

# **Bulletin of the Mineralogical Society of Southern California**

Volume 92 Number 2 - February, 2019

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*The 965<sup>th</sup> meeting of the Mineralogical Society of Southern California*

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*With Knowledge Comes Appreciation*

**February 15<sup>th</sup>, 2019 at 7:30 P.M.**

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

***Program : Geology of Rancho La Brea/La Brea Tar Pits***  
Presented by Karin Rice

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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 Geology of Rancho La Brea/La Brea Tar Pits Presented by Karin Rice

I'm a geologist by training with industry experience in environmental and engineering geology, and paleontological resource mitigation. I'm also a graduate student working on fault mapping in central Mongolia. I've always been drawn to natural history and fossils and have been lucky to have worked in paleontology since 2005: as a paleontological monitor on construction sites; as a fossil preparator in the Dino Lab at the Natural History Museum; and currently as an excavator for Project 23. Working on Project 23 is all about daily discovery. [krice@tarpits.org](mailto:krice@tarpits.org)

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### From the Editor:

It's that time of year again. Our Membership Roster will be mailed in the next week or two and it's time to clear our list of non-renewing members. Don't be left out... If you haven't already done so, contact our Membership Chair, Cheryl today to renew your membership!

**Did you know that if you haven't renewed your MSSC Membership by the end of February, THIS WILL BE THE LAST BULLETIN YOU WILL RECEIVE!!** If you aren't sure if you have renewed, contact our membership Chairperson, Cheryl Lopez at [membership@mineralsocal.org](mailto:membership@mineralsocal.org). Also, If you haven't renewed by the end of January, your information will not be in the annual membership roster! Linda Elsnau

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## FROM THE PRESIDENT: Interesting Minerals, A to Z. Installment 14, the letter N

by George Rossman

### Nsutite

Nsutite (pronounced ñn sue' tite) is a manganese dioxide mineral. Is named for the type locality, Nsuta, Ghana, where it is an abundant mineral. It was first known as an artificially prepared form of manganese dioxide that was known as gamma-MnO<sub>2</sub>. It was recognized in the Nsuta manganese deposits as early as 1944. In the 1960's researchers noticed that its X-ray pattern of the synthetic phase showed minor variations in their X-ray patterns such that a prominent line in the powder pattern varied from 1.64 to 1.67 Å. This same variation has been noted in the natural mineral from Nsuta. It was found that there are variable amounts of Mn<sup>2+</sup> in what should otherwise be a purely Mn<sup>4+</sup> oxide. It was finally given a mineral name in 1962 [Zwicker et al. Nsutite – A widespread

Manganese Oxide Mineral]. It is not a particularly pretty mineral. It is usually lumps of black stuff. But it is important stuff.

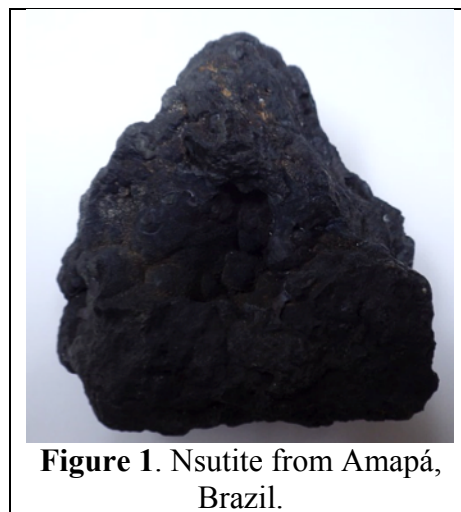
Nsutite is the black oxidizing material inside dry cell (the zinc-carbon batteries we used before lithium ion batteries were used) and alkaline cell batteries. There are several different polymorphs of manganese dioxide. Other polymorphs of manganese dioxide include the mineral species hollandite, cryptomelane, todorokite,



**Figure 2.** Piles of nsutite from the manganese mine near Carajás, Brazil. *Photo Credit: GRR*



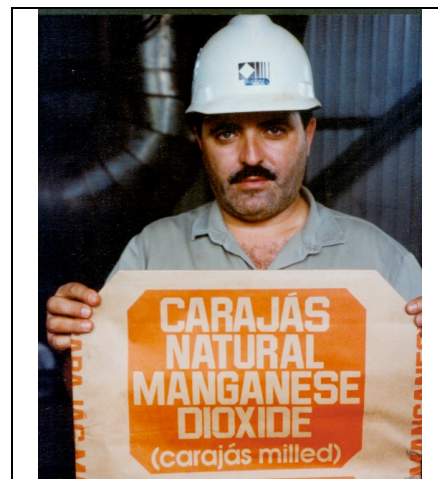
Karen Rice



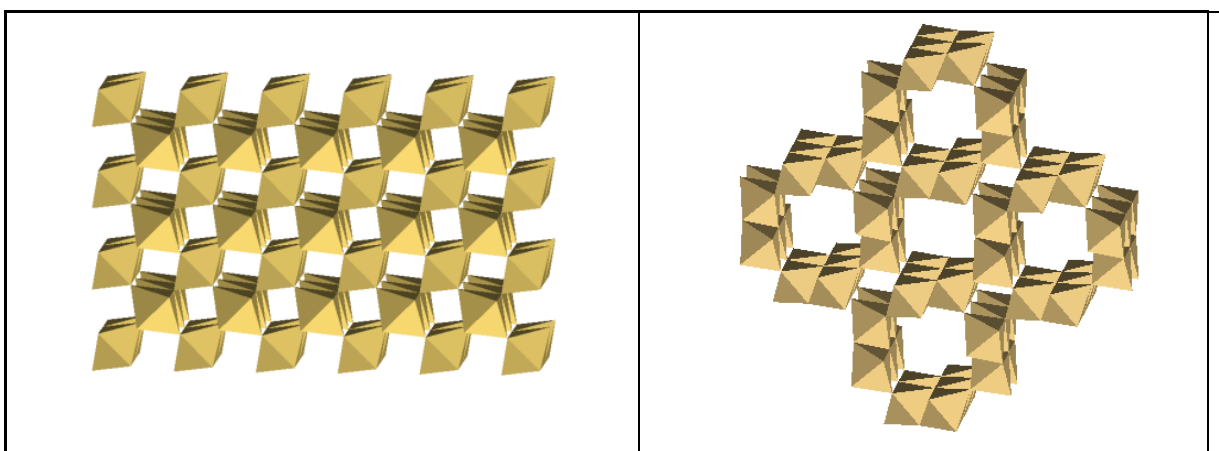
**Figure 1.** Nsutite from Amapá, Brazil.

pyrolusite, and romanechite, to name the more common ones. But only nsutite was the preferred oxide used for batteries. In the Amazon jungle of Brazil, it is mined commercially (**Figures 2,3**) in the Carajás region in the same vicinity where massive iron and gold mines are found.

Nsutite is a tunnel structure manganese dioxide. By this we mean that the  $\text{MnO}_6$  octahedra are arranged to form open tunnels that run down the  $c$ -axis. Sometimes, these tunnels are large enough to hold other ions such as potassium and barium. Most of the other polymorphs of manganese dioxide are also tunnel structures (**Figure 4**). If the tunnels are large enough, other cations can enter the tunnels. Sometimes, the mineral species is determined by the dominant cation in the tunnel.



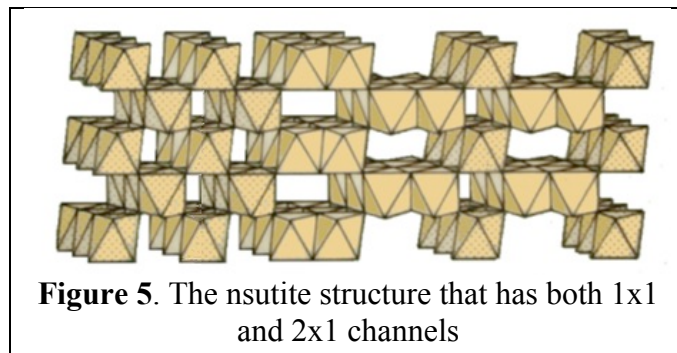
**Figure 3.** A worker at the manganese purification facility near Carajás, Brazil, holding a bag in which nsutite is shipped to market. *Photo Credit: GRR*



**Figure 4.** The pyrolusite structure on the left is a tunnel structure where the tunnel is defined as one  $\text{MnO}_6$  octahedron wide on top and one octahedron tall on the side (a 1x1 channel). Both the hollandite and cryptomelane structures on the right consist of a tunnel that is defined as two octahedra wide on top and two octahedra tall on the side (a 2x2 channel).

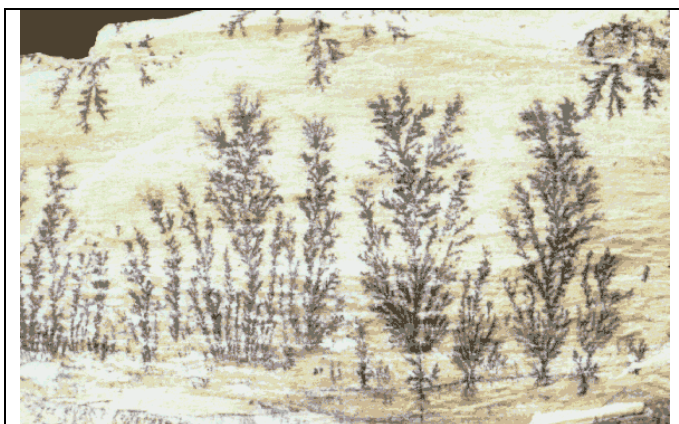
When barium is the dominant cation in the tunnels, the mineral is hollandite, but if we have the same structure with potassium dominant in the tunnels, then the mineral is cryptomelane. Because the potassium ( $\text{K}^+$ ) and barium ( $\text{Ba}^{2+}$ ) in the tunnels bring in extra ionic charge, some of the manganese in the octahedral framework must be reduced from manganese 4+ to manganese 3+ to maintain charge balance. Here, in the manganese oxides, we have other examples of mixed oxidation states as were discussed in previous installments of this series. And we have electrons jumping between oxidation states when light strikes the mineral. That makes manganese oxides black.

Back to nsutite. The nsutite structure contains variable amounts of 1x1 tunnels and 2x1 tunnels (**Figure 5**). In other words, the mineral does not have a fixed, well-defined structure. That explains why the X-ray pattern is



**Figure 5.** The nsutite structure that has both 1x1 and 2x1 channels

variable and might also be a reason that it is the best manganese oxide for batteries.



**Figure 6.** A manganese dendrite from near Afton Canyon. The manganese mineral is hollandite, not pyrolusite. *Photo credit: GRR*

We also find these manganese oxides in manganese dendrites. Many books call them pyrolusite dendrites, Pyrolusite is  $MnO_2$ . Pyrolusite is the 1x1 tunnel structure manganese oxide. But, to my knowledge, never has a manganese oxide dendrite, when analyzed, been found to be pyrolusite.

They can be coronadite, a lead-containing 2x2 tunnel structure, cryptomelene, a potassium-containing 2x2 tunnel structure, hollandite, a barium-containing 2x2 tunnel structure, romanechite, a 2x3 tunnel structure, or todorokite a 4x3 tunnel structure. But never pyrolusite.

**Figure 6** shows an attractive hollandite manganese dendrite from San Bernardino County.

But, no, I don't know of any nsutite dendrites. Still, I hope that all this proves that even piles of black stuff can be interesting.

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### MINUTES of the January 12, 2019 Banquet/Meeting

The 964th meeting of the Mineralogical Society of Southern California was held on Saturday, January 12, 2019 at Coco's Restaurant, Oak Tree Room. The Installation of Officers Banquet and Silent Auction is one of MSSC's annual events and primary fundraiser.

The evening began with Social Hour at 5:30 p.m., dinner at 6:30 p.m. and guest speaker Denise Nelson at 7:30 p.m. The society's fundraiser, the Silent Auction, took place starting at 5:30 pm and during the evening until final bids were made and the auction was called closed at the conclusion of the speaker's presentation.

There was a brief welcome and announcement by our Coco's hostess, Cindy after which she invited all to partake of the buffet dinner.

Dr. Rossman announced the 964<sup>th</sup> meeting of the Mineralogical Society of Southern California and called the meeting to order. He stated that there are now 5,415 minerals recognized by the International Mineralogical Association (IMA) and that one of the latest is named for one of our members, Tony Kampf.

**Business:** Approval of Minutes of the last meeting as published in the January 2019 *Bulletin*. The Motion was made by Guzman and seconded. There was no discussion, the vote was called, and the motion passed unanimous. **Announcements:** Field trip planned for January, check website for information; Tucson show is starting! **Guests:** Dr. Rossman asked any guests to introduce themselves; the following guests were in attendance: Ursula Hamilton (Dodge), Dennis Nelson (husband of speaker Denise Nelson), Jen Andrews, seismologist CalTech, with her parents, Mike and Sue Andrews from UK, and Darwin Mink (Elliott and Guzman). **Silent Auction** will continue until after the speaker's presentation.

Dr. Rossman introduced the following re-elected **Officers and Directors for 2019:**

<b>President</b>	Dr. George Rossman
<b>Vice President</b>	Renee Krause
<b>Treasurer</b>	Jim Kusely
<b>Secretary</b>	Angela Guzman
<b>CFMS Director</b>	JoAnna Ritchey

#### **Directors: 2018-2019**

Pat Caplette  
Pat Stevens

#### **Directors: 2019-2020**

Dr. Bruce Carter  
Dr. Bob Housley  
Leslie Ogg

**Chairs:**

<b>Bulletin Editor</b>	Linda Elsnau	<b>Membership</b>	Cheryl Lopez
<b>Programs</b>	Rudy Lopez	<b>Webmaster</b>	Leslie Ogg
<b>PMC</b>	Al Wilkins	<b>Hospitality</b>	Laura Davis
<b>Historian/Past Pres.</b>	Anne Meister	<b>Field Trips</b>	Marek Chorazewicz

Congratulations!

**Program**

The meeting was turned over to Program Chair, Rudy Lopez. Rudy introduced our speaker, Denise Nelson who came in from Maryland to give her presentation. She is a gemologist certified through Gemological Institute of America, GIA, an appraiser, jewelry designer and wholesaler. Denise has traveled extensively. She has 30 years of experience in her field. She is also an expert in genealogy! This is Denise's third appearance and tonight she will speak on "Treasures of Poland: Amber and Salt."

Denise starts out with a few highlights from the tour of Poland guided by her cousin. **Gdansk** is in northern Poland, a port city on the Baltic coast. After World War II, the reconstruction includes long enclosed mall shops. Gdansk is a tourist city and, it is the center of the world's amber trade.

Many years ago, as far back as 44 million years ago<sup>1</sup> (million years ago), ancient Baltic coastal forests produced Amber, a fossilized tree resin. Amber has been appreciated for its beauty and range of colors<sup>2</sup> since Neolithic times<sup>3</sup>. These ancient forests created more than 100,000 ton of amber most of which now lies below the Gdansk Bay. Trade took amber across southern Europe and to other places. In ancient times, amber specimens reveal it has been worked with crude tools, polished and even made into jewelry. Amber's color and scent soon attracted other cultures' interest. For instance, the Romans used amber for perfume, oils and made other uses of it. It became popular and favorable to own, even by royalty. In China, it is called sun stone because of its orange color. Amber is a soft material, it can be polished, it can be burned, it has an electro-static reaction if rubbed and it is light weight. Because of these traits, the amber trade industry grew. In fact, during medieval times, the Templar patrolled and protected the trade routes along rivers. During those times for a couple of centuries, it was prohibited to collect amber.

Denise took us on a brief tour of the area, showing us WWII sites and showed photos of local people collecting amber in the ocean. Even today, amber washes ashore and can be found on Gdansk beaches. Amber is also mined in open mines. But at the Amber Museum, after a small entrance fee is paid, one can see a guitar made completely out of amber, an amber Tiffany lamp, exquisite artistic jewelry pieces and other items. Amber in the raw looks aged, its "skin" layer appears brownish, and it is uneven, coarse and dull. When refined, cleaned up, it is beautiful! Denise showed Viking era pieces that are gorgeous. She says the Romans carved a lot of necklaces out of amber and jet. Jet is a lignite, is derived from wood, is a gem stone and is mineraloid. Almost every museum has a collection of amber in their vaults. She emphasizes the artistry aspect reminding us that, through the ages, artists have been working amber with beautiful results. The museum has wonderful pieces in their collection. Denise mentions the Amber Room, originally a gift to Peter the Great from Frederick of Prussia, was dismantled during WWII. While some of the Amber Room has been located, parts of it are still missing. In Russia, a reconstruction effort to replicate the Amber Room was finished in 2003.

Dispelling the myth about amber, not all pieces have insects included in the specimens. Gdansk amber is further north than tropical areas where other amber is found and for that reason, Gdansk amber does not usually have insect inclusions. She also tells us the closer you are to the source, the higher the price for amber. They see you coming. Shopping here is for tourists not wholesalers or collectors. If looking for great amber prices and experts in the field, go to the Tucson shows and vendors. Generally, you will find amber treasures. It's not to say natural Baltic amber is not lovely and valuable, it is, and you can find beautiful items in Poland. Copal, for instance, is a younger tree resin. It's brittle and cracks. Mexican amber is harder than copal and about 30-40 mya but Denise says she's not sure how stable it is. There is also fake amber – plastic, polymer injected, not genuine, and you need a keen eye.

Denise next takes us to **Wieliczka Salt Mine** in Poland. It is 1,000 feet underground and is located near Krakow. The salt mine began production in the 10<sup>th</sup> century. The crystalline salt was the area's economic foundation as salt was very valuable in the Middle Ages on par with silver or gold due to its use in production of arms and preservation of meats and dairy products.

Throughout the centuries, miners removed salt from the mines but in their leisure, they carved spectacular sculptures and chapels out of salt rock, leaving cultural depictions now shared with thousands of tourists today. In fact, Wieliczka Salt Mine is Poland's largest tourist site comprising 9 levels, including a lake and a salt cathedral! In 1978 UNESCO declared it a World Cultural Heritage Site.

It is 327 meters deep and 178 miles in length. After a walk of 900 steps down, the space opens up to a huge "room" including several chandeliers carved from salt. There is a wellness center, a "stable" for the work horses that were housed in the mine during years of operation, a luxury car was there for the pleasure of affluent visitors of old, there are weddings held in the mine, there is a restaurant down there and a gift shop. While the mine has not been operational for salt production since 1996 due to falling salt prices, approximately 1.2 million visitors are attracted to the mine annually. Oh, there is an elevator to take visitors back up to the top. Whew, thought you'd have to climb back up those 900 steps, did you?

Next Denise takes us south to Bohemia, the **Czech Republic**. **Kunta Hora** has a historic silver mine that miners started working in 1260. It became a full production silver mint in those days. Evidence of that can be seen in some of the stained-glass windows of the central church which features miners, not saints. Denise takes us onward into **Austria** and the town of **Maissau**. There, Amethystwelt museum shows an amethyst vein was discovered while workers were doing quarry work in 1845. The amethyst shows inclusions but the crystals are incredibly big. The vein, though, was not big enough to mine, so, the town created a museum for educational purposes.

Denise had more wonderful information in her presentation including her side trip to Vienna with their collections of minerals and meteorites. She gave more descriptions about Poland's amber and other museums containing fabulous collections. Next time ask about the coin found from Caguila's time! Q & A followed the informative presentation. Thanks, Denise. Please come again!

After the presentation, Dr. Rossman asked Dr. Housley about the Pacific Micromount Conference. Bob reports that the PMC will be held in Fallbrook adjacent to the mineral club's museum. It will be February 1-2 and field trip on Sunday, Feb 3. Registration on Friday starts at 3pm. Friday speakers will be Michael Cox and Ted Hadley speaking on the "McDermitt Mine Update: Geology, Microminerals and Fun" and the Saturday speakers will be Paul Adams on "The Copper World and Mohawk Mines, San Bernardino County, CA" and Bob Housley's "The Use of Raman Spectroscopy In Identifying New and Rare Secondary Tellurium Minerals". The Field trip is to be announced. Check the *Bulletin* and website for updates. Dr. Rossman called for the end of the Silent Auction and for those who made winning bids to pay. Thank you for your Silent Auction participation and thank you all for a wonderful banquet. See you next year!

MSSC's fifth year with Coco's Arcadia was a tribute to their service and good food. Thanks Lisa! We'll miss you next year. The banquet and silent auction were a great success! The evening can't be beat for the great company and collecting tidbits. The banquet ended and the meeting was adjourned at 9:00 p.m. Hope you didn't miss this one.

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

<sup>1</sup> 44 mya: Eocene Epoch

<sup>2</sup> Colors: white, yellow, golden, orange, blue, green, black, etc.

<sup>1</sup> Neolithic: Stone Age

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*With Knowledge Comes Appreciation*

## List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
<b>Meeting Dates:</b>	March 8, 2019	Steve Mulqueen: The Golden Age of Rockhounding, 1946 – 1972
	April 12, 2019	Bruce Carter – Mineralogical - Identifying Mega Floods In Southern California
	May 10, 2019	The Webers- Rainforest Jasper of Queensland Australia
	June 14, 2019	Justin Seastrand: Forest Service – Land Rights
<b>Board Meeting</b>	March 3, 2019	Board Meeting at Bruce Carter's house
<b>Annual Banquet</b>	January 12, 2019	Denise Nelson - "Treasures of Poland, Amber and Salt":
<b>Field Trip</b>	February 23, 2019	Siberia Crater (Dish Hill), See details below

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

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## L.A. Nature Fest

**The Nature Fest on March 16 and 17, 2019! is coming up fast!**

Join us for a two-day festival as we celebrate L.A.'s wild side! There's a surprising amount of nature in Los Angeles, and the more you know how to look for it, the more you'll see. You'll be blown away by L.A.'s wild side: the plants, the animals, and the people devoted to protecting and studying them.

We will pass out a mineral to every kid that comes to our tables. We will also have Crystal models for the kids to cut out and paste together.

**Volunteers are needed to assist with the cutouts and handing out the minerals.**

**Please contact: Rudy Lopez**

**626 993-7989 or [programs@mineralsocal.org](mailto:programs@mineralsocal.org)**

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## Upcoming Field Trip: Saturday Feb. 23, 2019: Dish Hill Volcanic Cinders Mine, Dish Hill Crater (Dish Hill; Siberia Hill; Siberia Hill Crater), Trojan, San Bernardino Co., California

This trip is still in the works, depends on the weather too. The area has excellent large phenocrysts of deep mantle minerals like **kaersutite**, Ti-bearing **augite** and **forsterite**, as well as rare micro zeolites like **phillipsite** and very rare octahedral **faujasite**. The cone is very unusual geologically, it's a very alkaline volcanic rock called **basanite**. Another very rare alkaline mineral has been identified from there: **quintinite** from the **hydrotalcite** group.

If you are interested, contact Rudy Lopez at [programs@mineralsocal.org](mailto:programs@mineralsocal.org)

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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](mailto: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

## February Featured Mineral: **Ramsdellite**

**Formula:**  $\text{Mn}^{4+}\text{O}_2$

**Crystal System:** Orthorhombic

**Name:** Named in honor of Lewis Stephen Ramsdell (4 June 1895, Clinton, Michigan, USA - 14 July 1975, Palo Alto, California, USA), Professor of Mineralogy at the University of Michigan, who first described the mineral.



**Ramsdellite**  $\text{Mn}^{4+}\text{O}_2$

**Locality:** Lake Valley District, Sierra Co., New Mexico, USA

1.8 cm x 3.9 cm x 2.8 cm

© irocks.com photo



© irocks.com photo

**Ramsdellite**  $\text{Mn}^{4+}\text{O}_2$

**Locality:** Mistake Mine, Sam Powell Peak, Box Canyon District, Yavapai Co., Arizona, USA

2.9 cm x 2.4 cm x 1.2 cm



© irocks.com photo

**Ramsdellite**  $\text{Mn}^{4+}\text{O}_2$

**Locality:** Sierra Co., New Mexico, USA

5.7 cm x 3.5 cm x 2.2 cm

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### OTHER FREE THINGS TO DO...by Ann Meister

The **Von Kármán Lecture** on \*Thursday/Friday\* **February 7 and 8** at 7 PM. The speakers are Dr. Jose Siles and Dr. Laura Jones-Wilson. The title of the talk is **“Ridiculous World of Scientific Ballooning.”** Human flight began with the balloon and today it is the last bastion of guerrilla science. Scientific ballooning provides a well-tested, reliable, low-cost, moderate risk platform that helps prepare the next generation of scientists, engineers, and instruments. This talk will take a look at how our oldest flight technology actually paves the way for the future. \*\* Thursday is at the Von Kármán Auditorium at JPL and Friday is at Ramo Auditorium at Caltech.

There are two **Watson Lectures** at Caltech's Beckman Auditorium this month. The first is on Wednesday, **February 13** at 8 PM. The speaker is Eliot Meyerwoitz. The title of his talk is, "**Plant Growth: How Stem Cells Make Stems.**" The second is on Wednesday, **February 27** at 8 PM. The speaker is **Kip S. Thorne**. The title of his talk is, "**My Half Century Romance with Caltech and with Black Holes, Wormholes, Time Travel, and Gravitational Waves.**" The line for this one is likely to snake around the campus.

The **UCLA Meteorite Gallery** lecture is on Sunday, **February 24**. The speaker is Fernando Ramirez, a Ph.D. candidate in our department of Earth, Planetary and Space Sciences. He will tell us about "**The rediscovery of the site where the Old Woman meteorite was found**". In 1976 two young prospectors found the 2nd largest North American meteorite, the 3-ton Old Woman iron (a large slab is now exhibited in the UCLA Meteorite Gallery). This discovery triggered a bureaucratic struggle for ownership and the find site was never properly documented. I used available evidence, especially photos of the recovery operation, to try to locate the find site. I will tell stories about my efforts that finally resulted in success. I am continuing my efforts to use similar techniques to locate the impact point higher in the Old Woman Mountains. 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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# West Coast Gem & Mineral Show

## May 10 - 12, 2019

75 Select Retail & Wholesale Dealers' Minerals & Fossils Gems & Jewelry Lapidary & Home Decor and much more!

Wholesale for qualified buyers



Neubertite, East Denver, CO, CA  
Housed by JMT Schwartz  
Alaska State Collection

### NEW LOCATION!!!

**Hilton Orange County**  
3050 Bristol St., Costa Mesa, CA 92626

FREE Admission  
Parking \$10/day  
OPEN to the Public

See our website for directions

www.MineralShowsLLC.com

MineralShowsLLC@gmail.com

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 <a href="mailto:bulletin@mineralsocal.org">bulletin@mineralsocal.org</a> and the payment should be sent to the <b>MSSC Treasurer 1855 Idlewood Road, Glendale, CA 91202</b>			

## Calendar of Events:

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

**Mark Your Calendars Now!**

**March 8, 9 & 10, 2019**

### **80<sup>th</sup> CFMS SHOW & CONVENTION**

Hosted by the Pasadena Lapidary Society,  
Fairplex, Building 6, Pomona, California

Show Hours: FRI & SAT: 10 a.m. - 5  
p.m. SUN: 10 a.m. - 4 p.m.

**VISIT PASADENA LAPIDARY SOCIETY'S  
SITE for SHOW DETAILS**

[Advance  
Registration  
Form](#)

[CFMS  
Meeting  
Schedule](#)

[Case Display  
Registration](#)

[CFMS Lodging & Meeting Site](#)

Also see [Visitor Lodging](#)



## **FEBRUARY 2019**

### **February 15 - 24: INDIO, CA**

San Geronio Mineral & Gem Society  
Riverside County Fair & National Date Festival  
82-503 Highway 111  
Hours: 10 - 10 daily

## **MARCH 2019**

### **March 2 - 3: VENTURA, CA**

Ventura Gem & Mineral Society  
Ventura County Fairgrounds  
10 West Harbor Blvd.  
Hours: Sat 10 - 5; Sun 10 - 4  
Website: [www.vgms.org](http://www.vgms.org)

### **March 8 - 10: VICTORVILLE, CA**

Victorville Valley Gem & Mineral Club  
Stoddard Wells Tailgate  
Stoddard Wells Road off Dale Evans Pkwy  
Hours: 9 - 5 daily  
Website: [vvgmc.org](http://vvgmc.org) [Show Page](#)

### **March 16 - 17: LEMOORE, CA**

Lemoore Gem & Mineral Club  
Trinity Hall  
470 Champion Street  
Hours: Sat 10 - 6; Sun 10 - 4  
Website:  
[www.lemooregemandmineralclub.wordpress.com](http://www.lemooregemandmineralclub.wordpress.com)

### **March 30 - 31: TORRANCE, CA**

South Bay Lapidary & Mineral Society  
Ken Miller Recreation Center  
3341 Torrance Blvd (entrance on Madrona Ave)  
Hours: Sat. 10 - 5; Sun. 10 - 4  
Website:  
[southbaylapidaryandmineralsociety.com](http://southbaylapidaryandmineralsociety.com) [Show Page](#)

## **APRIL, 2019**

### **April 13 - 14: PASO ROBLES, CA**

Santa Lucia Rockhounds  
Paso Robles Event Center  
2198 Riverside Avenue  
Hours: 10 - 5 Daily  
Website: [slockhounds.org](http://slockhounds.org) [Show Page](#)

### **April 27 - 28: LANCASTER**

Antelope Valley Gem & Mineral Society  
Antelope Valley Fairgrounds  
2551 West Avenue H (Hwy. 14 & Ave. H)  
Hours: 10 - 5 daily  
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2019--2020	Leslie Ogg	
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2018-2019	Pat Stevens	
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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:

**Mineralogical Society of Southern California**

**1855 Idlewood Rd.,**

**Glendale, CA 91202-1053**

**E-mail:** [treasurer@mineralsocal.org](mailto:treasurer@mineralsocal.org)

**Website:** [www.mineralsocal.org](http://www.mineralsocal.org) **The Mineralogical Society of California, Inc.**

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MSSC Bulletin Editor  
3630 Encinal Ave.  
Glendale, CA 91214-2415

*To:*



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