The BULLETIN

OF THE NEW YORK MINERALOGICAL CLUB, INC

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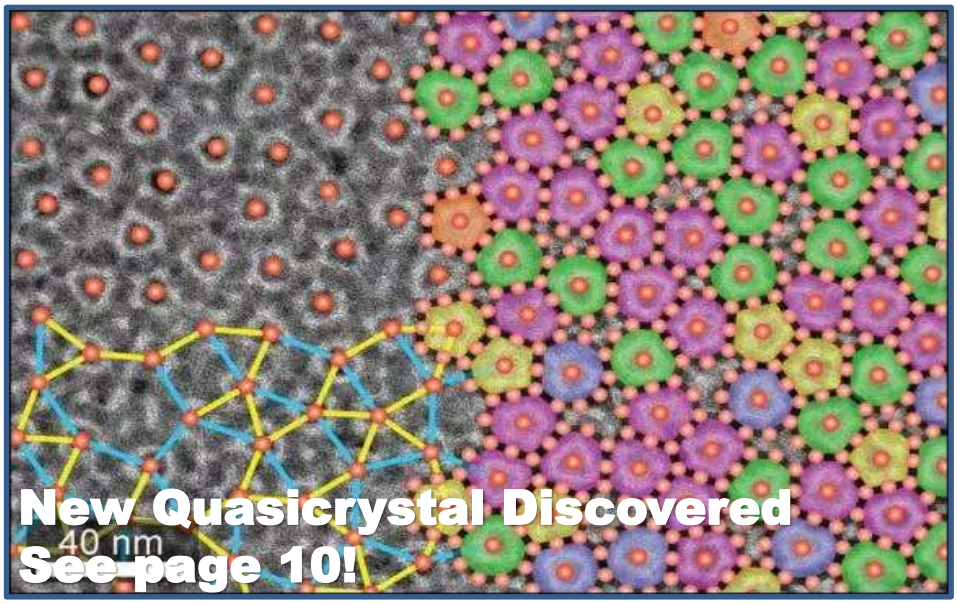
May 2019



New Quasicrystal Discovered
See page 10!

America's Oldest Gem & Mineral Club
Founded 1886 ◆ Incorporated 1937

Bulletin of the New York Mineralogical Club

Founded 1886 ♦ New York City, New York ♦ Incorporated 1937

Volume 133, No. 5 ***Celebrating the International Year of the Periodic Table of Chemical Elements*** **May 2019**

May 8th Meeting:
Annual Benefit Auction!

Additional Contributions Received

Below is a partial list of additional auction contributions received from members and friends during the past few months. Thanks to everyone!

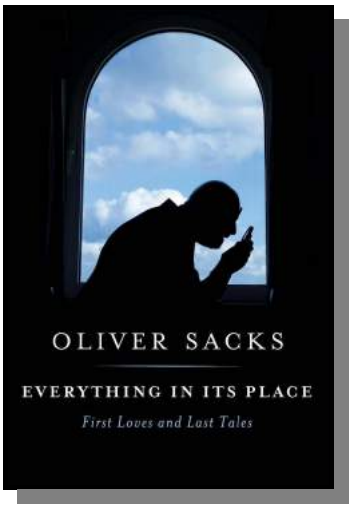
From Elise Skalwold
- Metzger Gem Collection (Book)
- (2) Quartz Monographs (Books)
- (2) Birefringence Monographs (Books)

From Susan Rudich
- Lacquer/Abalone Box
- Jade Pendant
- Heart-Shaped Smoky Quartz
- Turquoise, Silver, Garnet Pendant

From Pauletta Brooks
- (10) Ancient Egyptian Beads (Really!)

From James Zigras
- (2) Small Quartz from Arkansas
- (2) Medium Quartz from Arkansas
- (2) Large Quartz from Arkansas

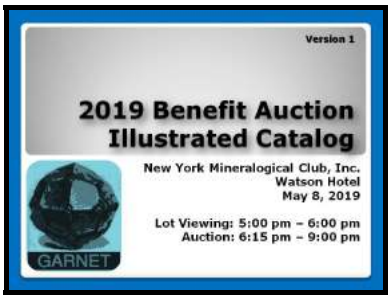
Now Available!



Annual Benefit Auction to Occur on May 8, 2019

By Mitch Portnoy

Don't miss this year's NYMC Benefit Auction, now occurring in May! The auction has always been among the Club's most popular events since its inception in the 70's. There are always a wide variety, impressive quality and great prices for all sorts of items than can certainly enhance your collections.



We will hold the auction from 6:15 p.m. to 9:00 p.m. in Mezzanine C at the Watson Hotel, our regular meeting place. You may preview lots from about 5:00 until 6:00; the auction begins at 6:15 p.m.. Make sure you arrive in time to view all the lots. The auction proceedings cannot be interrupted to allow more "personal viewing." After some brief club business and announcements, the auction will commence.

For the fourth time, an illustrated catalog (PDF) of all the lots is available for viewing and/or downloading on the Club's website. (Thanks to **Mark Kucera** for assisting in the difficult lot photography!) The link to this document can be found on the Calendar Page below the entry about the Benefit Auction. In addition, the catalog pages will be projected during the auction to aid you in seeing what lot is up for bid. (Also thanks to **Diane Beckman** for spending many hours with me making the auction lot selections and organization.)

We will again use our Auction Management System Software so please arrive early to register your name into the system and get your auction number paddle. During the auction our treasurer, Diane Beckman, will be recording who successfully wins what and for what amount. This, too, will be projected at the front of the room.

By using this software, consolidated bills can then be easily generated at the auction's end. In addition, the recorded information can be used to summarize the auction after the fact here in a later Bulletin.

Since the items will be given to you immediately upon a successful winning bid, please bring a flat or tote bag with you so you can get them home safely afterwards easily. In addition, as there is no credit allowed and we are not equipped to accept credit cards, please don't forget to bring some cash or your check book!

This auction is the most important fund raiser for the club. The money goes to underwrite the ever-increasing costs of the paper monthly newsletter production and mailing, meeting speaker and room rental fees, banquet expenses, administrative costs, etc. (The total yearly dues simply do not cover all annual club operating costs!) We rely on your generosity to make this a successful event. Please plan to attend and bid! And bring a friend or make a donation if you have not already done so.

Even if you don't see yourself as a big spender, I can promise that everyone finds this a fun event to attend. Come view your fellow members in their "natural states" and have a good time!

Issue Highlights

President's Message

By Mitch Portnoy

2019 AFMS BEAC Contest Results WOW!

(Thanks to Cheryl Neary for providing the above photos!)

Have an idea for a story?
Write for the *Bulletin of the NYMC.*
You'll be glad you did!

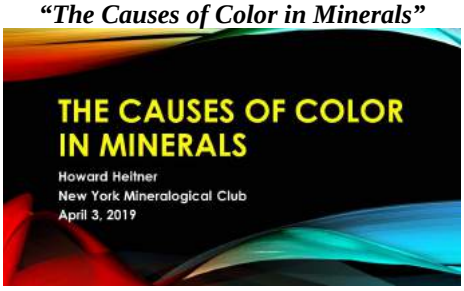
Club Meeting Minutes for April 3, 2019

By Mitch Portnoy, *Acting Secretary*
(Vivien Gornitz was unable to attend.)
Attendance: 47
President Mitch Portnoy presided

Announcements & Proceedings:

- The monthly mineral raffle was held.
- We swept the AFMS Special Publications Category. **Vivien Gornitz** won both the 2nd Place and 3rd Place Trophies in the Advanced Articles Category.
- The remaining IYPT cacheted covers were distributed.
- A NYMC website update was given. Google "hacked" us! (Really!)
- The month's and day's historical events were announced.
- An elements game about gold, silver and platinum was played; A New Jersey lottery "gold" and "silver" scratchers were prizes.
- A NYMC tee shirt update was given. They will be available for sale in June.
- Schumann's *Mineral Handbook* is out of print and we only have a few left.
- A joke using a "bat signal" to announce cancelled meetings was shown.
- Several "comic" videos about melting metals and paper were shown.
- The Club's upcoming events through October 2019 were quickly listed.

Special Lecture: Howard Heitner
"The Causes of Color in Minerals"



Popular speaker and NYMC member **Howard Heitner** gave a well-illustrated overview of why minerals are the colors that they are.

Howard, a professional chemist, focused on the "idiochromatic"reasons for mineral color, which is based on their ideal chemical formula or structure.

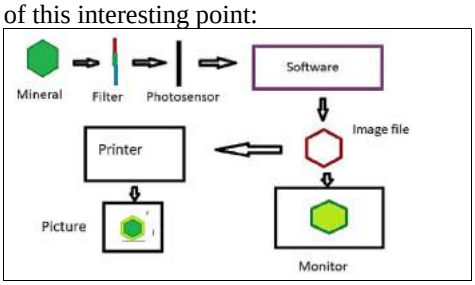
First he gave a quick overview of the physics of color. Visible light is a form of electromagnetic radiation, just like radio waves, microwaves, X-rays, and gamma rays. If we picture these as waves, the wavelength is the distance from the peak of one wave to the next.

The accepted theory of color is that some of the wavelengths of incoming light are absorbed by the colored object, and that the remaining wavelengths determine its final color.

However, an important point that Howard made is that there is always a human element: our brain and personal experience often determine the color or appearance of the specimen or gem in front of us.

Topics and interesting examples that he gave were about why some diamonds have (or don't have) color, why alexandrite appears green in some light and reddish in others, the coloring effects of electron transfer (sapphire), heating (tanzanite), irradiation (quartz) and structure (opal).

My favorite lecture point that he made came at the end: *"It never looks like the picture in the book!"* This was his illustration of this interesting point:



We thank Howard, once again, for educating us with a wonderful lecture!

Members in the News

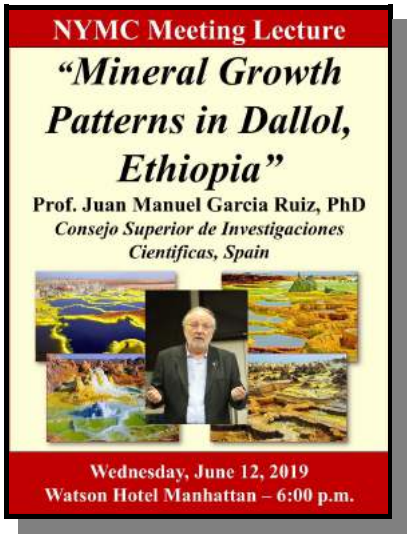
Carolyn M. Weinberger
(August 1943 - March 2019)
EFMLS Officer & Bulletin Editor

- **David Tibbits** had two exhibit cases at the 2019 Tucson Gem and Mineral Show in February. ***Both cases received 1st place ribbons.***

Welcome New Members!

Jessica Hurwitz . . . . . Rome, NY
Gabriela Larner . . . . . NYC, NY
Laurie Poyiatzis & Family. . . . Astoria, NY

Coming In June 2019



The World of Minerals

The *World of Minerals* is a monthly column written by Dr. Vivien Gornitz on timely and interesting topics related to geology, gemology, mineralogy, mineral history, etc.

(Vivien is on a much-needed spring break but the Gand Canyon is of great interest to her!)

Visited This Museum Recently? You May Have Been Exposed To Radiation

By Madison Depcevich

For nearly two decades, visitors to the Grand Canyon Museum Collection may have been unknowingly exposed to unsafe levels of radiation, according to a new report by the Arizona Republic.

View of the Grand Canyon, Arizona

A "rogue" email sent on February 4 by the park's safety, health, and wellness manager Elston Stephenson alleges nothing was done to warn visitors or workers of previous exposure to unsafe levels of radiation after three 5-gallon buckets containing uranium ore were found (and subsequently removed) by federal officials from the collections museum. In the email, the manager alleges the cover-up was a "top management failure", further warning of possible health consequences from the radiation exposure.

"If you were in the Museum Collections Building (2C) between the year 2000 and June 18, 2018, you were 'exposed' to uranium by OSHA's definition," the newspaper reports the manager wrote. "The radiation readings, at first blush, exceeds (sic) the Nuclear Regulatory Commission's (NRC) safe limits. … Identifying who was exposed, and your exposure level, gets tricky and is our next important task."

IFLScience reached out to Stephenson but had not received a response at the time of publication. According to the initial report, he said buckets were stored in a room near a taxidermy exhibit frequented by tourists, including school-aged children. Radiation levels next to the uranium measured at 13.9 milliroentgen per hour – seven times the safe limit recommended by the NRC. While that same report also found the levels dropped to zero past 1.5 meters (5 feet), Stephenson alleges close proximity could have exposed adults to 140 times the health limit and children up to 1,400 times that.

However, it's unlikely that exposure to the buckets would have resulted in any serious health injury, reports The Verge, who talked with Kathryn Higley, head of Oregon State University's School of Nuclear Science and Engineering. Although she said "people should have been more mindful of them," she also noted that, based on the information she's read so far, "the likelihood of people receiving serious radiation exposures is extremely unlikely."

Since the public wasn't hugging and lugging the buckets around for extended periods of time, the likelihood of anyone experiencing radiation sickness or its effects is fairly low, Higley noted. But why were they there to begin with? Well, she can only surmise, but she did say that the buckets were probably used as a teaching tool to show geologists what uranium ore looks like. Still, leaving the buckets behind – and for 18 years at that – is a sloppy mistake, nonetheless.

In a phone interview with IFLScience, Emily Davis, public affairs specialist at the Grand Canyon, said that the Park Service is coordinating an investigation with federal experts, but that the area is currently safe to the public.

"A recent survey of the Grand Canyon National Park's collection facility found that radiation levels were at background, that's the level that's always in the environment and is below levels of public concern and safety," said Davis, stressing that the museum collection facility is open to the public but available by request only.

All told, an estimated 800 to 1,000 visitors enter the 550-square-meter (6,000-square-foot) facility each year, which is used to hold and curate artifacts. When asked, Davis was unable to confirm whether these visitors may have been exposed to dangerous levels of radiation.

"It's a research facility and we do store samples of many resources there," she explained. "Samples in our museum collections facility [are stored] as part of our research collection as representative samples of park resources."

Uranium ore is a naturally occurring element in the Earth's crust and, when extracted from the rock that it is found in, can be used to make nuclear fuel. The area just outside of the Grand Canyon National Park boundaries is home to several uranium mines and hundreds of uranium claims. Exposure to large amounts of uranium can cause harm to the kidneys, and excessive exposure can cause cancer, including leukemia, according to the Centers for Disease Control and Prevention.

IFLScience is awaiting a statement to be released by the NPS with new and relevant information.

Museum Collection, circa 1935. National Park Service

Source: IFLScience.com from February 20, 2019

2019 New York Mineralogical Club Benefit Auction Listing

Wednesday Evening, May 8, 2018 at the Watson Hotel, New York City

A Fully-Illustrated Catalog (PDF) is Available on the Website on the Calendar Page!

Auction Procedures & Guidelines

This catalog contains short descriptions of the items being offered. Fuller descriptions are on the labels included with the items themselves. In addition, more items will be donated after this catalog is printed, including on the evening of the auction itself. Please allow yourself enough time to see all the lots. The auction proceedings will not be interrupted to allow additional "personal" viewing.

Each bidder will be assigned a number. This allows the club to keep track of the transactions, winning bids and successful bidders. Arrive early to sign up for one. The order of the items offered will be determined by the auctioneer although the auction will proceed primarily in the numerical lot order of this listing.

Each lot will be offered with either a minimum bid or a starting bid determined by the auctioneer. Minimum bids may be determined by the auctioneer. Bids will be: in $1.00 increments to $10.00; in $2.00 increments to $20.00; in $5.00 increments thereafter. Some lots have a reserve price.

Each lot will be distributed to the successful bidder immediately. Only after the auction is finished should the successful bidder reconcile with the club volunteers. (They are recording bids during the auction.) Cash or personal check only. No credit allowed. There are no consignment lots. All monies go to the club to support lectures, publications, prizes, the banquet, meeting room expenses, etc. Items of unusual quality, size or rarity are in bold Have fun!

Remember to Bring: Checkbook/Cash ! Auction Catalog ! Pen / Pencil ! Packing Materials ! Tote Bag(s)
If you have any specific questions about any of the lots below, please contact Mitch.

1. *The French Blue* by Richard W. Wise . . . . . Book
2. (2) Lustrous Pyrites . . . . . Peru
3. Large Almandine Garnet Crystal . . . . . Alaska
4. Herkimer Diamonds on Matrix . . . . . New York
5. Fossil Stone Sphere . . . . . China
6. Multicolor Chakra Wand . . . . . India
7. **Large Jadeite Disk. . . . . Burma**
8. Rhodonite in Silver Pendant . . . . . NA
9. Fossil Fish . . . . . Wyoming
10. Rhodochrosite Stalactite Slice . . . . . Argentina
11. Larger Chrysocolla Specimen . . . . . Chile
12. **Landscape Jasper Block . . . . . Southwest**
13. Shark Tooth Fossil . . . . . Morocco
14. Twinned Selenite "Fishtail" Crystal . . . . . Mexico
15. Smokey Quartz and Feldspar Crystals . . . New Hampshire
16. Rubellite Tourmaline in Marble . . . . . Brazil
17. (1) Blue Amber & (1) Amber . . . . . Indonesia/Mexico
18. Malachite Elephant Carving . . . . . Congo
19. Botswana Agate Double Strand Necklace . . . . . NA
20. Inlaid Landscape Jasper Pendant . . . . . NA
21. Fossilized Palm(?) Wood Slice . . . . . NA
22. Green Opal, Blue Opal, Pink Opal . . . . Madagascar, Peru
23. **Turtle Poop Fossils . . . . . Madagascar**
24. Amethyst Scepter, Slice, Point . . . . . Misc
25. Boulder Opal . . . . . Australia
26. Fossil Fern . . . . . Pennsylvania
27. Quartz & Pyrite . . . . . Mexico
28. **Boulder (Black?) Opal . . . . . Australia**
29. Meteorite . . . . . Argentina
30. **Quartz with Papagoite Inclusions . . . . . South Africa**
31. Large Kyanite . . . . . Brazil
32. Petrified Wood (Jasper) Chunk. . . . . Southwest USA
33. **Aventurine & etc. Gemstone Necklace . . . . . NA**
34. Carved Soapstone Sphere in Sphere . . . . . China
35. Carved Soapstone Sphere in Sphere . . . . . China
36. **Large Polished Lapis Specimen. . . . . Afghanistan**
37. **Meteorite Keychain . . . . . Russia**
38. (5) Gemstone Cabochons . . . . . Misc
39. **Large Smoky Quartz. . . . . China**
40. (7) Baroque Pearls . . . . . NA
41. Jade Earrings . . . . . NA
42. **Trapiche Spinel . . . . . Burma**
43. Fancy Citrine 3 Carat 11 x 9 mm . . . . . Brazil
44. Opal 0.89 Carats . . . . . Ethiopia
45. Concave Cut Garnet 2.08 Carat . . . . . Brazil
46. (2) Rubies Cut by Bill Mancuso . . . . . NA
47. Moldavite 1.2 Grams. . . . . Czech Republic
48. (3) Multicolor Sapphires . . . . . Brazil
49. **Faceted Yellow Labradorite. . . . . Ceylon**
50. (1) Synthetic Ruby & (1) Synthetic Diamond . . . . . NA
51. (1) Opalized Wood & (1) Fire Opal . . . . Ethiopia/Mexico
52. **Persian Turquoise Cabochon. . . . . Iran**
53. **Spectacular Liddicoatite. . . . . Madagascar**
54. **Tanzanite Crystal . . . . . Tanzania**

55. Gemmy Topaz . . . . . Utah
56. Silver & Marcasite Pendant . . . . . NA
57. K2 Cabochon & Malachite/Azurite Cabochon. . . . . NA
58. Klimt Lacquerware Object . . . . . Russia
59. Amber & Silver Pin. . . . . NA
60. Burmese Jadeite Lion Carving . . . . . China
61. Synthetic Quartz Crystal . . . . . Russia
62. Multi-Stone Zuni Fetish . . . . . Southwest USA
63. Multi-Stone Zuni Fetish . . . . . Southwest USA
64. Mystic Topaz & Silver Ring . . . . . NA
65. Silver & Pearl Necklace. . . . . NA
66. Azurite Specimen . . . . . Congo
67. Quartz with Arfedsonite Inclusions . . . . . NA
68. (1) Concretion & (2) Fossils . . . . . Misc
69. Hemimorphite . . . . . Idaho
70. Polished Boulder Opal Slice . . . . . Australia
71. Elegant Amethyst & Silver Link Bracelet . . . . . NA
72. Silver & Black Pearl Necklace. . . . . NA
73. Rainbow Moonstone Strand. . . . . Ceylon
74. Burmese Jadeite Carved Disk Necklace. . . . . China
75. Artinite . . . . . Staten Island, NY
76. Nephrite Jade Block. . . . . British Columbia
77. Polished Ruby in Tanzanite. . . . . Tanzania
78. Large Quartz with Clay Inclusions. . . . . Madagascar
79. Gemmy Green Prehnite Plate . . . . . Mali
80. The Metzger Gem Collection . . . . . Book
81. (1) Quartz & (1) Birefringence. . . . . Booklets
82. (1) Quartz & (1) Birefringence. . . . . Booklets
83. (10) Ancient Egyptian Beads. . . . . El-Lisht, Egypt

[12th or 13th Dynasty, c. 1800 BC]

84. Turquoise, Silver & Garnet Pendant . . . . . NA
85. Black Lacquer Wood Box with Abalone Inlay . . . . . NA
86. Small Light-Green Jade Pendant . . . . . Burma/China
87. Faceted Smoky Quartz Heart . . . . . NA
88. Large Quartz Crystal Cluster. . . . . Ellenville, NY
89. (2) Unakite Rough Slabs . . . . . NA
90. Terminated Red Tourmaline Crystal. . . . . Brazil
91. Large Chrysocolla Cabochon . . . . . Arizona
92. (1) Sodalite & (1) Cobaltite . . . . . Ontario, Canada

The following quartz specimens are thanks to the endless generosity of James Zigras:

93. Small Quartz . . . . . Arkansas
94. Another Small Quartz. . . . . Arkansas
95. Medium Quartz . . . . . Arkansas
96. Another Medium Quartz . . . . . Arkansas
97. Large Quartz . . . . . Arkansas
98. Large Quartz Cluster . . . . . Arkansas
99. Curious Lore of Precious Stones . . . . . Book
100.
101.
102.

Scientists Have Discovered a Way to Turn Copper into Gold (Well, Sort Of)

By Katie Spalding

Long before it was rescued from the clutches of He Who Must Not Be Named by a bespectacled British 11-year-old, the *Philosopher's Stone* was an ancient and mystical substance sought throughout the world for its miraculous and life-giving properties.

Legend said the Stone held the key to immortality – some believed it was the reason Adam and Eve were able to live for over 900 years in the Bible. Not only that, but it was said to be capable of chrysopoeia – the ability to transform base metals into gold.

Now, thousands of years after it was first imagined by those ancient mystics, scientists in China may be about to make this dream a reality. No, they haven't discovered the key to eternal life – that was someone else – but they have found a way to turn copper into a new material "almost identical" to gold.

In their paper, published this week in Science Advances, the team describe how they bombarded copper atoms with high-energy argon plasma, changing the metal's electron structure. "Frozen" at zero valence by this process, the copper became less reactive and started behaving instead like noble metals such as gold or silver.

The process makes copper oxidization-resistant even at high temperatures, "similar to a warrior with a solid armor resisting the attack on the battlefield."

The copper nanoparticles "achieved catalytic performance extremely similar to that of gold or silver," the team explained in a statement posted on the academy's website and reported in the South China Morning Post. "The results… proved that after processing, metal copper can transform from 'chicken' to 'phoenix.'"

Unlike the alchemical solutions sought by Isaac Newton, among others, this discovery won't make the chemists suddenly and inexplicably wealthy – it can't be used to make fake gold. But that hasn't stopped some commenters from speculating that the development might lead to the precious metal losing its place as a stock market and economic hedge standard – perhaps to an electronic alternative such as Bitcoin.

But cryptocurrencies, with their current planet-destroying energy demands, are about as far from the researchers' goals as possible. They instead see their discovery as an essential – and lucrative – way to take on the challenges of the modern world.

Not only do their resistance to oxidization and low reactivity make gold and silver perfect for industrial uses – there's a veritable jewelry box inside your smartphone, for instance – noble metals are also used in sophisticated chemical processes that can transform coal into useful and clean resources like ethanol.

"The clean utilization of coal resources to synthesize high value-added chemicals is greatly desired with the increasing energy and environmental problems," explains the paper.

"[Methyl glycolate] … is an essential intermediate with higher commercial price than [other substances] for the synthesis of pharmaceutical products, fine chemicals, and perfumes. However, [methyl glycolate] is difficult to be gained via copper catalysts … [so] the development of an efficient catalyst to control and regulate the target products is still a great challenge for both academia and industry."

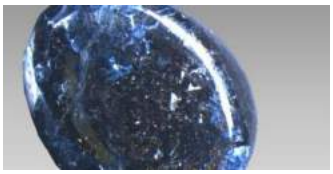
Source: IFLScience.com from December 27, 2018

New Mineral Similar to Outer Space Specimens Discovered in Israel's North

By Benjamin Kerstein

A new mineral whose composition is similar to objects from outer space has been found in Israel's north.

Israeli gem company Shefa Yamim announced the discovery, saying in a statement that the mineral — containing chemical components of titanium, aluminum and zirconium — had been found in one of its Carmel Sapphire gemstones.



A Carmel Sapphire contained traces of the newly discovered mineral carmeltazite. Photo: Shefa Yamim.

The mineral has been named carmeltazite because it was found in the area of Mount Carmel near the city of Haifa. It was approved as a new substance by the International Mineralogical Association (IMA) and described in a scientific article titled, "Carmeltazite, $ZrAl_2Ti_4O_{11}$, a New Mineral Trapped in Corundum from Volcanic Rocks of Mt Carmel, Northern Israel," written by scientists from Macquarie University, the University of Western Australia, Università degli Studi di Firenze, Università degli Studi di Milano, and Shefa Yamim.

Shefa Yamim's CEO Avi Taub stated, "We are delighted that our Carmel Sapphire has been recognized as a host to many rare minerals. In today's world where the prices of gems are determined predominantly by their rarity, the Carmel Sapphire is a unique discovery because it has not been found anywhere else in the world and was discovered by Shefa Yamim in the soil of the Holy Land."

The Israeli newspaper *Haaretz* reported that carmeltazite was similar in makeup to materials identified in rocks from outer space, but has never before been discovered on earth.

It is believed that the mineral was formed around 250 million years ago in the Cretaceous period, when the Carmel was a site of volcanic activity. The mineral was found trapped in pockets of crystalline material inside lava deposits. The area is known for discoveries of precious stones.

Carmeltazite is described as black to dark blue, with occasional reddish areas, as well as browns and greens that can be seen through microscopic examination. It has been shown to be harder than diamonds.

Source: algemeiner.com from January 8, 2019

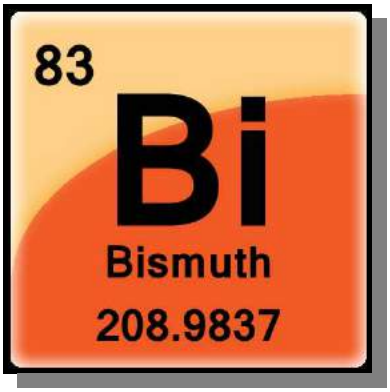
It's Elemental

It's Elemental is a series of columns by Bill Shelton written this year in recognition of the United Nations' International Year of the Periodic Table of Chemical Elements.

INTERNATIONAL YEAR OF THE PERIODIC TABLE 2019

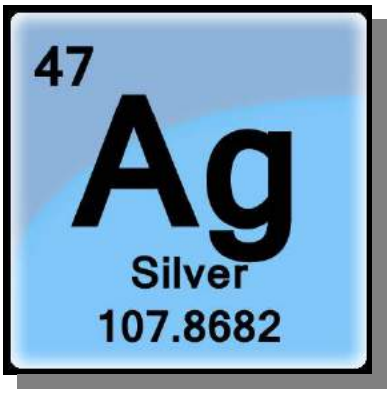
Bismuth and Silver

Here we will find two metals that are especially easy to find if you wish to purchase a sample for an element collection. Now, silver as bullion coins or bars are instantly available if you think you want to own one. Bismuth is very easy to find as man-made hopper-like crystals with rainbow colors. I see them all the time at major shows and expect you could find them on the internet. I used Google and found bismuth for sale as both ingots and crystals. That's good news for element collectors.



On the periodic table, silver is number 47 and it is located near the middle of period five. In rank order, silver is number 67 meaning 66 out of 92 naturally occurring elements are more common than silver. Contrast this with bismuth which is element number 83. It is located in period six next to lead. You will find it right of center and near the bottom of the main part of the periodic table. It is number 64 in rank order so we see that elemental rarity is very similar for this pair. About three quarters of the 92 natural elements are more common in the earth's crust.

You might wonder why the symbols for some elements clearly match their names, i.e., Bi for bismuth while a few others such as Ag for silver do not. Well, silver is part of a group of elements that have been known for a very long time. In this case, the name is based on the Latin term *argentum*; hence the symbol Ag. Bismuth was first noted around 1,500 years ago while silver is present in ancient artifacts and mining is known from 3,000 years ago. Ancient Sumer is thought to be the source of the oldest silver artifact dating to about 4,000 BC. Sumer is located in modern-day Iraq. So, in terms of the 92 natural elements bismuth ranks among the first fifteen to be recognized while silver is among the first ten – all known before 1,000 BC. In fact, silver may have been known as long ago as 5,000 BC.



Mineral collectors are likely to come across bismuth and silver because a few species with these elements present as major components are relatively common both on the internet and at mineral shows like the next NY shows on March 2nd and 3rd or June 22nd and 23rd in 2019. Dana's Textbook, 1966, tells us there are 22 species of note for bismuth and emphasizes bismuthinite and native bismuth as perhaps the most frequent examples one might encounter. Also, silver has 55 species and the most common ones are argentite and native silver. Acanthite is also important and you may wish to seek more data regarding this species because it may be used to refer to species once called argentite. Using data from Mindat.org, it appears that we can find 187 species that contain silver and 233 with bismuth present. As a note to collectors, many of these are not likely to be interesting to you.

My experience makes me suspect silver species are far more desired and sought out by collectors than bismuth examples. Some additional silver-rick species that I notice in museum collections, personal collections and the mineral marketplace are listed below.

Proustite, pyrargyrite, polybasite and stephanite are four additional examples that seem to get a fair amount of attention from collectors. To a lesser extent, I find amalgam, dyscrasite, stromeyerite, andorite and cerargyrite. Since natural examples exist for bismuth and silver, you can add them to a collection of native elements. There are about twenty different possibilities that I believe you can locate with little effort. In aesthetic terms, silver may be among the five or so examples that are most popular – I base this on what is present on internet sales sites, museum collections, private collections and the illustrations in books and magazines.

1st Place Trophy
AFMS BEAC 2019 Contest
Special Publications

2019 Members of the New York Mineralogical Club, Inc.

Recently, I added a new field of information to the Club's membership database, the year that member joined the Club. That year appears in (parenthesis) after the member on this list. "OT" (old-timer) refers to a member whose original membership preceded available records. If you can make any corrections or additions to this list, please contact me. – Mitch

Toni Akhibi, Abuja, Nigeria (2015)
Alicja Andrejczuk, Scarsdale, NY (2002)
Scott Arsham, New York, NY (2014)
David Bagnera, NYC, NY (2016)
Carol Bailey, Flushing, NY (2008)
The Bassett Family, Thornwood, NY (2003)
Diane Beckman, New York, NY (2009)
C. R "Cap" Beesley, Mt. Vernon, NY (OT)
Lorraine Bege, New York, NY (2013)
Ted Berkowitz, New York, NY (2004)
Lauren Bernal & Family, Brooklyn, NY (2019)
Philip Betancourt, Moorestown, NJ (1995)
John Betts, New York, NY (1993)
Richard Blackman, Randolph, NJ (1995)
Tema Hecht/Dick Bostwick, New York, NY (1996)
Cristiano Brigida, NYC, NY (2016)
Alan Bronstein, Livingston, NJ (2011)
Pauletta Brooks, New York, NY (2013)
Kevan & Claudia Brown, New York, NY (OT)
Louis J. Brown, Bronx, NY (2014)
Mrs Dale L. Brown, Bronx, NY (2015)
Otis Kidwell Burger, New York, NY (2000)
Eugene Carmichael, Kew Gardens, NY (OT)
Elaine Casani, Bohemia, NY (1998)
Frank Casella, Sparta, NJ (2017)
Brennan Cassidy, New York, NY (2018)
Augusto Castilto, Ridgewood, NY (2019)
Andrew Chait & Family, New York, NY (2015)
Julie, Hal, & Jane Cohen, Oceanside, NY (2018)
Leticia Colon, New York, NY (2019)
Bill Cotrofeld, East Arlington, VT (2015)
Diane Cramer, New York, NY (2017)
Bob Cullen, Mamaroneck, NY (1989)
Margaret Da Rocha, Namibia, Africa (2010)
Ralph Dames, Kearny, NJ (OT)
Joan Daniel, New York, NY (2007)
Irma Davidson, New York, NY (1997)
Alberto Bird/Michael P. Davis, Bronx, NY (2013)
Claudia de Simone, New York, NY (2016)
Nick Del Re, Brooklyn, NY (OT)
Donna Dempsey, New York, NY (2015)
Anthony Dolesh, Belleville, NJ (2019)
Alissa Duffy, Blairstown, NJ (2016)
Kevin & DG Duffy, Sunnyside, NY (2016)
The Durgin-Bruce Family, Brooklyn, NY (2016)
Ray Eginton, Springfield Gardens, NY (2011)
Philip Elenko, New York, NY (OT)
Duane Farabaugh, Forest Hills, NY (2013)
Robert & Estée Fraser, Fort Knox, KY (2009)
Michael Freedman, Jericho, NY (2018)
Lois Gareau, Center Moriches, NY (2018)
Olga González, New York, NY (2014)
Vivien Gornitz, New York, NY (1992)
The Bernard- Grae Family, New York, NY (2015)
Dorothea & Wesley Gray, Brooklyn, NY (2017)
Fran Greder, Belleville, NJ (2013)
Steve Max Grenyo, New York, NY (2016)
Malcolm Guevara, New York, NY (2017)
Dr. Daniel Hall, Columbus, OH (1998)
Ted Hamway, Brooklyn, NY (2018)
Dr. George Harlow, New York, NY (OT)
Parvin Hartramph, New York, NY (2007)
Nicky Harwich & Family, New York, NY (2013)
Richard & Elna Hauck, Franklin, NJ (1961?)
Fred Haynes, Rochester, NY (2017)
Jeffrey Hayward, Staten Island, NY (OT)
Will Heierman, Stafford, TX (OT)
Howard Heitner, Tuckahoe, NY (2008)
Sandita Henry, New Rochelle, NY (2019)
Megan Hill, New York, NY (2018)
Irving Horowitz, Floral Park, NY (OT)
Jessica Hurwitz, Rome, NY (2019)
Christine Iacobuzio , New York, NY (2017)
Linda Jaffee, Rego Park, NY (2018)
Aldon James, New York, NY (2019)
Lisa Jarnot, Jackson Heights, NY (2018)
Diana Jarrett, University Park, FL (2003)
Sumate Jiemjitpolchai, Flushing, NY (2018)
Rudolph B. Jones, Fayetteville, NC (1999)
Arlene Joseph, New Milford, NJ (2010)
Tracy Jukes, Wales, UK (1997)
Robert Karlovits, Staten Island, NY (2014)
Daniel Katznelson, Brooklyn, NY (2018)
Jacob & Ruth Kaufman, New York, NY (OT)
Michael Kessler, East Stroudsburg, PA (1968?)
Kelly Kotulak, Brooklyn, NY (2018)
Joe Krabak, Jessup, PA (2015)
Margaret Krasan, Jamaica, NY (2000)
The Krishnamachari Family, New York, NY (2019)
Saul Krotki, Seattle, WA (1956)
The Kucera Family, Yonkers, NY (1997)
Gabriela Larner, NYC, NY (2019)
Paul Vitaris & Lee Laurie, New York, NY (2016)
Delores Lawton, Brooklyn, NY (2003)
Barbara Brewka/James Lee, Bronxville, NY (OT)
Gail Brett Levine, Rego Park, NY (2012)
The Litvin Family, Englewood, NJ (2002)
Marina Livanos, New York, NY (2017)
Cecilia Llanusa, New Windsor, NY (2018)
Nicholas Longo, Staten Island, NY (2018)
Eduardo Lopez, New York, NY (2009)
Immacula Louisime, Jamaica, NY (2012)
Josephine, Marie & Anthony Lucania-Rosario & Family, New York, NY (2017)
Donna M. Luisi, Middle Village, NY (1995)
Mary Malin, New York, NY (2018)
Cecile Martineau, New York, NY (2019)
Andrea Mason, New York, NY (2017)
Susan McCauley, New York, NY (2018)
Gladys McDonnell, New York, NY (2018)
Michael A. McGreevy, New York, NY (2018)
Dr. Charles Merguerian, Stone Ridge, NY (1972)
Lillian Meyers, New York, NY (2018)
Sam Millard, New, NY (2019)
William Mirabello, Staten Island, NY (2011)
Marco Monti, New York, NY (2014)
Miriam Mopper, Forest Hills, NY (2011)
Ethel Murray, New York, NY (2015)
Carolyn Z. Mutter, Piermont, NY (2019)
Diane L. Nadler, New York, NY (1995)
Akitsu Nakamura, New York City, NY (2019)
Jamie Newman, Brooklyn, NY (2003)
Nik Nikiforou, New Paltz, NY (2003)
Tony Nikischer, Keswick, VA (1978?)
Keith & Barbara Noyes, Blauvelt, NY (2002)
Thomas W. Nugent, Woodside, NY (2014)
Tim O'Meara, Reston, VA (NA)
Corinne Orr, New York, NY (1980)
Erica Padilla, New York, NY (2019)
Peter & Mady Palese, NYC, NY (2003)
Seymour Perlowitz, Brooklyn, NY (1999)
Anthony Pesce, Brooklyn, NY (2018)
Alfredo Petrov, Desert Hot Springs, CA (2000)
Martin Pope & Family, Brooklyn, NY (1953)
Mitchell Portnoy, New York, NY (1995)
Laurie Poyiatzis & Family (2019)
Elayne Prince, Westport, CT (2002)
Yingjia Puk, NYC, NY (2018)
Eric Rampello, Levittown, NY (2011)
Lana Raymond, White Plains, NY (2018)
The Duffy-Raymos Family, Woodside, NY (2016)
Daniel J. Record, Newington, CT (2012)
James Regnante, Forest Hills, NY (2007)
Vesta Sue Rhodes, New York, NY (1970)
Karen Rice, Rio Rancho, NM (1989)
Susan Ritter, New York, NY (2014)
Andrea Ross, Manchester, VT (2016)
Deborah Steen Ross, Elmsford, NY (2009)
The Rossi Family, Brooklyn, NY (1992)
Olga Rubio, Flushing, NY (2003)
Geoff Rudaw, Pelham, NY (2018)
Susan Jane Rudich, New York, NY (2003)
Patrick Sabineza, Chapel Hill, NC (2018)
Chandana Samararatne, Staten Island, NY (2018)
Jesus Sanchez, Elizabeth, NJ (2008)
John F. Sanfaçon, Mt. Arlington, NJ (2002)
Victor Sapienza, Staten Island, NY (1996)
Naomi Sarna, New York, NY (1999)
Roland Scal, New York, NY (2004)
Neuza J. Schinmann, East Meadow, NY (2016)
Peter C. Schneirla, New York, NY (2011)
Francine Schnoll, New York, NY (2018)
Anna Schumate, New York, NY (1996)
Jack Segall, Cedarhurst, NY (2007)
William Shelton, Tucson, AZ (1999)
The Shipman Family, Irvington, NY (2003)
Michael Silver, Los Angeles, CA (2014)
Candie Smith, Staten Island, NY (2014)
Tyler Smith, Brooklyn, NY (2018)
Charles Snider, New York, NY (2010)
The Speranza Family, North Bellmore, NY (1999)
Marshall Sponder, Jersey City, NJ (2019)
Amy Springsteel, New York, NY (2019)
Sandra Stern, New York, NY (2018)
Sam Gelman & Robin Sternberg, NY, NY (2014)
Steven B. Stieglitz, New York, NY (OT)
Sybil Sugarman, NYC, NY (2018)
Crystal Suh, Brooklyn, NY (2017)
Thomas Sullivan, New York, NY (2019)
Kacper Szarejko, St. Louis, MO (2015)
David Tibbits, Phoenix, AZ (2018)
Lee Tomlinson, New York, NY (2018)
Elizabeth Apgar Triano, Patterson, NY (2009)
Sung-Young Trifault, New York, NY (2017)
Linda Ultee, New York, NY (2012)
Ann Vitiello, Brooklyn, NY (OT)
Morgan Vlad-McCabe, NYC, NY (2017)
Sam Waldman, Brooklyn, NY (2003)
Michael Walter, New York, NY (OT)
Richard & Paulette Wasserman, NYC, NY (2016)
Lenore Weber, New York, NY (2007)
Adam Weston, New South Wales, 2217 (2018)
Jeffrey P. Wiegand, New Rochelle, NY (2000)
Susana Wilches, New York, NY (OT)
Robin Wildes, New York, NY (2011)
Troy Wilensky, New York, NY (2019)
James P. Witkowski, Camden, SC (2018)
Ms. E. Wooden, New York, NY (2018)
David Ziga, Darien, CT (2018)
Theodore Zirnite (OT)

Topics in Gemology

Topics in Gemology is a monthly column written by Diana Jarrett, GG, RMV, based on gemological questions posed to her over the years by beginners and experts alike. Contact her at diana@dianajarrett.com.

Diamond Dogs

Ever heard of the Boerboel dog breed? Me either. How about the slobbery lumbering Mastiff? Now we're getting close. The Boerboel, meaning farmer's dog in Afrikaans was a type of Mastiff bred specifically within South Africa to help farmers guard livestock and assist with other work. It's also called the South African Mastiff. This distinctive noble creature has been a fixture in that part of the world for centuries. Male Boerboels typically weigh between 140-200 lbs., with females weighing between 110-140 lbs.

An Adult Male Boerboel

Dutch and French settlers moved to this part of the world in the 17th century, as early as 1652 when the Dutch East India Company established deep and permanent roots in Cape Town.

We know South Africa for its history of diamond mining, of course. By the early part of the 20th century along with the growth of diamond production there, De Beers diamond mining empire founded in 1888, (now De Beers Group of Companies) imported large Mastiff dogs to South Africa and integrated them into the gene pool with local Boerboels. Their goal was to produce large, heavy dogs to guard the mines—which they did for years.

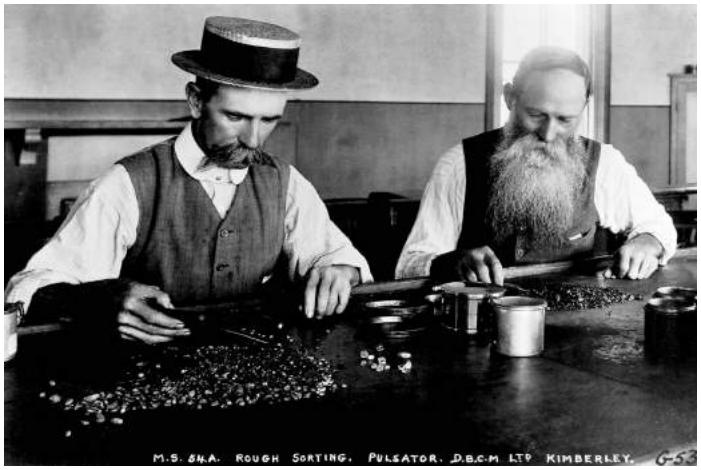
The temperament of these specifically bred Boerboels made them ideally suited for their job as a mine guard. Calm, loyal and devoted to their owners, Boerboels are also extremely territorial and suspicious of strangers.

I don't know if theses low-tech security practices have survived through the high-tech age we live in today. My research on the subject of De Beers guard dogs took me an article simply named Diamonds by Gary Thatcher appearing in the Christian Science Monitor, May 14, 1981. It details his first-person account of visiting the Wesselton Mine of De Beers Consolidated Diamond Mining Company in Kimberly, South Africa.

In his report, Thatcher recounts seeing double-ringed fences surrounding the mines which were patrolled by 'rather ferocious' guard dogs trained at a company owned kennel in Kimberley. These dogs, he claimed were Alsatians however—a breed similar in some ways to a large German Shepherd. "Dogs from the kennel are occasionally put on display, and entertain audiences with feats such as walking blindfolded on tightropes. But a company official confides that these dogs are 'just the ones we show.'"

The real guard dogs, it seems, were so fierce they weren't allowed anywhere near the public. I'll accept that statement. I don't see evidence of dogs still being used for guarding purposes at De Beers mines, but it doesn't mean that they are not utilized in that way today. Maybe there's no need to publicize this practice.

As for the brave Boerboel however, by the mid to late 20th century, the Boerboel was at risk of extinction. Urbanization in South Africa and careless crossing of the breed diminished the Boerboel into nearly non-existence. A group of enthusiasts—South African Boerboel Breeders' Association (SABBA) was formed in the 1980s to restore the breed to its original type. Slowly they revived this historical dog –and today the breed is recognized and gained acceptance into the AKC's Miscellaneous Class as a member of the working dog class. Not all mining stories are sparkling with diamonds—but because of these brilliant stones, some of its history has gone to the dogs.



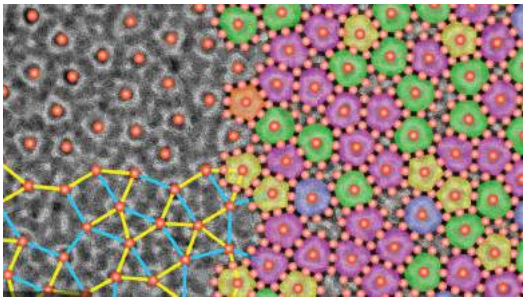
Sorting Rough at Kimberly Mines Late 19th Century

Aerial View of the Wesselton Mine

Brand-New Quasicrystal Discovered

By Alfredo Carpineti

Quasicrystals are extraordinary objects. Just like crystals, they consist of ordered patterns, but unlike crystals, these patterns don't repeat. They have many technological applications, so the discovery of a new one is a big deal.



The structure of the newly discovered quasicrystal.

Researchers from Brown University have discovered a quasicrystal that self-assembles from a single type of nanoparticle. This is the first definitive observation of quasicrystalline superlattice formed by a single component. The discovery is reported in Science.

The single nanoparticle is shaped like a triangular-based pyramid, a tetrahedron, that can create structures with different properties depending on the relative orientation of these nanoparticles to each other. In the study, the team saw them assemble themselves in a way that is not allowed in regular crystals, making the researchers realize these were building something different.

"Single-component quasicrystal lattices have been predicted mathematically and in computer simulations, but hadn't been demonstrated before this," senior author Ou Chen, an assistant professor of chemistry at Brown, said in a statement. "It's a fundamentally new type of quasicrystal, and we've been able to figure out the rules for making it, which will be useful in the continued study of quasicrystal structures."

The team didn't set out to study quasicrystals. Their work focused on bridging the gap between the nanoscale and macroscale by building superstructures made of nanoparticles. The team demonstrated an extremely complex superstructure from a solid substrate. They then decided to use a liquid substrate and discovered that the particles began to organize themselves in a quasicrystal lattice.

"When I realized the pattern I was seeing was a quasicrystal, I emailed Ou and said 'I think I've found something super-great,'" said Yasutaka Nagaoka, a postdoctoral scholar in Chen's lab and the lead author of the new paper. "It was really exciting."

The nanoparticles assembled into 10-sided shapes (decagons) that had the ability to flex their edges when they started to connect. The final structure is made of decagons with different-sided shapes (from nine to five) filling in the gaps. The team think that many quasicrystals can be built with this flexible polygon tiling system.

Quasicrystals are used in the coating of frying pans as well as in anticorrosion treatments on surgical instruments. Discovering new ones could lead to important technological breakthroughs as well as new insights into chemistry, math, art, and design.

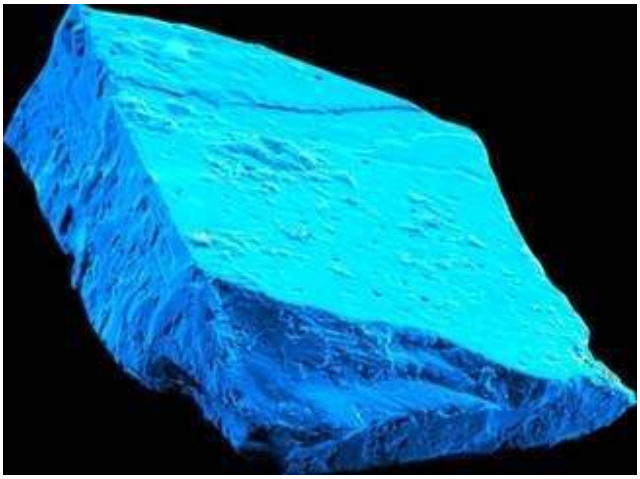
Source: IFLScience.com from January 3, 2019

Ancient Space Crystals May Prove the Sun Threw Heated Tantrums as a Tot

You can learn a lot from 4.5-billion-year-old rocks.

By Neel V. Patel

Many newborn and toddler stars are not all that different from newborn and toddler humans—prone to bouts of cranky energy, loud and violent tempers, and indiscriminately wailing and vomiting heaps of disgusting matter in every direction. It's natural to assume even our 4.6 billion-year-old sun had a messy heyday in its youth, but without any hard evidence to prove this was case, the only thing many scientists had going for them were strong suspicions. New data, focused around a peculiar set of ancient blue crystals from space, seems to suggest the sun emitted a much higher flux of cosmic rays in its early history than we once thought.



A tiny hibonite crystal from the Murchison meteorite.
© Andy Davis, University of Chicago

Those blue crystals are called hibonite, and they've arrived here on Earth by way of meteorite impacts. Hibonite are effectively some of the first minerals formed in the solar system, created by the cooling gas derived from the sun. The new study, published in Nature Astronomy, focuses on the Murchison meteorite, which fell in Australia in 1969, likely originating from an asteroid in the asteroid belt—and which possesses pieces of micron barely larger than the width of human hair.

"We think hibonites like those in Murchison formed close to the young sun, because that is where temperatures were high enough to form such minerals," says Levke Kööp, a cosmochemistry researcher at the University of Chicago and the lead author of the new study. "Hibonites from Murchison are famous for showing large isotope anomalies that tell us about the types of stars that contributed material to the molecular cloud that the sun formed from." The team doesn't have an exact date on the hibonite grains, but based on the age of refractory elements in the meteorite, it pegs the crystals to be a little over 4.5 billion years old.

If hibonite really was produced by an early active sun, the answer would be found in analyzing the crystals' helium and neon isotopes. High energy particles being ejected by a volatile young sun would have hit calcium and aluminum deposits in the crystals and split these atoms into neon and helium, and been irrevocably trapped for billions of years.

The research team studied the hibonite crystals using a highly sensitive mass spectrometer at ETH Zurich in

Switzerland, melting the grains of hibonite down with a laser while the spectrometer measured and confirmed the presence of helium and neon concentrations.

Beyond simply illustrating that the young sun went through a phase of high activity, the new results also show how some meteorite materials from the solar nebula are directly affected by young sun irradiation. The team also noticed helium and neon were absent from younger crystals, indicating that something changed later in the irradiation conditions created by the sun, and raising the question of what happened. This sort of insight might augur later into a better understanding of how the roles star evolution plays in the creation of elements and materials that later on assemble into planets and other celestial bodies.

"Over the last few decades, there has been a controversy whether meteorites contain evidence of an early active sun," says Kööp. "In general, even for us, it was hard to know what to expect from this study. In the end, we were very excited to see such a clear irradiation signature in the hibonites."

Andrew Davis, a study coauthor affiliated with the University of Chicago and the Field Museum of Natural History, points out the minuscule size of the hibonite grains limits how much the team could measure helium and neon traces, as well as an analysis of the absolute age of the hibonite itself. Moreover, the analyses also involve destruction of the grains. "We are working on a new instrument in my lab to study the isotopic compositions of more elements in the hibonite grains, to better understand how different sources of dust were mixed in the early solar nebula," he says.

Still, the implications of these findings alone shouldn't be understated. "I've been involved with this type research for a very long time. I've constantly been skeptical of claims from scientists that traces of the early sun have been found."

"With this new study," he says, "I'm happy to change my mind."

Source: POPSCI.com from July 31, 2018

A Large Chunk of Earth's Crust Is Missing and We May Have Just Discovered Where it Went

By Stephen Luntz

Geologists have been puzzled for more than a century by something they call "The Great Unconformity", where enormous slabs of time are missing from the geological record. Now, a new paper explains this was a product of astonishing glacial erosion during the period known as "Snowball Earth," when almost the entire planet was covered in ice.

An example of the Great Unconformity from the Grand Canyon, with 500 million-year-old rocks sitting on those 1,700 million years old, with the period in between missing. Wikimedia Commons

An unconformity is a break in the sedimentary record, such as when the age of rocks jumps sharply because one set of rocks eroded away before being covered by those substantially younger. One example was noticed in 1869 in the Grand Canyon, and subsequent research found it replicated around the world in rocks of similar age, earning the name The Great Unconformity. The authors of the new study calculated that due to glacial erosion a global average of 3-5 kilometers (2-3 miles) of the rocks were stripped away, hence "missing" from the record.

Although the Great Unconformity isn't seen everywhere on Earth, and the span of missing time varies where it does, Dr Brenhin Keller of the Berkeley Geochronology Center writes in Proceedings of the National Academy of Sciences its scale is truly enormous. Before 500 years ago, we have approximately 0.2 cubic kilometers (0.05 cubic miles) of preserved sedimentary rock for each year of the Earth's existence. Afterward this jumps to 1 km3 (0.2 miles3), rather than the gradual increase we would model as we get closer to today, and Keller and colleagues calculate an astonishing 1 billion cubic kilometers (200 million cubic miles) of pre-Cambrian material is missing beyond what would be expected.

Either, the authors argue, sedimentation increased dramatically at the start of the Phanerozoic era, or there was much greater erosion beforehand. They present evidence for the latter, showing crystals from the relevant era have isotopes of hafnium and oxygen consistent with being eroded from old rock and deposited at low temperatures. A phenomenal spike in erosion rates would also explain why we know of many asteroid impact craters less than 700 million years old, but only two older than that.

Between 717 and 580 million years ago the Earth went through a series of dramatic glaciations that make the recent ice ages look like minor chills. Even at the equator, the planet was covered with ice that was often piled higher than the tallest skyscraper.

The authors propose these mighty glaciers scoured the sedimentary rocks of previous eras and washed them out to sea, producing the Great Unconformity. They argue the rate of erosion required is quite consistent with that seen in modern Greenland.

If the theory is right, it not only explains one of geology's most enduring mysteries, but supports the developing theory that the appearance of the first animals so soon after Snowball Earth was no coincidence. Instead, the nutrient pulse delivered by so much erosion created the conditions for complex life forms to survive.

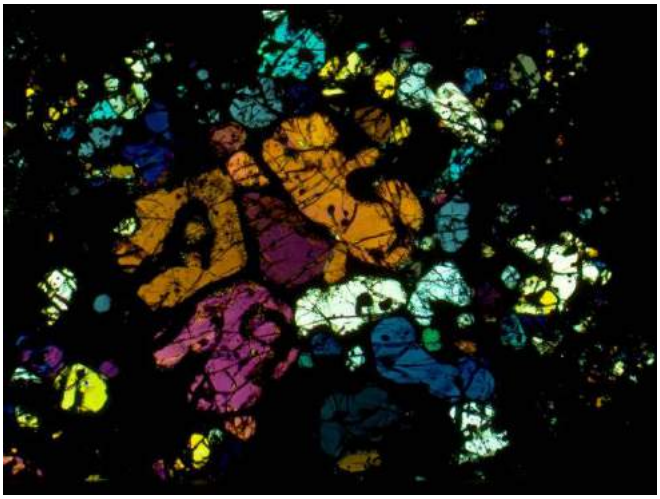
Source: IFLScience.com from January 2, 2019

The Oldest Material in the Smithsonian Institution Came from Outer Space

Decades after the Allende Meteorite plunged to Earth, scientists still mine its fragments for clues to the cosmos

By Franz Lidz

Most likely it came from the asteroid belt, that cosmic junk heap between the orbits of Mars and Jupiter that harbors rubble left over from the Sun's formation. Plowing into Earth's atmosphere during the early morning hours of February 8, 1969, the meteor—a stardust memory about the size of a Buick—produced an incandescent blue-white vapor that streaked the sky as a shooting star.



A polarized-light microscopy image (in background) of a section from the Allende meteorite is one-thousandth of a millimeter thin.

The great ball of fire blazed briefly over the Sierra Madre of Mexico before charging over the Chihuahuan Desert and splintering near the village of Pueblito de Allende, due south of El Paso, Texas. When a meteor smacks down it becomes a meteorite, and this one scattered more than two tons of fragments like birdseed over nearly 100 square miles. With the help of local schoolchildren—who asked for bottles of soda for their efforts—Smithsonian researchers recovered hundreds of specimens, a selection of which are on display at the National Museum of Natural History.

Studded with molten clumps of minerals (chondrules) distributed like currants in a fruitcake, the Allende meteorite, as it came to be known, contains the oldest material in the Smithsonian Institution, or any institution. The ratio of lead and potassium-argon isotopes in this block of mineral components including olivine, pyroxene, feldspar and glass gives it an age of roughly 4.57 billion years, which makes it older than Earth itself. Indeed, it's the oldest object at our disposal in the solar system.

Our planet is continually bombarded by rocks and extraterrestrial dust; an estimated 25 million meteors enter the atmosphere each day. Of the small percentage to survive the fiery ordeal and pierce Earth's surface, most fall into the seas. The Allende meteorite wasn't the most devastating space rock to make land (that honor probably belongs to the asteroid suspected of wiping out the dinosaurs 66 million years ago), or the biggest single chunk (that may be Hoba, the 66-tonner that arrived 80,000 years ago in what is now Namibia) or even the biggest of modern times (a super-sized one dubbed Tunguska ruptured over Russia in 1908 and incinerated 800 square miles of forest). But it's surely the most scientifically significant, a rich fund of information about the evolution of the gas and dust cloud—the solar nebula—that coalesced into the Sun and planets.

Having fallen on the eve of the Apollo 11 Moon landing, the Allende meteorite may also be the world's most comprehensively studied rock. For nearly a decade, planetary scientists had been prepping for the arrival of lunar samples, perfecting their analytical technology with new instruments designed to measure everything from radioactive decay to elemental composition.

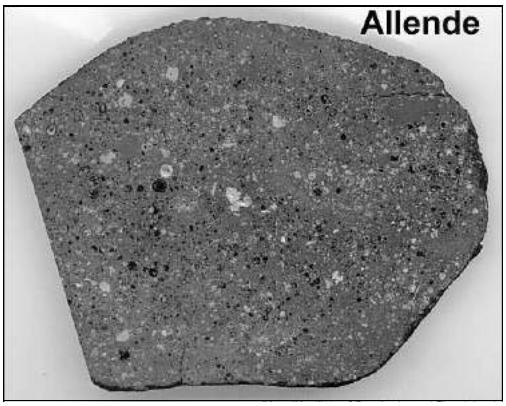
Today, even as Smithsonian scientists conduct ongoing analysis of the meteorite, they are also the source of Allende investigations on an international scale; they lend micro slices of the meteorite to researchers worldwide. "We love being able to loan out the materials, so folks can do their own research and these rocks can tell us their stories," says Cari Corrigan, curator of the meteorite collection.

"The Allende meteorite is a book from outer space filled with primordial minerals and all sorts of stories and secrets," says Chi Ma, director of the analytical facility at Caltech's geological and planetary sciences division. Ma is both a meteorist—the designation "meteorologist" was claimed first by weather forecasters—and a nanomineralogist, a term he coined for a scientist who peers into a rock's tiniest recesses for even tinier particles of minerals and the tiny features within them. Ma has spent much of the last 11 years probing the Allende meteorite.

In his laboratory, he scans an Allende shard with an electron microscope and talks nanomineralogy. "When you examine a meteorite down to micrometers and nanoscales, you can discover clues to what was happening when the rock was formed or when the sample was altered."

While 5,390 minerals have been identified on Earth to date, only about 65 are thought to have been charter members of the solar nebula—the kind of minerals found in meteorites. "The earliest minerals were formed by condensation from solar gases at high temperatures," Ma says. "These refractory minerals were the first solid materials in our solar system." When Ma started studying Allende in January 2007, he adds, "only about 30 refractory minerals were known." He's found another 30 or so.

So far, Ma has discovered 19 new minerals embedded in the Allende meteorite, including allendeite, hexamolybdenum, tistarite and kangite. He named his favorite, panguite, after Pan Gu, a giant from Chinese mythology who separated yin from yang to create the earth and the heavens. Half a century after the meteorite made contact with our world, its impact continues to deepen.



Source: SmithsonianMag.com from January 2019

2019 Club Calendar

Date	Event	Location	Remarks & Information
May 8	**Annual Benefit Auction**	**Mezzanine B & C Watson Hotel, Manhattan**	**100+ Diverse Lots; Bring Friends & Family; Illustrated Catalog Available on Website!**
June 12	Meeting at 6:00 pm	Watson Hotel, Manhattan	Special Lecture: Prof. Juan Manuel Garcia Ruiz– "Hydrothermal Mineralization in Dallol, Ethiopia"
July 10	Meeting at 6:00 pm	Watson Hotel, Manhattan	Special Lecture: Eric Rampello – "The Joys of Collecting Quartz"
Sunday July 21	Annual NYMC Directors' Planning Meeting	Upper West Side, NYC	2019 Banquet Planning; 2020 Club Calendar & Events; Tee-Shirts; Other Important Topics
Sunday August 18	Open House	Home of Cheryl Neary Patchogue, Long Island, New York	RSVP Required; Lots of Details to Follow
THIRD Wednesday! September 18	Meeting At 6:00 pm	Watson Hotel, Manhattan	Special Lecture: Christopher Kemper Ober– "The Periodic Table and the Language of Science"
Thursday October 3	Special Gallery Talk at 6:00 pm	Wilensky Mineral Gallery 173 Tenth Avenue (at 20th Street)	Emerald Exhibit Talk by Stuart Wilensky (RSVP required!)
THIRD Wednesday! October 16	Annual Gala Banquet	Mezzanine B & C Watson Hotel, Manhattan	Theme: Labradorite; Silent Auction; Awards; Fun & Games; Gifts & MANY Surprises!
November 13	Meeting At 6:00 pm	Watson Hotel, Manhattan	Special Lecture: Alfredo Petrov– "Mineral Pareidolia" or "San Diego Minerals"
December 11	Meeting At 6:00 pm	Watson Hotel, Manhattan	Special Lecture: Vivien Gornitz– "Ice: The Mineral that Shapes the World"

2019 Show & Event Calendar

Date	Event	Location	Remarks & Information
April 27 - 28	Gem & Mineral Show with Outdoor Swap & Sell	Littell Community Center, Franklin, New Jersey	Sponsors: NJESA, FOMS, Sterling Hill Mining Museum; Info: (973) 209-7212
May 18 - 19	Suffolk Gem, Mineral, Fossil & Bead Show	Our Lady of Mt Carmel Church, Patchogue, New York	Sponsor: Suffolk Gem & Mineral Club
May 18 - 19	Southern Vermont Mineral & Gem Show	Grace Christian School, Bennington, Vermont	Southwestern Vermont Mineral & Gem Club, Sponsor; Info: Bill Cotrofeld @ 802-375-6782
May 31, 2019 & June 1 - 2, 2019	EFMLS Convention & Orange County Mineral Show	Monroe, New York (Various Locations)	Sponsor: Orange County Mineral Society
June 1 - 2	Gem Fest 2019	Greater Canandaigua Civic Center, Canandaigua, New York	Sponsor: Wayne County Gem & Mineral Club; Website: www.wcgmc.org
June 8	17th Annual Mineral, Gem, and Jewelry Show	Connecticut Antique Machinery Association , Kent, CT on Route 7	To benefit the Connecticut Museum of Mining and Mineral Science
June 20-21	Mineralogical Society of America Centennial Symposium	Carnegie Institution Building, Washington, DC	Info: https://msa.minsocam.org/Centennial.html
June 22 - 23	Summer NYC Gem, Mineral, Jewelry & Fossil Show	Grand Ballroom, Watson Hotel, New York City	25+ High Quality Dealers; NYMC Booth; Lecture on Both Days; Wholesale Section
August 9-11	East Coast Gem, Mineral & Fossil Show	Better Living Center, Eastern States Exposition. West Springfield, MA	Largest Show in the East! 200+ Dealers! Info: www.mzexpos.com/east-coast-show
September 21 - 22	Mid-Hudson Valley Gem and Mineral Show & Sale	Gold's Gym, Poughkeepsie, NY	50th Anniversary Show!; Theme: "Pyrite . . . Don't be Fooled"; Pyrite Exhibit by Vassar College

For more extensive national and regional show information check online:
AFMS Website: http://www.amfed.org and/or the EFMLS Website: http://www.amfed.org/efmls

The New York Mineralogical Club, Inc.

Founded in 1886 for the purpose of increasing interest in the science of mineralogy through the collecting, describing and displaying of minerals and associated gemstones.

Website: www.newyorkmineralogicalclub.org

P.O. Box 77, Planetarium Station, New York City, New York, 10024-0077

2019 Executive Committee

[redacted]

Dues: $25 Individual, $35 Family per calendar year. **Meetings**: 2nd Wednesday of every month (except August) at the Watson Hotel, 440 West 57th Street between Ninth and Tenth Avenues, New York City, New York. Meetings will generally be held in one of the conference rooms on the Mezzanine Level. The doors open at 5:30 P.M. and the meeting starts at 6:45 P.M. **(Please watch for any announced time / date changes.)** This bulletin is published monthly by the New York Mineralogical Club, Inc. The submission deadline for each month's bulletin is the 20th of the preceding month. You may reprint articles or quote from this bulletin for **non-profit usage only** provided credit is given to the New York Mineralogical Club ***and*** **permission** is obtained from the author and/or Editor. The Editor and the New York Mineralogical Club are not responsible for the accuracy or authenticity of information or information in articles accepted for publication, nor are the expressed opinions necessarily those of the officers of the New York Mineralogical Club, Inc.

Annual Club Benefit Auction on Wednesday Evening, May 8, 2019

Mezzanine Level Room C, Watson Hotel, 57th Street & Tenth Avenue, New York City
Auction Lot Viewing from 5:00 - 6:00 p.m. – Live Auction Proceedings from 6:15 - 9:00 p.m.

New York Mineralogical Club, Inc.
Mitchell Portnoy, Bulletin Editor
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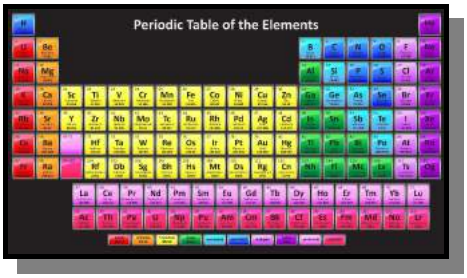

FIRST CLASS

George F. Kunz
Founder