

*Chippings - many thx to Ray
Mason for his past efforts*



London Gem Mineral & Fossil Society

Newsletter of the London Gem Mineral & Fossil Society London Ontario

October 2nd 2025
Club News

Activities for this Meeting

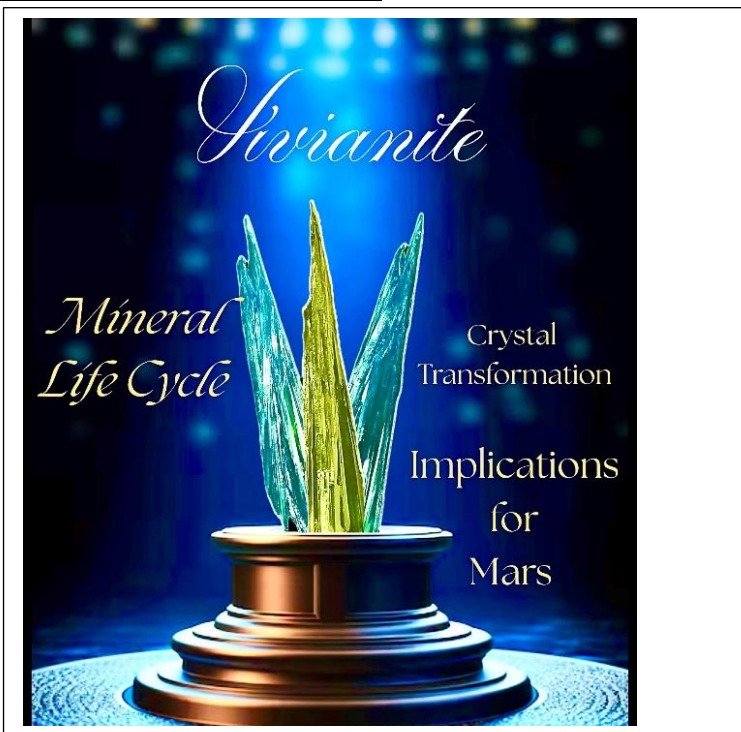
Membership: All memberships are due at the meeting in September.

Club fees are as follows: Families \$30, Single \$20, Student \$15. Those who have paid at the beginning of January until the September meeting will not have to pay until September 2026.

September Meeting Summary

This meeting was a Show-and-Tell of Minerals and Fossils collected by members over the summer and earlier. Tom organized an auction for many of the samples, and it was a big success. There was extremely good information about the items by members and there was some competition to place winning bids. Refreshments were provided by Judie Perrin. Everyone had a good time!

Peter Wozniak-Vivianite Presentation



London Gem Mineral & Fossil Society

Meetings: Usually, 1st Thursday of each month 7:00 – 8:30 pm (September to June but not in January)

Meeting Place: Earl Nichols Arena
799 Homeview Place London Ontario

Membership: Single \$20, Family \$30, Student \$15

President: Tom Iannelli **519-641-0098**

Vice President: Tim Jokela

Secretary: Vacant

Membership: Judie Perrin **226-663-0236**

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Treasurer: Judie Perrin **226-663-0236**

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CCFMS Website: News, Trips, Clubs etc.
www.ccfms.ca
LGMFS: www.facebook.com/londongemmineralsociety

Extraordinary Fossil Captures Battle for Existence

<https://www.nature.com/articles/s41598-023-37545-8> (open source-not copyright)

- For the last ~ 230 million years dinosaurs and mammals (D-M) have existed on the Earth in different timeframes
- These times were during the late Triassic, and through the Mesozoic and into the Cenozoic (birds)
- While there were D-M interactions, there is very little fossil evidence of this
- A new fossil shows a direct interaction between a dinosaur and mammal as opposed to mammals found in Dino digestion tracks- see photo below
- This fossil was found in the Lujiatun Member of the **lower Cretaceous** Yixian formation in China (geological area).
- These two species have the names Psittacosaurid dinosaur, and Gobiconodontid mammal.
- Also known as *Psittacosaurus lujiatunensis*, and *Repenomamus robustus* (help)
- The predator was the smaller mammal, but the fight was interrupted and preserved by a Lahar-type volcanic debris flow
- A **lahar** is a violent type of mud or debris flow composed of a slurry of pyroclastic material, rocky debris and water.
- The source article is extremely detailed in terms of the science including graphical and statistical details giving information about the mammal-Dinosaur balance overall and the possibility of modification of the images. Download the pdf if interested.



Psittacosaurus lujiatunensis-*Repenomamus robustus* pair (WZSSM VF000011) locked in mortal combat. Insets depict (left to right): hand of *R. robustus* wrapped around lower jaw of *P. lujiatunensis*, teeth of *R. robustus* embedded in ribs of *P. lujiatunensis*, hind foot of *R. robustus* wrapped around lower hindlimb of *P. lujiatunensis*. Scale bar equals 10 cm.

Above: *Psittacosaurus lujiatunensis* (*Dino*), *Repenomamus robustus* Mammal pair (WZSSM VF000011) locked in mortal combat. Insets depict (**left to right**): 1) hand of the Mammal wrapped around lower jaw of the Dino, 2) teeth of Mammal embedded in the ribs of *Dino*, 3) hind foot of *Mammal* wrapped around lower hindlimb of the *Dino*. White Scale bar = 10cm.



Artists rendering of the two species locked in combat.
This image was adjusted for better contrast. The original was quite faint.

Diaspore Mineral- α AlO(OH), and Zultanite Gemstones

Sometimes specified as a mixture of 85% Al_2O_3 and 15% H_2O .

It crystallizes in the orthorhombic system. It occurs sometimes as flattened crystals, but usually as lamellar or scaly masses, the flattened surface being a direction of perfect cleavage on which the lustre is pearly in character. It is colorless or greyish-white, yellowish, sometimes violet in color, and varies from translucent to transparent (more info below).



Above: A Diaspore mineral image with small gemstones. This is like the one in the collection of **Phil and Roberta** as shown at the last meeting. Peter's small magnifier and light combo illustrated how the colors change depending on the direction of the light. The change in color is called pleochroism and often occurs because of impurities in transparent minerals.

Pleochroism is an optical property of anisotropic substances, particularly crystals and gemstones, where they appear to be different colors when viewed from different angles, especially when observed with polarized light. This occurs because the crystal's structure causes light entering it to split into rays that are absorbed differently, leading to distinct colors depending on the viewing direction. It is a useful tool in mineralogy for identifying minerals and gems, with examples like alexandrite showing dramatic color changes.

An impurity in a mineral can change its color by altering the wavelengths of light it absorbs and reflects. Impurities can create "color centers" where their electrons absorb specific light energies, leaving other wavelengths to be reflected and perceived as color.

Impurities in diaspore minerals are common, with the most frequent being Iron, Manganese, Chromium, and Silicon. These elements can substitute for aluminum in the crystal structure, altering the mineral's properties, such as its color, which can range from green and brown (due to iron) to pink and red (due to manganese). Diaspore forms through complex geological processes, particularly in bauxite deposits, where the right conditions-intense pressure and heat—allow the mineral to crystallize. Bauxite is the main mineral for Aluminum manufacturing. The aluminum companies did not originally respect the Jamaican miners and just paid them a small amount when they got sick or got serious rashes. The author was at a hearing about this abuse where the R&D people verbally attacked the executive and Sales/Marketing people who thought it was funny.

Diaspore is mined in several locations around the world. Here are a few examples: Jamaica, Mugla-Turkey, Naxos Island Greece, South Africa, Chester County Pennsylvania, Russia, and Brazil. New sources may have been found recently.

The Gemstone Version: Zultanite and Csarite,

Info from IGS: The history of the name by Lisa Rossen IGS with Murat Akgun

Murat Akgun is the owner of the Turkish mine for the gemstone known as Zultanite and its successor trade name, Csarite.

Diaspore had an awful sounding mineral name sounding like a fungus, so in early 2006 Akgun came up with the name after I suggested we call it "Ottominite" after the Ottoman Empire of Turkey and he said how about "Sultanite" after the Sultans of the Ottoman Empire and giving it a Royal kind of sounding name. It turns out after researching the name there was a mineral called "Sultanate" out there and he said it was too close to that name so instead we just exchange the "S" for a "Z" and Zultanite® was born. Zultanite® refers to the Sultans of the Ottoman Empire of Turkey as the inspiration and dedication for its royal sounding name.



My 26 carat "Uniquely K Apex Fan" Diaspore under incandescent light showing the reddish tan color of this AGTA Spectrum Awards winning stone from 1995, (the name Zultanite® was not created as of yet nor was Csarite™ which is a recent New Trade Mark name by the mine owner Murat Akgun in Turkey)



Above: An 80 Carat Zultanite award winning stone with incandescent light.
Below: The same 80 Carat stone with unknown light source

26 Carat likely named Csarite by the owner Murat Akgun. None are at the correct scale except by the Carat size.

Short Articles/Summaries Below:

[Phs.Org June 2025, Astronomy & Space, Space Exploration, Astronomy & SpacePlanetary Sciences](#)

Water Found on Mars from a new Article:

The text was written by Erica Luzzi, edited [Lisa Lock](#), reviewed by [Robert Egan](#)

Researchers take one small step toward planning life on Mars.

Before they take the long journey to another planet, humans will have to find the right place to land. New findings from a University of Mississippi researcher may point to just such a place on Mars.

Erica Luzzi, a planetary geologist and postdoctoral researcher in the Mississippi Mineral Resources Institute, recently led a research effort that discovered indications of near-surface water ice on the red planet. The finding, [published](#) in the ***Journal of Geophysical Research: Planets***, provides a potential water source for future human exploration.

"If we're going to send humans to Mars, you need H₂O and not just for drinking, but for propellant and all manner of applications. She completed the research as a part of her postdoctoral studies at the Bay Area Environmental Research Institute within the NASA Ames Research Center.

"And finding it close to the surface is helpful because we can easily extract it and use it. This is called in situ resource utilization, and it's an important practice for any space exploration." Using high-resolution orbital imagery, the team analyzed the Martian surface and found evidence of ice less than 1 meter below the planet's surface in the Amazonis Planitia region, located around the middle latitudes of the planet. The region is among the sites considered for future human missions.

"The mid-latitudes offer the perfect compromise—they get enough sunlight for power, but they're still cold enough to preserve ice near the surface," Luzzi said. "That makes them ideal for future landing sites."

Using [satellite images](#) from HiRISE, the highest resolution camera ever sent to another planet, the researchers identified ice-exposing craters, polygonal terrain and other morphologies that typically suggest ice near the surface.

Finding water ice means that human explorers would be able to use resources on the planet to provide drinking water, fuel, oxygen and other forms of life support.

Ice can also preserve indicators of life, both past and present, the researchers said.

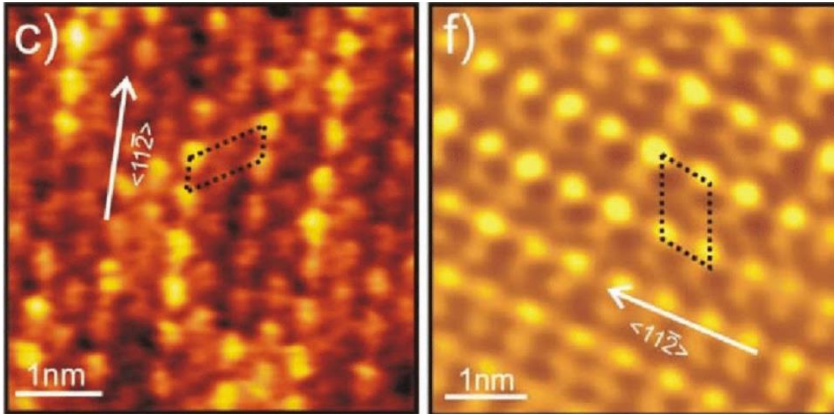
"This also has astro-biological implications," Luzzi said. "On Earth, ice can preserve biomarkers of past life, and it can also host microbial populations. So, it could tell us if Mars was ever habitable."

Can We See Atoms Using the New More Powerful Microscopes?

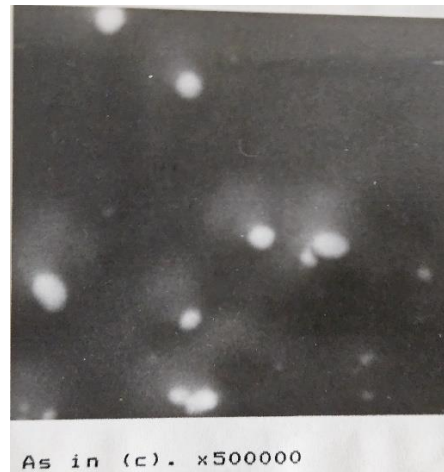
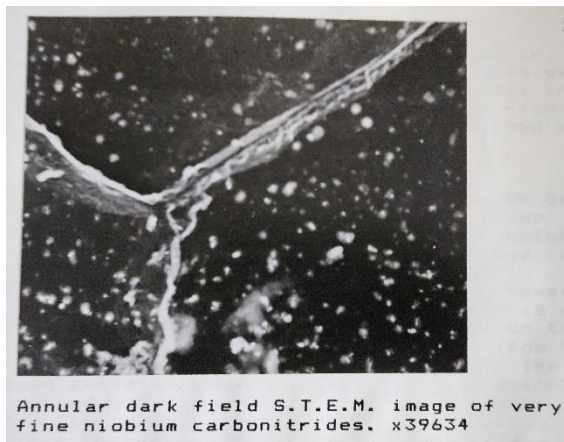
Over the past 30 years new microscopes and devices have been able resolve atomic structures.

AI Generated:

In "photos" of atoms, you are not seeing the atom itself, but rather a map of the atom's electron distribution or the light emitted by excited atoms, which provides information about their positions and structures. Modern techniques use quantum mechanics to detect atomic-scale features, generating images that represent the probability of electron locations rather than direct visual depictions of a tiny ball and orbiting electrons.



New images of a gold surface. The $\langle 11\bar{2} \rangle$ indicates the atomic plane directions. The scale bar is 1 nanometer (0.000000001) meters.



For historical info only. Photos taken by the author in 1983-84 using a STEM.

These show how much high magnification imagery has improved.

The left photo shows fine Niobium carbo-nitrides and a grain boundary.

The right one shows the structure at 500,000 times. The right particles had to be tracked using the X-Ray diffraction pattern on a separate screen, and then they were photographed.

- On the funny side, the STEM kept losing the images.

After a few hours of frustration, the technician was found and said that he could fix it.

He opened the large door to one of the wide circuit boards which was not flat but curved between the left and right contacts. He flicked it with his finger a few times and everything worked. So much for high tech back then. The STEM cost was over \$200,000. At companies where circuit boards are rapidly wave soldered; there are often hundreds of technicians repairing the boards.

Bahgdad Battery-Was it Really a Battery?

In 1938 while in Baghdad, German Archaeologist Wilhelm Konig discovered a 13 cm long clay jar that contained an iron rod surrounded by a copper cylinder. The jar had evidence of corrosion inside possibly by a mild acid like vinegar or wine. Konig believed this object was a galvanic cell or battery. He dated them to between 250 BCE and A.D. 224. Others believed the time range to be A.D 225-640. Others similar jars have been found but without the electrical components. It

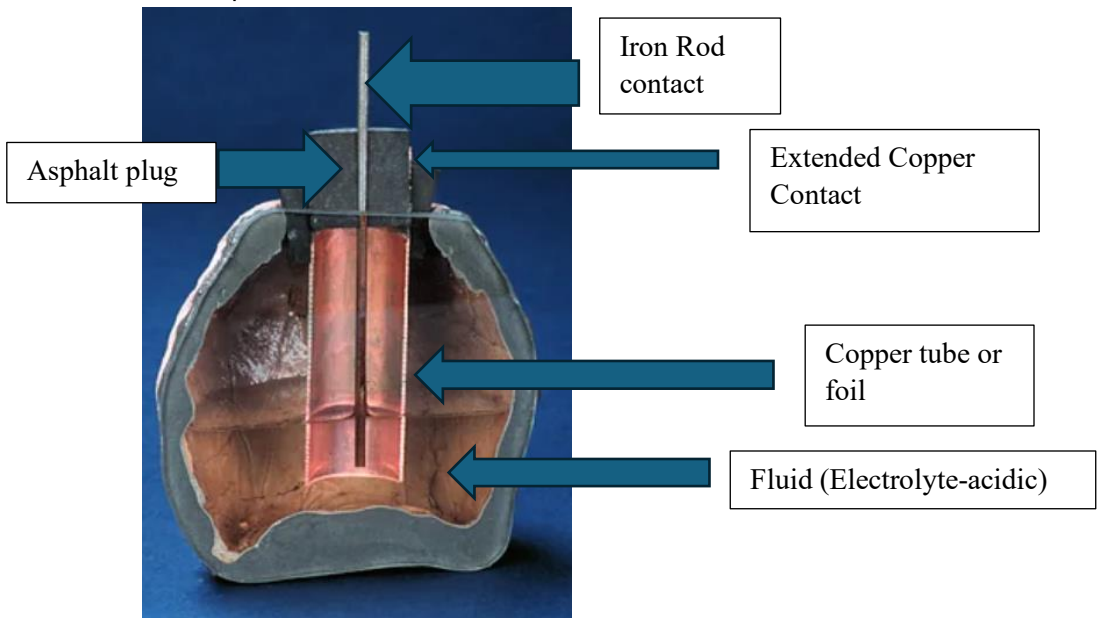
is believed that these longer ones were use as containers of manuscripts. There is much disagreement over these items!

A metallurgist, Dr. Paul Craddock in 2003 noted that the possible battery type was a one-off. “They are odd and one of life’s enigmas”. Many hobbyists and technical explorers have made these so-called batteries, sometimes putting them in series to increase the voltage.

With 4 of them, 4 or more volts were obtained. The power level is tiny so that practical uses were unlikely. Konig claimed to have seen tiny bits of gold plating on silver, but this was rejected by scientists.

Other possible uses of these devices were getting idol worshippers excited, acupuncture(?), and wet storage. With more ‘batteries’ connected, a shock could be felt on damp hands.

Since no wires or conductors were ever found it is unlikely that they were used as batteries and no electroplated surfaces were found.



In a battery composed of iron and copper with a wire connection, electrons would flow from the iron electrode (the anode) to the copper electrode (the cathode). The direction of electron flow is determined by the standard reduction potentials of the two metals. Iron has a negative potential while Copper has a positive one. Charged Copper Ions would have gone into solution in the liquid electrolyte with small amounts of copper salts being formed, and copper metal would have formed on the iron.