

The Sierra Pelonagram



October 2023

... Member of the California Federation of Mineralogical Society Inc. ...

The Sierra Pelona Rock Club is a non-profit organization founded in 1959 with the objective to sponsor activities and promote interest and education in: mineralogy, lapidary, geology, paleontology and related subjects.

SPRC Meeting

9/19/23

At the UCN at College of the Canyons

Meeting called to order at 7:03 p.m. by President Linda J.

Treasurer's Report

- Treasurer Ed L. reported a healthy balance; specifics are found in the Treasurer's Report.

Silent Auction

- Julie T. reviewed the whys-and-hows of the Silent Auction and Drawing.
- We need more auctionable rocks
- The woman who offered up rocks for \$10/bucket didn't call Ed back and gave the wrong address to Diane Hellrigel.
- Members are – and are encouraged to continue – donating their own rocks.

Guest

- Tonight's guest is Shawn, a potential new member with great enthusiasm and knowledge of some good collecting sites.

Field Trips

- Julie T. announced that the Ballarat trip has been postponed indefinitely as the roads are all closed.

• Stoddard Wells was decided upon as the destination for September's trip, Julie shared examples of Tricolor Marble and Antique Verde Marble.

- It was suggested that we might do a joint drip with the Antelope Valley or Victor Valley Clubs.

- Shawn shared with us a great spot in Riverside; we'll likely go there in October.

Presentation

Recognizing that many in the club are lapidarists and/or collectors of pretty rocks, Tina gave a presentation on Mineral & Rock Basics. What minerals are, types of rocks, etc.

Drawing Winners

Tina, Betsey, Trina (2x), Linda (2x) Trina, Tina, Diane, Ed, Shawn (courtesy of Linda), Julie, Diane (2x).

Auction

- The auction closed at 8:30, some but not all of the items were bid on.

The meeting was adjourned at 8:38 p.m.

Officers:

President – Linda Jenkins

Vice-President – Julie Tinoco

Secretary: Tina White

Treasurer – Ed Learn

Federation Director (CFMS/AFMS) --Greg Mazourek

Chairpersons:

Claim--Linda Jenkins

Donation Rock Table--Dianne Wholleben

Equipment--Bill Webber

Field Trips – Julie Tinoco

Historian -Open

Hospitality – Ron Rackliffe

Membership – Heidi Webber

Website-- Larry Holt

Pelonagram Publisher, Editor – Heidi Webber

Programs –Tina White

Publicity –Open

Sunshine--Yolanda Resnick

The Sierra Pelona Rock Club, is a member of the California and American Federation of Mineralogical Societies, Inc. (CFMS/AFMS). The general club meetings (Open to the public) are at 7:00 PM, on the 3rd Tuesday of each month at: College of the Canyons, 26455 Rockwell Canyon Rd in the Dianne Van Hook University Center, Room 209. (Go to their website for a map, It's in section 14)

Contact the Club or the Sierra Pelonagram Editor at:

Sierra Pelona Rock Club

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Greetings Everyone:

It's finally Fall, and with Fall comes all of the fun activities associated with the season.

The Club has reserved a booth for October 28-29 at Gilchrist Farms. This is a much anticipated fundraising event (the only fundraising event) for SPRC. Please contact Heidi to schedule a time to volunteer at the club's booth. If you can't volunteer, please bring your families out to support the Club and enjoy all of the Fall festivities at Gilchrist Farms. Gilchrist Farms is open from 9:00 to 6:00 both days.

At last month's meeting, I was again approached by several members who would like to see the meetings at a different venue. We are growing out of the space at COC. Not to mention we are not allowed to have refreshments, and in doing so have lost most of our younger members. PLEASE, if you know of any place that can rent to us once a month, please pass your information to one of the board members.

For those not volunteering on Saturday at Gilchrist, there will be a club field trip to Riverside. See additional information to be provided by Julie Tinoco at the General Meeting and by email.

Enjoy your Fall season and see you at the monthly meeting!

Sincerely,
Linda Jenkins,
President



October
Omid Aeen

November
Frank Hummelbaugh
Jack Jenkins

SPRC Board Meeting

10/3/23
On Zoom

The meeting was called to at 7:05 p.m. by Vice President Julie Tinoco

Attendees: Heidi W., Ed L., Julie T., Ron R., Greg M., Tina W.

Ed ~ Treasurer's Report

- Our balance remains healthy, with a small deposit from the Sept. meeting's drawing & auction and a couple of cleared checks.
- The paperwork for the Claim has been submitted, and we are "good to go".
- The Club's insurance has been paid, and COC is/will be on the policy renewal.

Heidi ~ Holiday Party

- The Clubhouse is available on 12/16 and all present agreed that date will work.

Julie ~ Field Trips

- October 28th trip to Riverside location shared with us by new/potential member Shawn
- Site is small, so only 8 or so folks at each location at any time particularly as prybars, etc. may be useful
- Ed shared photos of some of Shawn's finds, they include Fluorite, Mica, and Garnets

Heidi & Julie ~ Gilchrest Farms Event 10/28 & 29

- Heidi will contact the woman tomorrow and let us know for sure if we're set
- The wheel is at the Webbers' as is a supply of candy
- Ron has some tumbled rocks; Ed will tumble more
- Julie has some rocks she got in Quartzite for us to sell

Future Events:

- October 17 General Membership meeting at COC; Tina will present on Garnets
- November 11th trip to the Claim for a "claim cleanup".
- November 18th Workshop at the Webbers
- November 21st General Membership meeting at COC (tentative)
- December 2nd or 9th an informal trip the Stone Femme Studio in Montrose to see old friends and purchase nifty stuff

Greg ~ CFMS

- He has received some emails from the Federation and believes that there is a December meeting; he will look into it and update us.

The meeting was adjourned at 7:59 p.m.



By John Alan Elson - <http://www.3dham.com/3dgalleries/fulgurites/index.html>, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=17791548>

Fulgurite

Fulgurites (from Latin fulgur 'lightning', and -ite), commonly called "fossilized lightning", are natural tubes, clumps, or masses of sintered, vitrified, and/or fused soil, sand, rock, organic debris and other sediments that sometimes form when lightning discharges into ground. When composed of silica, fulgurites are classified as a variety of the mineraloid lechatelierite.

When ordinary negative polarity cloud-ground lightning discharges into a grounding substrate, greater than 100 million volts (100 MV) of potential difference may be bridged. Such current may propagate into silica-rich quartzose sand, mixed soil, clay, or other sediments, rapidly vaporizing and melting resistant materials within such a common dissipation regime. This results in the formation of generally hollow and/or vesicular, branching assemblages of glassy tubes, crusts, and clumped masses. Fulgurites have no fixed composition because their chemical composition is determined by the physical and chemical properties of whatever material is being struck by lightning. Fulgurites are structurally similar to Lichtenberg figures, which are the branching patterns produced on surfaces of insulators during dielectric breakdown by high-voltage discharges, such as lightning.

Description

Fulgurites are formed when lightning strikes the ground, fusing and vitrifying mineral grains. The primary SiO₂ phase in common tube fulgurites is lechatelierite, an amorphous silica glass. Many fulgurites show some evidence of crystallization: in addition to glasses, many are partially protocrystalline or microcrystalline. Because fulgurites are generally amorphous in structure, fulgurites are classified as mineraloids.

Material properties (size, color, texture) of fulgurites vary widely, depending on the size of the lightning bolt and composition and moisture content of the surface struck by lightning. Most natural fulgurites fall on a spectrum from white to black. Iron is a common impurity that can result in a deep brownish-green coloration. Lechatelierite similar to fulgurites can also be produced via controlled (or uncontrolled) arcing of artificial electricity into a medium. Downed high voltage power lines have produced brightly colored lechatelierites, due to the incorporation of copper or other materials from the power lines themselves. Brightly colored lechatelierites resembling fulgurites are usually synthetic and reflect the incorporation of synthetic materials. However, lightning can strike man-made objects, resulting in colored fulgurites.

The interior of Type I (sand) fulgurites normally is smooth or lined with fine bubbles, while their exteriors are coated with rough sedimentary particles or small rocks. Other types of fulgurites are usually vesicular, and may lack an open central tube; their exteriors can be porous or smooth. Branching fulgurites display fractal-like self-similarity and structural scale invariance as a macroscopic or microscopic network of root-like branches, and can display this texture without central channels or obvious divergence from morphology of context or target (e.g. sheet-like melt, rock fulgurites). Fulgurites are usually fragile, making the field collection of large specimens difficult.

Fulgurites can exceed 20 centimeters in diameter and can penetrate deep into the subsoil, sometimes occurring as far as 15 m (49 ft) below the surface that was struck, although they may also form directly on a sedimentary surface. One of the longest fulgurites to have been found in modern times was a little over 4.9 m (16 ft) in length, and was found in northern Florida. The Yale University Peabody Museum of Natural History displays one of the longest known preserved fulgurites, approximately 4 m (13 ft) in length. Charles Darwin in *The Voyage of the Beagle* recorded that tubes such as these found in Drigg, Cumberland, UK reached a length of 9.1 m (30 ft). The

Winans Lake fulgurite[s] (Winans Lake, Livingston County, Michigan), extended discontinuously throughout a 30 m range, and arguably includes the largest reported fulgurite mass ever recovered and described: its largest section extending approximately 16 ft (4.88 m) in length by 1 ft in diameter (30 cm).

Peak temperatures within a lightning channel exceed 30,000 K, with sufficient pressure to produce planar deformation features in SiO₂, a kind of polymorphism. This is also known colloquially as shocked quartz.

Classification

Fulgurites have been classified by Pasek et al. (2012) into five types related to the type of sediment in which the fulgurite formed, as follows:

- Type I - sand fulgurites with tubaceous structure; their central axial void may be collapsed
- Type II - soil fulgurites; these are glass-rich, and form in a wide range of sediment compositions, including clay-rich soils, silt-rich soils, gravel-rich soils, and loessoid; these may be tubaceous, branching, vesicular, irregular/slaggy, or may display a combination of these structures, and can produce exogenic fulgurites (droplet fulgurites)
- Type III - caliche or calcic sediment fulgurites, having thick, often surficially glazed granular walls with calcium-rich vitreous groundmass with little or no lechatelierite glass; their shapes are variable, with multiple narrow central channels common, and can span the entire range of morphological and structural variation for fulguritic objects
- Type IV - rock fulgurites, which are either crusts on minimally altered rocks, networks of tunneling within rocks, vesicular outgassed rocks (often glazed by a silicide-rich and/or metal oxide crust), or completely vitrified and dense rock material and masses of these forms with little sedimentary groundmass
- Type V - [droplet] fulgurites (exogenic fulgurites), which show evidence of ejection (e.g. spheroidal, filamentous, or aerodynamic), related by composition to Type II and Type IV fulgurites
- phytfulgurite - a proposed class of objects resulting from partial to total alteration of biomass (e.g. grasses, lichens, moss, wood) by lightning. Pasek et al. (2012) described fulgurites as "natural glasses formed by cloud-to-ground lightning." Pasek et al. excluded phytfulgurites from their classification scheme because they are not glasses, so classifying them as a subset of fulgurites is debatable.

Significance

Paleoenvironmental indicator

The presence of fulgurites in an area can be used to estimate the frequency of lightning over a period of time, which can help to understand past regional climates. Paleolightning is the study of various indicators of past lightning strikes, primarily in the form of fulgurites and lightning-induced remanent magnetization (LIRM) signatures.

Place in planetary processes and the geologic record

Many high-pressure, high-temperature materials have been observed in fulgurites. Many of these minerals and compounds are also known to be formed in extreme environments such as nuclear weapon tests, hypervelocity impacts, and interstellar space. Shocked quartz was first described in fulgurites in 1980. Other materials, including highly reduced silicon-metal alloys (silicides), the fullerene allotropes C₆₀ (buckminsterfullerenes) and C₇₀, as well as high-pressure polymorphs of SiO₂, have since been identified in fulgurites. Reduced phosphides have been identified in fulgurites, in the form of schreibersite (Fe₃P and (Fe,Ni)₃P), and titanium(III) phosphide. These reduced compounds are otherwise rare on Earth due to the presence of oxygen in Earth's atmosphere, which creates oxidizing surface conditions.

Reference: Wikipedia

