



Bulletin of the Mineralogical Society of Southern California

Volume 87 Number 10 - October, 2014

The 914th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

October 10th, 2014 at 7:30 pm

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

Program : Gemology: A Specialized Geoscience by Nathan Renfro

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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: Gemology: A Specialized Geoscience by Nathan Renfro

This talk will cover gemological instrumentation and application, including standard optical instruments and so called advanced instrumentation including a wide range of spectroscopic equipment.

Nathan Renfro, a native of western North Carolina, developed an interest in minerals during his teenage years. He explored the rich geology of his home state with particular interest on pegmatite bodies in Mitchell County. As a result Mr. Renfro visited many mines and outcrops in western North Carolina in search of interesting minerals like beryl, kyanite, garnet, magnetite, feldspar, and mica.

This exploration fueled his undergraduate studies in geology. In 2006, he received a B.S. in Geology and Education in from Appalachian State University. While at ASU, he was a recipient of the Outstanding Senior Teaching Geology Major award.

Upon completion of his university studies, following his increasing interest in gem minerals, he enrolled in the resident Graduate Gemologist program at the Gemological Institute of America in 2007 in which he received the William Goldberg Diamond Corporation scholarship.

After completion of the Graduate Gemologist (G.G.) program, he was hired as a Diamond Grader at GIA. In July 2008, he transferred into the Gem Identification department at GIA where he is currently the Analytical Manager. While in this department, Mr. Renfro has authored or co-authored several gemological articles on various gemology topics. Mr. Renfro's primary gem interests include photomicrography and lapidary arts.

List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	November 14, 2014	Dr. Sarah Milkovich - The Curiosity Rover at 1 year Note: Special Location
	December 12, 2014	George Rossman - What makes gem of the year the color it is / Why Peridot is green
Annual Banquet	January 10, 2015	Denise Nelson – Giant Amethyst
Board Meeting	November 16, 2014	Bruce Carter's House

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

DON'T FORGET SILENT AUCTION DONATIONS FOR THE BANQUET ON JANUARY 10th, 2015

From the Editor: Linda Elsnau

At the last Board meeting, I agreed to stay as your bulletin editor for another year. I have enjoyed producing the MSSC bulletin but it isn't easy. I still need articles and material of interest from you, our members to help keep our bulletin interesting, educational and fun. If you wish, I can proof-read and help you with anything you want to write for the bulletin. Also, remember, if you are sending me material from some other source, you will need include information so that we can get permission from the author or photographer to use their material in our bulletin. If we can't get permission, we can't use the material.

MEANDERINGS FROM THE PRESIDENT by Ann Meister

Do you know what's great about the mineral hobby? It's the people you get to know from all over the world. Some become friends for the rest of your life even when you don't see them often, perhaps just once a year at Tucson. I renewed several friendships at the CFMS show this summer which lead to an invitation to lunch (along with Leslie Ogg) this weekend with an old friend, Toy Sato – old both in age and length of acquaintance – who I had not seen for a number of years. She was CFMS President year after my father's term as CFMS President in 1969-70. She and her husband were friends with both my mother and father. And I got to know her then also. We had a lengthy and interesting conversation about the changes in local clubs, how the hobby has changed, and many more subjects. One thing we remember is that spouses who were not necessarily active in

the hobby also often participated in activities. Today, there is always so much going on and with both husband and wife working, spouses are often not seen, even at “family” activities such as the picnic and banquet. As then and also now, the fun “craft” side of the hobby is of interest to more people than the serious “scientific” side.

Though I was active with MSSC as a “Junior” (MSSC didn’t call us “Pebble Pups”) in the mid-1950’s, I didn’t really become active as an adult until the early 1970’s after college and a 2 year stint as a ski bum in Park City, UT. I still have many friendships that began that long ago. With some, I also share other interests, such as books, opera and classical music. We “bonded” while working long hours on shows, sitting around the campfire on field trips, and working together on committees. We visited each other’s homes for board meetings, study groups, and open houses where we ooh’ed and ah’ed over each other’s collections. Well, so much for nostalgia. Back to the present. Elsewhere in the *Bulletin* is a proposed slate of officers and directors for 2015. No changes! The *Bulletin* editor, webmaster, and other committee chairs are also continuing. I wholeheartedly thank you all for your continuing service. Doesn’t anyone else want to join us and see what fun we have?

MINUTES of the September 12, 2014 Meeting

The 913th Meeting of the Mineralogical Society of Southern California (MSSC) was held on Friday, September 12, 2014 at the Geology Department of Pasadena City College. President Ann Meister brought the meeting to order at 7:38 p.m.

Regular Business: Welcome to all in attendance at tonight's meeting.

Minutes:

President Ann Meister asked for a motion to approve the Minutes of the Membership Meeting as listed in the August 2014 Bulletin. The Minutes of July 11, 2014 meeting were approved by motion from Rudy, seconded by Leslie and carried by membership vote.

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President's Messages:

- A thank you was given to Bruce Carter for hosting the MSSC Picnic at his home and to Rudy Lopez for his meat.
- Bulletin deadline is Sept. 24, 2014.
- MSSC Board members and Officers meeting at 1:00 pm on Sept. 14, 2014 at Bruce Carter's home.
- Parking placards are available at the monthly meetings. They are to be placed on your dashboard on meeting nights to notify PCC Campus Police, we are attending a MSSC meeting and not be ticketed for parking.
- Nominations are open for next year's officers. If you are on the board and wish not to hold the office again, please find someone to take your position. If you are interested in being on the board, please let Ann know. A list of names is needed for the October 2014 meeting, voting for officers will take place during the November 2014 meeting.
- Annual Banquet is in Jan. 2015 with a silent auction. Please look for items to be donated to MSSC.
- PMC dates are Jan. 30 & 31, 2015. We are currently working with San Bernardino County Museum to finalize the plans.

Announcements:

- Oct. 9th- JPL Lecture on Rosetta-A lesson on Comets, the Solar System and Mysteries of Earth.
- Nov. 6 & 7th- JPL Lecture on: Asteroid Redirect Mission: Rearranging the Solar System.

- Oct. 11 & 12-Searles Lake Gem & Mineral Society-73rd Annual GEM-O-RAMA
- Nov. 8 & 9,-2014-American Opal Society-47th Opal, Gem & Jewelry Show
- Oct. 5th- Fallbrook Show

Program

Rudy Lopez, Program Chair, introduced tonight's speaker Stephen P. Mulqueen. This lecture included four main subjects; the life of Thomas Bard, natural petroleum seeps, early cable-tool drilling technology and the drilling of wells by the California Petroleum Company in the Ojai Valley and Upper Ojai Valley beginning in 1865.

Thomas Bard: Factors That Led to the Discovery of Oil at Well “Ojai” 6 in 1867

In 1865, Thomas Bard and his uncle Thomas Scott formed the California Petroleum Company and began drilling for commercial quantities of crude oil near natural petroleum seeps in the Ojai Valley and Upper Ojai Valley in what is now Ventura County. In 1867, after drilling five dry holes, well “Ojai” 6 began flowing crude oil at a rate of 15 to 20 barrels/day after reaching a depth of 550’. This is recognized as the discovery well for the Ojai Oil Field and one of the earliest successful oil wells in the state of California. The Ojai Oil Field is still an important energy resource, producing crude oil and natural gas from over one hundred wells after 147 years of continuous field production.

Bard was 24 years old when he travelled by ship from the East Coast to the Port of Los Angeles in 1865. Before moving to California, Bard learned about the early oil industry of Pennsylvania and the emerging technology that allowed for the drilling of shallow wells in search of crude oil. In 1859, only eight years before the success of well “Ojai” 6 in California, Edwin Drake made his famous discovery of oil by drilling near Titusville in Pennsylvania. Drake’s good fortune sparked the world’s first oil boom.

One of the most intense well drilling efforts began in the early 1860s along the banks of Oil Creek located southwest of Titusville. Oil Creek gets its name from the abundant natural petroleum seeps that occur within the region, some flowing directly into the creek. In the early years before 1859, members of the Seneca Tribe gathered crude oil from seeps and sold the commodity to white settlers for distilling into lamp oil and lubricating oil. Prior to the production of crude oil from seeps and wells, lamp oil was made exclusively by rendering blubber from whales.

Oil pioneers of Pennsylvania drilled on or near oil seeps with the understanding that the natural occurrences of petroleum at the surface could be indicators of the abundance of oil in commercial quantities at depth. The early technology was adapted from the water well and salt well drilling industry. Salt brines were produced by drilling into formations containing either dry salt beds or permeable formations containing salt saturated groundwater. In those early years, table salt was crystallized from saturated brines by the process of evaporation.

While in Pennsylvania, Bard learned many details about natural petroleum seeps, the oil boom and cable-tool drilling. Bard also learned about comparable petroleum seeps that occurred in California as a result of published works by Dr. Benjamin Silliman, Jr., a professor at Yale College. With the financial assistance and encouragement from Thomas Scott, Bard applied what he learned from Pennsylvania to drilling for oil in California. He and a crew of rig hands concentrated their effort at the sites of petroleum seeps exposed on the north edge of Sulphur Mountain located between Ojai and Santa Paula.

Door Prize Winner was Jeff Capulet

Adjournment

The meeting was adjourned at 9:01 p.m. After the meeting, refreshments were served.

Respectfully submitted, Cheryl Lopez

NOMINATIONS ARE OPEN FOR OFFICERS AND DIRECTORS FOR 2015

As required by the Bylaws and Operating Rules, here are the nominees for 2015. The nominations are open if you would like to submit an additional candidate for any office. Make sure you have that person's permission before making the nomination.

President	Ann Meister
Vice-President	George Rossman
Secretary	Angie Guzman (?)
Treasurer	Jim Kusely
CFMS Director	Jo Anna Ritchey
Directors 2015-2016	
#1	Bruce Carter
#2	Bob Housley
#3	Leslie Ogg

Precautions for Using Toxic Oxalic Acid

Do any of you clean you minerals with Oxalic Acid? the following information may be of interest.

This article contains excerpts from "Safety Matters—Oxalic Acid Precautions" by Ellery Borow, AFMS Safety Chair in the September, 2014 *AFMS Newsletter*.

Numerous articles have been written about the use of oxalic acid for cleaning and preparing mineral specimens. But most of the articles never even mention the very important matter of its toxicity. The following information comes from "Some Notes and Safety Tips on Using Oxalic Acid" by Duane Leavitt of the Maine Geological Society.

Oxalic acid is an organic acid which means that it contains carbon. At room temperature it looks like granular sugar. As an acid, it is quite weak. Oxalic acid is nowhere near as strong or as soluble in water as hydrochloric or nitric acids which are also used in mineral cleaning. This last statement is a BIG part of the problem ! There is NO CORRELATION between acid strength and how poisonous it is, its TOXICITY.

Oxalic acid can be absorbed directly through the skin into the bloodstream, powders from the dry acid and vapors from solutions can be absorbed into the body through the lungs. This has serious implications for those who like to clean specimens in a crockpot of simmering oxalic acid solution in their basement. Dust from the solid acid can damage the cornea of the eyes.

In the body, oxalic acid removes calcium from the blood, forming insoluble crystalline masses of calcium oxalate that eventually wind up in the kidneys where they will cause the kidneys to bleed or form kidney stones. In respiratory passages, it can cause severe irritation, possible hemorrhaging of these tissues and burns. In the digestive tract it causes severe gastroenteritis and vomiting, shock and convulsions, cardiovascular collapse and/or kidney failure which can lead to death. A lethal dose of oxalic acid is somewhere between 5 and 15 grams.

OSHA recommends no more than 1mg (that is one thousandth of a gram). One restaurant packet of sugar contains about 1 gram of sugar or 1000 times the recommended exposure Unlike neutralized hydrochloric, muriatic and nitric acids, "neutralized" oxalic acid is still poisonous—it is just no longer acidic.

People wishing to use oxalic acid can do so successfully and safely provided they incorporate the following procedures into their mineral cleaning:

1. Always use long-sleeved rubber gloves, a splash proof apron, and full eye/nose protection when handling either dry oxalic acid crystals or oxalic acid solutions.
2. Avoid heating solutions of oxalic acid. It will work cold, it just takes longer.

3. Keep containers of soaking specimens covered so the acid vapors stay inside the container. Lids should NOT be airtight.
4. Rinse any specimens cleaned with oxalic acid with copious amounts of water and test with pH paper to ensure that all acid is gone. A post treatment bath in dilute household ammonia or sodium bicarbonate solution is a good idea.
5. In the event of a spill, remove affected clothing immediately, rinse affected areas with copious amounts of water, rinse and wash affected clothing. If there is any doubt as to the severity of the exposure seek medical help immediately.
6. Small amounts of used solutions of oxalic acid can be disposed of as follows:
 1. Neutralize the solution with sodium bi-carbonate or sodium hydroxide; TEST with pH paper to be sure it is neutral (or slightly basic).
 2. Dilute the solution from step 1 above, 20 fold with water (e.g., to 1 pint of neutralized acid solution add 20 pints of water.
 3. Pour solution 2 down the drain with plenty of cold water.
7. Read up on cleaning techniques, "Cleaning and Preserving Minerals" by Richard Pearl is a good start , and educate yourself about techniques, materials and alternatives.

Thanks to the bulletin exchange program, this came from: Reno Gem and Mineral Society, October, 2014 "The Conglomerate"

*******!!! EARLY NOTICE !!!*******

DUES ARE DUE by January 1, 2015 and are late after January 31, 2015.

If you would like to include payment for the January 10 banquet on the same check, the banquet tickets are \$38 per person. We appreciate your promptness!

Advance notice about our special November meeting. Mark your Calendar!

***Mineralogical Society of Southern California* Lecture Series**

Mars Science Laboratory: The Curiosity Rover Years 1&2

By Dr. Sarah Milkovich (JPL)

Friday November 14, 2014

7:30pm in the Volsloh Forum at Pasadena City College:



The Curiosity rover landed at Gale Crater, Mars, in August 2012, kicking off two years of exploration of the crater floor and a mountain of layered rocks and sediment inside the crater. Curiosity was designed to assess if Mars was ever habitable: did it ever have an environment able to support small life forms such as microbes? The record of the planet's climate is written in the rocks and soil - in their formation, structure, and chemical composition. Scientists are using the rover's onboard laboratory to study rocks, soils, and the local geologic setting to assess what the Martian environment was like in the past and to

look for the chemical building blocks of life. Science highlights from the first two years of the mission will be presented.

Dr. Sarah Milkovich is a planetary geologist and a systems engineer at NASA's Jet Propulsion Laboratory. Sarah's work at JPL focuses on the interactions between scientists, instrument operators, and spacecraft engineers during spacecraft science operations. She is currently currently working on the Mars 2020 rover project, and has previously worked on Mars Science Laboratory (the Curiosity rover), the Mars Phoenix Lander, the Cassini-Huygens spacecraft at Saturn, and Mars Reconnaissance Orbiter, where she was the investigation scientist for the HiRISE (High Resolution Imaging Science Experiment) camera. She has won JPL and NASA team awards for her efforts to return the best possible science within spacecraft engineering constraints. She received her B.S. in planetary science from Caltech, and her M. S. and Ph.D. from Brown University in planetary geology with studies of mountain glaciers and polar deposits on Mars, and volcanism on Mercury.

Sarah joined JPL in 2005 as a postdoctoral research fellow, studying Martian ice deposits using images, radar, and topography. In 2008, Sarah became a science planning systems engineer. She was a member of the surface operations team for Mars Phoenix during the summer of 2008, and the science planning team for the Cassini-Huygens Mission at Saturn from 2008-2012. Sarah's scientific research continues to focus on the geological history of the polar deposits of Mars.

Directions: *Ample free parking is available:*

**Pasadena City College, (see maps)
Volsloh Forum
1570 E. Colorado Boulevard
Pasadena, California.**

Children accompanied by parents are Welcome



Kokinosite



In the July Bulletin, a new mineral named for a former MSSC Member was discussed. Here is the promised photo!

Photo © Joe Marty and provided by Tony Kampf

WEST COAST GEM & MINERAL SHOW

NOV. 7 - 9, 2014

SANTA ANA, CA

Holiday Inn - Orange County Airport
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Featured Mineral: **Anhydrite**

Formula: CaSO_4

Crystal System:
Orthorhombic

Name: Named in 1804 by Abraham Gottlieb Werner from the Greek άνυδρος ("anhydros") meaning "without water", in allusion to the lack of water in its composition, in contrast to Gypsum, which contains water.



irocks.com photo

Anhydrite CaSO_4

Locality: Simplon Railway tunnel (north section), Simplon pass area, Brig, Wallis (Valais), Switzerland

2.6 cm x 2.0 cm x 1.9 cm



irocks.com photo

Locality: Naica, Mun. de Saucillo, Chihuahua, Mexico

8.6 cm x 6.4 cm x 2.2 cm



Anhydrite : CaSO_4

Locality: Naica, Mun. de Saucillo, Chihuahua, Mexico 12 cm x 7.7 cm x 2.1 cm

irocks.com photo



irocks.com photo

Anhydrite : CaSO_4

Locality: Naica, Mun. de Saucillo, Chihuahua, Mexico 11.8 cm x 9 cm x 5.8 cm

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	
A ride	Catherine Govaller	San Bernardino, CA	

Calendar of Events:

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

OCTOBER 2014

October 1 - 5: JOSHUA TREE, CA

Hi-Desert Rockhounds of Moronga Valley
Sportsman's Club of Joshua Tree
6225 Sunburst Street
Hours: 9 - 6 daily

Website: www.jtsportsmansclub.com/gem.html

October 11 - 12: TRONA, CA

Searles Lake Gem & Mineral Society
Gem & Mineral Building
13337 Main Street
Hours: Sat 7:30 - 5; Sun 7:30 - 4

Website: www1.iwvisp.com/tronagemclub

October 12 - 13: VISTA, CA

Vista Gem & Mineral Society
Antique Gas & Steam Engine Museum
2040 North Santa Fe Avenue
Hours: Sat 10 - 5; Sun 10 - 4

Website: www.vistarocks.org

October 18: WEST HILLS, CA

Woodland Hills Rock Chippers
First United Methodist Church
22700 Sherman Way
Hours: 10 - 5

Website: www.rockchippers.org

October 18 -19: WHITTIER, CA

Whittier Gem & Mineral Society
Whittier Community Center
7630 Washington Avenue
Hours: 10 - 5 daily

NOVEMBER 2014

November 1 - 2: OXNARD, CA

Oxnard Gem & Mineral Society
Oxnard Performing Arts Center
800 Hobson Way
Hours: Sat. 9 - 5; Sun. 10 - 4

Website: www.oxnardgem.com

November 1 - 2: RIDGECREST, CA

Indian Wells Gem & Mineral Society
Desert Empire Fairgrounds
520 S. Richmond Road
Hours: 9 - 5 daily

Website: www.indianwells.weebly.com

November 8 - 9: ANAHEIM, CA

American Opal Society, Garden Grove
The Phoenix Club - Festhalle
1340 S. Sanderson Ave.
Hours: Sat 9 - 6; Sun 9 - 5

Website: www.opalsociety.org

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			

Did you know?

Some terms used to describe minerals refer to the internal structure of the crystal

As described in Mineralogy by John Sinkankas ©1964 Or mindat.org "glossary"

Polymorph:

When the chemical composition is identical, but the crystals form in more than one stable structure.



Calcite : CaCO_3

Mine No. 884, Leiping, Guiyang Co., Chenzhou Prefecture, Hunan Province, China
7 cm

irocks.com photo



Aragonite : CaCO_3

Kombat Mine (Klein Otavi; Asis), Kombat, Grootfontein District, Otjozondjupa Region, Namibia
8.9 cm x 6.4 cm x 5.3 cm

irocks.com photo

- **Dimorph:** The property of a chemical compound to crystallize in either of two different crystal structures, e.g., CaCO_3 as trigonal calcite and as orthorhombic aragonite..



Anatase : TiO_2 , Dyrfonni (Dyre fonni), Vivel i, Eidfj

ord, Hardangervidda, Hordaland, Norway

2.3 cm x 1.5 cm x 1 cm

irocks.com photo



Brookite : TiO_2

Dodo Mine, Saranpaul, Khanty-Mansi Okrug (Khanty Mansiysk), Tyumenskaya Oblast', Prepolarsky, Western-Siberian Region, Russia
3.6 cm x 2.3 cm x 0.2 cm

irocks.com photo



Rutile : TiO_2

Alexander Co., North Carolina, USA

Dimensions: 1.3 cm x 0.5 cm x 0.4 cm

irocks.com photo

- **Trimorph:** The property of a chemical compound to crystallize in one of three different crystal structures Anatase, Brookite and Rutile are all Titanium Dioxide



A Mineral Oddity!

Rhodochrosite : MnCO_3

Kerch peninsula (Kertch peninsula), Crimea peninsula, Crimea Oblast', Ukraine

2.5 cm x 2.1 cm x 1.7 cm

Rhodochrosite replacing a clam shell

irocks.com photo

2014 MSSC Officers:

OFFICERS		
President	Ann Meister	president@mineralsocal.org
Vice President	George Rossman	vicepresident@mineralsocal.org
Secretary	Angie Guzman	secretary@mineralsocal.org
Treasurer	Jim Kusely	treasurer@mineralsocal.org
CFMS Director	Jo Anna Ritchey	
Past President	Geoffrey Caplette	
DIRECTORS		
2013--2014	Bruce Carter	
2013--2014	Bob Housley	
2013--2014	Leslie Ogg	
2014-2015	Pat Caplette	
2014-2015	Pat Stevens	
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:

Mineralogical Society of Southern California

1855 Idlewood Rd.,

Glendale, CA 91202-1053

E-mail: treasurer@mineralsocal.org

Website: www.mineralsocal.org **The Mineralogical Society of California, Inc.**

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MSSC Bulletin Editor
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Glendale, CA 91214-2415

To:



With Knowledge Comes Appreciation

**Your MSSC
Bulletin Is Here!**