

Bulletin of the Mineralogical Society of Southern California

Volume 87 Number 7 - July, 2014

The 911th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

July 11th, 2014 at 7:30 pm

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

Program: Greenland-Minerals Under the Northern Lights

Presented by Bruce Carter, Ph.D.

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

About the Program: Greenland-Minerals Under the Northern Lights Presented by Bruce Carter, Ph.D.

In October of 2013 Kathy and Bruce joined a group from the Griffith Observatory on a trip to Greenland to view the aurora borealis. Observations of the sky were excellent, but of course Bruce was also interested in the rocks and minerals of Greenland. These include extraterrestrial minerals, some of the oldest rocks and minerals on Earth, some unique “gemstones,” enormous mineral deposits formed during one of the most important transitions in Earth history and observations of the most important mineral on Earth.

Bruce Carter taught geology at Pasadena City College where he served as Dean of the Natural Sciences. Since his retirement in 2005, he and Kathy have traveled to many parts of the world.

List of Upcoming MSSC Events : Mark your Calendar!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	September 12, 2014	Stephen Mulqueen - Discovery of Oil Well Ojai #6 in 1867
	October 10, 2014	Justin Zyzzx - Minerals of Palos Verdes
	November 14, 2014	Dr. Sarah Milkovich - The Curiosity Rover at 1 year
	December 12, 2014	George Rossman - What makes gem of the year the color it is / Why Peridot is green
Annual Picnic	August 10, 2014	Celebrating your favorite Program: seen, given or fondly remembered!
Annual Banquet	January 15, 2015	Denise Nelson - Giant Amethyst
Board Meeting	September 14, 2014	At Bruce Carter's House

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

From the Editor:

At the last Board meeting, it was suggested that I add an “MSSC Upcoming Event” section to our bulletin.(see above) So, from now on, you can have advance notice of upcoming events and when possible program information earlier. We hope that this will help our members better plan to attend when there is a program of particular interest. Please let me know what you think or if you have any suggestions to make it work better for you. Linda Elsnau

MEANDERINGS FROM THE PRESIDENT by Ann Meister

Lots of “Thank you’s” this month...

Thank you to Cheryl and Rudy for the outstanding work they did on the MSSC brochure that we passed out at the CFMS show membership recruiting table. The brochure contains information about MSSC, our meetings, history, and the Pacific Micromount Conference, as well as our website address and contact information. Copies are available from Cheryl.

Thank you to Angie and Pat Stevens for helping me to recruit new members at the CFMS show. We handed out the new brochure, the June *Bulletin*, and membership forms. Some people thought that we were the show sponsor (which was the Pasadena Lapidary Society), but I told them, “We’re the *other* club in Pasadena. MSSC focuses on the scientific side of the hobby, not the craft side.” That either grabbed their attention or they walked away. It did entice one new member who said, “That’s exactly what I’m looking for!” I also spoke with “lapsed” members to bring them back. We’ll see how that goes...

Thank you to Bruce Carter for being the only MSSC member to have a display at the CFMS show. His subtly erotic educational exhibit was an attention-getter.

Thank you to the MSSC officers, board members, committee chairs, and guest for a productive Board meeting. With focus, we really can get the work done in 3 hours.

And a special thanks to Bruce and Kathy Carter for hosting the Board meeting as well as the upcoming (Sunday, August 10 at noon) Picnic/Potluck/Swap to which we are also inviting the Gem & Mineral Council,

the Fallbrook Gem & Mineral Society, and the Monrovia Rockhounds. Complete information will be in the August *Bulletin*.

The CFMS show, sponsored by the Pasadena Lapidary Society at the Fairplex at the end of May, was a success as far as I could tell. Though there were few people on Friday, Saturday had good attendance, but Sunday was a little sparse. I had not attended a CFMS show for many years and was saddened to see how few competitive exhibits there were; of the 27 competitive exhibitors listed in the program, only two were minerals and one educational exhibit focused on minerals. There were about a half dozen non-competitive displays with minerals including Bruce's educational, a rough and cut, and one on the USA mineral stamps. A one-time MSSC member who had been an active competitor many years ago bemoaned the situation, stating that in his class alone there had been more than 20 competitive displays. And at that time, competition was ruthless. Perhaps the rules now are too difficult? or it takes too much effort? or perhaps people are afraid to show their best for fear of being targeted by thieves? Who knows. Times have changed and so too have the shows. Among the dealers, there were several with minerals though only one appeared to have only minerals. The demonstrators well represented the craft side of the hobby, the kids activities were a success, and the speakers were good including Tony Kampf and Bob Jones. I most enjoyed talking with people, many of whom I had not seen in years, and meeting new people. I was intrigued by a table set up by the organization, Women in Mining. Among other things, they provide educational programs to schools on why mining (and minerals) are important in our lives. They also have downloadable activities on their website www.womeninmining.org. I applaud them and wish them the best of luck in their endeavors. "If it isn't GROWN, it has to be MINED!"

MINUTES of the June 13, 2014 Meeting

The 910th Meeting of the Mineralogical Society of Southern California (MSSC) was held on Friday, June 13, 2014 at the Geology Department of Pasadena City College. President Ann Meister brought the meeting to order at 7:35 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 last Membership Meeting as listed in the May 2014 Bulletin. The Minutes of May 9, 2014 meeting were approved by motion from George, seconded by Laura and carried by membership vote.

President's Messages:

- Bulletins if printed and mailed cost an additional \$20.00. If not paid, member will not receive bulletin.
- Parking placards were handed out at the meeting, to be put on dashboard on meeting nights to notify PCC Campus Police, we are attending a MSSC meeting and not be ticketed for parking. If you did not get one of these placards, they will be available at the monthly meetings.
- A Thank You was given to all the Board members and Officers who attended the meeting on June 9, 2014.
- A Thank You to Rudy & Cheryl Lopez for the new brochures and memberships application. They were given out at the Federation Show. Also, a thank you to Angie and Pat for assisting at the CFMS show.

Announcements:

- August 10, 2014 is the Picnic from noon until 5:00 p.m. at Bruce Carter's home. Theme for this year was discussed with suggestions of: Favorite Past Programs, Memory Lane. Other clubs to be invited are: GMC- LA History Museum, Fallbrook, MOROCKS, Dana Club.
- Shows: Culver City EOM, June
Opal Society Show, November

Show & Tell

- Marek Chorazewicz shared minerals and fossils he found locally.

Program

Rudy Lopez, Program Chair, presented a list of speakers through April 2015. The list of speakers and title of programs will be published in the monthly bulletin. He introduced tonight's speaker Dan Krawitz. Dan brought and shared many museum quality specimens (gold, copper, silver, minerals with fossils) and gave demonstrations. Dan donated to MSSC 1,000 year old carbonized corn specimens. Door Prize Winner was Ed Kessling-Kyanite.

Adjournment

The meeting was adjourned at 9:15 p.m. After the meeting, refreshments were served.
Respectfully submitted, Angie Guzman

MINERALS IN THE NEWS: Bridgmanite by Ann Meister

How about a field trip to find what is perhaps the Earth's most abundant and elusive mineral? That would have you going a long distance into the Earth's interior, to the lower mantle, between the transition zone in the mantle and the core-mantle boundary – at a depth of 416 to 1,802 miles to find silicate perovskite (Mg,Fe)SiO₃ now known as bridgmanite. That's a field trip that no geologist or mineralogist has ever accomplished.

Researchers Chi Ma and Oliver Tschauner worked for 5 years to characterize this mineral. Ma is a senior scientist and mineralogist with a special interest in nanomineralogy at Caltech and the director of the Geological and Planetary Sciences division's Analytical Facility. Tschauner is an associate research professor in the Department of GeoScience at the University of Nevada, Las Vegas.



The elusive mineral **bridgmanite** is shown in a shock melt vein inside a 4.5-billion-year-old meteorite found in Queensland, Australia.

Credit: Chi Ma, Caltech

There is no terrestrial sample; instead, they found the submicrometer-sized crystals in a meteorite that fell to Earth near the Tenham station in western Queensland, Australia, in 1879. The meteorite had been “highly shocked” by being subjected to high-energy impacts in space. This caused intense pressure and temperature, similar to what rocks in the Earth's mantle experience. The melt veins in the Tenham meteorite were the source of the now-named bridgmanite.

The International Mineralogical Association (IMA) Commission on New Minerals, Nomenclature and Classification (CNMNC) has strict guidelines for naming new minerals. The researchers must submit a complete chemical and structural analysis. The problem Chi Ma had with silicate perovskite is that when trying to analyze the crystal structure using electron diffraction, the structure disintegrated; the material was very sensitive to electron beams. Ma sent samples to Tschauner who used synchrotron X-ray diffraction but it still took lots of effort and 5 years of work using synchrotrons in Chicago and Berkeley before the work was complete for official review. The new mineral, bridgmanite, was approved on June 2, 2014 by the IMA's CNMNC.

The mineral is appropriately named for Percy W. Bridgman of Harvard University who won the Nobel Prize in Physics in 1946. His research concerned the effects of high pressures on materials and their thermodynamic behavior. At the Nobel award ceremony, Sigurd Curman, President of the Royal Academy of Sciences, said “You, Mr. Bridgman, have succeeded in doing what was once considered impossible. By the use of new alloys and by other ingenious devices you have been able figuratively speaking, to bring into your laboratory parts of the interior of the earth or of other places where no human being is able to exist...”

The question in my mind was: How do they know about the silicate perovskite in the mantle? Well, it seems the answer is a combination of technical developments in high resolution seismology to probe the fine structures of

Earth's deep interior (via seismic tomography, for example) and technical advances in mineral and rock physics which have provided new and improved data bases for interpreting seismological observations. This is the realm of the geophysicist, not the field geologist.

On our field trip, we might also find ringwoodite. It is also from the transition zone of the mantle, and was also originally found in the Tenham meteorite, with the terrestrial sample found as an inclusion in a Brazilian diamond. (MSSC *Bulletin*, April 2014)

References: <http://blogs.agu.org/geospace/2014/06/06/earths-abundant-mineral-finally-gets-name/>
<http://www.caltech.edu/content/earth-building-bridgmanite>

CFMS Board of Director's Meeting May, 2014

Next year's CFMS Show will be in Lodi on 6/12, 6/13, 6/14/15. The CFMS is hosting this show. The following year Placerville will be hosting the CFMS Show on 9/17, 9/18, 9/19/2016--this will also include the World Gold Panning Championship which will start on the previous Sunday.

We welcomed in 2 new clubs and had 3 on the delinquent list. So we are a little less than even. It is always sad to see any society on the way out.

The Education Through Sharing Committee Changed its name to Rockhound of the Year. And there will now be a Junior Rockhound of the Year category. Remember we all have people in our club that deserves to be recognized for their work--so make an effort to write 1 or 2 paragraphs re why they deserve to be recognized, and then have the Board of Directors send it in.

Rock and Gem has changed ownership. There should be no interruption in individual subscriptions. Things will be a little more settled by the AFMS Show in Tulsa in 3 weeks time. More information will be announced there.

As Speaker (Program) Chairman for the CFMS Show I was privileged to hear great speakers on a wide variety of subjects (from feathered dinos to colors in minerals). I learned so much. Many of the speakers are available for club meetings and I will be giving that information to the CFMS Programs Aids Chairman.

Jo Anna Ritchey, CMFS Director

Did you know?

Other terms that are often used to describe mineral specimen are:

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



Concentric

More or less circular layers superimposed upon one another about a common center.

Rhodochrosite :

MnCO₃

Locality: [Capillitas Mine, Andalgalá Department, Catamarca, Argentina](#)
10.1 x 7.8 x 0.6 cm.

irocks.com photo

Did you know?

Other terms that are often used to describe mineral specimen are:

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

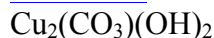


irocks.com photo

Pisolitic

Rounded masses of about the size of peas

Malachite :



Locality: [Copper Queen Mine \(Halero Mine\), Queen Hill, Bisbee, Warren District, Mule Mts, Cochise Co., Arizona, USA](#)

9.5 x 5.5 x 3.9 cm.

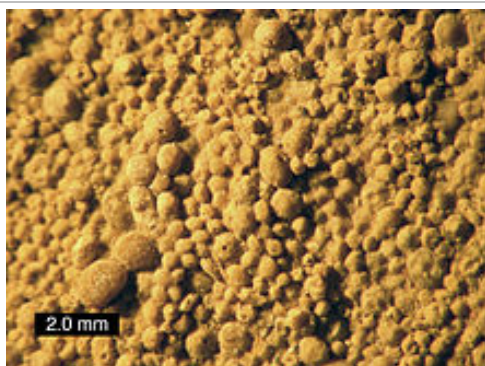
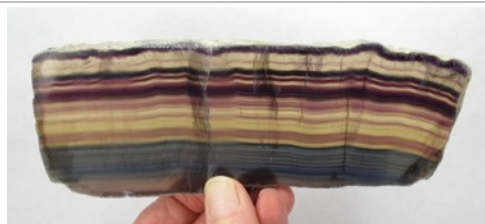


Photo courtesy of Wikipedia.org

Oölitic

A mineral aggregate made up of small spheres resembling fish roe.

Ooids on the surface of a limestone; Carmel Formation (Middle Jurassic) of southern Utah



irocks.com photo

Banded

The mineral occurs in narrow bands of different colors or textures.

Fluorite :



Locality: [Hunan Province, China](#)

19.0 x 7.1 x 1.0 cm

Relation Of The Crystal Structure Of Some Carbon Compounds To Those Of Graphite And Diamond. ¹

By Sir William H. Bragg, K.B.F., D.Sc., F.R.S. Quain Professor of Physics in University College, University of London (Abstract of lecture delivered March 21, 1922)

It must be our aim to correlate the external appearance of a crystal, and its physical properties also, with the arrangement of the atoms inside and the forces that join the atoms together. We might hope to gain so much knowledge on these points that, given a certain set of atoms, it would become possible to anticipate the design of their arrangement and to describe all the characteristics of the crystalline substance as consequences. The analysis of crystals by means of X-rays has given us a little help along this road, and we begin to see certain principles in broad outline.

In the first place, we now divide the force~ between atom and atom into three distinct classes. In the second place, we find that the distance between the centre of an atom to the centre of a neighbor is a definite quantity persisting from crystal to crystal. It may, however, have more than one value depending on the nature of the bonding between the atoms. To illustrate these statements we take a few examples. The diamond is an example of *crystallization* in which the only bonding is the most powerful of the three kinds mentioned above. According to modern ideas the strength of the forces which bind the atoms together in this particular way is

connected with a sharing of electrons. The carbon atom lacks four electrons to complete the second 'electron shell', and it achieves its full complement by holding a pair of electrons in common with each of its four neighbors. Binding of this kind takes place in general between atoms which require only a small number of electrons to complete a shell. Whether or not electron-sharing correctly describes the process is not of immediate consequence. The kind of bonding which the name describes certainly exists, and the explanation given by the modern theory so far fits the facts very well. The whole of the diamond, no matter what its size, is really one molecule. Combination of this kind occurs in other crystals such as carborundum or silicon; and, in addition, is often the basis of the formation of groups of atoms which enter into crystal formation as separate entities: for example, as in the case of the CO_3 of calcite, or the S_2 of pyrites, or the C_2 of calcium carbide. The second type of force is brought into existence when an atom which requires one or two electrons to complete its shell derives them from atoms of electro-positive character in which the one or two electrons which form the commencement of a new shell are easily removed. Crystals of polar compounds are bound together in this way. The molecules are completely dissociated, each into positive and negative portions, and the rule of formation is that each ion is surrounded by ions of the other kind as neighbors. In rock-salt and isomorphous crystals each positive is surrounded by six neighbors and vice versa. In calcium fluoride the positive metal is surrounded by eight fluorine and each fluorine by four metal atoms. Another two to one arrangement is shown in ordinary ice, where each oxygen is surrounded by four hydrogens, and each hydrogen has two oxygens as neighbors. In the ruby, the aluminum has six oxygen neighbors and the oxygen has four aluminum neighbors. It is true that in the ruby the two aluminum atoms appear to be in contact, but it would seem to be against their will: they are driven together by the mutual repulsion of oxygen atoms. In the crystal of senarmonite the arrangement is different. The antimony atoms of senarmonite are arranged in a face-centered lattice and completely separated from each other. Of the eight small cubes into which the cubic lattice can be divided, six are occupied by oxygens. In the spinel crystals the divalent metal is surrounded by four oxygen neighbors and the trivalent by six. In all these polar cases the solid is completely dissociated.

We also find crystals in which two types of bonding exist at the same time. For example, in calcite the CO_3 is tied together by means of electron-sharing, but as a whole it is an ion, and having borrowed two electrons from the calcium draws round it six calcium neighbors, just as the chlorine in rock-salt gathers six neighbors of sodium. In bismuth and antimony, whose structure was examined independently by James and Tunstall and by Ogg, the bismuth atoms are not equally distant from all their neighbors. There is a puckered sheet of atoms parallel to the plane of cleavage in which the atoms are tied together, in all probability, by electron-sharing, and the distance between centre and centre is nearly $2.9 \sim \text{\AA}$. But the distance from an atom in one layer to its nearest neighbor in the next layer is $3.3 \sim \text{\AA}$ and the binding forces are much weaker, as is shown by the position of the cleavage-plane. Perhaps this is a close parallel to the case of graphite in which layers of carbon atoms are joined, layer to layer, by comparatively weak forces, while in each layer the atoms are tied as tightly as in the diamond. The parallelism is strengthened by the fact that the expansion with heat along the axis is greater than in the perpendicular direction. The difference is very great in the case of graphite. Mr. Baekhurst has found a total expansion of 3 per cent. for a rise of 900°C .

The third type of bonding is most clearly shown in crystals of organic substances. It has been found that in all probability the benzene single ring and naphthalene double rings persist in organic substances as definite structures having invariable size and form. This may be expected since the hexagonal ring is found to have survived the change from diamond to graphite and should, therefore, survive the further break-up of the graphite sheets into molecules founded of one or more rings. The dimensions of a ring can be given in $\sim \text{\AA}$ units. The unit cell of an organic crystal can be determined by X-ray methods, and it becomes possible to fit together into the assigned space a molecular structure of which the rings are the basis. The structures are always very light in character and it is obvious that this must be so. The separate atom of carbon or even of hydrogen, assuming the usual values for size and weight, must have, so to speak, specific gravities very much greater than unity. If a structure such as that of naphthalene is to weigh little more than water, the atoms must be joined together in some very open design. But, while the atoms in the molecule are so tightly joined together that the molecule retains its shape, the forces that join one molecule to the next are weak. There is no electron-sharing, neither is there any electrical separation into ions. The forces may perhaps be classed as weak external fields due to uneven distribution of positive and negative electricities. They are exerted at rather large distances and

are very local in character. One molecule attaches itself to the next at different points in a manner limited by the strictest geometrical considerations. It is due to all these facts taken together that there exists such a multiplicity of precise forms, although the ultimate constituents are atoms of carbon, oxygen, hydrogen, and very little besides. The weakness of the forces is shown by the softness of the materials and by the low temperatures at which they pass from solid to liquid and liquid to gas.

¹ Fuller details with diagrams are given in a Presidential Address to the Physical Society : Sir W. It. Bragg, ' The structure of organic crystals.' Prec. Phys. See., 192~ vo]. 84~ pp. 33-50.

*Editor's Note: This article is available to us via the "Open Access Content in Mineralogical Magazine" from the **The Mineralogical Society of Great Britain and Ireland** www.minersoc.org*

Featured Mineral: **Ludlockite**

Formula: $\text{PbFe}^{3+}_4\text{As}^{3+}_{10}\text{O}_{22}$

Crystal System: Triclinic

Name: Named for mineral dealers Frederick Ludlow Smith III and Charles Locke Key, who discovered the mineral.



irocks.com photo

Ludlockite $\text{PbFe}^{3+}_4\text{As}^{3+}_{10}\text{O}_{22}$

Locality: Tsumeb Mine (Tsumcorp Mine), Tsumeb, Otjikoto Region (Oshikoto), Namibia

1 cm x 0.8 cm x 0.8 cm



irocks.com photo

Ludlockite $\text{PbFe}^{3+}_4\text{As}^{3+}_{10}\text{O}_{22}$

Locality: Tsumeb Mine (Tsumcorp Mine), Tsumeb, Otjikoto Region (Oshikoto), Namibia

1.1 cm x 0.6 cm x 0.6 cm



irocks.com photo

Ludlockite $\text{PbFe}^{3+}_4\text{As}^{3+}_{10}\text{O}_{22}$

Leiteite $\text{Zn}(\text{As}_2\text{O}_4)$

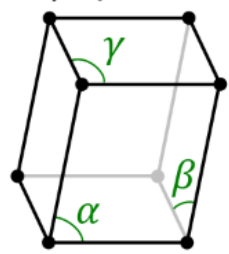
Locality: Tsumeb Mine (Tsumcorp Mine), Tsumeb, Otjikoto Region (Oshikoto), Namibia 2.8 cm x 1.8 cm x 1.2 cm

This specimen is clearly Leiteite in form, and yet it has a bright umber-red color to it! The cause is due to minute dispersed inclusions of Ludlockite.

Just in Case you are curious.....

The Triclinic crystal system is defined as never having 90° angles and all axes are of different lengths

$\alpha, \beta, \gamma \neq 90^\circ$



Triclinic ($a \neq b \neq c$ and $\alpha \neq \beta \neq \gamma$)

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	

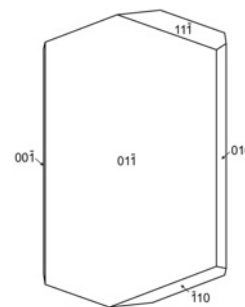
Kokinosite: A new mineral named for a well known California Collector, Mike Kokinos! Many of our longtime members know Mike as a past MSSC Member and an active micro-mounter. As published in the Feb. 2014 "Canadian Mineralogist" Mike just had a new mineral from Colorado named in his honor. Congratulation Mike! It is so new, there are no pictures available yet, but the details are as follows:

Kokinosite: $\text{Na}_2\text{Ca}_2(\text{V}_{10}\text{O}_{28}) \cdot 24\text{H}_2\text{O}$,

Crystal System: triclinic

Location: St. Jude mine, Slick Rock district, San Miguel County, Colorado, USA

- Name: named in honor of Michael Kokinos (b. 1927) of Shingle Springs, California, a well-known mineral collector and member of the Micromounters' Hall of Fame.
- typically occurs as tablets or blades up to 0.05 mm thick, with stepped faces, and 1 mm in maximum dimension
- Crystals transparent and yellow orange, although sometimes they are tinted orange brown; the streak of the phase is yellow
- luster is subadamantine
- does not fluoresce in short- or long-wave radiation
- Mohs hardness is *ca.* 1½
- Has a brittle tenacity, and displays one good cleavage on {01 -1}, No parting was observed, and fracture is irregular
- Kokinosite is pleochroic: *X*, *Z* = orange yellow, *Y* = orange, and *X* = *Z* < *Y*



Crystallography: Studies the arrangement of atoms in solids and the forms of the crystals that result from the arrangement of the atoms within.

Mineralogy: The study of the elements and compounds which occur naturally in the earth's crust. (also including meteorites and rocks from Mars and the Moon)

Geology: The study of history of the earth and its life, especially as recorded in the rocks.

Petrology: The study of the broader aspects of rock formation and subsequent rock alteration and decay

Petrography: Specifically focuses on the description and systematic classification of rocks.

**WEST COAST GEM &
MINERAL SHOW**

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*Fluorite - Anglaize Quarry, OH
Photo by Joe Buddo*

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	
<p>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</p> <p>MSSC Treasurer 1855 Idlewood Road, Glendale, CA 91202</p>			

Calendar of Events:

Since there are no local shows, this is what the CFMS website shows! <http://www.cfmsinc.org/>

JULY 2014

No Shows listed for July!

AUGUST 2014

No Southern California Shows Listed for August!

August 1 - 3: NIPOMO, CA

Orcutt Mineral Society, Santa Maria
Nipomo High School
525 North Thompson Avenue
Hours: Fri/Sat 10 - 5; Sun 10 - 4
Website: www.omsinc.org

August 23 - 24: SAN FRANCISCO, CA

San Francisco Gem & Mineral Society
S. F. County Fair Building, Golden Gate Park
9th Avenue & Lincoln Way
Hours: Sat 10 - 6; Sun 10 - 5
Website: www.sfgemshow.org

MSSC's Website: www.mineralsocal.org

Volume 87 Number 7 - July, 2014
2014 MSSC Officers:

OFFICERS		
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Vice President	George Rossman	vicepresident@mineralsocal.org
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2013--2014	Leslie Ogg	
2014-2015	Pat Caplette	
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Micro Mount Conf. Chairman	Al Wilkins	
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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.

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To:



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