Bulletin of the Mineralogical Society of Southern California

Volume 95 Number 11 –November, 2022

The 1,007th meeting of the Mineralogical Society of Southern California

With Knowledge Comes Appreciation

A ZOOM Meeting

November 11th, 2022 at 7:30 P.M.

Program: **"Prospering Backyards: Lead Sequestration Using Zeolites in Los Angeles**. Presented By: Dr. Aaron Celestian, PH.D

In this Issue:

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About the Program: :

Prospering Backyards: Lead Sequestration Using Zeolites in Los Angeles. Presented By: Dr. Aaron Celestian, PH.D

The Exide plant and past companies recycled batteries for 90 years and introduced heavy metals, lead and arsenic into the environment, while government agencies were unresponsive to this community health crisis. Community-based organizations like East Yard Communities for Environmental Justice and Communities for a Better Environment, among others, advocated and forced the permanent closure of the facility in 2015. Today communities continue to be exposed to the contaminants now present in their soil. To better protect families, there is an urgent need to remove Pb from the soil. This is a collaborative research project between community scientists from the affected community, artists, and activists to develop an alternative method for reducing lead exposure in contaminated backyards while considering the health of the soil and the environment.

The current cleaning approach by the government is to completely remove the contaminated soil and replace it with clean soil. This process is locally effective, but is very costly because it involves transportation and replacement, and the soil is still contaminated at its landfill dumpsite. An alternative method that we want to propose is the use of the clinoptilolite (a type of zeolite) to entomb the lead and make it no longer biologically accessible. This mineral is not harmful to people (even when containing lead), it increases water permeability in the soil, and also helps retain moisture for plant roots making it an ideal remediation method. Work is ongoing and a cohort of properties have been selected. This talk will cover the back story of lead pollution in Los Angeles, how and why clinoptilolite was selected, as well as how the mineral works to absorb lead.

Dr. Celestian's, currently researches how minerals interact with their environments and with living things, and how those minerals can be used to solve problems like climate change, pollution, and disease. His on-going research in experimental design, real-time material characterization, synthesis & application, and the functionalization of minerals is developing novel nano-crystalline Earth materials into functional materials for a wide variety of demanding applications. Prior to becoming curator of Mineral Sciences at the Natural History museum of Los Angeles County, he was a Professor of Geology at Western Kentucky University, Director of the Advanced Materials Institute in Bowling Green, KY, affiliate scientist at the Kentucky NanoNet (a nanomaterials consortium), and VP for research & development at Terra Enviro LLC. Currently, Dr. Celestian holds adjunct teaching and research faculty positions at the University of Southern California and is an Affiliate Research Scientist at NASA's Jet Propulsion Laboratory. In addition to research, Dr. Celestian oversees the Gem & Mineral Hall at the Natural History Museum of Los Angeles and develops mineral science exhibits.

How to Join our ZOOM Meetings by Rudy Lopez

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

For non MSSC Members who want to join this meeting. You must respond to our Programs chair, Rudy Lopez at programs@mineralsocal.org no later than Thursday November 10, 2022. Please include "November ZOOM Meeting" in the subject line of your response. This response date will allow time for us to send you the information needed to participate in the ZOOM meeting and also will allow time to get everything organized.

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From the Editor: Linda Elsnau

October was a busy month for MSSC so we have an extra long Bulletin for your enjoyment.

November is MSSC's election month and volunteers are still needed. If the Board is not filled, MSSC will cease to exist!! Don't miss the meeting so you can cast your vote and/volunteer if you can to keep this great club alive. It's all up to our members to get involved.

Hope everyone has a safe and healthy holiday.

FROM THE PRESIDENT: Mineral Groups. Installment 6, "The Spinel Group" by George Rossman

The spinel group is a collection of numerous mineral species that have a general chemical formula: $M1(M2)_2X_4$

Where M1 can = Fe, Mn, Mg, Mn, Si, Ge, Co, Cu, Sb, Zn, Ti, Ni;
M2 can = Fe, Cr, V, Mn, Al, Co, In, Ir, Rh, Pt, Ni;
and X can = O^{2-}, S^{2-} or Se^{2-}.

The M1 site has tetrahedral coordination. In this site, the metal ions are surrounded by four oxygens in the shape of a tetrahedron. The M2 site has octahedral coordination. That is the metal ion is surrounded by six oxygen ions in the shape of an octahedron. Many of the metal ions can be found in both the octahedral and tetrahedral sites.

The most common members of this group have X = O^{2-} and will be the focus of this discussion.

We begin with the species that gave the name to the group, namely spinel, $MgAl_2O_4$. The name, spinel is based on the Latin word for spine, "*spinella.*" The word is in reference to the pointed nature of many spinel crystals. If spinel had exactly that chemical formula, it would be colorless. We can verify that by looking at a high-purity synthetic spinel grown in the lab **(Figure 1)**. It is colorless.

Spinel is frequently colored red due to a minor amount of chromium replacing aluminum **(Figure 2)**. Just as chromium makes ruby red, chromium makes spinel red as well. For centuries, spinel has been a common and valued gemstone **(Figure 3).** It is hard (Mohs hardness = 8) and often transparent.

Figure 1. High purity, colorless synthetic spinel.
Photo Credit: GRR

Figure 2. Red spinel crystal from Mahenge, Tanzania.
Photo Credit: Mark Garcia

Figure 3. Spinel gem from Tanzania.
Photo Credit: Pala International.

Spinel is commonly found in metamorphosed limestones. It is from the limestones where, historically, the gem varieties have been obtained for centuries **(Figure 4).**

Other elements can enter the spinel's structure and will give it color such as blue from cobalt in the tetrahedral site **(Figures 5,6)** and iron in both the 2+ and 3+ oxidation states which causes blue to violet **(Figure 7)** to green to yellowish-green color in spinel.

Figure 4. A spinel crystal in limestone (calcite) from Myanmar. Photo Credit: GRR

Figure 5. Blue spinel from Vietnam.
Photo Credit: Pala International.

Figure 6. Blue spinel from Baffin Island.
Photo Credit: GRR

Figure 7. Violet spinel from Vietnam.
Photo Credit: Mark Garcia

The spinel group of minerals form extensive solid-solution series among their components which results in somewhat complicated chemical compositions for the minerals. Spinel, itself, forms a number of solid solutions

with other common spinel group minerals. Let's consider just a few of the more common ones. There is significant solid solution between spinel ($Mg^{2+}Al_2O_4$) and hercynite ($Fe^{2+}Al_2O_4$) **(Figure 8)** where iron in the 2+ oxidation state replaces magnesium. Another solid solution series is between spinel and magnesiochromite, $MgCr_2O_4$ **(Figure 9).** In this series, chromium replaces some of the aluminum.

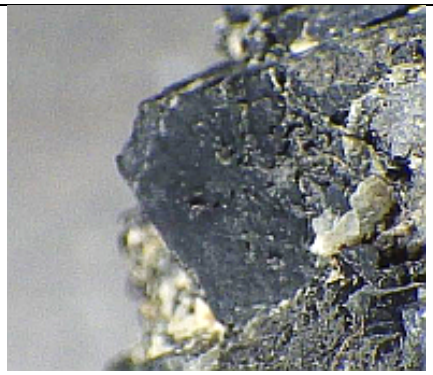

Figure 8. Hercynite from Yerrington, NV. Photo Credit: Mark Garcia

Figure 9. Magnesiochromite from Coleraine Township, Canada.
Photo Credit: Mark Garcia

A well-known member of the spinel group is magnetite, $Fe^{2+}Fe_2^{3+}O_4$. Magnetite, of course, is one of the most important ores of iron. Magnetite is black **(Figure 10)** because it contains iron in both the 2+ and 3+ oxidation state. Incoming light in the visible spectrum can easily cause the 'extra' electron on the Fe^{2+} to hop over to the Fe^{3+} which results in the light being absorbed by the magnetite; thus, making it black. Magnetite is commonly in solid solution with magnesioferrite, $MgFe^{3+}{}_2O_4$, **(Figure 11)** where Mg replaces the Fe^{2+} and less commonly with jacobsite, $Mn^{2+}Fe_2^{3+}O_4$, **(Figure 12)** where manganese (Mn) replaces the Fe^{2+}.

Figure 10 Magnetite, Corinto, Minas Gerais, Brazil.
Photo Credit: Mark Garcia

Figure 11. Magnesioferrite, from Warwick, NY.
Photo Credit: Mark Garcia

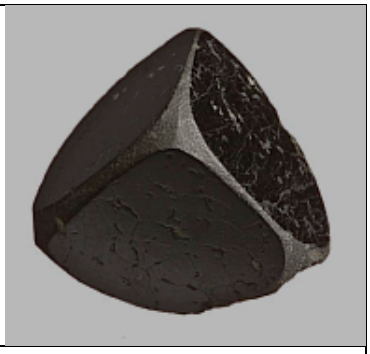

Figure 12. Jacobsite from Nordmarksberg, Sweden.
Photo credit: Rob Lavinsky

Another important spinel group mineral is gahnite **(Figure 13),** the zinc aluminum spinel with the chemical formula $ZnAl_2O_4$. Gahnites are commonly in a solid solution series both with hercynite where Fe^{2+} replaces some of the zinc and with spinel itself where Mg^{2+} replaces some of the zinc. The color of gahnite often varies from black to somewhat bluish **(Figure 14)** depending on the content and oxidation state of its iron component. The other zinc spinel that is well-known to collectors is franklinite, $ZnFe^{3+}{}_2O_4$ **(Figure 15),** a notable mineral from the Franklin and Sterling Hill, NJ, zinc mines. Like most of the other spinel group members, it is subject to extensive solid-solution where both Fe^{2+} and manganese can be significant components of the crystals.

Figure 13. Gahnite from Charlemont, MA. Photo Credit: Mark Garcia

Figure 14. Gahnite from Cordoba, Argentina. Photo Credit: Mark Garcia

Figure 15. Franklinite from Franklin, NJ. Photo Credit: Mark Garcia

Much less common are the manganese spinel group minerals where manganese is the dominant cation. The two of greatest interest are galaxite, an aluminum spinel, with the chemical formula: $MnAl_2O_4$ **(Figure 16)** and jacobsite, an iron spinel, with the chemical formula $MnFe_2O_4$ (**Figure 17)**.

Figure 16. Galaxite from near Bald Knob, Alleghany County, NC. Photo Credit: Mark Garcia

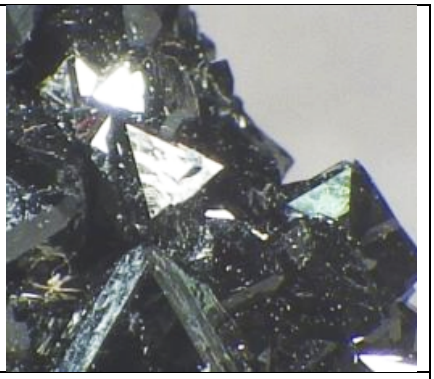

Figure 17. Jacobsite from the Kalahari Manganese Mines, Sou Africa. Photo Credit: Mark Garcia

Spinel is often grown synthetically by crystallization from fluxes or by the flame-fusion method. These synthetics are commonly used as gemstones. They have been extensively studied in the gemological laboratories (e.g., Mulmeister et al, 1993).

Muhlmeister S, Koivla JI, Kammerling RC, Smith CP, Fritsch E, Shigley JE (1993) Gems & Gemology 29, 81-98. Available at: https://www.gia.edu/doc/Flux-Grown-Synthetic-Red-and-Blue-Spinels-from-Russia.pdf

If you have ever been gold panning in the local streams, you undoubtedly ended up with lots of magnetite in your concentrate. It is a particularly abundant mineral in the denser components of our river sediments.

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It's That Time Of Year Again!

It is time to start paying your 2023 MSSC dues. You may use the attached form and mail in your payment or go the MSSC Website to complete the form and use PayPal. The last date to pay your dues and be listed in the 2023 MSSC Roster is Feb. 17th, 2023. For any questions, please contact Cheryl at membership@mineralsocal.org or Carolyn at treasurer@mineralsocal.org.

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MINUTES of the October 14, 2022 ZOOM Member Meeting

Call to Order (Dr. Rossman, President):

President Dr. George Rossman, Ph.D. called the meeting to order at 7:33 p.m. It was MSSC's **1,006th** Membership Meeting and the 29th via ZOOM conferencing.

Rudy Lopez announced a change in tonight's program. Presenter, Leyla Namazie, is unable to present due to laryngitis; she will be rescheduled. Tonight's presenter filling in is Dr. George Rossman who will speak about the rare mineral, painite.

Message from the Chair (Rossman)

Dr. Rossman said the IMA has approved 5,849 mineral species through September '22.

He had a little quiz for attendees, he wanted to know if anyone knew:

(a) the shortest mineral name (ice),
(b) longest name (Potassic-magnesio-fluoro-arfvedsonite),
(c) shortest chemical formula (diamond, graphite, chaoite, Sulphur and Beta sulphur(S^{β}) = C,
(d) the longest chemical formula….ready?
$Ba_5(Ca,REE,Y)_{22}(Ti,Nb)_{18}(SiO_4)_4[(PO_4),(SiO_4)]_4(BO_3)_9O_{22}[OH),F]_{43}(H_2O)_{1.5}$
A note about the name: "To reflect the complexity and chemical diversity of the structure of this mineral, we have named it ***byzantinevite*** after the Byzantine Empire that was home to many nations and religions."

George acknowledged the excellent work done by Dr. Tony Kampf, who along with Chi Ma, of Caltech, are responsible for 12 recently announced minerals:

Tony Kampf = 7 new minerals	*Cherokeeite*	*Tomsquarryite*	*Hayelasdiite*
(5 in collaboration with Ma)	*Zincochenite*	*Boojumite*	*Finescreekite*
	Kennygayite		
Chi Ma = 5 other new minerals:	*Ziroite*	*Sassite*	*Louisfuchsite*
	Mizraite (Ce)	*Toledoite*	

Dr. Kampf, Ph.D., has the distinction of being the most prolific characterizer of new mineral species. He is Curator Emeritus of Mineral Sciences at the Natural History Museum of Los Angeles County and a long-standing member of Mineralogical Society of Southern California.

Chi Ma, Ph.D., is Director, Analytical Facilities, Division of Geological and Planetary Sciences at Caltech. Ma is a nano mineral researcher and discoverer.

Congratulations, gentlemen!

Regular Business

MINUTES of the September 2022 Membership Meeting were approved after Dr. Rossman asked for corrections, additions or deletions to the minutes as published in the October 2022 MSSC Bulletin. Hearing none, he declared the minutes approved.

Announcements and Reports

Rudy Lopez – Programs/Speakers: Next month's speaker scheduled is Aaron Celestine from the Natural History Museum of Los Angeles County. In December, Jurupa Mountain Discovery Center and in January is Denise Nelson, Diamonds from the Forbidden Zone. We are booked through August 2023. Contract Rudy if you have any questions or if you need information.

Angie Guzman – Election Nominations: Angie opened the floor for nominations for the upcoming election. She gave an update regarding the Self-Nominating Forms and expressed the need for members to volunteer and serve our society. There were two self- nominations thus far and no other nominations were taken at this meeting. The nominations were closed and will be opened again on November 11, 2022 after which an election will take place. Please note: Since the MSSC President chair will be vacant at the end of the year, it is imperative that that seat be filled in order for MSSC continue to exist. This is in accordance with the State of CA and our own By Laws. Contact Angie or any Officer or Director if you would like to self-nominate or have someone nominate you for a position or if you have any questions.

Marek Chorazewicz – Field Trips: (a) The Tecopa Opal trip is rescheduled for October 29 and 30. Meet up at 8am on Saturday, SR 127. See MSSC website for coordinates and details. Saturday we will gather to collect Tecopa opal and other minerals such as gem calcite. Sunday collection is at Emigrant Pass for shale trilobites. Camp overnight or come for the day. Check the Website for details; (b) Next week is the Friends of Mineralogy event, they are going to Amboy for interesting collecting. Must contact Friends of Mineralogy coordinator to sign up. Contact Marek if you have questions.

Carolyn Seitz – (Excused): Results of favorites topic survey will be given at the Board meeting on Sunday, Oct 16. Contact Rudy Lopez to be included on the ZOOM invite list.

Angie Guzman – Reminder to Board and other members to the Oct 16th Board Meeting via ZOOM. The meeting will begin at 1pm.

Rudy Lopez – Programs are doing well; we are reaching out and people are responding. Everyone needs to participate in order for things to continue successfully.

Program - Rudy Lopez, Program Chair, introduced MSSC's own Dr. George Rossman. Rossman is professor at Caltech, he is highly regarded as an expert in identifying color origination in gems and minerals. He has given countless presentations on a wide range of topics relating to minerals, microminerals, chemical and other testing methods of those minerals. "Dr. George" collaborates with other respected members in his field and is himself renown and respected. Now, he presents: Painite, Once the World's Rarest Mineral.

Painite was an exceedingly rare mineral, named for A.C.D. Pain, who in 1952 sent a crystal weighing 1.7 grams to London. The crystal was found in a small alluvial ruby mine near Ongaing, Mogok, Upper Burma, today known as Myanmar. The London Chamber of Commerce Lab could not identify the crystal so it was sent to the British Museum and subsequent work showed it was a new mineral! Pain lived in Mogok, the gem center of central Asia. Paul Moore, University of Chicago, eventually analyzed the sample specimen as a calcium zirconium boron aluminum oxide (1976) not a silicate as originally thought. Eventually, a small piece of the painite (#1) was sent by Moore to Rossman for further analysis. George did a color study using optical absorption spectra that showed chromium and vanadium was the cause of the color. This was painite #1, a *very* rare mineral. At the time, there were only 2 known samples of it in the world!

Painite Sample #2 is on display at the British Museum of Natural History. It is 2.12g (1961). The only testing was to verify if is painite but there was never anything published about the findings. That's all we know about it.

In 1986 a painite #3 shows on the scene. It is .027g and was included in a sampling of rough gems (sapphires, spinel, rubies, etc.) bought in Burma by Ed Swoboda, a mineral dealer out of Los Angeles, CA. The gems were sent to Gemological Institute of America, GIA. Shigley, Kampf and Rossman found new data on painite using Raman (laser) and IR spectra which identified it as painite #3 sample.

In 2001 painite #4a and #4b surface. #4a is approximately 10.8g and #4b is 0.19g. #4a was verified by Rossman as genuine painite. A dentist in Mogok offered it to Bill Larson, Pala Mine, for $1.5 million, brought it down to $1.2million, later kicked down again - this time to $60,000 and eventually the piece sold for $6,000 to a gem dealer in Burma. The art of negotiation (purchase prices for gems and minerals) in Burma is to be learned quickly.

In 2002, painite #5, a *faceted* piece of 0.51g, was obtained by A. Peretti at the Gem Research Swiss Lab and was written about in their August 2003 Contributions to Gemology publication.

The stones come from Myanmar in the village of Ongaing, northeast of Mandalay, near the city of Mogok. The geology of the area formed when Asia came up and collided into the small islands that were shedding calcium organisms. And then, when India collided with southern Asia there was contact metamorphism, limestones turned into marble, molten rock came up, there was a lot of chemical transformations going on and there were a lot of gneiss, leucogranite, alluvial deposits – a lot going on.

In Namya, Myanmar, 2 more painite specimen show up. Painite #6 showed up in a sample for chemical analysis and painite #7, a "larger" specimen was found when Rossman visited Burma during a visit to purchase

stones for research. Namya village is further north and east of Ongaing village. At the ruby mine in Namya, the mining was done by hydro-mining. Water was blasted into the side of a hill and materials deposit in a pool, they were eventually suctioned out and up into giant separators. The separators are sifted to settle materials. The raw materials drop down into giant vats at the bottom of the separators and the resulting materials (stones) are hand sorted. The yield is rubies, spinel and other mineral specimens.

Some of the material is not good enough quality for the gem merchants from China or other parts of Asia and not so good for further processing. These are a low gem quality and are sold more cheaply as museum specimens, or for research and other such possible purposes. These were the stones Dr. Rossman bought to take back to Caltech for his research. He bought a little blue plastic bag that contained heavy mineral concentrates, cracked pieces of spinel, ruby, sapphires, green gems, zircons and 2 painite specimens!

Rossman did optical spectrum testing on the painite and found that the Namya material contained nearly an order of magnitude lower concentration of Cr and V and is proportionally less intensely colored. They were paler but they were painite! With that in mind, at that time, George owned 28% of all painite known to exist in the world and he'd studied 71% of all known painite! WOW. But, oops, later, it was determined those percentages were overstated because Asia held another sample, a secret sample they had not let out they held. Actual numbers were 25% and 62% - still, not bad.

Painite #8 was found in May 2004 in Ongaing. Rossman was able to analyze pieces off the sample and verify authenticity. Eventually, more specimen gemstone of painite were found bringing the number to 18 by 2005. The Burmese were able to search in areas identified by Western scientists (alluvial, ruby and sapphire mines, etc.) in Namya and more painite was found. Still with only 22 stones in the world, collectors of rare minerals would pay premium prices.

Deeper analysis showed the painite was forming in limestone rich environments with carbonate inclusion as host. Using Raman spectroscopy, Rossman found other painite specimens had liquid CO_2, phlogophite, srilankaite [$ZrTi_2O_6$], baddeleyite, spinel and calcite inside of them. Srilankaite was identified in painite #3 and #6, both the northern occurrence and the southern occurrence!

Srilankaite is important because it occurs in Garnet Ridge, Arizona and at the bottom of the Indian Ocean on the Atlantis II fracture zone. Temperature and pressure tell the tale. In the lab, they could tell how the inclusions could exist in the painite. The result is formed Geological Interpretation which states the Mogok (Ongaing) and Namya deposits, known for rubies are sources from marbles (late Proterozoic) limestones that have experienced a series of metamorphic events (burial metamorphism, fluid infiltration and skarns) contact metamorphism from intrusions as recently as Miocene. Painite is closely associated with ruby and Rhythmic compositional banding of ruby and painite point to grown from/during fluid pulses.

Result: The Burmese took about 2 weeks to find out the source of the painite in Ongaing at the Sinhalite Mine via skarn formation. Soon painite was found in matrix, and there was a rapid discovery period. The Wet Loo Mine in Mogok district is a contact point that was discovered. Many miners, hundreds of people, were looking for painite. Another mine near Thurein Taung found painite and there were more discoveries. By July 2005, a 28g crystal was found, as well as the many, many smaller crystals. Bill Larson at Pala bought many of them and he'd sent several samples to Rossman for research. Take a look at the Mindat website, it has the first pictures of painite.

Dr. Rossman went on to describe the geology of the region and explained the conditions of the painite deposits that were found. He also talked about the implications of the numerous discoveries and how a very rare mineral and its monetary value decreased with each new discovery. Today, he says, there are probably about 1,000 samples world-wide, still within a collector's grasp but many are pieces, broken, cracked and not really good gem quality.

As of December 2020, painite was mainly found in two localities, Wet Loo and Thurein Taung. Some miners searched in contact zone of marble and leucogranite in the upper side of Wet Loo. Samples were specimen quality but not suitable for gems. In Myanmar, few gem quality were available in the gem markets with higher prices for those found in the previous 5 years. New samples have not been available from Namya as the large

commercial mines are now closed, mostly due to military actions. There is only minor mining happening, mostly by mom-and-pop operations collecting in the rubble piles.

Today, painite is still a valuable mineral, but is it still the *rarest mineral*? Internet searches reveal prices range from $12,500 (6.0x1.5x1.5cm) piece of painite with corundum var. ruby (Wet Loo region) to $850 Ongaing painite (.09x.03x0.2cm) to 1.54ct cut painite – Myanmar for $249.99 plus shipping. Basically, the painite being sold now, as previously noted, is not new material but a hash of the old pieces.

As for the rarest *gemstone* today, and thanks to Tony Kampf who brought it to Caltech where Rossman and Ma also contributed their expertise, the gem is *Kyawthuite*. This gem is named for Burmese gemologist Kyaw Thu and has the formula $Bi^{3+}Sb^{5+}O_4$. It is a new gem from Mogok, Burma (Myanmar). There is only one example of this in the world!

The Allende Meteorite has been studied by many scientists around the world, including Chi Ma of Caltech who has collaborated with Tony Kampf on several characterizations of new minerals. Dr Rossman gave us another example of Ma's work showing a photo of a slice of the Allende Meteorite that has a scale of view 10µm (10 microns). The focal point is surrounded by olivine to the left and right and corundum above and below. Upon closer examination of the view at 1µm (1/100th of the width of a hair) it shows 3 titanium oxide minerals: rutile, tistarite and kaitianite. This is the only known kaitianite crystal and therefore the *rarest mineral*. These photos are awesome.

At the end of Rossman's presentation, Tony Kampf showed photos of painite. They are <u>not</u> <u>on</u> <u>display</u> at the LA County Museum of Natural History because they are too small. Dr Rossman asked if anyone had a painite specimen in their collection. Marek said he has one!

Wow! You may have really missed some great photos, achievements and the overall presentation. Our thanks to Dr. Rossman for filling in with this interesting look at the rare painite. Next month's presenter is Aaron Celestian.

The meeting was adjourned at 8:39pm. The ZOOM was kept active for some minutes afterward for nonbusiness-related discussion and comments.

Respectfully submitted by Angela Guzman, Secretary

N O T I C E

MSSC ELECTIONS WILL BE HELD NOVEMBER 11, 2022.

ALL MEMBERS ARE ASKED JOIN IN TO

SUPPORT MSSC.

ATTEND. NOMINATE. VOTE.

Thank you, Angie Guzman, Secretary

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MINUTES of the October 16, 2022 ZOOM Board Meeting

<u>Call to Order and Roll Call</u>

The MSSC Board meeting was called to order at 1:03 p.m. by President Dr. George Rossman. The following Officers, Directors and Committee Chairs were present: George Rossman, Cheryl Lopez, Carolyn Seitz, Angela Guzman, Ann Meister, Rudy Lopez, Marek Chorazewicz, Ahni Dodge and Bob Housley. Excused were Al Wilkins, Pat Caplette, Leslie Ogg, Patrick Stevens, Linda Elsnau and Laura Davis. There were 2 guests: Simona Cianciulli and David Lesperance. There was a quorum.

Approval of the Minutes

Approval of the July 10, 2022 Board minutes as published in the August 2022 Bulletin was up next. Rossman asked if there were any corrections or additions and hearing none, asked for show of hands to approve the minutes. It was unanimous. There was no opposition to the approval.

President's Remarks (Dr. George Rossman, Ph.D.):

Dr. Rossman, in asking some Caltech students why they are not members of societies like MSSC, was met with these basic answers: (a) too busy, (b) they have self-organized collecting trips, independent of any society or club, (c) all the information they need is on the web such as maps, discussion programs/presentations, mines and etc. All of these are of concern to MSSC, in terms of recruiting efforts to attract mineral minded youth into the society. It will be more challenging than in the past. The young people don't have much need for social activity of an organization.

Board discussion included the importance of our ZOOM meetings.

Reports (Officers and Committees):

1. Vice President and Membership Chair (Cheryl Lopez)

a. Increase awareness of importance of our upcoming Election by Board members Cheryl, Carolyn and Angie. Personal emails, phone conversations and other methods. We hoped for better response to Self-nominating form and, in fact, received 3 back for Director seats. We anticipate someone will step forward to nominate for President chair. Cheryl put out the plea for members to volunteer to help MSSC to continue forward;
b. Angie Guzman actually asked David Lesperance if he would volunteer to be President. David, who has experience leading organizations, respectfully declined but said he would be willing to sit as a director. Angie thanked him for his willingness to be put on the spot and to be nominated for Director and,
c. Dr. Rossman echoed his past statements regarding the need for new people, new ideas for President's chair and he's looking at us to step up, fill that slot.

Board discussion followed including whoever fills the shoes of President, their way does not have to be exactly as Dr. Rossman's way. Each president has their own style and makes contributions in their own way. *Our By-Laws and the State of California mandate that we have a President or we cannot continue as a society*. So, nominations, self or other, will be accepted at the November meeting after which the election is scheduled to be held.

2. Future Programs (Rudy Lopez)

a. Programs are doing very well. Next month is Aaron Celestian from Natural History Museum, December's Jurupa Valley presentation should be good and they'll return in March 2023. Others returning to present will be Denise Nelson (January), Mike Sanders from Colorado, Dr. Malkovich (Mars), Scott Braley (micro mounts) and others.
b. Branching out: Rudy is casting his networking net and has caught some clubs in Colorado, Tennessee and beyond. He's our PR man and, individually with Marek, have increased our membership by virtue of their interests. Thanks guys!

Board discussion include local area field trips, Family Day trips (White's Point), collage of past trips for the web, update list of speakers for the web site, it's all about the field trips for some folks and other related items.

3. Discussion of meeting topic preferences (Carolyn Seitz)

a. Survey was distributed and better than expected response (although still low given the number of members). The survey was sent to get feedback from members about presentation subjects and if they had any comments. Started with categories and added more based on feedback (thanks, Al). Full survey results are shown on page 12 of this Bulletin.

   Comments left by respondents were: not being greeted when joining the ZOOM meeting and they felt unwelcomed, people wanted to hear about other groups such as Friends of Mineralogy, the CFMS activities, inviting other clubs (Rudy does that routinely in his search for speakers), share information with other groups about collecting places, the quality of speaker vs. subject matter and there was a large interest in micro minerals, fluorescents and minerals of the Southwest.

Board discussion regarding how comprehensive this survey was, that many clubs are invited to our meetings each month, the importance of acknowledging attendees – perhaps first- timers segment at beginning of meeting. Other suggestions: we put forth efforts to invite other clubs, maybe those with low numbers of members, to join MSSC notifying them of our primary focus, minerals, we could publish information about clubs' meetings in our Bulletin. Also noted: some clubs are going back to in-house meetings and more.

4. Bulletin Editor (Linda Elsnau by Dr. Rossman)

a. There are 4 members who still get snail mail Bulletin, everyone else is via email. *Question; how many people actually read the Bulletin?* The recap of the last talk, the fantastic mineral articles are all great.

5. Secretary Remarks (Angie Guzman)

a. Proposal to do nominations and election before or after the presentation. Consensus is to do it after the presentation. Dr Rossman would make announcement before to remind *members to stay* after Dr Celestian's presentation for MSSC business portion of the meeting.
b. Cheryl Lopez volunteered to send an email blast to all members requesting they attend the November meeting for election purposes. She will also send a notice to Linda Elsnau to be published in the November Bulletin regarding the election.

6. Field Trips (Marek Chorazewicz)

a. Tecopa two-day trip is a go for October 29 and 30. Saturday will be opals and calcite and Sunday at Emigrant for fossils. Come for one day or both. Camp out or stay nearby in Barstow.
b. Trips for kids to areas close to home like Palos Verdes for barite. There are lots of boulders to climb over, the ocean is right there and they would enjoy it. Also, there are other places, as well. Rudy mentioned White's Beach (at the southern end of Western Avenue in San Pedro), a good place for kids to collect shells, agates and sea glass. Marek says we will consider maybe 2 short trips per year just for purpose of bringing people to local mineralogy and geology, accessible for kids.

Board discussion followed including Felix mine, fire roads, private property and the like.

7. Treasurer's Report (Carolyn Seitz)

a. Financial report given by Carolyn included reconcilement of account, 3rd quarter cash flow report and year-to-date cash flow report. All financials accepted by the Board;
b. Outstanding $75 to be donated to Mindat per Scott Braley's request;
c. Discussion regarding MSSC contribution to Mindat – **tabled until January 2023** Board meeting;
d. Discussion regarding other possible contributions to colleges, organizations, museums, etc.; long ago donations made to PCC Dana Club when a MSSC member passed; scholarship to local student; CFMS has education awards.

8. Membership (Cheryl Lopez)

a. Membership has increased by 2 and, we have 2 more pending payment of dues.
b. Field trips attract people to attend which increases our membership (must be a member to go on the field trips). Discussion with Marek about paperwork, dues collection and insurance.
c. Membership renewals will start going out, cutoff for the Roster will be February 17, 2023. Currently we have 111 members plus 2 pending. COMMENT: at any given meeting we have maybe 20+ members meaning 90 or so do not participate. Not all of them are strictly field trip members.
d. ZOOM license renewal due 10/20/22. Cheryl was able to get a discount for the year. Does the Board think we should continue with ZOOM? Yes!
e. How much is 2023 membership? $30 for individual and $40 for a family.

9. Webmaster Report (Leslie Ogg by Dr. Rossman)

a. No major changes since last report.
b. COMMENT: David Lesperance stated Leslie does a bang-up job on the website and she deserves our applause for keeping the website good and up to date. You go out there and many, many websites of societies and clubs are so out dated and need attention. Thanks to Leslie!

10. Federation Director Report (Angie Guzman)

Nothing at this time except the CFMS meeting will be November 11, 12 and 13 in Visalia. I will be conducting the election Friday the 11th from there.

11. Issues un-resolved since last meeting (Board)

a. Long-term storage of MSSC Materials (digital and physical): a) Ann Meister has framed photographs from Rock Currier's things, Proclamation from the Mayor of Pasadena, glass edifice accolade to honor MSSC as founding member of the Federation and other items she is still working through; b) Rudy has 4 boxes given to MSSC by Ron Sleeper that contained Bulletin duplicates (2 boxes) and actual ones from 1932 to 1992 (2) boxes. It was determined that these 4 boxes will go to Bob Housley for he and Marek to cull through checking for possible collecting sites; c) David Lesperance said he would digitize (scan) the Bulletins. Angie offered to help out.

12. Pacific MicroMineral Conference (Dr. Bob Housley)

a. Al Wilkins has scheduled PMC with Fallbrook for late January 27 and 28, 2023. Set up is usually the Friday evening before. Discussion about micro tables, specimen boxes and cables. Rudy said he has 15 boxes for the dollar tables but that is not enough. Bob and Marek both said they have a lot more for the conference). Rudy also has electrical cables, cords. Al negotiated cost of the hall. Carolyn said she will be there, work with the finances, checks, etc.

13. Next Board Meeting: January 15, 2023.

Someone wanted to know if there will be a banquet in January 2023. No, due to COVID instability of who-knows-what variant may be around.

Big THANK YOU to our guests, Simona and David and thank you for your participation in MSSC.

The meeting was adjourned at 2:41 p.m.

Respectfully submitted by Angie Guzman, Secretary

A MESSAGE FROM THE SECRETARY

The Mineralogical Society of Southern California (MSSC) was founded in 1931. We are proud of our past and look forward to a great future. MSSC is a fellowship of those who appreciate minerals. So, whether you pick up a rock hammer, loupe, microscope or use your naked eye, you can experience the crystalized wonder and beauty of minerals.

You are cordially invited to attend the next Membership Meeting, our annual election meeting. As a member, you can join in, support and vote for those members who will lead our society. If you would like to be one of those people, feel free to self-nominate as an Officer or Director on ***November 11, 2023****. Thank you. see you on ZOOM!*

Angela Guzman, MSSC Secretary

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Member Survey Results

Hello MSSC members. I would like to extend a big "THANKS" to all of the members who provided great feedback about what topics, of all of our varied options, they most enjoy at our monthly meetings. Your feedback is greatly appreciated and we will continue to work hard to provide programs that keep our meetings interesting to you. Please feel free to email any of the Board members with feedback or suggestions at any time.

Carolyn Seitz, Treasurer

TOPIC	1st Choice	2nd Choice	3rd Choice	4th Choice	Total Votes	Rank as of 16-Oct-22
History	7	4	4	--	15	#2
Minerals Including Micros	11	9	2	--	22	#1
Mines, Methods, History & Structure	3	3	1	--	7	#5
Armchair Field Trips	1	7	5	--	13	#3

Paleontology	1	1	2	--	4	#7
Geology/Seismology	3	4	3	--	10	#4
Gemology	--	2	5	--	7	#6
Jewelry Making	--	--	1	--	1	Tie #10
Fluorescent Minerals	1	1		--	2	Tie #9
Prospecting, Maps, Info & Regulations	1	--	1	1	3	#8
Lapidary	--	--	--	1	1	Tie #10
Cleaning, Labeling & Storing Minerals	--	--	2	--	2	Tie #9
Rudy's Fishing Trips	--	--	--	--	1	Tie #10

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

With Knowledge Comes Appreciation

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List of Upcoming MSSC Events : Mark your Calender!

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	**ZOOM** Dec 9, 2022	Wes Andree: "JMDC's Dinosaur Trek" our augmented reality (AR) dinosaur hunt.
	ZOOM Jan 13 **,** 2023	Denise Nelson: Diamonds of the Forbidden Zone
	ZOOM Feb 17, 2023	Paolo Sanchez TBA
	ZOOM Mar 10, 2023	Wes Andree: "JMDC's Dinosaur Trek".. our augmented reality (AR) dinosaur hunt.
Board Meeting	**ZOOM** Jan 15, 2023	ZOOM at 1:00 PM
Field Trip	TO BE ANNOUNCED	

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

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Volunteers still Needed for MSSC Board-

There is still time to Self-Nominations for MSSC Board Positions. We are looking for someone to be **President, Vice President, Secretary, and Treasurer.** Please nominate yourself, to Cheryl Lopez at rclopez002@verizon.net by Nov. 9 2022. The election is Nov. 11, 2022. **Please attend the MSSC Monthly ZOOM meeting on Nov, 11, 2022 to vote for the new MSSC Board Members. The meeting will start at 7:30 pm and the Zoom link will be sent to you in your email.**

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OTHER FREE THINGS TO DO...by Ann Meister

The **Watson Lecture** at Caltech's Beckman Auditorium is on Wednesday, **November 2** at 7:30 PM, or you can view the livestream at **caltech.edu/watson** or on Caltech's YouTube channel. No advance registration is required. By entering the auditorium, attendees attest to being fully vaccinated or having a legal medical exemption. Masks are optional inside Beckman Auditorium. The speaker is Magdalena Zernicka-Goetz, Bren Professor of Biology and Biological Engineering, Caltech. The title is **"The Dance of Life: How Do We Become Ourselves?"** Human and animal embryos are built from three types of stem cell that are established by the sixth day after fertilization and before the embryo implants into the womb. These three stem cell types can

also be grown indefinitely in cell culture. In her lecture, Zernicka-Goetz will describe how she and her research group have been able to assemble embryo models not from eggs and sperm but from these stem cell types, and what those models are teaching us about human development. *Find more past Watson Lectures on* Caltech's YouTube channel.

The **Von Kármán Lecture** is on Thursday, **November 10** at 7:00 PM. Available live on YouTube at NASA Jet Propulsion Laboratory - YouTube. The speaker is Dr. Marie Ygouf, Technologist, NASA/JPL. The title is **"What's in a Name? How We Find, Name, and Investigate Exoplanets."** We live in a golden age of discovery having confirmed over 5,000 Exoplanets. How do we find these worlds and what challenges do we face in the search for more? In this talk with Dr. Marie Ygouf, we'll take a look at the discovery process and what lies ahead for exoplanet discovery.

The **UCLA Meteorite Gallery** is open. Check the website for hours. The monthly lecture will be presented on Sunday, **November 20** at 2:30 PM. The speaker is Dr. Elena Dobrica, University of Hawai'i. The title is: **"Staring at the Solar System Through a Microscope."** For decades, the study of chondritic meteorites has been driven by a perpetual quest to identify and understand the most pristine materials formed in the early Solar System. The goal of this presentation is to discuss the physicochemical conditions of these materials and their evolution within the protoplanetary disk and later on the chondrite parent bodies. Following asteroidal accretion, multiple secondary processes come into play, such as thermal- and shock-induced metamorphism, metasomatism, and aqueous alteration, which modify these pristine components of chondrites. These processes begin to occur even at very low degrees of secondary alteration. Therefore, understanding these secondary processes will help us to determine the characteristics of the earliest Solar System materials. Today, electron microscopy is one of the primary nanoscience tools, allowing us to carry out various observations that transform electron microscopy into a versatile micro- and nanoscale laboratory to obtain fundamental insight into nucleation, growth, and evolution of returned samples, meteorites, and dust particles. **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: Registration is only needed once as this is a recurring meeting in Zoom. 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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Calendar of Events:

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

November 6, 2022 – Lake Elsinore, CA
Lake Elsinore Gem & Mineral Society
32097 Corydon Road, Lake Elsinore, CA 92530
Hours: 10 AM – 4 PM

2023

March 4-5, 2023 – Ventura, CA
Ventura Gem & Mineral Society
Ventura County Fairgrounds, 10 W. Harbor Blvd.,
Ventura, CA 93001
Hours: Sat 10 AM-5 PM, Sun 10 AM – 4 PM
Website: http://www.vgms.org

March 10-12, 2023 – Stoddard Wells
Victor Valley Gem and Mineral Club
47th Annual Stoddard Wells Rockhound Tailgate
Time: Friday, Saturday & Sunday – 9 AM – 5 PM
Website: http://vvgmc.org

March 18-19, 2023 – Lemoore, CA
Lemoore Gem & Mineral Club
Trinity Hall, 470 Champion St., Lemoore, CA
Hours: Sat 10 AM – 6 PM, Sun 10 AM – 4 PM
Website: https://facebook.com/AndLemoore

2022 MSSC Officers:

OFFICERS		
President	George Rossman	president@mineralsocal.org
Vice President	Cheryl Lopez	vicepresident@mineralsocal.org
Secretary	Angie Guzman	secretary@mineralsocal.org
Treasurer	Carolyn Seitz	treasurer@mineralsocal.org
CFMS Director	Angie Guzman	
Past President	Ann Meister	
DIRECTORS		
2022-2023	Pat Caplette	
2022-2023	Ahni Dodge	
2021--2022	Rudy Lopez	
2021--2022	Pat Stevens	
2021--2022	Leslie Ogg	
COMMITTEE CHAIRS		
Bulletin Editor	Linda Elsnau	bulletin@mineralsocal.org
Field Trip	Marek Chorazewicz	
Historian	Ann Meister	
Hospitality	Laura Davis	
Membership	Cheryl Lopez	membership@mineralsocal.org
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 $30.00 for an individual membership, $40.00 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.**

MSSC Bulletin Editor

3630 Encinal Ave.

Glendale, CA 91214-2415

To:

With Knowledge Comes Appreciation

Your MSSC Bulletin Is Here!

2023 MSSC Membership Dues

PLEASE PRINT CLEARLY!

All information **will** appear in the Roster unless you check **NO**

Name: _____

☐ NO Address: _____
Street Apt

_____
City State Zip+4

☐ NO Phone: _____ _____
Home Cell

☐ NO Email: _____

NOTE: THE BULLETIN IS DISTRIBUTED VIA EMAIL : If you wish to receive the Bulletin in a printed, black-and-white format via the US post office, there is an additional annual charge of $35 to cover the printing and postage. ___ **YES, I will pay the extra $35**

Additional name(s) and relationship if this is a family membership:

_____

Our annual Roster will be sent via email and will include only the information you approve above. The Roster is ONLY for personal use of our members.

Membership Dues for One Year:

_____$30 Individual ($10 for CFMS and $20 for MSSC)
_____$40 Family ($20 for CFMS and $20 for MSSC)
_____$35 USPS- delivered paper Bulletin

Donations

____$100 Platinum
____ other donation

Pro-Rated Membership starting on July 1

_____$20.00 Individual ($10 to CFMS and $10 to MSSC)
_____$30.00 Family ($20 to CFMS and $10 to MSSC)

Notice: CFMS does not pro-rate dues; MSSC does pro-rate annual dues.

Total enclosed: $_____

Make checks payable to MSSC and mail with this form to:

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

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

Revised 08/22