Bulletin of the Mineralogical Society of Southern California

Volume 93 Number 2 - February, 2020

The 977th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

February 21st, 2020 at 7:30 P.M.

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

Program : **Do Rocks Start Fires? Presented by Dr. George Rossman**

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

MSSC Membership Dues: **February 20, 2020** is the Date!!

Your membership dues will need to be paid before Feb. 20, 2020, if your information is to be listed in the Annual Roster and to continue to receive the MSSC Monthly Bulletin.

About the Program: Do Rocks Start Fires? Presented By Dr. George Rossman

Dr. Rossman will discuss a project with which he was involved that considered the possibility that rocks rolling down a mountain could collide and give off hot fragments that would start fires. This study took place in the mountains on the north side of Mount San Jacinto. It was in response to an actual fire that occurred in that region. The study involves characterization of the weathering phases on the rocks and measurement of the temperature of the fragments ejected when rocks collide. He will highlight an extensive study of this possibility and some legal ramifications that ensued.

George Rossman is currently Professor of Mineralogy at the California Institute of Technology where he has worked for the past 48 years. He has a Ph.D. in inorganic chemistry from Caltech where his studies involving molybdenum cyanides and polymerized iron compounds had little to do with minerals or geology. He has authored or co-authored over 360 papers in mineralogy, chemistry, and materials science. The tourmaline species, rossmanite, published in 1998, was named in recognition of his studies of the color and spectroscopy of tourmalines.

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From the Editor:

Welcome to February, 2020! Time does fly when we are having fun, doesn't it? It's almost time for our Micro Mineral Conference, an event everyone should try to attend, at least once as it is a very interesting happening! Now, I need to get this bulletin done so I can experience the joy of getting our taxes done. Linda Elsnau

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FROM THE PRESIDENT: : Interesting Minerals, A to Z. Installment 25, the letter "Y":

by George Rossman

Yugawaralite

What's that? You must understand the there are no common minerals that start with the letter "Y" that I can use for this submission. So why pick yugawaralite? It is A) a zeolite; zeolites are important, and B) a mineral for which I can easily obtain pictures.

Figure 1ab. Colorless yugawaralite from the road between Okuyagawara Hot Springs and Fudo Waterfall, Yugawara Hot Springs, Karragawa Prefecture, Japan. Photo credits: Mark Garcia

It was named after the Yugawara Hot Spring, the locality where the original sample was discovered **(Figure 1).**

Sakurai K, Hayashi A (1952) "Yugawaralite", a new zeolite, Science Reports of the Yokohama National University 1, 69-77.

Sakurai was originally studying the zeolites from the hot springs area where commonly zeolites such as epistilibite, stilbite, laumontite, mordonite, and chabazite were found. But Sakurai found one that had a different

crystal morphology and when analyzed, a different chemical composition from the zeolites commonly found there. In fact, it's chemical formula resembled none of the zeolites known at that time. So, together with Hayashi, a detailed study was conducted that concluded in the announcement of a new mineral species. Nothing was sent to the International Mineralogical Association for vetting and approval because the IMA did not exist at that time.

Originally, its chemical formula was reported as $Ca_4Al_7Si_{20}O_{54}\cdot 14H_2O$ but after Leimer & Slaughter determined yugawaralite's correct crystal structure, the formula was corrected to $CaAl_2Si_6O_{16}\cdot 4H_2O$.

> Leimer H W, Slaughter M (1969) The determination and refinement of the crystal structure of yugawaralite. Zeitschrift für Kristallographie 130, 88-111

Since its original discovery in Japan, yugawaralite has been found in many other localities, particularly in India, where is occurs among the zeolites in the famous Deccan Traps **(Figures 2,3,4)**. The Deccan Traps are one of the largest volcanic features on this planet. They are absolutely massive flood basalts that are more than 2000 meters thick. There is some speculation that the impact at Chicxulub (the one that did in the dinosaurs) may have actually induced the Deccan volcanism.

> *Renne PR, Sprain CJ, Richards MA, Self S, Vanderkluysen L, Pande K (2015). State shift in Deccan volcanism at the Cretaceous-Paleogene boundary, possibly induced by impact. Science.* ***350*** *(6256): 76–78.*

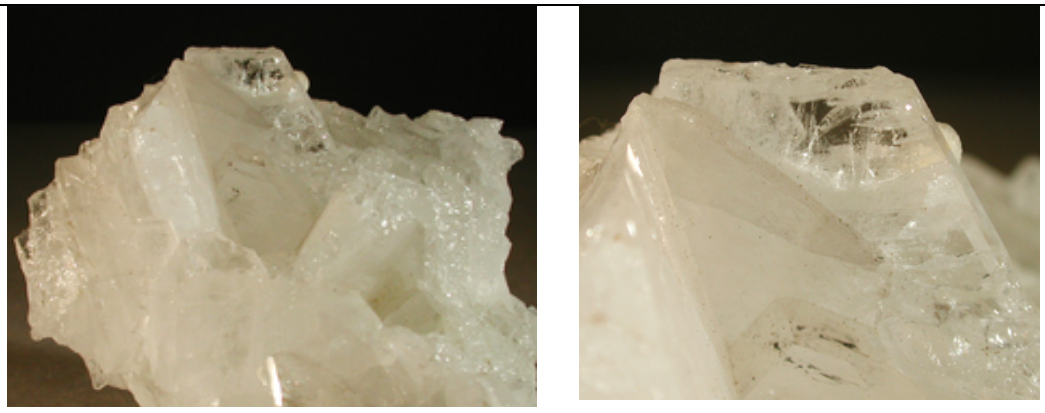

Figure 2ab. Crystals of yugarawalite from CIT-13720, Kandivily, India.
Photo credits: Mark Garcia

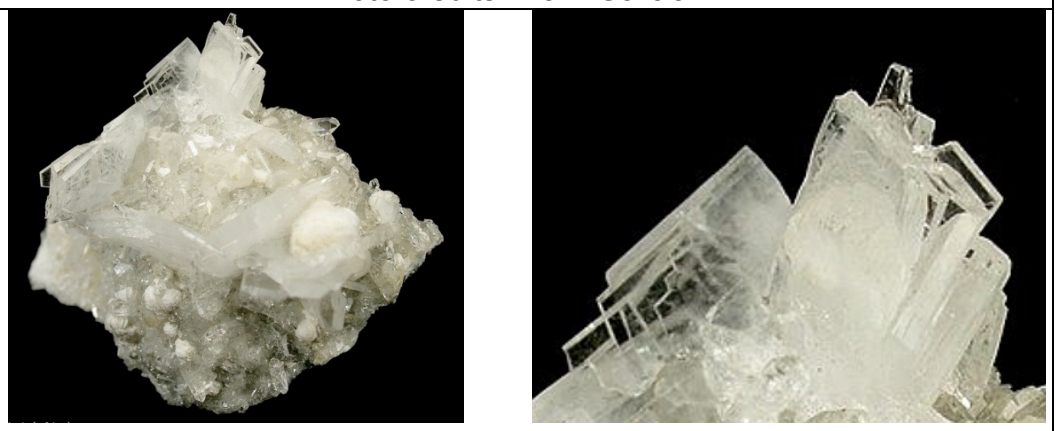

Figure 3ab.Crystals of yugarawalite from Malad Quarry, Mumbai, India.
Photo credits: Rob Lavinsky

Some of the basalts that erupted in the Deccan Traps basalts contained a lot of dissolved volatiles (CO_2 and H_2O) which formed gas pockets in the basalts when the pressure was reduced when then came to the surface. In time, water slowly (think geologic time) percolated through the basalts dissolving some of the glasses (basalts have a lot of volcanic glass in them when they first form). These fluids precipitated zeolites in the cavities as they cooled. The zeolites are usually found in low temperature hydrothermal systems, especially, in volcanic rocks such as basalt.

Figure 4.Crystals of yugarawalite from the Jalgaon District, Maharashtra, India.
Photo credit: Rob Lavinsky

Zeolites are framework silicates that consist of corner-sharing SiO_4 and AlO_4 tetrahedrons. They have a (Si +Al)/O ratio of 1/2. Because the framework structure is negatively charged it attracts positive cations that reside within large vacant spaces or cages in the structures. The zeolites constitute a group of about 90 minerals (and numerous more synthetic materials) that are built from linked tetrahedra of (usually) aluminum and silicon. As of November 2016, 194 unique zeolite frameworks have been identified. Over 40 of these occur naturally as minerals. The frameworks contain open cavities within their structures that are large enough to hold molecules of water in cages or channels.

In yugarawalite, a ring of 5 silicon and 3 aluminum atoms in **Figure 5** defines the area of the cavity in yugawaralite.

Worth mentioning is the relatively rare zeolite known as faujasite. **Figure 6** shows crystals from Limburg Germany. The chemical formula of faujasite is $(Na_2,Ca)_7Al_{14}Si_{34}O_{96}\cdot 64H_2O$. It has a fairly complex structure that is shown in **Figure 7.** I bring this up because the synthetic version of faujasite is known as zeolite Y, a tremendously important cracking catalyst in the petroleum industry. It converts hydrocarbons that have a high molecular weight and that boil at high temperatures into smaller molecules that boil at lower temperatures such as those in gasoline. It has rare-earth elements incorporated into it which help make the solid catalyst strongly acidic, a condition necessary for the catalytic process.

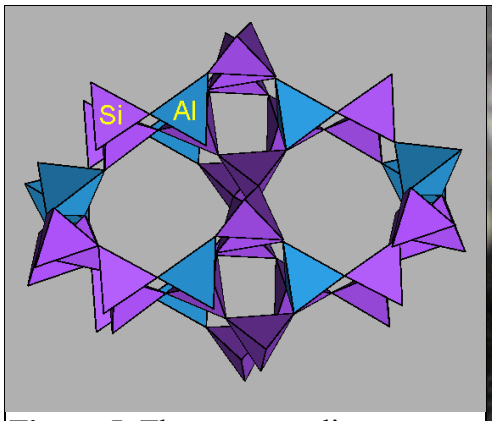

Figure 5. The yugarawalite structure looking down the c-axis

Figure 6. Faujasite crystals from Limburg, Germany
Photo credit: Mark Garcia

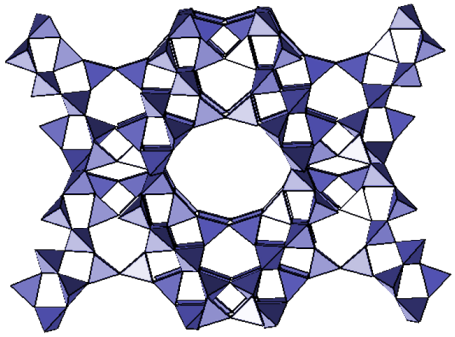

Figure 7. The fajuasite structure showing the arrangement of the silicon and aluminum tetrahedra

.There are, of course, many other zeolite minerals. Ones we commonly encounter are analcime, heulandite, natrolite, and stilbite. There are many zeolite localities in southern California. Do you have some in your collection?

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MINUTES of the January 4, 2020 Banquet/Meeting

The 976th meeting of the Mineralogical Society of Southern California was held on Saturday, January 4, 2020 at Pinocchio's Restaurant in Pasadena. The Installation of Officers Banquet with MSSC's Silent Auction is one of MSSC's annual fundraising events. The meeting was called to order by President Dr. George Rossman, Ph.D. The evening began with Social Hour at 5:30 p.m., dinner at 6:45 p.m. followed by MSSC Business meeting then guest speaker Paul M. Adams made his presentation entitled "Mineralogy of the Copper World and Mohawk Mines, San Bernardino County, California." The conclusion of Adams' presentation brought the end of the Silent Auction.

Business portion of the meeting included:

a) Remarks from the Chair: Dr Rossman said there are 5,534 IMA approved minerals, up 119 from last year (5,415) at this time. Some of the minerals have interesting names such as Kingsgateite, Luxemborgite, Northstarite, Reaphookhillite and Windmountainite, to name a few.

b) Approval of Minutes of December 13, 2019 Membership Meeting: Motion to approve was made by Dale Harwood and seconded. President Rossman called for discussion, corrections or additions and seeing none, called for a voice vote to approve the motion. The Motion to approve the Minutes of 12-13-2019 passed unanimously.

c) MSSC's Silent Auction commenced. The Silent Auction items were well displayed and included cabochons, jewelry, books, mineral specimens and other goodies. Thanks to all who brought donations and, to those who won bids! The auction proceeds results are reported under a separate report.

d) Announcements:

- Field Trip planned for January 2020. Check website for particulars.
- Tucson show is starting soon.
- Pacific Micromineral Conference is Jan 31, Feb 1 with field trip Feb 2 (TBA).
- Guests were asked to introduce themselves.
- The memorial for Dr. Bruce Carter is being held tomorrow at the Carter residence.

d) The Society congratulates the following members who are officers or directors for the current period:

2020 Officers

Dr. George Rossman	President
Ahni Dodge	Vice President
Jim Kusely	Treasurer
Angela Guzman	Secretary and CFMS Director
Ann Meister	Past President

Directors and Chairs:

Directors: 2019-2020	Directors: 2020-2021
Dr. Bob Housley	Pat Caplette
Leslie Ogg	Vacant, to be determined.
Rudy Lopez	

Committee Chairs

Linda Elsnau	*Bulletin* Editor
Laura Davis	Hospitality
Cheryl Lopez	Membership
Al Wilkins	Pacific Micromineral Conference
Rudy Lopez	Programs and Education
Linda Elsnau	Publicity

Leslie Ogg	Webmaster
Marek Chorazewicz	Field Trip Organizer

Dr. Rossman thanked outgoing members for their service: Renee Kraus served as Vice President, JoAnna Ritchey served as CFMS Director and Pat Stevens served as Director.

Rossman then welcomed Ahni Dodge as the incoming Vice President, Angie Guzman who assumes CFMS Director duties and Rudy Lopez who steps in as Director (2019-2020) replacing Dr. Bruce Carter and Pat Caplette as Director, newly re-elected. Congratulations to all the officers and directors and thank you for your service to our society.

Program

After the banquet, the meeting was turned over to Programs Chair, Rudy Lopez. Rudy introduced speaker Paul Adams. Mr. Adams has MS and BS degrees in geology from USC and SUNY, Albany, respectively. Paul has been employed in the aerospace industry for 40 years as a spectroscopist and microscopist. He has been collecting minerals for 40+ years and has authored/coauthored more than a dozen new minerals and the structure of many more. Paul has lectured at mineral conferences and elsewhere for several years. *Pauladamsite*, $Cu_4(SeO_3)(SO_4)(OH)_4 \cdot 2H_2O$, is a mineral (similar to munakataite) named for him in 2015 and was described by MSSC Life Member Dr. Tony Kampf. Tonight, ***"Mineralogy of the Copper World and Mohawk Mines, San Bernardino County, California"*** is Paul Adams' presentation to MSSC.

The Copper World and Mohawk mines are located north of I-15 near the California-Nevada border. In 1863 Johnny Moss discovered the Moss gold mine in Mojave County, Arizona. In 1864, during a time of Indian unrest, Moss took the Mojave chief, Irabata, to Washington D.C. to see and meet the white chief, Abraham Lincoln. A treaty was signed with the Piute that allowed Moss unrestricted travel and use of their territory. In 1868 Piute Indians brought Moss a piece of metallic copper from a location on Clark Mountain's southwest slope, San Bernardino County. Johnny worked a mine, gathered material and headed to San Francisco with his samples to pique the interest of prospective investors. Soon thereafter, many people came into the area; over 130 claims were filed, including the Copper World Mine. Later in 1869, a few tons of high-grade ore were extracted from the mine and shipped to San Francisco.

By 1878, James Boyd opened a smelter in San Bernardino with the intention of moving it to the Copper World Mine, if it proved to be profitable. However, after not hearing positive news from the mine's workers, he did not work the mine and it remained idle; Boyd held it for 20 years. In 1897, eastern capitalists showed interest in the mine owned now by a Mr. Lawrence, which he sold to Ivanpah Smelting of Los Angeles for $1,100. The history of the mine itself continued through construction of the Santa Fe railroad (which came as close as 15 miles from the mine) to Daniel Murphy, a successful businessman and civic leader (Daniel Murphy Foundation) to, in 1977, a Mr. Philip Rivera. The mine workings, under the name of Royal Gem Azurite Mine (azurite, malachite and tenorite) continued until 1981. A glorious past if ever there was one!

The Mohawk Mine is visible from I-15 (off Cima Road) on Mohawk Hill in San Bernardino County and outside of the Mojave Preserve area. This mine was purchased from Ivanpah Copper Company by Mohawk Mines during the 1940's and was worked for its lead and zinc. From the 1970's - 1990's, it was a popular collecting site for micro mounters and was used as a geological study area by laboratories.

Primary minerals of the Mohawk Mine are ankerite, chalcopyrite, galena, gold, quartz, sphalerite, rhodochrosite and arsenopyrite. The mine produced an assemblage of well crystallized *secondary* lead and zinc minerals, primarily carbonates and arsenates. Included with the secondary lead and zinc minerals are adamite, aurichlcite, austinite, azurite, cerussite, cuprite, duftite, jarosite, malachite, mimetite and wulfenite, to name a few.

Each of these mines has a wealth of history all their own and each has provided wonderment and joy to those fortunate enough to experience their bounty either through actual mining, or as a collector, or as a researcher.

Adams treated us with his exquisite collection of detailed photographs of some of the micro minerals collected at either the Copper World Mine or the Mohawk Mine. His display of crisp photos showed brilliantly

throughout his presentation. His descriptions of the individual minerals (many listed above) were detailed. I'm still in awe! Thank you for a great presentation, Paul. There was a Q & A following the presentation.

The **Silent Auction** was called to a close and everyone was requested to settle up.

The banquet was very nice! This was MSSC's first event held at Pinocchio's Restaurant in Pasadena. The main dishes, salads and dessert were all good. Thanks to Rudy and Cheryl for the venue research. Thanks to all who helped set up and tear down.

According to early reports, the silent auction was successful. Thanks for bringing your donations. To those who won their bids, you got some really great deals for fabulous items! The evening can't be beat for the great company, the wonderful presentation, the Silent Auction and collection tidbits and conversation. The banquet ended at 9:00 p.m. Thank you all who attended and participated.

Respectfully submitted, Angie Guzman, Secretary (Apologies in advance for any omissions or misspellings.)

REMINDERS:

Due to Tucson Show, the February Membership meeting will be held on the 3rd Friday of the month. That meeting will be February 21, 2020 at PCC, Geology Building E at 7:30 p.m. See you then.

The Pacific Micro Mineral Conference will be held at the Fallbrook Gem & Mineral hall January 31, February 1 and 2nd. There will be presentations, lots of wonderful materials and specimens, a silent and oral auction, and lots of interesting conversation.

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Open Letter to Kathy Carter 01/22/2020

Dear Kathy,

When I met Bruce, I was new to the world of minerals. As you know, after earning his Masters and Ph.D. from Caltech, Bruce went on to become Dean of Natural Sciences at Pasadena City College. As a geology professor, he worked at PCC for over 40 years. My personal regret is that I didn't know him at PCC as a professor. I read some of the student's ratings of Bruce, they were very high. He was loved and respected by his students and fellow instructors. I read about his field trips to Baja, Santa Cruz Island, etc., and can only imagine they were a blast! (As Bruce would say: "…just up this way a little further…")

Bruce retired from PCC in 2005. I met him some 6 years later on November 20, 2011 when I attended my first MSSC Board Meeting at your home. I really didn't know much about MSSC, having just joined the membership at that time. Nor, did I know of the culture of minerals, collecting them, appreciating them and understanding them. And, I was intimidated by the Board at first because I was the fish out of water. I remember Bruce's voice though. It held authority and, at the same time, compassion. It was soothing and had an understanding toward the new "student" who wanted to learn.

I grew to know Bruce little by little, as time passed. I glimpsed that twinkle in his mischievous eyes a time or two. His sense of humor was wonderful. He was not afraid to share his joy or astonishment, though there was little in mineralogy that surprised him. I was fortunate enough to have observed a classic mineral exhibit of his at one of the shows. It was stunning, informative and down-right sexy. You know the one.

Bruce was generous, loyal to MSSC, had integrity. He was a man of his word and a man of action. A down-to-earth sort of fellow who lived and did what seemed utterly natural to him. While he may have been officially retired from teaching, it did not stop him from traveling, going to those places most of us dreamed of going, learning more and then sharing those awesome experiences with others. His unique educational exchange-student programs were quite amazing, as well!

You know, Kathy, it's not often one comes across a person like Bruce in their lifetime, but when it happens, it's a time to be savored and cherished. Bruce made a difference in my life and if he touched others the way he touched me, I'm quite certain he made a lasting impression on them, as well.

On behalf of me and those countless people who knew and loved Bruce, I, we, offer our sympathies and condolences for your loss, Kathy. His passing is a loss to us all.

Most sincerely, Angie Guzman, MSSC Secretary

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List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	March 13. 2020	Karol McQueary: "A Dinosaur for California
	April 10, 2020	Krista Sawchuk: Discovering the Deep Earth
	May 8, 2020:	Webers- Rainforest Jasper of Queensland Australia
	June 12, 2020	Eric Scerri: The Periodic Table: It's Story & In Significance
	July 10, 2020	Peter Goetz: - Beautiful Opal, Identification and Internet Opal
Board Meeting	March **?**, 2020	Board Meeting *, Date & Location to be announced*
Micromineral Conferece	January 31 – Feb 2, 2020	Fallbrook Mineral Museum, Fallbrook, CA

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

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2020 MSSC ANNUAL BANQUET By Rudy Lopez

On Saturday January 4, 2020, MSSC's Annual Banquet and Installation dinner was held at Pinocchio's Pizza, Pasadena.

We had a good turnout and a great time. With the flu going around we had a few that couldn't make it. Hope everyone is feeling better and heading to the Tucson show.

We had a great night, our speaker Paul Adams gave a great presentation: Mineralogy of the Copper World and Mohawk Mines San Bernardino County, California.

Paul Adams→

Ahni Dodge→

Pinocchio's was the perfect location for our banquet.






We had a great dinner that everyone enjoyed.



We had plenty of room to set up our silent auction items.

Rudy Lopez brought 120 Cabochons for the silent auction. There was plenty of high-quality minerals donated for the silent auction. The silent auction made over $900.00 this year.



I would like to thank Pinocchio's management and staff for a fantastic dinner and great customer service. I want to give a special thank you to the two young ladies at the check in desk. Not only did they make sure everyone was checked in for dinner. They also did a fantastic job collecting for the silent auction.

Angie Guzman & Danielle Elliott
Thank you, Ladies,

Hope to see everyone at next year's Banquet
Rudy Lopez

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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 home after meetings	Ed Kiessling	1299 Linda Vista Ave. Pasadena, CA	*See emailed bulletin*
A Ride home after meetings	Isabel King	900 N. Broadway, Los Angeles, CA	*See emailed bulletin*
A ride	Richard Stamberg	North Orange County, near Cal State Fullerton	*See emailed bulletin*

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CABOCHONS FOR SALE

Rudy Lopez has donated finished Cabochons to MSSC. Some are in settings and some are pendants. They will be sold at our regular meetings. 100% of the sales will go to MSSC.

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OTHER (FREE) THINGS TO DO... by Ann Meister

The **Von Kármán Lecture** on *Thursday/Friday* **February 6 and 7** at 7 PM. The speakers are Rich Terrile, astronomer and Voyager imaging team member, NASA-JPL and Rob Zellem, exoplanetary astronomer, NASA-JPL. The title of the presentation is **"Beyond the Pale Blue Dot: Seeing Distant Planets."** On the 30th anniversary of the "Pale Blue Dot" image taken by NASA's Voyager mission, we'll look at the impact of that image and other distant views of Earth. We'll then turn to the quest to photograph another Earth — an exoplanet orbiting another star — as its own pale blue dot. Join us for a discussion about perspective: the value of what a single pixel can tell us and what it can make us feel. ** Thursday is at the Von Kármán Auditorium at JPL and Friday is at Ramo Auditorium at Caltech.

There is NO **Watson Lecture** scheduled for February.

The **UCLA Meteorite Gallery** lecture is on Sunday, **February 9** at 2:30 pm*. The speaker is Dr. Ashley Davies, JPL-Caltech. The title of his talk is **"Power and Fury: Recent Developments in the Study of Volcanism on Io."** Volcanoes helped transform the surfaces of the Earth, the other terrestrial planets, and the Moon. However, the biggest volcanic eruptions in the Solar System are taking place not on Earth, but on the

Jovian moon Io. This wonder of the Solar System is a fascinating volcanic laboratory where powerful volcanic eruptions result from tidal heating, a process that also affects ice-covered Jovian moon Europa. Yet despite multiple spacecraft visits and spectacular new observations of Io with large Earth-based telescopes, some of the biggest questions about Io's extraordinary volcanoes remain unanswered. Getting the answers requires an understanding of the difficulties of remote sensing of volcanic activity; a new, innovative approach to instrument design; and ultimately a return to Io. **The UCLA 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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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

With Knowledge Comes Appreciation !

Calendar of Events:

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

FEBRUARY 2020

February 14 – 23: INDIO, CA
San Gorgonio Mineral & Gem Society
Riverside County Fair & National Date Festival
82-503 Highway 111
Hours: 10 – 10 daily

MARCH 2020

March 7 – 8: VENTURA, CA
Ventura Gem & Mineral Society
Ventura County Fairgrounds
10 West Harbor Blvd.
Hours: Sat 10 – 5; Sun 10 – 4
Website: vgms.org

March 13, 14 & 15: VICTORVILLE, CA
Victorville Valley Gem & Mineral Club
44th Annual Rockhound Tailgate
Stoddard Wells Road/Dale Evans Pkwy
Hours: 9 – 5 daily
Website: vvgmc.org Show Page

APRIL 2020

April 25 – 26: LANCASTER, CA
Antelope Valley Gem & Mineral Club
Antelope Valley Fairgrounds
2551 West Avenue H
Hours: Sat 9 – 5; Sun 9 – 4
Website: www.avgem.weebly.com

MAY 2020

May 1-3; YUCAIPA, CA
Yucaipa Valley Gem and Mineral Society
Yucaipa Blvd and Adams Street, Yucaipa, CA
Hours: Fri 6 pm – 9 pm; Sat 12 noon – 9 pm; Sun 12 noon – 6 pm
Web Site: http://www.yvgms.org

With Knowledge Comes Appreciation

February Featured Mineral: Phenakite

Formula: Be_2SiO_4

Crystal System: Trigonal

Name: Named in 1833 by Nils Gustaf Nordenskiöld (October 12, 1792, Mäntsälä – February 2, 1866, Finnish/Russian mineralogist) from the Greek for "deceiver", φέναξ, in allusion to its being mistaken for quartz.
Although the spelling phenacite has been used in the past, the approved spelling is phenakite.

© Rob Lavinsky & iRocks.com

Phenakite, Be_2SiO_4
Quartz (Var: Smoky Quartz) SiO_2
Locality: Phenakite Mine, Khetchel village, Molo quarter, Momeik Township, Kyaukme District, Shan State, Myanmar**:** 2.5 cm x 1.9 cm x 1.4 cm

© Rob Lavinsky & iRocks.com

Phenakite
Be_2SiO_4
Locality: Malyshevo, Sverdlovsk Oblast, Russia
1.9 cm x 1.5 cm x 1.1 cm

Lavinsky & iRocks.com

Phenakite
Be_2SiO_4

Locality: Anjanabonoina pegmatites, Ambohimanambola, Betafo, Vakinankaratra, Madagascar
2.4 cm x 0.9 cm x 0. 9 cm

© Rob Lavinsky & iRocks.com

Phenakite
Be_2SiO_4
Microcline (Var: Amazonite)
$K(AlSi_3O_8)$
Locality: Park Co., Colorado, USA
3.0 cm x 2.0 cm x 1.5 cm

© Rob Lavinsky & iRocks.com

Phenakite
Be_2SiO_4
Locality: Rio Piracicaba, Minas Gerais, Brazil
4.2 cm x 2.9 cm x 2.4 cm

Rob Lavinsky & iRocks.com

Phenakite
Be_2SiO_4
Locality: North Sugarloaf Mountain locality, Bethlehem, Grafton Co., New Hampshire, USA
4.5 cm x 3.5 cm x 2.5 cm

2019 MSSC Officers:

OFFICERS		
President	George Rossman	president@mineralsocal.org
Vice President	Ahni Dodge	vicepresident@mineralsocal.org
Secretary	Angie Guzman	secretary@mineralsocal.org
Treasurer	Jim Kusely	treasurer@mineralsocal.org
CFMS Director	Angie Guzman	
Past President	Ann Meister	
DIRECTORS		
2019--2020	Bruce Carter	
2019--2020	Bob Housley	
2019--2020	Leslie Ogg	
2020-2021	Pat Caplette	
2020-2021	Currently open	
COMMITTEE CHAIRS		
Bulletin Editor	Linda Elsnau	bulletin@mineralsocal.org
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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Website: ***www.mineralsocal.org*** **The Mineralogical Society of California, Inc.**

DISCLAIMER: The Mineralogical Society of Southern California, Inc. is not responsible, cannot be held responsible or liable for any person's injuries, damages or loss of property at or traveling to or from any general meeting, board meeting, open house, field trip, annual show or any other MSSC event.

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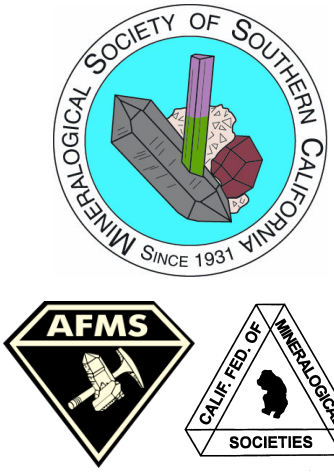

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