

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

Volume 95 Number 4 – April, 2022

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*The **1,000<sup>th</sup>** meeting of the Mineralogical Society of Southern California*

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***With Knowledge Comes Appreciation***

## **A ZOOM Meeting**

***April 8<sup>th</sup>, 2022 at 7:30 P.M.***

***Program :*** The History of: Mineralogical Society of Southern California; June 23, 1931  
– April 8, 2022; Presented by Rossman/Guzman & Lopez

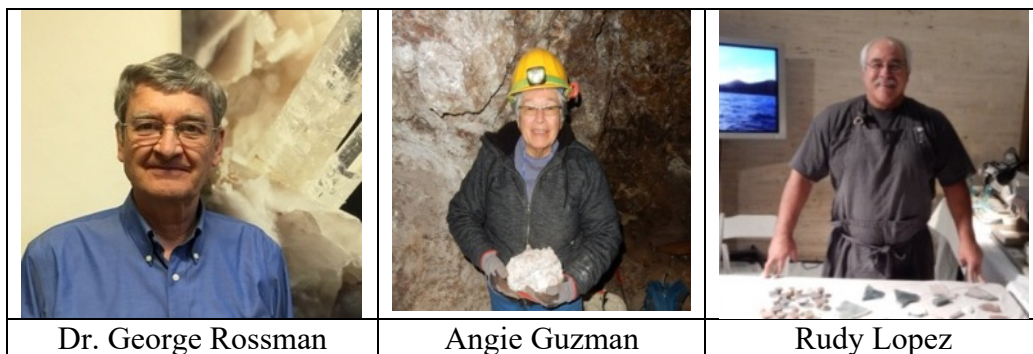
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**Remember:** If you change your email or street address, you must let the MSSC Editor and Membership Chair know or we cannot guarantee receipt of future Bulletins

## About the Program: "MSSC's 1,000<sup>th</sup> Meeting " The History of: Mineralogical Society of Southern California; June 23, 1931 – April 8, 2022

Presented by:



In the first bulletin of the Society, President John A. Renshaw announced that the 40 persons who attended the first meeting at the Pasadena Public Library were part of a great hobby and asked where would our civilization be without minerals.

Minerals remain important to our society today, more than 90 years later. Minerals are a focus of academic study and research. Synthetic materials based either directly on natural minerals or based on the structure of minerals make our technology possible. And let us not forget that collecting minerals remains a great hobby.

Join us the evening of April 8<sup>th</sup> for the 1000<sup>th</sup> meeting of MSSC where we will review the history and accomplishments of our society and its members. The meeting will be on-line, so ZOOM in. We look forward to seeing you there.

### 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](mailto:programs@mineralsocal.org) no later than Tuesday March 8, 2022. Please include "March 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

WOW! This is a milestone meeting for MSSC, meeting number 1,000! It looks like our Program Director, President and Secretary have planned an exceptional trip back in MSSC time for our 1,000<sup>th</sup> meeting. Don't miss it.

Here's to the next 1,000 MSSC meetings!

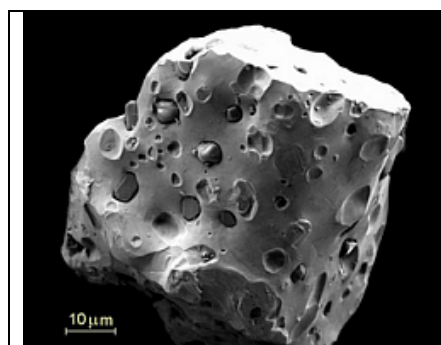
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### FROM THE PRESIDENT: Interesting Minerals, A to Z. Round 2, installment 25, the letter "Y": by George Rossman

The "Y –(Y)" minerals

Rather than focusing on a single mineral that begins with the letter 'Y,' I will deal with a number of minerals whose names begin in "Y" and end in "–(Y)" where Y is the chemical symbol for the element yttrium. These minerals include

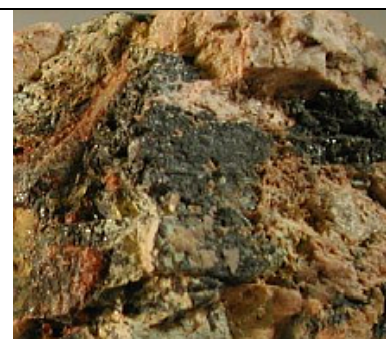
Yttriaite-(Y)	$Y_2O_3$	<b>Figure 1</b>
Yttrialite-(Y)	$Y_2Si_2O_7$	
Yttrocolumbite-(Y)	$(Y,U,Fe^{2+})(Nb,Ta)O_4$	<b>Figure 2</b>
Yttrocrasite-(Y)	$(Y,Th,Ca,U)(Ti,Fe)_2(O,OH)_6$	<b>Figure 3</b>
Yttrotantalite-(Y)	$(Y,U,Fe^{2+})(Ta,Nb)(O,OH)_4$	<b>Figure 4</b>



**Figure 1.** Yttriaite-(Y) from the Boishaya Polya River, Russia.  
Photo Credit: Chi Ma



**Figure 2.** Yttrocolumbite-(Y) from Juniper Flats, Riverside Co., California.  
Photo Credit: Mark Garcia



**Figure 3.** Yttrocrasite-(Y) from Southern Pacific Mine, Nuevo, Riverside Co., California.  
Photo Credit: Mark Garcia

I must say that several of these are ugly black masses. And I should add that some are quite radioactive due to their thorium content. But at least some can be collected locally in Southern California.



**Figure 4.** Yttrotantalite-(Y) from Ytterby, Sweden



**Figure 5.** Yttrotungstite-(Y) from Kinta District, Malaysia.  
Photo Credit: Mark Garcia

Their compositions are a mixture of cations in different oxidation states which makes it hard to define a simple end-member formula. For example, yttrocolumbite-(Y) would ideally be  $YNbO_4$  as an end-member formula. Yttrium (Y) has a 3+ charge and niobium (Nb) has a 5+ charge, so the total positive charge is 8. That is nicely compensated by the 4 oxygen ions which each bring 2- charge for a total of 8-.

However, if we said that the ideal formula of yttrotungstite-(Y) should be  $YW_2O_9$  we would see that the 3+ charge of Y and the two 5+ charges of tungsten (W) add to 13 which does not agree with 18 minus charges that nine oxide ions would bring. Yuck. Or should I say Yuck-(Y)? That is why the formula mixes  $O^{2-}$  with  $OH^{1-}$  and  $H_2O$  that has no charge with the negatively charged ions, and why  $W^{5+}$ ,  $Ti^{4+}$ , and  $Si^{4+}$  are all mixed together with the positively charged ions. Somehow that mixture of ions has to add up to a neutral charge balance, and why we don't have a simple formula for yttrotungstite-(Y). A more appropriate formula for the endmember might actually be:  $YW_2O_6(OH)_3$ . Did anybody say nature is simple? Figure 5 shows what yttrotungstite-(Y) looks like. Again, not exactly the most beautiful, collectable mineral, we might agree.

So why the -(Y)? This has to do with the fact that minerals that contain rare-earth elements often have variable amounts of the different rare-earth elements in them and can vary with respect to which rare-earth element is dominant (has the highest atomic concentration). The symbol for the chemical element with the highest concentration in the mineral will be placed in the -( ) at the end of the formula. In each of these cases, the letters 'yttira' or 'yttro' indicate that yttrium is a major component, of the mineral. In fact, yttrium is the dominant component in a particular crystal site. If we found a sample of yttrocolumbite where lanthanum was present at a higher concentration than yttrium, it would be called yttrocolumbite-(La) and if neodymium were present in the

highest concentration, it would be called yttrocolumbite-(Nd). This way we don't have to come up with many different names for minerals with the same structure that vary only by which rare-earth element is dominant.

Typically, whichever phase is first described gets a name by the people who characterize it. Take xenotime as an example. Then, according to current naming conventions that the IMA uses, if a rare earth element is a dominant cation, its chemical symbol is added to the end of the name. That is why we have xenotime-(Y) and xenotime-(Yb) as two mineral species. These naming conventions are explained in Nickel and Mandarino (1987).

Nickel E H, Mandarino J A (1987) Procedures involving the IMA Commission on New Minerals and Mineral Names and guidelines on mineral nomenclature, *American Mineralogist* 72, 1031-1042.

Here is what Nickel and Mandarino wrote regarding this nomenclature convention which was taken from a proposal by Levinson (1966):

"The name of a mineral with essential rare-earth elements (or the chemically related elements Y or Sc) must have a suffix indicating the dominant rare-earth element, e.g., bastnäsite-(Ce). If a new mineral with the same structure and analogous composition, but with a different dominant rare-earth element, is discovered, it should be given a name that is analogous to that of the existing mineral, e.g., bastnäsite-(Y). A suffix of this type is known as a "Levinson modifier" after the author who introduced this procedure (Levinson, 1966). The CNMMN recently decided that the names of all minerals containing essential rare-earth elements, including those introduced into the literature before the publication of Levinson's paper, should be changed into the approved format."

Levinson AA (1966) A system of nomenclature for rare-earth minerals. *American Mineralogist*, 51, 152-158.

The majority of minerals that contain rare earth elements have a name that does not start with a portion of the dominant chemical element. Xenotime is an example. But a few do, and as the examples above show, yttrium has been the most often used.




This also leads to some strange names. For example, a mineral of the yttrotungstite structure was found that contained cerium (Ce) as the dominant cation in the site otherwise occupied by yttrium. It was given the name yttrotungstite-(Ce) and has the ideal end-member chemical formula  $\text{CeW}_2\text{O}_6(\text{OH})_3$ . This might strike you as rather strange that a 'yttro' mineral has an ideal formula that does not contain any yttrium. This is how the current system works.

Some of you may know that yttrium (number 39 on the periodic table) is not a rare-earth element. The rare-earth elements start with lanthanum (number 57) and end with lutecium (number 71). So why is yttrium treated the same way as the rare-earths? Because yttrium commonly follows the rare-earths in nature, because yttrium has the same oxidation state usually found in the rare-earths (+3), and because yttrium behaves like a rare-earth in its chemical behavior and in the minerals it occupies.

There are also many other minerals that end in -(Y) that start with other letters of the alphabet. A few examples include the species:

Chukhrovite-(Y)	$\text{Ca}_3\text{YAl}_2(\text{SO}_4)\text{F}_{13} \cdot 12\text{H}_2\text{O}$	<b>Figure 6</b>
Tveitite-(Y)	$(\text{Y}, \text{Na})_6(\text{Ca}, \text{Na}, \text{REE})_{12}(\text{Ca}, \text{Na})\text{F}_{42}$	
Tengerite-(Y)	$\text{Y}_2(\text{CO}_3)_3 \cdot 2-3\text{H}_2\text{O}$	<b>Figure 7</b>
Vyuntspakhkite-(Y)	$\text{Y}(\text{Al}, \text{Si})(\text{SiO}_4)(\text{OH}, \text{O})_2$	<b>Figure 8</b>
Wakefieldite-(Y)	$\text{YVO}_4$	
Xenotime-(Y),	$\text{Y}(\text{PO}_4)$	



		
<p><b>Figure 6.</b> Tveitite-(Y) from Hundholmen, Nordland, Norway. Photo Credit: Mark Garcia</p>	<p><b>Figure 7.</b> Tengerite-(Y) from Iveland, Norway. Photo Credit: Mark Garcia</p>	<p><b>Figure 8.</b> Xenotime-(Y) from the Southern Pacific Silica Quarry, Nuevo, CA. Photo Credit: Mark Garcia</p>

I reiterate the point that a dominant concentration of a different rare-earth element will add a different symbol in the –( ) portion of the formula, I note that in addition to wakefieldite-(Y) there are the related species wakefieldite-(Ce), wakefieldite-(La), and wakefieldite-(Nd) with the respective ideal chemical formulas,  $\text{CeVO}_4$ ,  $\text{LaVO}_4$ , and  $\text{NdVO}_4$ . Such be the complexity of mineral species nomenclature.

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## MINUTES of the March 11, 2022 ZOOM Meeting

### Call to Order (Dr. Rossman):

At 7:33 p.m., the 999<sup>th</sup> Membership Meeting of the Mineralogical Society of Southern California (MSSC) was called to order by President Dr. Rossman, Ph.D. It was MSSC's 22<sup>nd</sup> ZOOM conference Membership meeting, 5<sup>th</sup> under MSSC's license.

### President's Remarks (Rossman)

Dr. Rossman reports that the International Mineralogical Association (IMA) has approved 5,794 mineral species. Two of the new minerals are hexathioplumbite and cubothioplumbite are polymorphs. They have the same chemistry, lead hydroxyl thiol sulfates. Interestingly, with this sulfate, one of the oxygen has been replaced by sulfur. These come from the Redmond Mine in North Carolina. Authors include Tony Kampf, Curator Emeritus, Natural History Museum of Los Angeles County (NHM) and Caltech's Chi Ma.

### Regular Business (Rossman)

**MINUTES:** Dr. Rossman announced that the February 2022 Membership Meeting Minutes, as published in the March 2022 Bulletin, need to be approved. George asked for any corrections or additions, seeing none, called for a vote to approve the Minutes. There was no opposition seen and he declared the Minutes approved.

### Announcements and Reports

#### 1. Fieldtrip Report (Marek Chorazewicz)

- The next field trip may be possible for April;
- The recent field trip to Red Hill (Lucerne Valley) had a good turnout, 12 cars. 20 people and 1 dog; there was good collecting including molybdenite. Check the website for a write-up of this fun field trip.

#### 2. Microminerals (Dr. Bob Housley)

The NCMA will hold an in-person micro mineral conference May 26-28 in El Dorado, CA. NCMA is Northern California Mineralogical Association. If you're interested, please e-mail: [rhousley@caltech.edu](mailto:rhousley@caltech.edu) for information. This is not to be confused with MSSC's Pacific Micromount Conference in Fallbrook.

### 3. Board Meeting (Dr. G. Rossman)

MSSC's next Board meeting will be Sunday, April 3<sup>rd</sup> at 1pm via ZOOM. Everyone is invited, if you'd like to attend, please contact Rudy Lopez to ensure you get on the ZOOM invite list.

### 4. Speakers and Programs (Rudy Lopez)

a) Our next meeting will be our 1,000<sup>th</sup> Membership meeting. It's going to be very exciting. Rudy went on a field trip today and collected a mother lode when he visited Ron Sleeper and was handed 4 boxes full of old Bulletins from 1932 to 2000 (various dates). [Note: Rudy does not have room to store these boxes, so if someone would step up and offer space to store these historic records, it will be appreciated.] George and Angie will help go through the boxes to see what can be used in the 1,000<sup>th</sup> presentation. There were exchange bulletins from other clubs and societies and they may want them back. David Lesperance offered to convert the documents to .pdf. Rudy and George have put a lot of time and effort into this presentation and we hope everyone will enjoy looking at how and where MSSC came from to where we are today.

b) Speakers: We have our regular list of speakers plus back up of five new people. Jurupa Valley will put on two programs (tour and dino trek), Dr. Aaron Celestine, current Curator of NHM will return for another presentation, we have speakers from USA and international speakers.

### Program

Dr. Rossman turned the meeting over to Program and Education Chair, Rudy Lopez to introduce speaker, Dr. Peter M.K. Megaw. Rudy starts by thanking Carolyn Seitz for bringing Dr. Megaw to MSSC's attention and inviting him to speak with us. He then introduces Dr. Megaw by way of a brief bio. Rudy tells us that Dr. Peter Megaw is a consulting geologist who earned his Ph.D. from University of Arizona. He is president of IMDEX/Casabel and co-founder of MAG Silver and Minaurum Gold. He has been a dedicated mineral collector since 1977, when he first set foot in Santa Eulalia, Chihuahua, Mexico. Megaw currently is the Exhibits Chair for Tucson Gem and Mineral Show and has held that post since 1984. He has had opportunity to travel the world's major mineral museums with a special eye out for what to bring to Tucson. His own mineral collecting became focused almost exclusively on minerals of Mexico. Mexico is the number one producer of silver, producing 25% of the world's historic supply. Tonight, Dr. Megaw will speak on *The Silver Mineralogy of Mexico*.

Dr. Peter K. M. Megaw, Ph.D., begins his presentation with a fabulous photo screen behind him showing a double (twin?), green mineral specimen he identifies as copper, tungstite and scheelite from Sonora, Mexico. He starts with, "We're going to talk about the silver mineralogy of Mexico." He mentions that when he speaks of Mexico, it brings up the memory of his good friend Dr. Miguel Romero, a preeminent collector, and of Dick Graeme, who was the consummate locality collector and in whose footsteps Peter follows. He also acknowledges mineral photographer, Jeff Scovil, a lot of the pictures are his, longtime associate Jim McGlasson, Gerardo Perez of Mexico, Jesus Salinas, a lot of miners and other people who risk their life and livelihood to get the minerals and help to bring them out. Megaw also tips his hat to Mindat for giving him the opportunity to be the one to check all the pictures and, to TGMS, Tucson Gem and Mineral Society.

As Rudy mentioned, says Megaw, we look at the world's historic silver production. These estimates are based on all of human history: somewhere between 48 and 50 **billion** ounces of silver have been produced, of which 12 **billion** of those are from Mexico. So, 25% of all the silver that has ever come out of the ground has come from Mexico! By comparison, for example in 2019 top silver producers worldwide are Mexico (190 million troy ounces – mto), 2<sup>nd</sup> is Peru (135mto), 3<sup>rd</sup> is China (111mto), 4<sup>th</sup> is Australia (43mto) and down to 10<sup>th</sup> ranked USA (32 mto). Further, of the top 15 with a billion oz or more producing silver camps, 8 are in Mexico (top is Fresnillo 3.3 billion oz) and 1 each in Bolivia, Peru, Australia, USA (Coeur d'Alene, Idaho), Russia, Canada and one other. Bottom line, Mexico is the place for silver; in fact, it's the place for big silver!

So why is Mexico silver so special? Is it the rocks under Mexico, the (age) timing, the mineralization that makes Mexico's silver different? People have noticed that Mexico is marked by a series of NW, SE channels of

mineralization. In 1929, J E Spurr drew a map of the Great Silver Channel. The channel is from Oaxaca in the south, up diagonal NW through Pachuca, Parí, Santa Eulalia, Cananea (Mexico) up further into the USA through Tonopah and beyond to the west coast of America. Keep in mind the map was drawn way before plate tectonics was accepted.

Plate tectonics are related in 3 ways: spreading center, mid ocean rift where plates move away from each other and collision zone. Dr. Megaw delivers a lesson on plate tectonics, motion, boundaries, convergence, subduction, etc. [Secy Note: It's too detailed to fully report here.] So, when we look at Mexico's ore deposits, this is everything. Megaw says there are very distinct *belts* of gold, silver, lead, zinc, etc., that run along the axis of Mexico. The western margin of Mexico has the trench, a series of transform and spreading centers in the middle of the Gulf of California; the rest of California is moving away and to the north. The belts are marked by a whole series of different types of deposits and the Eastern terrain shows more silver dominant as you work your way westerly. There is more gold and copper in the eastern part of Mexico. Megaw shows several maps depicting major ore deposits, silver belt clusters and others. He shows how Mexico's tectonics are repeated coaxial compression and extension, like movement of an accordion: Middle Jurassic compression, Late Jurassic extension, Late Cretaceous compression (Early Laramide Orogeny) to initial Mid-Tertiary extension and Rhyolitic Volcanism (40-25 mya). The sense of motion is interesting as plate movements are parallel or perpendicular to boundaries, near the rift, between two plates - all that is slop gets taken up in the subduction zone because it has no parallel or perpendicular shape or constraints.

With all these activities then, why is Mexico so rich in big silver? It is the perfect tectonic storm. These four factors tell the story. (1) Sources: gold-rich deposits, Earth's crust is accessible. (2) Processes: hydrothermal activity within magmatic belt, silver moves, deposits associated with felsic magmatism. (3) Environment: chemically appropriate, structurally-prepared host rocks. (4) Timing: near perfect timing for magmas and fluids to get to high crustal levels, old enough to be exposed and young enough to be preserved. Megaw's photo slide sums it up: "By understanding very well-developed Mexican examples, we can better understand related (specimen-producing) silver systems worldwide." The specimen photos he displayed thus far are absolutely amazing and beautiful.

Dr. Megaw takes us back a bit to subduction and reminds us that when a slab is going down, it takes a bunch of water down with it, that touches off melting of the slab at depth and, in turn, moves hot magma to the base of the crust, melting a lot of that crust. All of that works its way back up toward shallow levels and makes a volcanic belt; when it's young, looks like the Cascades and when older, looks like Nevada. When it happened back then, there were all kinds of magmatic differentiation and assimilation. Now 30 million years of erosion later, the silver deposits in Mexico are prominent. Megaw says there is probably an equal amount of silver in South America (Peru) but their erosion is still 20 million years behind Mexico's. Silver deposits in Mexico can be studied now and used as proxy for understanding silver deposits worldwide.

The same processes that make carbonate replacements make the veins; we can understand replacement mineralization. We see paragenesis, which tend to have a lot of pseudomorphs. Zooming in on Mexico, we see (in an old map with a series of deposits highlighted) veins vs. carbonate replacement deposits. In Baja California, Boleo is a young deposit that actually started forming 7 million years ago and is related to the opening of the Gulf of California. There is a deep penetrating fault on the eastern side of the Gulf of California, there is lots of heat being generated by those plates sliding past each other and, it creates heat that moves hydrothermal fluids along that fault. Those fluids go into the chemically stratified basin resulting in brines that are loaded with really very cool metals which, in turn, begin to precipitate then you wind up with sedimentation of laminated sulfides. When that fault moves, Baja moves and San Francisco moves a little more toward Mendocino. The process continues when the rocks fall, slide and bury the laminated sulfides. Things quiet down and it returns to the sulfide depositing system, then the process keeps going as it repeats over and over. Comparing Boleo to the Santa Rosalio mine pit (on the eastern side of Baja California) there are black layers of copper sulfide minerals and the rest is conglomerate, a gunky stuff full of clay. When it gets oxidized, there are beautiful and unusual minerals. The best example is the blue cube boleite, named for the district. There is also the blue pseudoboleite and the indigo blue tetragonal, highly desirable cumengeite.

Dr. Megaw talks about the “Five Element” native silver deposits of Mexico of Mesozoic volcano rock and shows tetrahedrite, bournonite, cinnabar, acanthite, pyrite, and silver specimens. He mentions “Mass Balance” and says carbonate is not destroyed but picked up by spent ore fluids with residual elements. They migrate outward along the “plumbing network” (fluid escape structures) and deposit secondary fugitive carbonate that plugs up peripheral porosity and permeability.

He reviews the “replacement process” slides and says some interesting things happen because both the skarn silicate and the sulfide mineral atomic structures are more compact than the carbonate that they replace. So, the replacement process gives about 15-20% volume reduction which allows fluids to flow through previously formed mineralization until the ore bodies get big enough then the sulfides and silicates are too weak to support their own weight and collapse ultimately creating voids for big specimens to grow into. As a result, there were big fluorite, sphalerite, galena and chalcopyrite coming out (of southern Mexico) by the boatload! In Chihuahua this happened and there were lustrous jet-black andradite garnets mislabeled as melonites but there is no titanium. Further in there was manganese that gets mixed with garnets and they come out hot pink! Megaw cites many other examples and shows stunning Scovil photos. The Santa Eulalia single crystal is gorgeous and so are the anhydrite, rhodochrosite, calcite-manganoan and gypsum pieces.

At the Cave of the Giants (Naica, Chihuahua), in a huge chamber of the limestone host rock, down about 950 feet, where it is a very hot (58°C = 136°F) giant gypsum crystals (about 14') have grown for about 200,000 years. Naica was closed in 2016 after a massive flooding. There has been no interfering with growth of crystals, but now, after 5 years, there has been some rehabilitation and beautiful gypsum specimens are now starting to appear in mineral markets.

Oxidation has had a chance to penetrate deeply because for 30 million years, Mexico has had no stream erosion. There are sulfide chimneys being affected by infiltrating groundwater plus oxygenated water that makes an acid which flushes out soluble elements like zinc. Megaw goes on to talk about the calcites, lead, arsenic, mimetite, cerussite and other minerals and mine finds, especially silver.

When the Spaniards came to this part of the world and saw the silver and gold sticking out of the ground, they literally built the Spanish Empire and paid for the Spanish Armada. In Mexico, the 20-million-year-old silver rich and gold rich deposits were smelted by the pre-Columbian Indigenous peoples using their ancient methods. Later, these people were displaced by the Spaniards.

Dr. Megaw continues by showing early (historic) mining with the use of candles, crude tools, compressed air and dynamite in mines (late 1800's) to today's safety practices of hard hats, steel boots, long-sleeved shirts and other improvements.

He takes us to his collection of minerals by way of exquisite photos of the beautiful minerals: wulfenite, vanadinite, bromargyrite, malachite, smithsonite, hemimorphite, legrandite and others. He shows the silver-gold vein deposits map then talks a bit about Buchanan's epithermal vein model featuring the sudden pressure drop causing metal precipitation, quartz filling the voids, pressure rebuilds, sudden drop in pressure and a repeat of the procedure. We see a photo of silver on acanthite, one of jalpaite, and several others. His silver “wire” photos are incredible. Part of his presentation focus is on items he received from friends and family such as a purchase by his daughter while she was in Munich, Germany of a mixture of mimetite and wulfenite and Dona and Wayne Leicht's (Kristalle) contributions. Megaw has mineral specimens from Morocco, Saudi Arabia, several US sites, Mexico and other countries and locales. He is seen in a 2019 photo, “Meeting the Valdecañas Vein” up close, kissing the vein. The Valdecañas is located in Zacatecas and is a MAG Silver and Minaurum Gold business concern.

Dr. Megaw was kind to take questions from those in attendance. We were honored to have Dr. Megaw at our 999<sup>th</sup> MSSC Membership Meeting; he indicated he would like to return but not for the 1,999<sup>th</sup>; sometime sooner would be good. You got it! Thank you, Dr. Megaw.

It is impossible to report the entire presentation but we hope you appreciate this report. We hope you will attend our next ZOOM Membership Meeting on **April 8, 2022**. It will be our special **1,000<sup>th</sup> meeting** celebration. Please contact Programs and Education Chair Rudy Lopez for invitation information.



There being no further business, the meeting was adjourned at 9:08p.m.

Respectfully submitted, Angie Guzman, MSSC Secretary

**\* \* \* \* REMINDER: MSSC will celebrate its 1,000<sup>th</sup> Membership Meeting on April 8, 2022 via ZOOM. Please contact Program Chair Rudy Lopez for invitation information. See you then! \* \* \* \***

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

Event	Date	Comments / Scheduled Program (if known)
Meeting Dates:	ZOOM May 13, 2022	L, Michael Kaas: Silver Hill
	ZOOM June 11, 2022	John Rakovan -Mosaic and Split Crystals
	ZOOM July 8, 2022	Howard Heitner - Minerals in 19th century America.
	ZOOM August, 13, 2022	TBA
Board Meeting	ZOOM April 3, 2022	ZOOM at 1:00 PM
Field Trip	TBA	No Field Trips Planned at this Time

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

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## ***With Knowledge Comes Appreciation***

**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

The **Watson Lecture** is on Wednesday, **April 13**. Each Watson Lecture will begin at 5:00 p.m. Pacific Time. Each lecture runs approximately 40 minutes, followed by live audience Q&A. You can view the livestream at [caltech.edu/watson](https://caltech.edu/watson) or on Caltech's YouTube channel. No advance registration is required. The speaker is Jennifer A Jahner, Professor of English, Caltech. The title of the presentation is **"The Rhetoric of Chance in Times of Pandemic."** The COVID-19 pandemic has disrupted not only our daily patterns of life but also our habitual ways of thinking about safety, uncertainty, and risk at the personal and collective scales. While the science we bring to this pandemic is new, the arguments we bring to questions of public health and uncertainty have ancient roots. This talk explores the long history of thinking about chance, from the Goddess Fortune of ancient epic to the modern rhetoric of personal risk. Find more past Watson Lectures on [Caltech's YouTube channel](https://caltech.edu/watson).

The **Von Kármán Lecture** is on Thursday, **April 14** at 7:00 PM. Available live on YouTube at [NASA Jet Propulsion Laboratory - YouTube](https://www.youtube.com/channel/UC8vXp1YUg8vXp1YUg8vXp1Y). The speaker is Erika Podest, Carbon Cycle and Ecosystems Scientist, NASA/JPL. The title of the presentation is **"A Look at NASA's Earth System Observatory."** NASA is working on a new set of Earth-focused missions to provide key information to guide efforts related to climate change, natural hazard mitigation, fighting forest fires, and improving real-time agricultural processes. Each uniquely designed satellite in the Earth System Observatory will complement the others, working in tandem to create a 3D, holistic view of Earth, from bedrock to atmosphere.

The **UCLA Meteorite Gallery** has reopened. Check the website for hours. The monthly lecture will be presented on Sunday, **April 17**. The speaker is Dr. Thomas Burbine, Mount Holyoke College. The topic to be announced. This is a pre-recorded lecture. It will be available on YouTube [UCLA Meteorite Collection & Gallery - YouTube](https://www.youtube.com/channel/UC8vXp1YUg8vXp1YUg8vXp1Y) on April 17 and will be available indefinitely. There is no registration necessary. Visit the website and check on events and videos and other neat things about meteorites, go to <https://meteorites.ucla.edu>

MSSC Advertisement Policy:			
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### Calendar of Events:

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

#### **April 1-3, 2022, Vista CA**

Vista Gem and Mineral Society

Vista Gem and Mineral Show

Antique Gas and Steam Engine Museum, 2040 N. Santa Fe Ave., Vista, CA 92083

Hours: Fri/Sat 10 AM – 5 PM, Sun, 10 AM – 4 PM

Website: <https://vistarocks.org>

#### **April 9-10, 2022, Thousand Oaks, CA**

Canejo Gem and Mineral Club

Borchard Park, 190 N. Reino Rd., Thousand Oaks, CA

Hours: Sat 10 AM – 5 PM, Sun 10 AM – 4 PM

Free Admission and Parking

Website: <https://cgamc.org>

#### **April 16, 2022 – Lake Elsinore, CA**

Lake Elsinore Gem & Mineral Society

Rock and Craft Show

32097 Corydon Rd., Lake Elsinore, CA 92530

Hours: Saturday 10 AM – 4 PM

Contact: 1 (909) 208-6956, [berylman50@aol.com](mailto:berylman50@aol.com)

#### **April 30 – May 1, 2022 – Anaheim, CA**

Searchers Gem & Mineral Society

Brookhurst Community Center, 2271 W. Crescent Ave., Anaheim, CA 92801

Hours: Sat 10 AM – 5 PM, Sun 10AM – 4:30 PM

Website: <https://searchersrocks.org>

#### **May 6-7, 2022 – Yucaipa, CA**

Yucaipa Valley Gem and Mineral Society

Yucaipa Blvd and Adams Street, Yucaipa CA 92399

Hours: Friday 6 PM – 10 PM, Saturday noon – 10 PM

Website: <http://yvgms.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**

#### **June 11-12, 2022 – Escondido, CA**

Palomar Gem and Mineral Club

Palomar Gem and Mineral Show

California Center for the Arts, 340 N. Escondido, Escondido 92025

Hours: Sat 10 AM – 5 PM, Sun 10 AM – 4 PM

Website: <http://palomargem.org>

#### **July 16-17, 2022 – Culver City, CA**

Culver City Gem & Mineral Society

Fiesta of Gems

Veterans Memorial Auditorium, 4117 Overland Ave., Culver City, 90230

Hours: Sat 10 AM – 6 PM, Sun 10 AM – 5 PM

Website: <http://CulverCityRocks.org/fiesta.htm>

## 2022 MSSC Officers:

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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. 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](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:*



**With Knowledge Comes  
Appreciation**

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Here!***