Bulletin of the Mineralogical Society of Southern California

Volume 94 Number 12 - December, 2021

The 996th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

A ZOOM Meeting

December 10th, 2021 at 7:30 P.M.

Program : **Mineralogy and Fluid-Rock Reactions in the Ocean Crust**
Presented by: Dr. Rebecca Greenberger

In this Issue:

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

About the Program: Mineralogy and Fluid-Rock Reactions in the Ocean Crust

Presented by: Dr. Rebecca Greenberger

The majority of Earth's crust is ocean crust, yet we do not fully understand how it forms, cools, and alters through interaction with water. A key challenge is accessing the ocean crust. We can directly sample this crust through ocean drilling, which is technologically challenging, but we have not yet recovered a continuous sample of the ocean crust from the lavas near the ocean floor to the lower crust kilometers below. Ophiolites, where the ocean crust and upper mantle have been tectonically thrust onto continents, provide more accessible sites to study the ocean crust. The International Continental Scientific Drilling Program's Oman Drilling Project recovered 3.2 km of drill core through the ocean crust and upper mantle of the Samail Ophiolite, Oman

Dr. Rebecca Greenberger is currently a Lab Manager and Research Scientist at Caltech. In her research, she uses imaging spectroscopy in the field and laboratory to understand geological processes on Earth and elsewhere in the Solar System. She has done fieldwork across four continents, including meteorite impact craters in the Canadian High Arctic and Germany, the mountains of Oman, and most recently dust source regions in Morocco and Iceland. Rebecca received an AB in Earth and Planetary Sciences at Washington University in St. Louis and ScM and PhD in Geological Sciences at Brown University. She also completed a NASA Postdoctoral Fellowship at the Jet Propulsion Laboratory.

How to Join our ZOOM Meetings by Rudy Lopez

MSSC members are automatically included in the invite list each month.

Non-Members must request to attend MSSC zoom meeting each month.
Please go to the MSSC website, http://www.mineralsocal.org to read our Bulletin for upcoming programs, then send Rudy Lopez an email, no later than the Tuesday before the meeting, to programs@mineralsocal.org and he will make sure you're contacted.

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From the Editor: Linda Elsnau

Wow, this bulletin marks the end of my ninth year as your Editor! I never expected to be doing it for so long. It's been quite a roller coaster ride for me, but mostly a good one. Internet problems, my own computer's problems, and other unexpected "stuff" aside, I have enjoyed being MSSC's Bulletin Editor. (Who knew?!)

Don't forget to send in your Membership Renewal…as well as your completed Membership Form so we can be sure we are up to date on your information.

It looks like another excellent program this month…try not to miss it.

I also want to extend my congratulations and thanks to our new slate of MSSC Officers.

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FROM THE PRESIDENT: Interesting Minerals, A to Z. Round 2, installment 21, the letter "U": by George Rossman

Ulexite $NaCaB_5O_6(OH)_6 \cdot 5H_2O$

Ulexite is an important California mineral. However, it was originally named in honor of the German chemist and politician, George Ulex (1811-1883). He was the first person to correctly analyze this mineral species. Others had examined it, but Ulex was the first to get correct. In 1850, James D. Dana states that "Ulexite – The species of borate analyzed by Ulex, from Chili, differs so widely from that examined by Hayes, that is seems to require a distinct appellation".

> Dana JD (1950) Ulexite. In: A System of Mineralogy comprising the Most Recent Discoveries: including full descriptions of species and their localities, chemical analyses and formulas, tables for the determination of minerals, and a treatise on mathematical crystallography and the drawing of figures of crystals. *Third Edition*, George P Putnam (New York and London) 695-695.

Ulexite is a mineral that occurs in salt playas and dry saline lakes. The type locality is the Iquique Province, Tarapacá, Chile. There are several other localities where ulexite is found in Chile **(Figures 1-3).**

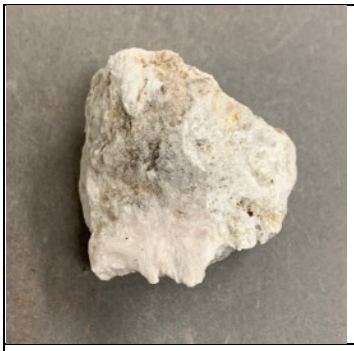

Figure 1. Ulexite from Banos del Toro Hot Springs, Coquimbo, Chile. Photo Credit: GRR

Figure 2. Ulexite from Banos del Toro Hot Springs, Chile. Photo Credit: GRR

Figure 3. Ulexite from Antofagasta, Chile. Photo Credit: GRR

In the US, it was first used commercially from the material in the semi-dry lake bed at Teals Marsh in western Nevada. A bit later, it was commercially collected from Death Valley **(Figures 4-6)**

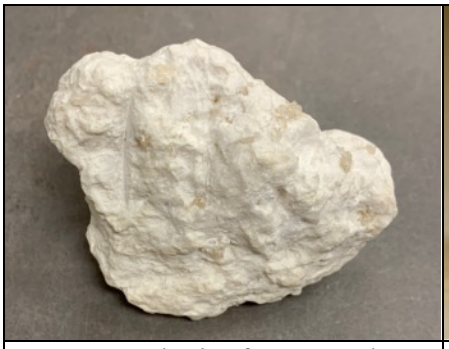

Figure 4, Ulexite from Death Valley National Park. Photo Credit: GRR

Figure 5, Death Valley National Park, 20 Mule Team Canyon, Inyo County, California. Photo Credit: GRR

Figure 6, Death Valley National Park, near Zabriskie Point, Inyo County, California. Photo Credit: GRR

Much of the early ulexite collected in Death Valley and elsewhere was in the form of "cotton balls", rounded aggregates of ulexite crystals. Such "cotton balls" are also found at the large borate mine at Boron, CA **(Figure 7).**

Mindat.org has an interesting article from former MSSC member Rock Currier about the occurrence of ulexite at the big mine near Boron, California. He states that the ulexite is found in the top most layer of the borate deposit just above the borax which is the main ore of interest at that mine.

Fibrous crystals

Ulexite crystalizes in the form of fine needle-like crystals. Sometimes, these delicate crystals occur in collectable specimens **(Figure 8)**

Satin Spar

Figure 7. Ulexite "cotton balls" from Boron, CA. Photo Credit: GRR

Figure 8. Individual ulexite crystal fibers from Boron, CA Photo Credit: Rob Lavinsky & irocks.com

Often, these ulexite crystal fibers occur in masses of parallel fibers. Such masses can show enhanced light reflection at certain angles of incidence and are known as the variety "satin spar" **(Figures 9,10).**

Figure 9. Ulexite, variety satin spar, from Borate, CA.
Photo Credit: GRR

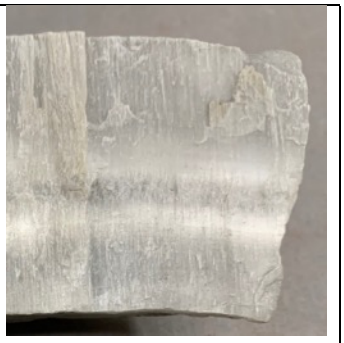

Figure 10. Closer view of ulexite, variety satin spar, from Borate, CA.
Photo Credit: GRR

TV Rock

Ulexite is often found in large blocks comprised of a multitude of parallel fibers. If free of inclusions, these fibers conduct light in a fashion similar to fiber optics. They allow images to be seen through crystals that can be up to 10 cm thick. When it was formed the thin acicular crystals of ulexite grew next to each other in a parallel fashion and when chunks of this massive material is cut perpendicular to the long axis of the crystals, the resulting material demonstrates the fiber optic effect **(Figures 11,12).**

Figure 11. Side view of ulexite, variety "TV Rock" from Boron, CA. Photo Credit: GRR

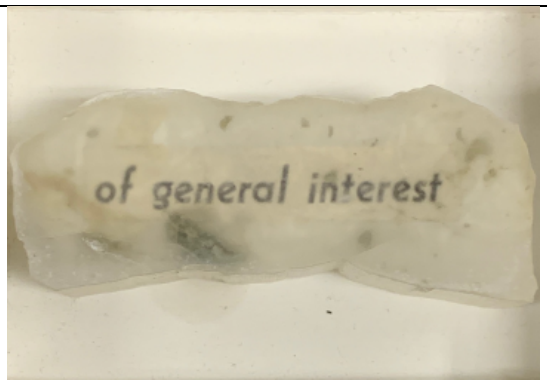

Figure 12. View down the c-axis of "TV rock" from Boron, CA, looking at writing below the sample. Photo Credit: GRR

The parallel fiber alignment also makes it possible to fabricate cabochons from ulexite that display a distinctive, broad cat's-eye effect as shown in **Figure 13**.

Sometimes in the mud of the deposit you can find ulexite pseudomorphs after borax **(Figure 14).** There are significant amounts of arsenic minerals in the deposit at Boron where it is frequently initially present as red realgar. The realgar is commonly found mixed with ulexite **(Figure 15).** The realgar tends to revert to yellow/orange pararealgar when exposed to sun light.

Figure 13. Ulexite "TV rock" from Boron, CA, cut into a cabochon with a cat's eye effect.
Photo Credit: Rock Currier

Figure 14. Ulexite pseudomorphs after borax from Boron, CA. Photo Credit: GRR

Figure 15. Ulexite with orange pararealgar from Boron, CA.
Photo credit: Marc Garcia

An interesting form of ulexite is called a "clam shell". These are ulexite massed that were collected in the Boron mine in the shale/mud layer. **(Figure 16 & 17)**

Figure 16. Ulexite "clam Shell" from Boron, CA.
Photo Credit: Rock Currier

Figure `17. Ulexite "clam Shell" from Boron, CA. Photo Credit: Rock Currier

The structure of ulexite was examined by Clark and Appleman in 1964 and by Ghose et al (1978). They found that the borate groups occur in clusters of 5 consisting of three borate tetrahedra and two borate triangular groups **(Figure 18).** The clusters have the formula $[B_5O_6(OH)_6]^{3-}$.

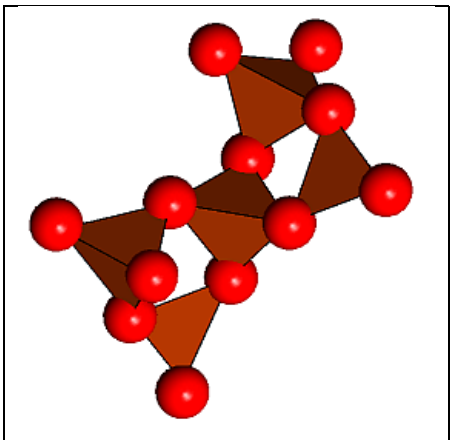

Figure 18. The borate cluster in ulexite.

Clark JR, Appleman DE (1964) Pentaborate polyanion in the crystal structure of ulexite, $NaCaB_4O_6 \cdot 5H_2O$. Science 145, 1295-1296.

Ghose, S, Wan C, Clark JR (1978) Ulexite, $NaCaB_4O_6 \cdot 5H_2O$: structure refinement, polyanion configuration, hydrogen bonding and fiber optics. American Mineralogist 63, 160-171,

Large amounts of ulexite are currently being stockpiled in the dumps at Boron, CA, awaiting the time when the primary ore, borax, runs out. Then, processing of the ulexite is expected to begin to extract to provide a feedstock for borate products.

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MINUTES of the November 12, 2021 ZOOM Meeting

Call to Order (Dr. Rossman):

At 7:31 p.m., the 995th Membership Meeting of the Mineralogical Society of Southern California (MSSC) was called to order by President Dr. Rossman, Ph.D. It was MSSC's 18th ZOOM conference meeting. The IMA still stands at 5,744 approved mineral species, no new announcements this past month. This meeting is under MSSC's newly acquired ZOOM license. It will be recorded and have a live transcript. The recording and live transcript **will not** be for public distribution, **will not** be on the web and **will not** be on YouTube or social media. They will strictly be used by the Secretary for the Minutes of the meeting. We wish to thank Caltech for their kind generosity in allowing MSSC's past use of their ZOOM license for our conference meetings during the COVID pandemic.

Regular Business (Dr. Rossman)

MINUTES: Dr. Rossman announced that the October 2021 Membership Meeting Minutes, as published in the November 2021 Bulletin, need to be approved. He called for corrections or additions, seeing none, *[ZOOM recording started]* called for the vote to approve those Minutes. The vote to approve the October 2021 Minutes was approved unanimously.

Message from the Chair (Dr. Rossman):

Dr. Rossman announced that the society has important business tonight, the completion of nominations and election of officers. Dr. Rossman turned the meeting over to Secretary, Angie Guzman.

Nominations and Election of Officer and Directors (Angie Guzman)

Nominations of Officers and (2) Directors, terms begin January 1, 2022: Angie Guzman, Secretary, announced accepted nominations from the October meeting as listed below. An opportunity was provided for those to rescind their nomination, none did. The floor was opened for any additional nominations, no others came forward and the nominations were closed. Angie offered that since those nominated were in place and no other nominations had been submitted, the "slate" would be voted by acclamation. There was no objection. Angie called for the vote by a show of hands. The members voted unanimously to elect the slate: The newly elected Officers and Directors, terms beginning January 1, 2022, are

Officers (each for 1-year term 2022)

President:	Dr. George Rossman
Vice President:	Cheryl Lopez
Treasurer:	Carolyn Seitz
Secretary:	Angela Guzman
CFMS Director:	Angela Guzman

Directors: (each for 2-year term 2022-2024)

Ahni Dodge & Pat Caplette, .

Angie congratulated the newly elected Officers and Directors and thanked them for their service during their upcoming term. Installation of officers will be in January 2022, details to be announced.

Announcements and Reports

1. Leslie Ogg, Webmaster: Now you can renew your membership via PayPal through MSSC's website. It does cost a couple extra dollars because PayPal charges a fee, but you don't have to use a stamp to mail your

check. Look on the website's membership page. We've also updated the membership form online; it's now a Google form. Instead of printing it and filling it out, you just fill it out on the web page and it automatically sends to our membership chair Cheryl Lopez without you having to mail anything. Or you can fill out the form online and mail the check to Carolyn Seitz as well, just as in the past;

2. Program/Education Chair Rudy Lopez announced (a) next month's speaker is Dr. Greenberg from CalTech and JPL. She hasn't given the exact topic for her presentation, but she's a lab manager and research scientist who is very much involved in remote sensing motion (Martian) and things of that nature, (b) speakers are booked through June 2022 and there was discussion regarding recruitment of additional speakers and (c) local collecting for kids, ideas for getting younger people involved. Rudy spoke with a member about White Point (San Pedro). The woman took her children there and their trip was successful for them and for MSSC, too. The member, whose kids are too little for regular field trips, renewed her membership. Rudy will be putting together an article geared to children (and adults) that cannot get to the more rigorous field trips, highlighting places for collecting and of interest, such as museums;

3. Field Trip Chair, Marek Chorazewicz reports that tomorrow, 9:30am, there will be a meet up at the end of the paved road in Hinckley, which is northwest of Barstow and north of Glenwood to Black Mountain for opal. The group will go to two Scouts Cove locations: one for orange opal and the other for red opal. These are common opal but still very nice color. After the trip, if people are not too tired, Marek will lead them to Inscription Canyon to look at ancient and current graffiti. For more information, please see the MSSC website.

4. Jurupa Mountain Discovery Center, David Lesperance reports that the Jurupa Mountains Discovery Center (JMDC) will have re-opening ceremonies this weekend. There is a paleo museum, Dinosaur Trek, critters, gardens, discovery camps and the "home of best field trip ever" which caters to youngsters. This is a family fun place. Next year they will reopen their mineral and geology sections and there is a call for docents, people familiar with rocks and minerals. JMDC, 7621 Granite Hill Drive, Jurupa Valley, CA., it is off the 60 Fwy., exit at Pyrite.

Program

Dr. Rossman turned the meeting over to Programs Chair, Rudy Lopez. Rudy gave a brief introduction of Mr. Paolo Santos, UC Berkeley senior undergraduate student who is double majoring in geology and geophysics. Santos is a member of PLS and has received CFMS grants toward his research. He's going to talk about the search for the rocks and minerals of Chicxulub Crater (Yucatan Peninsula, Mexico): *"Traces of Extinction: The search for the rocks and minerals of Chicxulub."*

Santos thanked Rudy for the introduction, and thanked MSSC for hosting him. This is the first time he's presenting his research in this context. He will speak about traces of extinction, technically the search for rocks and minerals at Chicxulub.

Paolo told us he has had a lifelong interest in the hard rock geosciences: mineralogy, petrology and geochemistry. He's conducted research through UC Berkeley, Stanford and Cal State Northridge and is in pursuit of his Ph.D. He loves rock and mineral hunting, hiking, coin collecting and metal detecting.

In brief summary, his presentation includes background of what extinction events are like, the Chicxulub Impact (the great impact that killed off dinosaurs), Tektites, Past Research and the Research Project he is working on now.

First, Earth's life has been through a lot. For the past 540 million years, since the Cambrian explosion, there have been many extinction events, defined by Wikipedia as the widespread and rapid decrease in biodiversity on Earth. Five major extinction events have occurred: End Ordovician, Late Devonian, Permian-Triassic, End Triassic and Cretaceous-Paleogene and many minor extinction events, as well. Using graphs, Paolo points to the Cretaceous-Paleogene, around 66 million years ago, where there was a very sharp spike. That spike represents the extinction event also known as the Cretaceous tertiary extinction event; over 75% of all species on Earth just vanished. They're just completely gone. The extinction included belemnites, ammonites, bivalves, underwater reptiles and, most famous, dinosaurs, excluding birds. It was a major change in life on Earth.

How did the idea of this extinction event really come about? It started in 1980 at UC Berkeley, with Walter Alvarez and his Nobel Prize winning father, Luis Walter Alvarez. During their research in the mountains of Italy, they found calcium carbonate calcite shells, plankton, deep in sea limestone deposits that date back 66 mya. In an adjacent clay layer, there was no calcium carbonate. Why the abrupt change? Upon closer inspection, they notice iridium, a platinum group element and other metals – a mixture of "primordial goop", says Santos. After further research, they concluded that a large extraterrestrial body struck Earth at the Cretaceous-Paleogene boundary. It took another 10 years to find the impact site; after the Alvarez conclusion there were studies and surveys performed which found gravity, magnetic and seismic anomalies which supported the Alvarez's conclusion.

Paolo continued speaking about further research and evidence brought by those studies. Standouts include the peak ring crater, vaporization of impact materials, hydrothermal and water alterations and, of course, the 66-million-year-old viewable rock. About that rock and the water alterations, calcium, sodium, potassium, silver and other volatile elements would have been important and helped in trying to understand the lithology that the impact would have exchanged with water and leached out of the original basement rock. There is definitely some obscurity in the true chemistry of the impact.

That brings us to Tektites. A lot of scientists have looked at tektites, which are glassy mixtures of materials resulting from the actual impact. In this case, they weren't brought down *to* the crater; they were actually ejected *from* it over a widespread area, a 1,000-kilometer distance. They are different shapes, but generally spherical, they are called spirals. Tektites are found, generally, in 4 areas: Australia, Ivory Coast, Moldavia and North America. Paolo presented photos of samples from each area. He says people found that tektite chemistry usually shows an intermediate composition of rock and material of the site specific to the impact. Tektites are glass and thus very high in silica and common oxides.

Paolo explored the idea of volcano eruption versus meteor impact: possible that one (meteor impact) may have influenced the other (eruption) or, how greenhouse gasses affected the atmosphere which could have possibly caused the mass extinction as well as other ideas. Still, he wants to know where, exactly, are the pristine deposits from impact events? Where are the tektites that have not been altered? Looking to Chicxulub Crater and most other areas, he finds that tektites have been altered and, there are a lot of secondary minerals formed around tektites.

Paolo says, with all these alterations occurring, he is looking for the pristine tektite deposits, but where are they? And that brings us to his current research project. A lot of the previous studies had had obscure readings and one weird question, what was the lithology, the physical characteristics, of the Chicxulub impact itself? We know that a meteor struck the earth 66 million years ago, it killed the dinosaurs. But was it completely vaporized upon impact?

Santos' Research Project study site is 3,000 kilometers south of the impact at Chicxulub. Tektites from the impact were ejected from the source crater way down to South America, on the southern tip of Gorgon Island, off the coast of Colombia. Although he was not able to physically go to collect specimen, Paolo displayed photos of the island site and of the Gorgonilla Tektites. They are pristine microtektites, interbedded in tuffaceous sandstones and marls; the tektites date back 66.030 mya and were collected by Dr Paul Renne (UC Berkeley). The photos show an amazing collection of what reminds me of tiny black glass marbles but upon closer inspection the sizes and shapes are different, some long, most circular, and some dark while others are light. Paolo was able to perform tests on various tektites using an electron microscope at Stanford by remote. His imaging microanalysis preliminary results were amazing: Backscatter Electron Microscopy showed schlieren textures (irregular streaks in plutonic igneous rock that differ in composition from the primary mass). X-rays revealed variable concentrations of major elements. Quantitative Point Analysis showed the presence of Cobalt (having to do with the impact itself), Barium and barium sulfate (associated with evaporation) and Sulfur (generally vaporized upon impact but not in these specimens). Finally, Primary Clasts within tektites showed possible fragments of original impact materials. He goes on to explain other research and elements found including titanium, aluminum, silicone, calcium carbonate, calcium oxide and carbon dioxide, among others. He talked about individual specimen, concentrations, heavy on one side, light on the other characteristics.

As for the future, Paolo has more research to do before he is finished. There is still much qualitative and quantitative data to gather and then analyze, there is new modeling using multivariate curve resolution to perform and there is the possibility of finding more traces of the Chicxulub Impact. Paolo thanked his advisors and professors for their guidance and contributions to his studies. He then graciously took questions from those in attendance.

Thank you, Paolo Santos, for an interesting presentation, a look into the Chicxulub Crater, tektites and your comprehensive and extensive research. We wish you success in your pursuit of your Ph.D. Thanks for the active Q&A that followed.

Keep in mind this is an abbreviated report of the night's presentation. Join us next month for Dr. Greenberg, Caltech and JPL on December 10, 2021, via ZOOM. Check the Bulletin for details and contact our Program/Education Chair, Rudy Lopez, to be included on the ZOOM invitation list.

As there was no other society business, the meeting was adjourned by Dr. Rossman at 8:57 p.m.

Respectfully submitted, 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:	**ZOOM** January 14, 2022	Denise Nelson: "Forbidden Zone"
	ZOOM February 11, 2022	Rudy Lopez: Guadalupe Island Revised 2021– Volcanic Shield/ Island History
	ZOOM March 11, 2022	Rudy Lopez: Tiny Minerals with "A Big Surprise"
	ZOOM April 8, 2022	TBA
Board Meeting	**ZOOM** January 16, 2022	ZOOM
Field Trip	None at this time	TBA

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

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It's Time To Renew your MSSC Membership !

Please complete the membership application online, then you can use PayPal located on the MSSC website or mail a check to:

MSSC
13781 Alderwood Lane #22J
Seal Beach, CA 90740-3993

If you have any questions, please contact Cheryl Lopez at membership@mineralsocal.org.

Your 2022 Membership renewal is due by December 31, 2021. As the Membership roster will be sent in Feb/Mar, late renewals must be received by February 12, 2022 if you wish to be included in the MSSC Roster.

(A copy of the 2022 Membership form is attached to this Bulletin for your convenience.)

If you've already sent in your 2022 Membership Renewal….Thank You!

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My trip to Jurupa Mountains Discovery Center By: Rudy Lopez

Jurupa Mountains Discovery Center
7621 Granite Hill Dr.
Jurupa Valley, CA 92509

On Saturday November 20, 2021, I took a trip to the Jurupa Mountains Discovery Center. At our last MSSC meeting guest Dave Lesrperance talked about the Center reopening. It was an hour trip from Pasadena. It cost $10.00 to park and that's your entry fee.

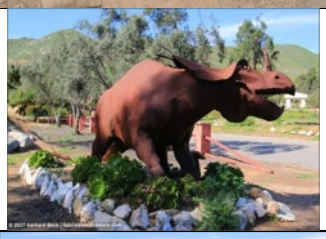
There is something for everyone to see, Dinosaurs, Plants, Minerals, Animals, kid's activities and picnic areas. There are learning expeditions that cost $10.00 per child.:

Dinosaurs









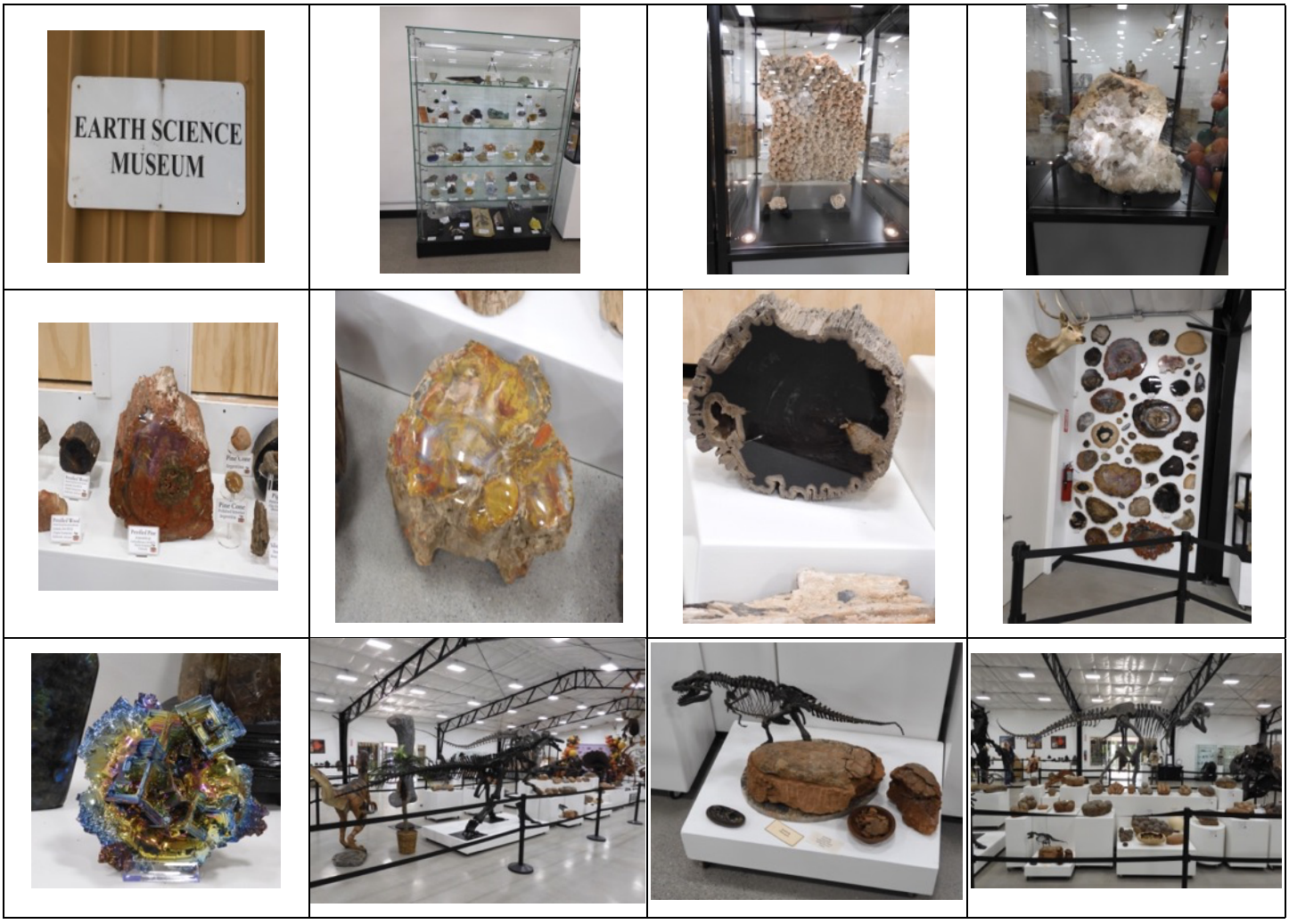





There are Beautiful Cactus gardens

The Wildlife:

We then went into the Museum



This is a great location to take the entire family. You can plan the entire day, have a picnic, walk the grounds looking for dinosaurs, plants and coming soon you can hunt interactive dinosaurs.

Go to MSSC web site for the full report on this trip. During January's meeting we will have Wes Andree the Executive Director of the Jurupa Mountains Discovery Center give an informative talk about the center. There is a great interactive program coming to the center that will enable you to find dinosaurs with your phone while touring the center. My picture above is an example of what's to come.

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The Ride Share Listing is being temporarily discontinued until such time as MSSC starts holding in-person meetings again.

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OTHER FREE THINGS TO DO...by Ann Meister

MERRY CHRISTMAS and HAPPY NEW YEAR from Caltech and NASA/JPL.

The **Watson Lecture** will resume in January.

The **Von Kármán Lecture** will resume in January.

The **UCLA Meteorite Gallery** has reopened. Check the website for hours. The monthly lecture will be presented on Zoom on Sunday, **December 19** at 2:30 PM. Speaker and topic are not yet available. **Zoom Registration:** https://ucla.zoom.us/meeting/register/tJEqduyupj0vGd3S0_52FsbHTbPjYr0sZQUj
If you need detailed instructions on how to join a meeting via Zoom please contact our Curatorial Assistant, Juliet Hook, at jahook@ucla.edu. Note: You only need to register once for this lectue as this is a recurring meeting in Zoom. The speaker and topic will be announced on the website. Visit the website and check on events and videos and other neat things about meteorites, go to https://meteorites.ucla.edu

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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/

December 5, 2021 – Lake Elsinore, CA
Lake Elsinore Gem & Mineral Society
Rock 'n Craft Winter Festival, 32097 Corydon Rd., Lake Elsinore, CA 92530
Hours: Sunday, December 5 – 10 AM – 4 PM
Website: Facebook: Lake Elsinore Gem & Mineral Society

2022 Shows

January 15-16, 2022 – Exeter, CA
Tule Gem & Mineral Society
Exeter Memorial Building, 324 N. Kaweah Ave., Exeter, CA

March 5-6, 2022 – Ventura, CA
Ventura Gem and Mineral Society
Ventura County Fairgrounds, 10 W. Harbor Blvd., Ventura
Hours: Saturday 10 AM – 5 PM,
Sunday 10 AM – 4 PM
Website: http://www.vgms.org

March 12-13, 2022 – Arcadia, CA
Pasadena Lapidary Society
"Inspiration Unearthed", 62nd Annual Tournament of Gems
Arcadia Masonic Center, 50 W. Duarte Rd., Arcadia
Hours: Saturday 10 AM- 6 PM,
Sunday 10 AM – 5 PM
Website: https://www.pasadenalapidary.org

CFMS
Gems, Minerals, Fossils & Jewelry Show
MAY 6-7-8, 2022
Friday, Saturday: 9-5
Sunday: 9-4
Gems*Minerals*Fossils*Jewelry*Demonstrations
Exhibits*Dealers*Kid's & Family Activities
State Golden Bear Nugget on Display

Antelope Valley Fairgrounds
2551 W. Avenue H
Lancaster, CA 93536

FREE PARKING & FREE ADMISSION

Happy Holidays to All!

2020 MSSC Officers:

OFFICERS		
President	George Rossman	*president@mineralsocal.org*
Vice President	Ahni Dodge	*vicepresident@mineralsocal.org*
Secretary	Angie Guzman	*secretary@mineralsocal.org*
Treasurer	Carolyn Seitz	*treasurer@mineralsocal.org*
CFMS Director	Angie Guzman	
Past President	Ann Meister	
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2020-2021	Pat Caplette	
2020-2021	Cheryl Lopez	
2021--2022	Rudy Lopez	
2021--2022	Pat Stevens	
2021--2022	Leslie Ogg	
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Micro Mount Conf. Chairman	Al Wilkins	
Program and Education	Rudy Lopez	*programs@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. We are a scientific non-profit organization that actively supports those endeavors through public outreach, field study and related programs. 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. However, due to current health considerations, MSSC meetings are held via ZOOM conferencing until further notice**.** 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 Fallbrook Mineral 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 fee if you prefer paper bulletins mailed to your address. The Society's contact information:

Mineralogical Society of Southern California
13781 Alderwood Lane, #22-J, Seal Beach, CA 90740
E-mail: *treasurer@mineralsocal.org*
Website: ***www.mineralsocal.org*** **The Mineralogical Society of California, Inc.**

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Questions: Contact Carolyn Seitz (MSSC Treasurer) at: treasurer@mineralsocal.org

Revised 08/21

MSSC Bulletin Editor

3630 Encinal Ave.

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To:

With Knowledge Comes Appreciation

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