Bulletin of the Mineralogical Society of Southern California

Volume 91 Number 4 - April, 2018

The 955th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

April, 13th, 2018 at 7:30 P.M.

Pasadena City College
Geology Department, E-Building, Room 220
1570 E Colorado Blvd., Pasadena

Program: **Opal, Presented by Pete Goetz**

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

About the Program: Opal in General: location, mining techniques, types of Opal, a little on how to value an Opal, and a question period. Presented by Pete Goetz

Pete graduated from California State University San Diego, (now, San Diego State University) with a Degree in Physical Geography and a minor in Geology. He has also been President of The American Opal Society for about 12 years.

Pete will bring some Opal samples along to show us.

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From the Editor:

April is a busy month for "special" days, April Fools Day, Easter, Tax Day and Earth Day! May each and every one be just what you hope it to be. Oops, I'd better get our taxes done soon!

I hope you are enjoying our President's *Minerals A to Z* articles each month as much as I do. Thank you George for such interesting pieces. I also want to thank Rudy and Ann for their contributions for the Bulletin as well. The next obvious statement is…I welcome articles from any member for the bulletin. If you provide photos with your article that you did not take yourself, be sure to include permission from the photographer for the use of the pics in our publication. Anything you feel would be of interest to our members is welcome. If you need help with your article, let me know. …Linda Elsnau, Editor

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From the President: Interesting Minerals, A to Z. Installment 3, the letter "C": By George Rossman

Calcite

Calcite is calcium carbonate, $CaCO_3$. Calcite, of course, was known in ancient times, but the first known publication using the name "calcite" appears in Johann Carl Freiesleben's 1836 publication: *Magazin für die Oryktographie von Sachsen* where the name "Calcit" appears in section 5.

Huge quantities exist in limestone which is mostly calcite. In 2016, according to the USGS Mineral Commodity Summary, about 17 million tons of quicklime (CaO) were produced in the US through the thermal decomposition of limestone. Quicklime is an important ingredient of concrete.

According to the California Department of Conservation significant calcite is found in 31 of California's counties. Optical quality calcite was formerly mined at the Hilton Deposit in what is now Anza Borrego Desert State Park

Calcite, when pure, is colorless. Think of Iceland spar optical grade calcite.

But, many of us have heard of the limestone quarries on Sky Blue Hill, Crestmore, CA. On Sky Blue Hill, the calcite in the limestone is sky blue (Figure 2). Arthur Eakle stated in 1916 that the sky-blue calcite at Crestmore had been largely quarried away. OK, why is the Crestmore calcite blue? It was investigated by Alice Wiersema (in 1960) and Larry Doyle (in 1961) of the US Atomic Energy Commission who found manganese in the blue calcite, but they could not be certain of the origin of the blue color. Russian scientists, Samoilovich and Andrusenko, in 1967, suggested that the blue calcite contained SO_3 groups that replaced CO_3 and that the SO_3 was formed by ionizing radiation. Last month I discussed how radiation causes blue color in baryte. Can it do the same in calcite?

Figure 1. A 5 cm colorless calcite crystal from Egremont, England

Figure 2. Blue calcite from Crestmore, CA

Figure 3. A 15 cm brown calcite from the Tri-state district

Figure 4. A blue calcite that results from shearing followed by irradiation

Here is an experiment that gives insight into the origin of the sky-blue calcite.

1) Take a colorless cleavage slab of optical grade calcite and irradiate it with gamma rays at a dose level comparable to what it might get in nature. It turns brown. This is like the brown to amber color commonly seen in calcite crystals from the Tri-state area or from the Elmwood, Tennessee, mine (Fig 3). The brown color is a radiation damage color often found in calcite.

Next, take a colorless slab of optical grade calcite and put it in a hydrolytic press and squeeze on it to somewhat crush it and shear it. It still is colorless. Now irradiate the sheared calcite with the same dose that turned the crystal brown. This time, it turns blue (Fig. 4)!

That irradiation produces blue color in calcite has been known for many years. [Sergeev, VM et al. (1974) Blue color of calcite. Doklady Akademii Nauk SSSR 216, 1037-9 (in Russian); Sterzel W, Chorinsky E (1968) Color-center formation in plastically deformed calcite. Z Naturforsch A 23:1052-1058 (in German).] Originally, the calcite was irradiated with X-rays. Now it is more efficient to use gamma rays. Nature does it with gamma rays, largely from the naturally occurring isotope potassium-40. Very little work has been done since the early 1970's on the atomic level origin of color of blue calcite.

Calcite, of course can be other colors. It can be pink from manganese or cobalt content, brown from iron content, and green or pink from rare-earth elements (the calcite favored by fluorescent mineral fans).

All photographs provided by George Rossman

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Minutes of the March 9th, 2018 Meeting

On Friday, March 9, 2018, the **954th Membership Meeting** of the Mineralogical Society of Southern California (MSSC) was called to order at 7:35 p.m. by President George Rossman. Dr. Rossman began by announcing that there are now 5,322 recognized minerals, the last of which is named paddlewheelite, $MgCa_5Cu_2(UO_2)_4(CO_3)_{12}(H_2O)_{33}$. Also, George showed us a diamond with a new mineral discovery. It shows there is water ice trapped (an inclusion) in diamond! The ice-VII's atoms are arranged in a cubic shape and have a different crystalline structure than ice cubes in your freezer. This is the first discovery of water ice found in diamond on Earth. The *Los Angeles Times* published an article this morning (March 9, 2018). George is quoted to remark that the internal pressure inside the diamond is so great that the water ice doesn't move and will not melt, even at room temperature!

Marek Chorazewicz mentioned that there is another high-pressure diamond containing calcium silicate perovskite $CaSiO_3$ that was recently excavated [from Cullinan Mine in South Africa].

Marek was asked to give some details about upcoming field trips. His report:

-- March 24-25, Friends of Mineralogy will have their Mineral Locality Symposium at Palm Desert Campus of CSUSB then go out to Salton Sea Mud pots and Cargo Muchacho Mountains for kaolinite, among other goodies;

-- In mid-April a trip is planned to Ord Mountain for malachite, azurite and actinolite;

-- In May another trip is planned to Blue Bell Mine in Mojave.

Rudy Lopez asked Marek to send out information for people on how to prepare to go into mines: hard hat, head lamps, water, etc. Marek said he would do it or get something out to Linda Elsnau, *Bulletin* Editor.

Dr. Rossman mentioned that some of his students, while walking and hiking in Monrovia found some malachite while other students found corundum in the San Jacintos.

Announcements were reported by Ann Meister:

-- Watson Lecture Series at CalTech March 14th;
-- Von Karman at JPL March 22 and at PCC on March 23rd;
-- UCLA Meteor Gallery will be March 25th.

The 15th Annual Sinkankas Symposium will be held April 14, 2018 in Carlsbad and one of the featured speakers is our own Dr. George Rossman. The symposium will showcase tanzanite and tsavorite. MSSC's Vice President, Renee Kraus, will chair the April MSSC meeting in his absence.

Other announcements: Rudy Lopez, Program Chair.

--The L.A. Nature Fest will be held March 17-18 at the Natural History Museum. Volunteers are still needed for either/both days. Set-up is 8:00 a m on Saturday. The event is open until closing time at 5:00 pm. Specimens are on display and there are hand-outs for the kids.

-- Membership rosters have been mailed and you should have yours by now. If you have not received it, please contact Cheryl Lopez, Membership Chair.

Program

Tonight's speaker has one of the largest, if not the largest, collection of petrified wood in the world. He studies paleobotany, plate tectonics and plant adaptation, survival and extinction. His undergrad work was completed at CSU Fullerton while his grad work was completed at UC Riverside. He has traveled extensively, consults, performs identification and presents to groups like MSSC. We are pleased to welcome Walton Wright back as our guest presenter.

Continental Drift/Plate Tectonics Presented by Walton Wright

How are Continental Drift and plate tectonics related? Continental Drift is a theory based on the thought that the world was made up of a single continent. The theory of plate tectonics states the earth's surface is broken into a number of shifting slabs or plates. Back in the 1950's no one really believed in Continental Drift. There was no mechanism to move continents through the sea floor basalt. In 1968 there was a feature article published in *American Scientist*, "Dynamics of Continental Drift." The article spoke about expanding ocean basins and prior to that, people were talking about shrinkage, creating mountains, a sort of wrinkling of the ocean basins. These were two thoughts up until the 1970's when the theory of plate tectonics, the switching of the magnetic poles and alignment of basalt were discussed.

The oceanic crust is about 170 million years old. How old is continental crust? Well, in western Australia, zircon crystals 4.37 billion years old (shortened to bya: billion years ago) have been found, in the northwest territories of Canada there are 4.01bya rocks and various other areas there are generally 3.6 - 3.8bya. But, why the age difference between the continents and the ocean floor? 80% of continental land is covered by sediments; under the sediments are granites and metamorphics. The granites are a lot less dense than sea floor pillow basalts. The continents are essentially floating on the lithosphere. Continental crust is lighter than oceanic crust and it cannot subduct. [*Secy. Note: Oceanic crust is subducted back into the mantle so "new" material comprises the oceanic crust.*] Continental crust is 16 miles thick while oceanic crust is 5 miles thick.

What drives tectonics? There is the solid core in the earth, and then there is "liquid" core on top of that, it's under very high pressure. Lord Kelvin (1824-1907) said that the whole earth was molten and, he figured that it took some time for the earth to cool. He also talked about evolution, but he didn't put a time frame to his

cooling theory. [*Secy. Note: Lord Kelvin's first estimate of the age of the earth was 100 million years old (myo), later revised downward to 20 myo.*] Even so, there are people today who believe the earth is only a little over 6,000 years old!

So, the crust is the surface of the lithosphere, it is solid. It's sitting on top of the mantle, which includes the athenosphere. Back to the question though, "what is it that drives tectonics?" At the hot mantle-core boundary are spiraling convection currents, rising, cooling, spreading then rising again. In the ocean, as the magma rises, it hits water and expands creating pillow basalts at the bottom of the oceans. Based on this theory, plates move very slowly at the effect of the convection currents.

Another thing we look at is hot spots. An example of hot spot activity is the volcanic Hawaiian Islands and other oceanic hot spots which erode and eventually become sea mounts, as with certain island coral reefs. Hot spots are volcanic areas fed by upwelling mantle. Due to convection currents, as the plate moves, a volcano erupts then eventually creates a caldera. The plate moves again and the process repeats. This is over millions of years, of course. Yellowstone is another hot spot. Looking generally westward, one can see several calderas in the wake of the hot spot activity which has taken place over millions of years. Even as far away as the Nevada/Oregon border at McDermitt Caldera, which is 16.1-15.4 myo, evidence exists of the beginning of the Yellowstone hot spot path.

Walt went on to speak of formations and how glacial striations, for example, indicate how continents could be put (back) together. For instance, look at Africa and South America. And, interestingly, he said that Florida and southern Georgia were actually part of Africa but that during the breakup of supercontinentent Gonwanda, they stayed with North America. Other evidence of plate tectonics includes certain trees not "native" to a particular area left fossil leaves for us; fossils of Lystersaurs, a 250 myo reptile have also been found in unlikely areas (Antarctica, India, South America). He talked about land bridges that were evident during times when the oceans level dropped 300 feet! Pre-Clovis and Clovis followed the animals! He explained about Woodworthia trees, seed ferns and other plant flora.

The Pacific plate (Baja to Mendicino) is moving in a NW direction with mountain building and active subduction. The North American plate is moving west. For continents, there are active margins (western edge) and passive margins (east coast). There is a triple junction at the Rio Grande Riff and mud pots in Imperial County at Salton Sea spewing CO_2. Walt talked about the North American Shield, a craton covered in the US by sediments but still visible in Canada. The Laurentia Craton originally included Greenland and the NW of Scotland.

Walt spoke about the lower Cretaceous tree fern, *tempskya*, and working with Mr. Tidwell in describing the fern as coming from Gowanda then they worked the research readying for publication. However, Tidwell and Brooks Britt re-wrote the work and it was published with Walt being the third author. Walt states, however, the paper cannot be used because changes in the information are based on *pentoxylon*, another extinct seed plant from Gowanda and not *tempskya*.

He brought and passed around several structure fossils, wonderful specimens of wood, fern, and other plants. There was a brief Q&A following his presentation. George wanted to know about restrictions on collecting petrified wood in California. Walt says that BLM says ok and Forest Service fist-size is ok as long as it's not bartered, traded or sold. Thanks, Walt!

There was no drawing tonight. The meeting was adjourned at 9:00 pm. Refreshments and good conversation followed in the break room.

The next Board meeting will be March 25th at Carter residence at 1 pm and the next Membership meeting will be April 13th at 7:30 pm at PCC Geology. All are welcome. Come and listen to another great presentation!

Respectfully submitted by Angela Guzman, MSSC Secretary *(Advance apologies for misspelled names, elements and/or other words.)*

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List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	May 11, 2018	Tony and Sandie Fender: "50 Unusual Things in the Mojave"
	June 8, 2018	The Webers
	July 13, 2018	Chuck Howser
	August 12, 2013	**MSSC Picnic**
Board Meeting	June 17, 2018	Board Meeting at Bruce Carter's house

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

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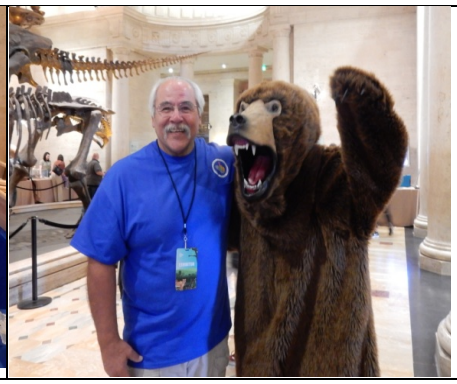
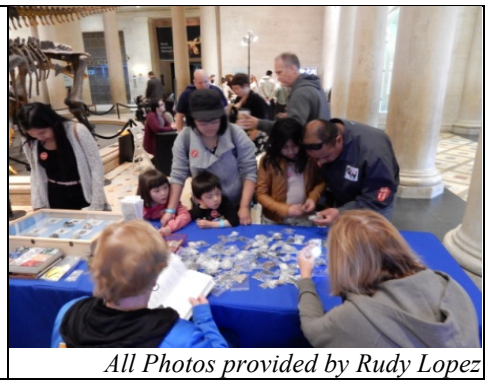
LA Nature Festival: by Rudy Lopez

March 17 & 18 2018, MSSC returned for the 4th Annual LA Nature Festival. We had a great time as usual.

Saturday Angie Guzman and Rudy Lopez managed the tables and gave away over 550 minerals to kids and teachers. Our tables were busy all day and for some reason we had 30 – 40 teachers come and ask questions on Geology. I spent a good part of the day showing teachers how to get to our web-site and get to our Teaching Resources Section, which contains Crystal models they can make. I showed them how to download 6 full-page files for printing these crystal models to cut out and paste together: Cube, Tetrahedron, Hexagonal Prism and Rhombohedron. The resource also includes a **"Crystal Quest" which is a treasure-hunt** style set of questions to be used by visitors to the Gem and Mineral Hall of the Natural History Museum of Los Angeles County in Exposition Park, which was prepared by Dr. Janet Gordon.

Sunday Leslie Ogg, Cheryl & Rudy Lopez managed the tables. Again, we were very busy. We had over 500 kids receive a bag of minerals. We met families from England, China, Australia, and from different US states. We had a family return for their 4 Nature Festival and 4th mineral collected from our table. I asked the kids what minerals they had in their collections and found they didn't have fossils. Thanks to the donation of minerals from Robert Housely we had plenty of fossils and the kids now have some for their collection. We were lucky to have over 1100 donated minerals to give kids thanks to Leslie Ogg, Robert Housely and Rudy & Cheryl Lopez

All Photos provided by Rudy Lopez

We had a "Bear Attack" as well as plenty of interested attendees at the MSSC booth!

We are already looking forward to next year's LA Nature Festival.

I want to thank Vanessa Vobis, Program Manager | Public Programs, Natural History Museum of LA County.

Here is part of an e-mail I received from Vanessa:

> Dear LA Nature Fest Exhibitors,
>
> The rain did not deter us from celebrating urban nature this past weekend! We hosted our 4th annual L.A. Nature Fest and welcomed over **9,620** visitors. The event's success is in large part due to NHM's partnership organizations.
>
> NHM staff and partner organizations happily shared their research and local nature stories. Your booths were interwoven with those that hosted live animals, hands-on activities, and performances. Our visitors

are most definitely interested in connecting and understanding L.A.'s urban nature as we saw curious, awe-struck, and smiling faces throughout the entire event. **With that in mind, thank you for your participation, creativity, and for sharing your passion during this year's Nature Fest!**

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Random Quote from Mineral Literature:

"Crystals take places of honor in every collection. The better they are, the more glistening and elegantly shaped, the more highly they are prized. Without doubt, seeing a beautiful cluster of crystals does more to inspire a beginner than hours of lecturing. Even the seasoned mineralogist is moved by the sight of a splendid specimen, perhaps more so than the beginner because he appreciates the miracle which made all of it possible"

Source: Mineralogy by John Sinkankas, Page 57, ¶ 1.

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Other (Free) Things to Do...By Ann Meister

There are two **Watson Lectures** at Caltech's Beckman Auditorium this month. Lectures start at 8 PM.
On Wednesday, **April 11**, Victoria J. Orphan will speak on **"Microbial Life Support: The Invisible Living Networks That Shape Our Oceans."** Dr. Orphan will talk about the activities of marine microorganisms from the ocean surface to deep in the earth's crust and consider the globally important geochemical processes they orchestrate through metabolic collaboration.
On Wednesday, **April 25**, Marina Agranov will speak on **"Negotiations and Group Decisions: Passing Bills with Backroom Deals."** In this lecture, Dr. Agranov will illustrate how the structure and rules of the negotiation process impacts how money gets distributed. We explore these and related questions using the tools of economic theory and experimental economics.

The **Von Kármán Lecture** on Thursday/Friday* **April 12 and 13** is titled, "**How Will Earth's Ecosystems Survive Under a Changing Climate?"** The speaker is Dr. Josh Fisher, a JPL Scientist. One of the largest uncertainties in projections of future climate change is how do terrestrial ecosystems (communities of land organisms and their environments) contribute to or help counteract the rise in atmospheric carbon dioxide. This is because terrestrial ecosystems can both absorb carbon (i.e., photosynthesis) and emit it (i.e., respiration, decomposition, combustion). Whether they absorb or emit carbon depends on a variety of factors, such as temperatures, moisture, nutrients, etc. JPL is using satellite remote sensing and sophisticated modeling to understand how Earth's carbon, water and nutrient cycles are linked and their impacts on the Earth system as a whole. In this talk, Dr. Fisher will give an overview of the latest remote sensing datasets and model developments from JPL and discuss new insights into the behavior and understanding of terrestrial ecosystems in a changing climate. *Thursday is at the Von Kármán Auditorium at JPL and Friday is at the Vosloh Forum at PCC. Start time is 7 PM.

The **UCLA Meteorite Gallery** lecture for April was not yet available. Check the website http://meteorites.ucla.edu/ . You can also find the UCLA Meteorite Gallery on Twitter (@UCLAMeteorites) and Instagram (uclameteorites) and Facebook (https://www.facebook.com/UCLAMeteorites). The Meteorite Gallery in Geology room 3697 is open with a docent present every Sunday from 1 till 4. The lecture, which is always on a Sunday afternoon at 2:30 pm, is in room 3656 near the Meteorite Gallery.

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Historical Meanderings by Ann Meister

I found this in some loose pages about collecting that were sent to me by a former MSSC member, Frank Fehlner, who now lives in New York state. The author, Vincent Morgan, was the chemist for US Borax at Boron, CA, until his retirement in 1971, and was instrumental in getting Rock Currier interested in minerals. Known as "Mr. Boron" in mineral collecting circles, Vince had a fantastic collection of borate minerals, most of which were self-collected. He published numerous technical articles including the descriptions of the minerals

gerstleyite (with Clifford Frondel) and tunellite (with Dick Erd). He and his wife Midge were charter members of the Mojave Mineralogical Society founded in 1940. Vince became President of both the California Federation of Mineralogical Societies (1955-56) and American Federation of Mineralogical Societies (1957-58). I spent many a happy hour with Vince and Midge at their home in Boron. This is a copy of the mimeographed article, probably written in the early 1950's.

SOME MINERAL COLLECTING TIPS

by Vincent Morgan
Vice-President, Mineral Division, California Federation

Assuming that one has obtained permission to collect in an area, if permission is required, following are a few suggestions on collecting which will perhaps be of value.

FIRST, make certain that the spot where you are going to collect is reasonably safe. An old mine which has been abandoned 40 years or more may be perfectly safe, or an active mine may have spots which are extremely hazardous in which to work.

Do not remove material, however desirable, from around supporting timbers. This may be all that holds the place up. Continually watch overhead and along the "rib" or walls of any passageway. A loose slab may need only the vibration of your voice or steps to send it crashing down. The sight of even a fully equipped miner, with all safety devices, lying under a five-ton slab of rock is not a pretty one.

Never enter an old mine alone; always have at least one person outside who can drive a car in the event it is necessary to go for help. When collecting in a remote area, have someone posted as to where you are going, and when you should return, in the event of accident or car failure. This has paid off many times.

SECOND, provide some method of protecting the specimens as they are collected. Many a collector has spent hours carefully digging out fragile or choice crystal groups, only to ruin them by careless handling, often even before they get to the car. Large specimen, or those not particularly fragile, should be wrapped in newspaper and tightly packed. More fragile specimens should be placed in individual boxes, protected by cotton.

Where conditions permit, specimens of all but the most lacy materials may be very well protected for shipment by placing in a box or can, and completely filling with sawdust or sand.

The most fragile, lacy specimens of all but a very few sensitive hydrates, may be adequately protected for even trans-continental shipping by placing in a cardboard box barely larger than the specimen, and pouring in melted paraffin, not too hot. To "liberate" the specimen, merely cut off the lower corner of the box, place in an oven over a pan to catch the paraffin and turn the oven on at the lowest setting. The paraffin will drain into the pan and leave the specimen clean and as perfect as when imbedded. Even such materials as the interlaced, extremely fragile crystals of "primary" meyerhofferite, difficult even to get home intact, have been shipped across the country by this method, without damage.

THIRD, exercise all due care and caution when extricating fragile specimens, to prevent damage. If you cannot work a specimen out without spoiling it, leave it for someone else who may be better equipped. The wanton destruction of beautiful or valuable specimens, when unable to remove them, reflects a juvenile attitude wholly unworthy of the mature collector.

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Ride Share Listing

Can You Provide A Ride?
Would You Like Company On The Drive To Meetings?

We have heard from several of our members that they would like to ride-share with someone to the meetings. We will list the names, general location and either a phone number or an email address of anyone who would like to connect for a ride-share. If you would like to catch a ride or would like company for the trip, let me know at msscbulletin@earthlink.net and I'll put the information in this section of the bulletin. After that, any

final arrangements made are up to you. Also, If you make a connection that works for you, let me know so that I can remove your information from the bulletin. The Editor

Looking for	Who	Where	Contact at
A ride	Richard Stamberg	North Orange County, near Cal State Fullerton	*See emailed bulletin*
A ride	Catherine Govaller	San Bernardino, CA	*See emailed bulletin*

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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 1855 Idlewood Road, Glendale, CA 91202**			

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Random Quote from Mineral Literature

"Mineral crystals form from molten solids, from solutions in which the necessary ions are dissolved and from vapors carrying ions intermingled with the ions of gases. All of these growth processes are extremely important in nature, but generally speaking, our finest crystals are those grown from solutions, the next best from molten solids, and the least in quantity though sometimes very fine in quality, those grown from vapors."

Source: Mineralogy by John Sinkankas, Page 57, ¶ 2.

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Calendar of Events:

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

APRIL, 2018

April 6, 7 & 8: VISTA, CA
Vista Gem & Mineral Society
Antique Gas & Steam Engine Museum
2040 North Santa Fe Avenue
Hours: 9 - 5 daily
Website: www.vistarocks.org

April 21 - 22: THOUSAND OAKS, CA
Conejo Gem & Mineral Club
Borchard Park Community Center
190 Reino Road
Hours: 10 - 5 Saturday; 10 - 4 Sunday
Website: www.cgamc.org

April 21 - 22: PASO ROBLES, CA
Santa Lucia Rock Hounds
Paso Robles Event Center
2198 Riverside Ave.
Hours: Sat 10 - 5; Sun 10 - 4
Website: slrockhounds.org Show Page

April 28 - 29: LANCASTER, CA
Antelope Valley Gem & Mineral Society
Lancaster High School
44701 - 32nd Street West
Hours: 10 - 5 daily
Website: www.avgem.weebly.com

MAY

May 4, 5 & 6: YUCAIPA, CA
Yucaipa Valley Gem & Mineral Society
Yucaipa Music & Arts Festival
Yucaipa Blvd and Adams St
Hours: Fri 6 pm - 9 pm; Sat 12 noon - 10 pm, Sun 12 noon - 7 pm
Website: www.yvgms.org Show Page

May 5 - 6: ANAHEIM, CA
Searchers Gem & Mineral Society
Brookhurst Community Center
2271 W. Crescent Avenue
Hours: Sat 10 - 5; Sun 10 - 4:30
Website: www.searchersrocks.org

JUNE

June 8 - 10: LA HABRA, CA
North Orange County Gem & Mineral Society
La Habra Community Center
101 W. La Habra Blvd.
Hours: Fri 5 - 8; Sat & Sun 10 - 5
Website: www.nocgms.com

June 9 - 10: ESCONDIDO, CA
Palomar Gem & Mineral Club
California Center for the Arts, Escondido
340 N. Escondido Blvd.
Hours: 10 - 5 daily
Website: www.palomargem.org Show Page

June 9 - 10, 2017: GLENDORA, CA
Glendora Gems
Goddard Middle School
859 E. Sierra Madre Avenue
Hours: Sat 10 - 5; Sun 10 - 4:

June 23 - 24: CULVER CITY, CA
Culver City Rock & Mineral Club
Veterans Memorial Auditorium
4117 Overland Blvd
Hours: Sat 10 - 6; Sun 10 - 5
Website: www.culvercityrocks.org Show Page

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What type of Minerals grow by which method?

Molten Rock:	Solution	Vapors
Diamond, Corundum Garnet Kayanite Staurolite	Quartz Calcite Zeolites Clay Minerals And many more…	Sulfer And only a few more

Source: *Mineralogy* by John Sinkankas, 1964

2018 MSSC Officers:

OFFICERS		
President	George Rossman	*president@mineralsocal.org*
Vice President	Renee Kraus	*vicepresident@mineralsocal.org*
Secretary	Angie Guzman	*secretary@mineralsocal.org*
Treasurer	Jim Kusely	*treasurer@mineralsocal.org*
CFMS Director	Jo Anna Ritchey	
Past President	Ann Meister	
DIRECTORS		
2016--2018	Bruce Carter	
2016--2018	Bob Housley	
2016--2018	Leslie Ogg	
2018-2019	Pat Caplette	
2018-2019	Pat Stevens	
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Hospitality	Laura Davis	
Membership	Cheryl Lopez	*membership@mineralsocal.org*
Micro Mount Conf. Chairman	Al Wilkins	
Program and Education	Rudy Lopez	*programs@mineralsocal.org*
Publicity	Linda Elsnau	*bulletin@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. The MSSC is a scientific non-profit organization that actively supports the geology department at Pasadena City College, Pasadena, California. Support is also given to the Los Angeles and San Bernardino County Museums of Natural History. 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. 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 San Bernardino County Natural History Museum during the last weekend of January.

Annual Membership dues for the MSSC are $20.00 for an individual membership, $30.00 for a family membership. Bulletins are delivered by email, there is an additional annual $20.00 fee if you prefer paper bulletins mailed to your address. The Society's contact information:

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To:

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