

WHITTIER

ROCKHOUNDER
GEM & MINERAL
SOCIETY

Special Summer E-Edition

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Sunrise in the California Desert

ROCKHOUNDER

The Elements of a Dazzling Fourth of July

The minerals that produce the brilliant colors in fireworks also bring water and electricity to your home, help to produce the vehicles and fuel needed for travel, and have many other every day uses.

Red Fireworks and Strontium - Strontium gives a brilliant red hue to fireworks and to the flares you might be toting in your car in case of roadside emergencies. Strontium is produced most notably from the mineral celestite. Strontium is used in drilling fluids to produce oil and gas; it also strengthens metal castings in airplanes and cars, and makes paints that resist corrosion.

Copper - Copper turns fireworks a dazzling blue. commonly it is found with sulfur as the mineral chalcopyrite. Azurite and malachite are common copper minerals known for their blue and

Copper was one of the first metals ever extracted and used by humans; in fact copper tools helped civilization emerge from the Stone Age.

The demand for copper remains strong in the developed world where copper wiring and plumbing bring water and electricity into nearly every home and building. It takes more than 40 pounds of copper to produce a small car, and nearly 100 pounds for luxury and hybrid vehicles. Copper is also essential in modern electronics.

(Continued on page 12)

**PASADENA LAPIDARY SOCIETY
Field Trip to the Palos Verdes area
Saturday, July 18th 2015
9am - 4pm**

Field Trip Leader: Chris Kyte (626) 794-0519 ckyte60@att.net

Meet: 9:00am at Livingston Quarry - also known as Forrestal Reserve. It is located at the end of Forrestal drive off of Palos Verde Drive South. The address is best described as 32200 Forrestal Drive, Rancho Palos Verdes, CA.

First Collecting Area: Livingstone Quarry for Barite, Dog-Tooth Dolomite and Selenite. 9am - 11:30am

We will go to a collecting site that is several hundred yards inside the quarry and up a steep hill to the right. There are loose pieces of minerals on and just below the surface to collect or you can use rock picks and chisels to break up pieces of Barite from the large veins. There are other, less visited, collecting spots further in the hills to the right of the road - the trail is more difficult but I can show you how to get there.

Second Collecting Area: Bluff Cove for Glaucofane, Barite and Borate.

12pm 64pm -- Across from address 650 Paseo del Mar, Palos Verdes Estates CA.

The beach at Bluff Cove is accessed by a wide dirt path, about 300 yards
n q p i . " y j k e j " i t c f w c n n { " f g u e g p f u " c d q
Borate crystals are found along the cliffs above the trail. Once to the bottom of the path we will be looking for collectible minerals amongst the beach rocks and along the green cliff above the beach. The glaucofane will appear green when wet. It is a quick walk down to the rocky beach and the walk back up carrying rocks should be done slowly, with frequent rests and with 16 oz of water. Some collectors have found that a carrier with 6" or larger wheels is handy for pulling your collected minerals back up the path.

What to Bring: Collecting bag, bucket or knapsack to carry your finds in; Small rock pick, hand or garden spade or a collapsible shovel for removing
u w t h c e g " f k t v " v q " w p e q x g t " o k p g t c n u " q
A gad or chisel, sledges and eye protection if you plan to chip barite from a

larger vein; Newspaper and zip-lock bags to wrap your more fragile specimens. Be sure to bring lunch, water and snacks, sun screen, basic first aid and a wide-brim hat. Start drinking water early!

Clothing: sturdy shoes, drinking water, lunch, gloves, suns creen and a large wide-brim hat. At the beach shorts are good, but bring a sturdy pair of shoes or boots - k v ø u " x g t { " t q e m { " c p f " y c n m k quarry we will surface collect in the brush, so wear long pants for brush at this location.

IMPORTANT: Please let me know if you are going to go on the field trip in case there are changes at the last minute. Call or email me with your name, club, number of people coming with you, your cell phone and email in case there is any last minute changes due to the weather q t " q v j g t " h c e v q t u 0 " K h " K " f q p) v " m p q y " be able to contact you if the field trip is canceled. Please don't wait until the day before to confirm.

The Minerals

Glaucoephane: $Na_2Mg_3Al_2(Si_8O_{22})(OH)_2$ or Hydrated Sodium Magnesium Aluminum Silicate We will find Electric colored material in the sands. It is a semi translucent stone in multicolored green hues. Black and wine red can be found. Recognizable by the semi translucent, variegated pattern. Great for tumbling, cabbing, spheres, etc.

Barite: $BaSO_4$ or Barium Sulfide. This is a deep golden honey colored, translucent, cockscomb mineral or it may be tan colored with curved crystals or it may be almost clear. Some sources are the beach cliffs as crack filled seams, or eroded down to the shoreline as fist-size chunks. These are great Display pieces. Perfect addition to any mineral collection.

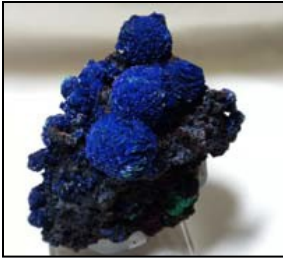
Selenite: $CaSO_4 \cdot 2H_2O$ or Hydrated Calcium Sulfate. From the Greek $\Sigma\lambda\lambda\omicron$, for "moon," in allusion to the moon-like white reflections of the mineral or to the quality of the light transmitted by semi-pellucid gypsum slabs of cleavages used as windows.

Dog-Tooth Dolomite: $CaMg(CO_3)_2$ or Calcium Magnesium Carbonate. Usually found as druzes or clusters of small rhombohedral crystals with a somewhat "saddle"-like shape, white to tan to pink in color.

Borate: is a form of boron with small crystals and may dissolve in water.

AZURITE AND MALACHITE FRATERNAL TWINS

By Susan Fisher



Azurite
Ibiajara, Bahia, Brazil
(3.5x2.5x4 cm)



Malachite
Milpillas Mine,
Cuitaca, Mun. de Santa Cruz,
Sonora, Mexico
(12.5x9.x7.3 cm)

Azurite:

Formula: $Cu_3(CO_3)_2(OH)_2$

System: Monoclinic

Color: Azure blue, light blue...

Luster: Vitreous

Hardness: 3½ - 4

Name: From the ancient Persian lazward, meaning "blue".. The name was changed to azurite in 1824 by Francois Sulpice Beudant.

Malachite:

Formula: $Cu_2(CO_3)(OH)_2$

System: Monoclinic

Color: Bright green,

Hardness: 3½ - 4

Name: Named in antiquity molochitus because it resembled the green color of the leaves. The spelling was changed to malachite sometime before 1661.

Malachite and azurite are closely related minerals. Both are secondary copper minerals frequently found in the oxidized zones of copper bearing ore deposits. Both are copper hydroxyl carbonate with just minor differences in the amounts of copper and the carbonate radical. Both are widely distributed and often occur together in numerous locations. Both have been known from antiquity and have been used for ores of copper, paint pigments and decorative stones. There are numerous striking mineral specimens containing vivid blue azurite and bright green malachite. Azurite is often pseudomorphed to malachite with much sought after specimens showing large azurite crystals partially modified to malachite.

Azurite is typically found as tabular to prismatic crystals of a deep "azure blue" color with lustrous faces. Many of these crystals are very complex so that it is difficult to identify and decipher the Miller indices of the faces. Beautiful specimens are found in many locations, but those from Bisbee, Arizona; Tsumeb, Namibia; and Chessy, France are famous.

Malachite has widely variable habits. Typically it is found as crystalline aggregates or crusts, often banded in appearance. It is also often found as botryoidal clusters of radiating crystals. Single crystals and clusters of distinguishable crystals are uncommon. Many of the thick crusts are so compact that they can be cut and polished into ornamental stones or jewelry.

Like azurite, there are numerous locations that provide lovely pieces, but classic pieces have come from the Russian Urals; Bisbee, Arizona; and the Katanga province in the Democratic Republic of the Congo.

(Photos and minerals - Susan Fisher)

From Mineral Minutes 06/15, via Stoney Statements 06/15, via The Glacial Drifter 06/15

Sagenite Agate

Sagenite Agate, or more accurately, **Sagenitic Agate** is any agate having acicular or needle like mineral or crystal growths. These hair-like filaments are often arranged in fans or sunbursts.

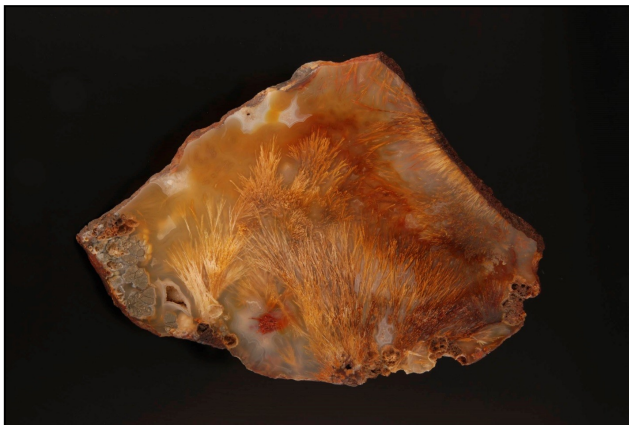
Sagenitic Agates are found all over the world and occur in nodules or veins. The pseudomorphous inclusions get their form mainly from needle shaped zeolites, aragonite, gypsum, geothite and antimonite.



Some Sagenite Agate from Mongolia is called Chop stick Agate.

Agate is a member of the chalcedony family, or a microcrystalline quartz, and it has a hardness of about 7 on the Moh's scale.

Via <http://www.oakrocks.net/sagenite-agate/>



<http://www.agateswithinclusions.com/images/US/cal/nipomo/plumewithsagenite.jpg>

Gorgeous **Sagenite Agate** from Mexico! This beautiful end-cut is polished on one face, natural rough on the back. It is 6 inches by 2.75 inches and .5 inch thick. It could be recut. It kind of looks like a fish shape to me!



<http://www.oakrocks.net/sagenitic-agate-gemstone-polished-stone-mexico-sagenite-rock-4/>

H q q n ø u " I q n f

Pyrite crystals commonly form pyritohedrons (twelve irregular five-sided faces) with striations on the crystal faces.

ø I q n f . " K " h q w p f " your friends. You quickly imagine all the things you are going to do with your newfound wealth. Then reality sets in, and you are embarrassed to discover that you have been tricked by the mineral r { t k v g . " c n u q " m Take heart, you are not the first person (nor the last) to be fooled by pyrite. Even Captain John Smith (of Pocahontas fame) mistakenly sent an entire shipload of pyrite to London in the early 1600s, while exploring the Chickahominy River for a waterway to the Pacific.



J q y " e c p " K " v g n n " v j g " f k h h g t g p e g gold)?

Visual clues

Color: Gold and pyrite both have a brilliant metallic luster, but are different tones of yellow. Gold is golden to silvery yellow, whereas pyrite is a pale to medium brassy yellow that sometimes tarnishes.

Shape: Gold usually occurs in nuggets or very small flakes, sheets, and shapeless grains. Small cubic and octahedral (two pyramids with bases joined) gold crystals are very rare. Pyrite crystals commonly form cubes, octahedrons, or pyritohedrons

(twelve irregular, pentagonal or five-sided faces), frequently with striations (parallel lines) on the crystal faces. Pyrite can also occur as shapeless grains.

Physical tests

Hardness: Scratch the mineral with the blade of a pocket knife. Rub off any loose powder to see if the mineral has been scratched. Gold is much softer than pyrite and can be cut. Pyrite cannot be scratched. (Beware of chalcopyrite looks similar to pyrite, but is softer and can be scratched with a knife. It is a very brassy yellow, often with a bronze or iridescent tarnish.)

Odor: Rub the mineral vigorously with a hard object. Gold has no odor, but pyrite gives off a sulphurous smell (like rotten eggs).

Malleable: Strike the mineral with a steel hammer. Gold will flatten or change shape without breaking. Pyrite will give off sparks.

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gold!

Source: <http://geology.utah.gov> via *MLMS Ghost Sheet*, 7/15

June Field Trip Report

Reported by Mark Nelson, Pasadena Lapidary Society

We had 35 members from the Monrovia, North Orange County, Pasadena and Searchers clubs in participating in the Himalaya Mine dig. The weather was warm and it was good to see that those attending were dressed for the heat and brought shade and lots of fluids! The mine operators had four nice prizes to raffle off to those paid attendees. Everyone that I saw found nice specimens of tourmaline, lepidolite, crystal and other minerals and are ready to return for another trip here in the future!

The Elements of a Dazzling Fourth of July

(Continued from page 3)

The developing world now accounts for most of global copper consumption growth. China accounts for about 40% of global consumption, up from only about 20% in 2005.

The USGS recently estimated that the Earth still contains enough copper to support the projected growth in demand beyond 2050, given current technology and economics. Recycling will be an important source of future copper supplies.

Green Fireworks and Barium \hat{o} Barium nitrate and chlorate produce bright green fireworks.

Barium is a metallic element that is not found in nature in its native form. It occurs principally as the mineral barite (barium sulfate), and its dominant use is in oil well drilling fluids. Barite is also used in making r c k p v u . " r n c u v k e . " c p f " t w d d g t 0 " [q w t mudflaps might contain barite. Ultrapure barite is used as a contrast medium in medical x-rays.

The United States imports about 75 percent of the barite it uses, and more than 85 percent of those imports come from China. The world is estimated to contain 2 billion metric tons of barite; of that total, the United States has an estimated 300 million metric tons.

Barium is geologically abundant, but future supplies may be disrupted in the short term by social, environmental, political and economic factors resulting from heavy reliance on limited sources.

Golden Sparks and Iron \hat{o} Iron filings produce the golden sparks that shower out of a main fireworks explosion. Iron is one of the most c d w p f c p v " g n g o g p v u " q p " G c t v j . " d w v " k crust in native form (Fe). It is found only in ores, principally hematite (Fe₂O₃) and magnetite (Fe₃O₄). By definition, steel is iron with a small amount of carbon. Heat and carbon are used to remove oxygen from iron ore to produce metallic iron required to make steel.

Thousands of products are made of steel. In some applications no other materials are suitable, such as steel framing for large buildings, because

of strength requirements. Iron and steel are central to supporting industrial economies worldwide.

U.S. resources are estimated to be about 27 billion tons of iron contained within 110 billion tons of iron ore. World resources are estimated to exceed 230 billion tons of iron contained within greater than 800 billion tons of crude ore.

Bright Flashes and Aluminum
Bright flashes and loud bangs in fireworks come from aluminum powder. Aluminum is the second most comparatively new industrial metal that has been produced in commercial quantities for just over 100 years.

Other metal except iron, and it is important in virtually all segments of the world economy.

Some of the many uses for aluminum are in transportation (automobiles, airplanes, trucks, railcars, marine vessels, etc.), packaging (cans, foil, etc.), construction (windows, doors, siding, etc.), consumer durables (appliances, cooking utensils, etc.), electrical transmission lines, machinery, and many other applications.

Aluminum recovery from scrap (recycling) has become an important component of the aluminum industry.

Other firework facts
Yellow fireworks result when sodium nitrate burns. The largest deposits of natural sodium nitrate are found in sedimentary rocks in the Atacama Desert of South America. Sodium nitrate is also used to produce fertilizer.

Other firework colors can be made by mixing elements; strontium and sodium produce brilliant orange; titanium, zirconium, and magnesium alloys make silvery white; copper and strontium make lavender.

Minerals that add color to fireworks and make the July 4 festive also benefit us in our everyday lives.

From USGS website, 7/3/14 via The Tumbler, 7/15

Upcoming CFMS Gem Shows

- Aug 7-9 NIPOMO, CA.** Orcutt Mineral Society, Santa Maria Nipomo High School, 525 North Thompson Avenue
Hours: Fri & Sat 10 - 5; Sun 10 - 4
Website: www.omsinc.org
- Sept 26 - 27 DOWNEY, CA.** Delvers Gem & Mineral Society
Elks Lodge, 11233 Woodruff Avenue
Hours: Sat 9 - 5; Sun 9 - 4
- Sept 30 - Oct 4 YUCCA VALLEY, CA.** Hi-Desert Rockhounds
Sportsman's Club of Joshua Tree
Hours: 9 - 6 daily
Website: www.jtsportsmansclub.com/gem.html
- Oct 3-4 BORON, CA.** Mojave Mineralogical Society
Boron Park, 12000 Boron Avenue
Hours: 9 - 4 daily
- Oct 3-4 VISTA, CA.** Vista Gem & Mineral Society
Antique Gas & Steam Engine Museum
2040 North Santa Fe Avenue
Hours: Sat 10 - 5; Sun 10 - 4
Website: www.vistarocks.org
- Oct 10-11 TRONA, CA.** Searles Lake Gem & Mineral Society
SLG&MS Show Building, 13337 Main Street
Hours: Sat 7 - 5; Sun 7 - 4
Website: www1.jwvisp.com/tronagemclub [Show Pages](#)
- Oct 11 FALLBROOK, CA.** Fallbrook Gem & Mineral Facility
123 West Alvarado Street
Hours: 9 - 4
Website: www.fgms.org
- Oct 17 WEST HILLS, CA.** Woodland Hills Rock Chippers
First United Methodist Church, 22700 Sherman Way
Hours: 10 - 5
Website: www.rockchippers.org ---- [Show Page](#)

WGMS MEETING LOCATION!
Whittier Community Center
7630 Washington Ave. Whittier



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