Mineral Club

**August, 2013**

**Lake George Gem and Mineral Club**  
Box 171  
Lake George, Colorado 80827  
LGGMClub.org

**2013 MEMBERSHIP APPLICATION**

Name(s) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_ Zip \_\_\_\_\_

Telephone ( ) \_\_\_\_\_ - \_\_\_\_\_ E-mail \_\_\_\_\_

Names and ages of dependent members: \_\_\_\_\_  
\_\_\_\_\_

Annual membership - dues Jan. 1 through Dec. 31 are as follows:

- Individual (18 and over) ..... \$15.00
- Family (Parents plus dependents under age 18) ..... \$25.00

Annual dues are due on or before March 31. Members with unpaid dues will be dropped from the roster after this date. **Any new member joining on/after August 30 shall pay one half the annual dues.**

I hereby agree to abide by the constitution and by-laws of this club.

Signed \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

I have previously been a member of Lake George Gem & Mineral Club. Yes \_\_\_ No \_\_\_

My interest areas include:

Minerals \_\_\_ Fossils\_\_\_ Lapidary \_\_\_ Micromounts \_\_\_  
Other \_\_\_\_\_

I would be willing to demonstrate any of the above for a club program or educational activity? If yes, which: \_\_\_\_\_

Please indicate which of the following activities you might be willing to help with:

Writing \_\_\_\_\_ Editor \_\_\_\_\_ Mailing \_\_\_\_\_ Local shows \_\_\_\_\_

Club Officer \_\_\_\_\_ Programs \_\_\_\_\_ Field trips \_\_\_\_\_ Refreshments \_\_\_\_\_

**Questions about the club or club activities? Contact Glenn Haggett (719) 687-6549**

Rev. April, 2013

**Lake George Gem and Mineral Club**  
**P.O. Box 171**  
**Lake George, CO 80827**

**The Lake George Gem and Mineral Club** is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts and the great outdoors. The club's informational programs and field trips provide an opportunity to learn about earth sciences, 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 meets 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 10:00 AM. From April through October, we meet at 9:00 AM, 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).

**Our Officers for 2013 are:**

**Glenn Haggett, President**

PO Box 985  
Woodland Park, CO 80866  
719-687-6549  
[gshaggett@msn.com](mailto:gshaggett@msn.com)

**Jo Beckwith, Vice President**

PO Box 275  
Guffey, CO 80820  
719-689-0248  
[shawneewolf@hotmail.com](mailto:shawneewolf@hotmail.com)

**Wayne Johnston, Treasurer**

207 Cooper Lake Drive  
Divide, CO 80814  
719-687-6067  
[wjohnston719@msn.com](mailto:wjohnston719@msn.com)

**Charlene DeVries, Secretary**

280 Homestead Rd.  
Divide, CO 80814  
719-686-1822  
[swordfishblue@wildblue.net](mailto:swordfishblue@wildblue.net)



**C.R. (Bob) Carnein, Editor, 507 Donzi Trail, Florissant, CO 80816**  
[ccarnein@gmail.com](mailto:ccarnein@gmail.com) ; 719-687-2739