Bulletin of the Mineralogical Society of Southern California

Volume 97 Number 4 –April, 2024

The 1,024th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

A ZOOM Meeting

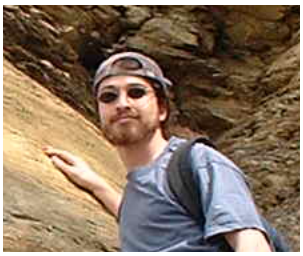
April 12, 2024 at 7:30 P.M.

Program: **"The White Rock Quarry, Clay Center, Ottawa County, Ohio"**
Presented by **Christopher Stefano**

In this Issue:

Remember: If you change your email or street address, you must let the MSSC Editor and Membership Chair know or we cannot guarantee receipt of future Bulletins

Program: "The White Rock Quarry, Clay Center, Ottawa County, Ohio"
Presented by Christopher Stefano.



This talk will discuss the geology, history, and fine mineral specimens of one of Ohio's oldest and most famous localities. Known for its "root beer" brown fluorite, as well as fine sphalerite and celestine specimens, Clay Center has been producing specimens since the Victorian era. The talk summarizes the article by Chris Stefano and Jamison Brizendine published in the Mineralogical Record in 2020.

Dr. Chris Stefano has had a lifelong passion for geosciences. He completed his bachelor's degree in geology at Kent State University in 2004 and was then admitted to the Ph.D. program at the University of Michigan where he studied the role of water in basaltic eruptions in the Yellowstone Hotspot in Washington, Oregon, Idaho, and Wyoming. By the time he graduated in 2010, Chris had amassed a large mineral collection and was an active mineral dealer. He was hired in 2011 to carry out an inventory and assessment of the University of Michigan's mineral collection, including a discussion of the history of the collection, which was published in Rocks and Minerals magazine in 2013. Chris became the Associate Curator of Michigan Tech's A. E. Seaman Mineral Museum later in 2013. During that time, he completed several publications on various topics in specimen mineralogy and petrology, as well as oversaw several large acquisitions to the collections; including the Michigan Mineral Alliance, under which the University of Michigan collection has been added to the A. E. Seaman Mineral Museum's holdings. In 2019, he joined the staff of The Mineralogical Record as an editor and has published many articles dealing with the American Midwest and other topics. Many more are on the way. His interests are very broad, spanning geochemistry, petrology, mineralogy, and the history of science. He is particularly interested in the minerals of the American Midwest and Arkansas' Magnet Cove district, and has significant field experience in these areas. Chris's other hobbies include cooking and board games.

How to Join our ZOOM Meetings

MSSC members are automatically included in the invite list each month.

For non MSSC Members who want to join this meeting. You must respond to our Programs chair, Carolyn Seitz at programs@mineralsocal.org no later than the Thursday prior to the next scheduled meeting. Please include "*current month* ZOOM Meeting" in the subject line of your response. This response date will allow time for us to send you the information needed to participate in the ZOOM meeting and also will allow time to get everything organized.

****

From the Editor: Linda Elsnau.

Well, tax day is almost upon us again! Hope you're done and you aren't waiting to the last minute. Looks like another interesting meeting is planned for our enjoyment this month. We all need to take time to thank our wonderful team of officers for their hard work keeping our group going so well.

Thank you to each and every one of you.

****

From Our President, Angie Guzman

As we head into April 2024, here are a few things to consider in the coming months.

MSSC's Picnic and Silent Auction in August: Our Picnic and Silent Auction is a fabulous day for families and friends to get together, enjoy old and start new friendships, browse, and bid on goodies up for auction during the auction and eat great food! It's a relaxing time to tell others about your favorite minerals and your funniest stories of collecting. There will be specimen displays, raffles and lots, lots

more. So, ***"Save the Date"***: ***August 24th***, *Technology Park (Caltech campus).* Watch the Bulletin and/or MSSC's website www.mineralsocal.org for details. *You won't want to miss it!*

MSSC Officer/Director Nominations and Elections: This is our annual election with nominations on October 11th and November 8th and the actual elections November 8th. If you would like to participate in efforts to keep MSSC a viable mineral society, volunteer for a position as an officer or director. Many of your officers and directors have been associated in leadership roles for several years and it is time to pass the baton to you! Please contact me directly if you're willing to volunteer.

Oh, there is another election in November, more of the national type. It's important, too. That vote will be 3 days ahead of MSSC's. **November 5th is the General Election**. If you haven't already done so, please register to vote now. Cast your vote on November 5th. Your vote counts!

Stay in touch! Our great monthly newsletter, the Bulletin, is posted on-line and our website has lots of information about upcoming meetings, field trips (past reports and upcoming outings), membership information, shows and lots more. Don't be shy, search Mineralogical Society of Southern California or just type www.mineralsocal.org and there we are!

Meetings: Do you have a friend you'd like to invite to our ZOOM meetings? *Guests are always welcome!* Just email treasurer@mineralsocal.org and ask to have your guest put on the invite list; just provide the guest's email address and that's it! See you, and your guest, at the next meeting on Friday, April12, 2024.

A layperson's brief look into ANDESITE

As just about every mineralogy textbook will tell you (at least the few I've looked at), andesite, rhyolite and dacite, which are volcanic equivalents of plutonic or intrusive rocks (like granite, tonalite and granodiorite) are silicic with less than 20% quartz.

Let's look at andesite. It is extrusive; that is, while deep in the magma, the crystals cool very slowly (larger crystals). However, on their way up during an eruption, they are forcefully ejected and then cool very rapidly (fine-grained matrix). These are called porphyritic, fine grained with "larger" crystals of plagioclase, biotite, or other amphibole (prism or needlelike crystals). Plagioclase has 90˚ angles that can be seen, especially with a hand lens. Andesites have at least 65% plagioclase and over 52% silica with the dark amphibole completing the balance. Andesites are named according to their dark mineral. In rare instances, the groundmass, or matrix, is completely glassy.

Andesite gets its name for volcanic rock in the Andes Mountains. It is grey or bluish gray in color and is compact with large crystals (porphyritic). The silica content is said to be intermediate. Andesite is low in alkali metals. When vesicles (voids created by gas bubbles in solidifying magma) are later filled in, it is said to be amygdaloidal, an irregular mineral habit (external shape).

The viscosity of andesite is slightly greater than smooth peanut butter. It is often explosive, forming tuffs. Andesite lavas are typically from composite volcanoes, not shield volcanoes. For the formation of andesite, a basaltic magma must "fractionally crystallize" certain minerals then remove them from the melt, called crystal settling. Those first removed are olivine and amphiboles which settle out of the magma and the cumulate lies at the base of the crust. Then the melt enriches the silica content of the magma and it gradually develops then eventually becomes andesite. Note: This is an abbreviated description of the lengthy process to arrive at andesite.

This process is commonly associated with volcanic activity and in particular subduction zone environments and convergent plate boundaries. As a result, andesite can be found in the Andes Mountains region in that western range in South America. Other *Pacific Ring of Fire* locations are in the United States, the Cascade Range in the western states of Washington, Oregon and northern California, well-known locations for volcanic andesite and dacitic lava flows. Andesitic magma flows and eruptions are known to occur in Java and Indonesia, Japan (i.e., Mt Fuji), Central America (Guatemala, Nicaragua and Costa Rica), New Zealand (North Island's Taupo

Volcanic Zone and in the South Island) and the Philippines (Mt Mayon). Generally speaking, andesites erupt from lave dome, caldera and/or strata volcanoes.

Andesite is used as a construction material, both interior and exterior, it is very durable (Mohs hardness of 7) and has a great resistance to weathering.

It can be crushed and used in pavement and road surface construction. Another use for andesite is as monuments and sculptures, tombstones and cemetery markers, countertops and tiles, decorative landscaping, aquariums, terrariums, water fountains and several other uses. Typically, andesite can be used as beads or cabochons in jewelry.

This is a magnified photo of three examples of andesite. From left, the first two are typical specimens (except for upper left yellow lamp reflection) with dark amphibole needles, white plagioclase on fine-grained matrix. The andesite specimen on the right has a fine-grained matrix, less dark amphibole evident but plagioclase white crystals visible. (*photo: YouTube @seanwillsey. Willsey, a Geology Professor in Southern Idaho and granted me permission to use this captured photo).*

Last Words

- Membership Meeting Friday, April 12th at 7:30pm via ZOOM;
- MSSC Board Meeting Sunday, April 14th at 1pm via ZOOM and
- Taxes are due April 15th !!

END

****

MINUTES of the March 8, 2024 ZOOM Meeting

Welcome

President Angela Guzman called the meeting to order at 7:31 pm, she welcomed members and guests, to the 1,023rd membership meeting of the Mineralogical Society of Southern California it is our 46th ZOOM meeting. There were 24 members and guests present. Guests included Angie's sister Maggie from Oregon, Troy Schmidt (Ventura Gem and Mineral Society), and Dean Wix.

List of Minerals: President Guzman stated that as of March 2024, according to the International Mineralogical Association (IMA) List of Minerals, there are 6,031 valid mineral species. This number is published on the IMA website, under the tab, Commission on New Minerals Nomenclature and Classification (CNMNC).

New Mineral Species: According to the IMA CNMNC Newsletter 77, published February 6, 2024, there are 5 of the new approved species involving MSSC members and friends. For our purposes, the list shows species, CNMNC designation, location where discovered/found, chemical formula and the MSSC association. We thank Dr Tony Kampf, Ph.D., Dr George Rossman, Ph.D., Chi Ma (Director GPS Caltech) and mineral discoverer extraordinaire, Joe Marty. We applaud you all!

****Rotherkopfite* (Rkp)** was found near Gerolstein, Eifel volcanic fields in Germany. It is a member of the neptunite group. It has the chemical formula of $KNa_2(Fe_{2.5}^{2+}Ti_{1.5})Fe^{2+}(Si_4O_{12})_2$. MSSC members Drs. Tony Kampf, George Rossman (and Chi Ma, Caltech).

***Chinnerite* (Chin)** was found at Penrice quarry, Australia. It has a chemical formula of $[Mg(H_2O)_6]Na(H_2O)_2Al_3(PO_4)_2F_6$. The species is chemically and structurally related to penriceite. MSSC member Dr. Tony Kampf.

***Désorite* (Dso)** was found at Schöne Aussicht mine in Germany. It is a new structure type with the chemical formula of $Pb_2(Fe_6^{3+}Zn)O_2(PO_4)_4(OH)_8$. MSSC member Drs. Tony Kampf (and Chi Ma, Caltech).

*** Ferriphoxite (Fphx)** is from Rowley mine, Maricopa Co., Arizona, USA; same structure units as carboferriphoxite (see below). Chemical formula $[(NH_4)_2K(H_2O)][Fe^{3+}(HPO_4)_2(C_2O_4)]$. MSSC member Drs. Tony Kampf (Chi Ma, Caltech and Joe Marty).

*** Carboferripoxite (Cfphx)** is also from the Rowley mine in Arizona at the same 125-foot level). It's chemical formula is $[(NH_4)_2K(H_2CO_3)][Fe^{3+}(HPO_4)(H_2PO_4(C_2O_4)]$. MSSC member Drs. Tony Kampf (Chi Ma, Caltech and Joe Marty).

***** "Type material is deposited in the collection of the Natural History Museum of LA County…."

Dr Kampf has identified and/or characterized over 300 mineral species – more than any other person on the planet! His number as of this meeting is 370.

President's Message - Announcements

1. CFMS/AFMS Gem & Mineral Show and Convention: May 24-26 in Ventura. Please go to www.2024cfms-afms.com for more information. CFMS is asking for demonstrators for the show. These are more along the lines of lapidary skills. If you are interested, please contact Demo Chair: Dick White Phone: (805) 404-7197 or Email: rich_phil@msn.com

   Dr. George Rossman was selected to receive a CFMS Honorary Award. Dr. Rossman will select a school and student to receive a $2000 scholarship for Fall 2024. Dr. Rossman will be invited to the awards banquet at the CFMS Convention, May 25, 2024.
2. Call for donations for the Silent Auction for our annual picnic. Please e-mail Rudy at education@mineralsocal.org The Picnic will be in August at Caltech's Technology Park.

Business:

Minutes to approve**:** February 9, 2024, membership meeting minutes as published in the March 2024 Bulletin. The president asked for a motion to approve these minutes. A motion to approve was made by Carolyn S. and seconded by Marek C. She asked for any additions, corrections or discussion, hearing none she called for a vote to approve the motion. The motion to approve the stated membership minutes carried on a voice vote.

Announcements and Reports

1. Field Trips (Marek C): MTNM's Cady Mountains on March 9. They will collect thulite and epidote, and the Old Dominion Mine for chrysocolla and malachite and shattuckite.
2. Trip to the Hauser Geode Beds with AFMS and CFMS on April 19-21. See website for Information. Angie introduced MSSC member and current CFMS President Marcia Goetz, she talked about the CFMS Award that Dr. George won.
3. Membership Report (Carolyn S): Current number of members is unknown; the new roster was sent via email to all members.
4. Programs/Education (Rudy L with Simona C): SMArt Night, Hamilton Elementary School will have a student science fair, March 22 from 6-8pm. They have invited the community to present a science activity/exhibit. Rudy will take a Dino-Lite to show micro minerals, they will distribute flyers and mineral cut-outs.

Program: Carolyn S. introduced Dr. Eleanor Robbins, Ph.D., who will present Food, Shelter, Water: The Microbiology of Mineralogy.

Dr. Robbins began by talking about the Bottom Line, an idea from Terry Beveridge (University of Guelph). He found that bacteria can precipitate metals in their cell membranes.

Why we care: We have more bacteria (38 trillion) in our bodies than cells (32 trillion)! We are human/bacteria constructs. Bacteria are found everywhere on Earth from air, water, soil, ice, and below the Earth's surface.

"Bacteria are catalysts of aqueous chemical reactions."-Thompson and Ferris. Catalysts speed up or slow down reactions without being consumed in the process."-K.A.C. Elliott, 1941

“But bacteria aren't perfect catalysts. We need them to get stuck into the mineral to figure out their role in forming/starting/nucleating the creation of a mineral.”- E.I. Robbins

She discussed the roles of Bacteria in forming minerals: gathering materials, concentrating materials, assembling materials, templates, preform, nucleation sites, quickening, seed crystals.

Bacteria need water. When there is no water, they lyse (fall apart) or form spores. Earth based organisms like bacteria need carbon. They get carbon from carbon dioxide in the water or air if they are autotrophs (like plants) or from organic matter if they are heterotrophs (like us).

In 2008 a study of water from coal mines in Pennsylvania was done by Cravotta. He found most of the elements on the periodic table in the water. Bacteria interacted with almost all of the elements present. The nutrients bacteria need are C,H,N,O,P,S,K,Mg,Ca, and Fe (macronutrients), and Cu,Mn,Zn,B,CI,Ni,Mo,Na,and Co (micronutrients). They ingest nutrients via four different cellular mechanisms: coupled ion transport, ion pumps, passive diffusion through channels, and diffusion across the membrane.

The most important observation I ever made to think about bacteria and mineralogy: Norrie’s revelation about the iron oxide she observed in a creek near her house in Washington D.C. She first tells the story abiotically (without life): groundwater carries reduced iron into the creek, the oxygenated water in the creek oxidizes the iron in the water to a red iron precipitate. She realized it was actually happening with bacteria biotically (with life). In the biotic version: groundwater carries reduced iron, which was formed by anaerobic bacteria, into the creek, using the oxygenated water in the creek iron oxide bacteria oxidizes the iron in the water to a red iron precipitate.

She had kids collect the red flocs (iron oxide bacteria sheaths) with eyedroppers. Observed under a microscope they saw hollow straws; the abandoned sheaths of Leptothrix ochracea (Iron Bacteria). The sheaths are coated with Ferrihydrite (hydrated iron oxide, $Fe_2,0_3.9H_20$). When the bacteria oxidize the iron in the water, they produce energy (22,000 cal/mol).

She said “I take this to mean that aerobic bacteria precipitate simple metastable hydrated minerals. These get buried and become hydroxide minerals. With increasing temperatures and/or salinity, structured minerals are created that have no hydroxide nor water.”

$$Fe_20_3.9H_20 \rightarrow FeO(OH) \rightarrow Fe_20_3$$

Ferrihydrite goethite hematite

While studying Precambrian banded iron formations composed of red hematite layers, black magnetite layers, and white chert she found hollow hematite rods. Tsu Ming Han at the Empire Mine in Michigan found magnetite overgrown on hollow hematite rods.

Now on to gold precipitation by bacteria: John Watterson's Alaska Work at USGS (1984). He put a gold nugget under a SEM and found rod shapes in the nugget that he labeled “bacterioform.”

In another experiment he put bacteria in gold chloride solution and found the gold precipitated out onto the bacteria.

Next, she talked about silica; the best lab for silica is Coober Pedy, Australia (Opal Mining). A friend told her about an opalized dead cat, she concluded that bacteria were involved in the process of using the carbon from organic tissues to form opal. After she visited the Blue Lagoon in Iceland and observed a white silica sludge precipitating on the rocks surrounding the lagoon Norrie wondered if bacteria were involved. Years later a fellow geologist brought her a sample. Underneath the microscope the bacterioform rods were obvious. Ikeda in 2021 showed that some bacteria precipitate silica on their membranes and internally. So, Dr. Robbins went looking for opal thin sections that showed evidence of bacteria. She found bacterioform shapes in a thin section of chert from Piedra de Lumbre Chert (Camp Pendleton).

Next up Magnetite [$Fe^{2+}Fe^{3+}0_4$]: microbial magnetite is found everywhere having water and a redox boundary. Vibrio bacteria precipitate magnetosomes which give the ocean remnant magnetization. You can collect them by placing magnets near a water sample, they are attracted to the N pole of the magnet and will from a bacterial “pill” which you can collect. How does sediment magnetite get macroscopic? The nanocrystals must

recrystallize to form a mineral. She asked ChatGPT*: What forces cause recrystallization? and found they were: surface diffusion, capillary forces, epitaxy, and cold welding.

Pyrite: look for the redox boundary. In San Diego County their water is supplied by the Colorado river, and it contains a lot of sulfur. Norrie showed the clogged popup on her sink drain. Upon observation you see the black sulfur reducing bacteria and the white sulfur oxidizing bacteria. The bacteria get the carbon they need when you spit in the sink.

She learned about pyrite formation while working in Boston Peak Fen, Rocky Mts., Colorado. How anaerobic bacteria create Pyrite: the living bacteria create H_2S, other bacteria produce FeS and finally if left for a long time FeS_2 Pyrite is formed. In organic matter (plant tissues) microscopic pyrite framboids grow to macroscopic euhedral pyrite. Liu, 2022 found that "cementation and rearrangement, regulated by surface energy, grains are physically rotated and repositioned into euhedral structures." At Boston Peak Fen in Colorado the pyrite looks microbial in organic tissues. Pyrite octahedrons are scattered like bacteria through organic matter, some of the bacteria are coated black. She asked do they entomb themselves to become octahedrons. Are framboids colonies of entombed bacteria?

Copper [Cu]: She learned about Copper in the White Pine Mine, Michigan; 2200 ft. underground.

The roof of the mine was dripping petroleum and water onto copper forming biofilms which Norrie collected on slides. Under the SEM she could see long and short rod bacteria were making up atacamite and paratacamite. Malachite $Cu_2(CO_3)(OH)_2$ is laminated and botryoidal, both possible due to cyanobacteria? Malachite is typically found sitting on sulfides. She asked if there is organic carbon? So far, there is no evidence of any radiocarbon dating done on malachite. Her hypothesis: A microbial connection to Malachite $Cu_2CO_3(OH)_2$. She dissolved crushed malachite in acid, rinsed with water and collected the residue. Looking at the residue under a microscope potential cyanobacteria were found (these precipitate carbonate and are tolerant of H_2S). Next where are Cu deposits around here so we can go play? You need an area with copper, sulfate and carbonate. You also need water and sunlight and sulfur tolerant cyanobacteria. In San Diego county, where Norrie lives, they have everything except a copper source.

Manganese: Manganese stains toilets in Appalachia (i.e., easy to get Manganese studies funded)

If there is Manganese in the watershed it will precipitate on rocks in creeks. She collected biofilms from the water on microscope slides. Testing the residue on the slides for Manganese they found romanechite, $BaMn^{2+}Mn^{4+}{}_8\ 0_{16}\ (OH)_4$. The slide had holes in the biofilm where she observed the bacterium Leptothrix discophora. Even though Mn is a great energy supply for bacteria there is no evidence of the same.; other theories are Mn for protection or detoxification.

Desert Varnish: Chemistry or bacteria? Look at the `Mn minerals that contain water for bacteria and study the Mn minerals that have lost water to find the carbon source.

Manganese Dendrites are Beautiful: they appear to show "mother cells" and "swarm cells." Some dendrites show an iron phase that precedes the manganese phase. Iron is used for energy and what the bacteria use the latter formed manganese for is unknown.

She concluded by saying she calls Earth "The Planet of the Living Catalysts"

Thank you Dr. Norrie Robbins for a fascinating journey. A short question and answer period followed.

*she cautioned that when you use the "free" version of ChatGPT it makes up parts of the scientific citations, so beware.

Last Words:

(a) Next Membership meeting Friday, April 12, 2024

(b) Daylight Savings begins March 10, Sunday at 2am

Adjournment: President Guzman adjourned the meeting at 9:05pm.

Respectfully submitted, Leslie Ogg, MSSC Secretary

Field Trip:

MSSC does not currently have a field trip scheduled for April. However, there is a CFMS field trip to the Hauser Geode Beds and to Palos Verdes, CA scheduled for April 19 -21. 2024. There is more information available on the MSSC website at https://mineralsocal.org/fieldtrip-information-reports/cfms-fieldtrip-hauser-geode-beds-palo-verde-april-19-21-2024/ For more information, you can contact Jim Barton if attending at (916) 847-7321 or geologist1@surewest.net

****

List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	**ZOOM** May 10, 2024	Erin Delventhal: Quartz of New Mexico
	ZOOM June 14, 2024	Les Presmyk – TBA likely on Mexico minerals
	ZOOM July 12, 2024	TBA
	ZOOM August 9, 2024	TBA
Board Meeting	**ZOOM** April 14, 2024	ZOOM at 1:00 PM
MSSC Picnic	**August 24, 2024**	Technology Park, Caltec Campus Watch for more details
Field Trip	**TBA**	

Note: Dates and programs shown above are subject to change. Check your bulletins to confirm final information each month.

The Ride Share Listing is being temporarily discontinued until such time as MSSC starts holding in-person meetings again.

****

OTHER FREE THINGS TO DO...by Ann Meister

. The **Watson Lecture** is on Wednesday, **April 24** at 7:30 PM at Caltech's Beckman Auditorium. The speaker is Zhongwen Zhan, Professor of geophysics, Caltech. The title is **"Voices of the Ice: A Seismic Odyssey to the South Pole."** Forecasting global sea level rise hinges on understanding how the Antarctic ice sheet behaves at its base, a region that is challenging to study because of the thick ice layers above. In December 2022, Zhongwen Zhan (PhD '13), embarked on a monthlong research expedition to Antarctica to explore an innovative method for investigating this crucial area. In this talk, Zhan will share the story of his transformative journey, detailing the scientific discoveries and the profound personal experiences that reshaped his perspective not just on geophysics but on life as a scientist. *Find more past Watson Lectures on* Caltech's YouTube channel.

The **UCLA Meteorite Gallery** is open. Check the website for hours. The monthly lecture will be presented via Zoom on Sunday, **April 21** at 2:30 PM. The speaker and the title are not yet available. To join via Zoom, click here. If clicking the link does not work, please open your zoom app and enter the meeting ID: 983 0252 9304. Then click "join meeting in progress" (there is no password). If you need further instructions on how to join our meeting via Zoom, click here or contact Kevin McKeegan at mckeegan@epss.ucla.edu. This meeting is only accessible through the desktop and mobile client. Visit the website and check on events and videos and other neat things about meteorites, go to https://meteorites.ucla.edu

The **Von Kármán Lecture** is on Thursday, **April ??** at 5:00 PM. Available live on YouTube at NASA Jet Propulsion Laboratory - YouTube. Date, speaker, and topic were not available at time of publication. Check website for information and past lectures Lecture Series (nasa.gov).

The Culver City Rock and Mineral Club will present master goldsmith, author, and educator Charles Lewton-Brain for a free workshop titled "Gem Identification on a Shoestring" on Monday, May 6, 2024, from 7:00 pm to 9:00 pm at the Veterans Memorial Auditorium in Culver City, CA 90230. For more information, please visit https://culvercityrocks.org/.

****

Calendar of Events:

Only S. CA shows are listed here. Other CFMS Club shows can be found at: http://www.cfmsinc.org/

2024

April 6-7, 2024 – Vista, CA
Vista Gem and Mineral Society
Antique Gas and Steam Engine Museum, 2040 N. Santa Fe Ave., Vista, CA 92083
Hours: Sat 10 AM – 5 PM, Sun 10 AM – 4 PM
Website: https://vistarocks.org/

April 13, 2024 – Lake Elsinore, CA
Lake Elsinore Gem & Mineral Society
32097 Corydon Road, Lake Elsinore, CA 92530
Hours: Saturday 10 AM – 4 PM
Contact: (909) 208-6956, berylman50@aol.com

April 20-21, 2024 – Thousand Oaks, CA
Conejo Gem & Mineral Club
Borchard Park, 190 N. Reino Road,
Thousand Oaks, CA
Hours: Sat 10 AM – 5 PM, Sun 10 AM – 4 PM
FREE Admission and FREE Parking
Website: https://cgamc.org/home

April 27 – 28, 2024 – Anaheim, CA
Searchers Gem and Mineral Society
Brookhurst Community Center, 2271 W. Crescent Ave., Anaheim, CA 92801
Hours: Saturday 10 AM – 5 PM, Sunday 10 AM – 4:30 PM
Website: https://www.searchersrocks.org

May 3-4, 2024 – Yucaipa, CA
Yucaipa Valley Gem & Mineral Society
Show will be held on Yucaipa Blvd near Adams Street, Yucaipa CA 92399
Hours: Friday 5 PM – 10 PM, Saturday noon – 9 PM
Website: https://www.yvgms.org/

May 4-5, 2024 – Lancaster
Antelope Valley Gem & Mineral Club
2551 W Ave. H, Lancaster, CA 93536
Hours: Sat 10 AM – 5 PM, Sun 10 AM – 4 PM

Website: https://avgem.weebly.com

May 24-26,2024 – Ventura, CA
Ventura Gem & Mineral Society and The American Federation of Mineralogical Societies
AFMS/CFMS GEM AND MINERAL SHOW AND CONVENTION
Ventura County Fairgrounds, 10 W. Harbor Blvd., Ventura, CA 93001
Hours: Friday and Saturday 10 AM – 5 PM, Sunday 10 AM – 4 PM
Website: http://www.2024cfms-afms.com , http://www.vgms.org

June 8-9, 2024 – Escondido, CA
Palomar Gem and Mineral Club
California Center for the Arts – at the Conference Center, 340 North Escondido Blvd., Escondido, 92025
Hours: Sat 10AM – 5 PM, Sun 10AM – 4 PM
Admission: $5.00, Children under 12 Free
Website: http://palomargem.org

June 29-30, 2024 – Culver City, CA
Culver City Rock & Mineral Club
Veteran's Memorial Auditorium, 4117 Overland Ave., Culver City, CA 90230
Hours: Saturday 10 AM – 6 PM, Sunday 10 AM – 5 PM
2024 Fiesta of Gems –
Website: http://culvercityrocks.org

With Knowledge Comes Appreciation

****

MSSC Advertisement Policy:
Mineral-related ads are allowable in the MSSC bulletin. Below is the price per month

Business Card	$5.00
1/3 page	$10.00
1/2 page	$20.00
Full Page	$35.00

	In addition, any advertiser who purchases 12 months of space in advance will receive a discount of 12 months for the price of 10 months. The copy for the ads should be mailed to the editor at bulletin@mineralsocal.org and the payment should be sent to the **MSSC Treasurer 13781 Alderwood Lane, #22-J, Seal Beach, CA 90740**	

****

Mineral Vocabulary

(*Descriptions are as defined in Manual of Mineralogy, 15th edition, by: Dana & Hurlbut; published in 1941)*

irocks.com photo

Reniform

When radiating individual crystal groups terminate in rounded masses resembling a kidney in shape, it's reniform!

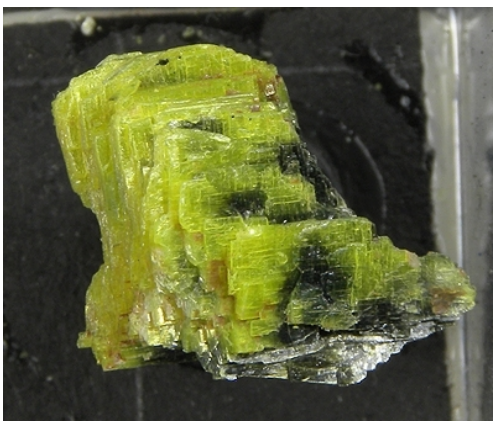
Hematite : Fe_2O_3
Locality; Florence Mine, Egremont, West Cumberland Iron Field, North and Western Region (Cumberland), Cumbria, England, UK
10.6 x 7.4 x 7.3 cm

:irocks.com photo

Mammillary

Large, rounded masses resembling mammae formed by radiating individual crystals.

Malachite :
$Cu_2(CO_3)(OH)_2$
Locality: Yunnan Province, China
8.3 x 5.5 x 5.4 cm



irocks.com photo

Foliated

When a mineral separates easily into plates or leaves.

Autunite :
$Ca(UO_2)_2(PO_4)_2 \cdot 11H_2O$
Locality: Daybreak Mine (Dahl lease), Mount Kit Carson, Spokane Co., Washington, USA
1.3 x 1.2 x 0.6 cm.

2024 MSSC Officers:

OFFICERS		
President	Angie Guzman	*president@mineralsocal.org*
Vice President	Vacant: to be filled at Jan Board Meeting	*vicepresident@mineralsocal.org*
Secretary	Leslie Ogg	*secretary@mineralsocal.org*
Treasurer	Carolyn Seitz	*treasurer@mineralsocal.org*
CFMS Director	Angie Guzman	
Past President	George Rossman	
DIRECTORS		
2023--2024	Simona Cianciulli	
2023--2024	David Lesperance	
2023--2024	Pat Stevens	
2024-2025	Pat Caplette	
2024-2025	Ahni Dodge	
COMMITTEE CHAIRS		
Bulletin Editor	Linda Elsnau	*bulletin@mineralsocal.org*
Field Trip	Marek Chorazewicz	
Historian	Ann Meister	
Hospitality	Laura Davis	
Membership	Carolyn Seitz	*membership@mineralsocal.org*
Micro Mount Conf. Chair	Al Wilkins	
Program and Education	Rudy Lopez	*programs@mineralsocal.org*
Speaker Bureau	Carolyn Seitz	*treasurer@mineralsocal.org*
Webmaster	Leslie Ogg	*webmaster@mineralsocal.org*

About the Mineralogical Society of Southern California

Organized in 1931, the Mineralogical Society of Southern California, Inc. is the oldest mineralogical society in the western United States. The MSSC is a member of the California Federation of Mineralogical Societies, and is dedicated to the dissemination of general knowledge of the mineralogical and related earth sciences through the study of mineral specimens. We are a scientific non-profit organization that actively supports those endeavors through public outreach, field study and related programs. The Bulletin of the Mineralogical Society of Southern California is the official publication of the Mineralogical Society of Southern California, Inc.

The MSSC meetings are usually held the second Friday of each month, January, February and August excepted, at 7:30 p.m. in Building E, Room 220, Pasadena City College, 1570 E Colorado Boulevard, Pasadena, California. However, due to current health considerations, MSSC meetings are held via ZOOM conferencing until further notice**.** The annual Installation Banquet is held in January, and the annual Picnic and Swap Meeting is held in August Due to PCC holidays, meetings may vary. Check the Society website for details.

The Society also sponsors the annual Pacific Micro mount Symposium held at the Fallbrook Mineral Museum during the last weekend of January.

Annual Membership dues for the MSSC are $30.00 for an individual membership, $40.00 for a family membership. Bulletins are delivered by email, there is an additional annual fee if you prefer paper bulletins mailed to your address. The Society's contact information:

Mineralogical Society of Southern California
13781 Alderwood Lane, #22-J, Seal Beach, CA 90740
E-mail: *treasurer@mineralsocal.org*
Website: ***www.mineralsocal.org*** **The Mineralogical Society of California, Inc.**

MSSC Bulletin Editor

3630 Encinal Ave.

Glendale, CA 91214-2415

To:

With Knowledge Comes Appreciation

Your MSSC Bulletin Is Here!