London Gem and Mineral Society

Newsletter of the London Gem Mineral & Fossil Society London Ontario

5th June 2025
CLUB NEWS

Dr. Peter Wozniak receiving a Thankyou Card for his superb Presentation on May 1st

Annual Club BBQ – Potluck – Silent Auction Extravaganza!!

The annual BBQ - potluck – silent auction event, for the London Gem, Mineral and Fossil Society, is coming up soon! The event is kindly being hosted, once again, by Mike and Liz Cardinal on the afternoon of Saturday June 21st starting at 2 pm!

Admission is free, but we request members bring something for the auction table, or a side dish (i.e. salad or dessert). Please also bring your own folding chairs for use on the lawn. The club will provide basic BBQ treats and drinks. As for last year, we will have shelter from the sun + rain (provided by the Jokela's). However, if it rains too much, our rain date will be one week later, on Saturday June 28th.

Directions to the Cardinal residence: 53 Aberdeen Dr between Poplar Hill and Coldstream off the Ilderton Rd in Hawks Ridge. Come through the gates at Hawks Ridge and make the first and only right turn. Proceed to the second house on the right.

Looking forward to seeing everyone!

Silver Mine Field Trip

Through the Brantford Gem, Mineral and Fossil Society. July 19-20 led by Chuc Cauchy. The cost is $100 per person. If interested please contact Gerald van Decker, at 'gerald@renewability.com'.

Those interested must have their own equipment and metal detector.

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**
Facebook Admin:	Judie Perrin	**226-663-0236**
Treasurer:	Judie Perrin	**226-663-0236**
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CCFMS Website: News, Trips, Clubs etc.
www.ccfms.ca
LGMFS: www.facebook.com/londongemmineralsociety

Speaker For June 2025
& Description of talk:

Biography:

Beth Gilhespy has been a conservation professional for over 30 years and is currently CEO of the Escarpment Biosphere Conservancy, an organization dedicated to land preservation, following almost 5 years as Executive Director of the Toronto Zoo Wildlife Conservancy. Between 2004 and 2018 Beth was Chief Executive Officer of the Bruce Trail Conservancy, where she oversaw the preservation of more than 6,500 acres of land along the Niagara Escarpment. Beth also served on the Niagara Escarpment Commission from 2017 to 2019. Prior to her work at the Bruce Trail Conservancy, Beth worked for 15 years as a consultant specializing in the environmental impact of toxic chemicals. She holds Bachelor of Science and Master of Science degrees in physical geography and geology from the University of Guelph. She is an avid hiker, traveller, fossil collector and self-professed landscape fanatic, and when not enjoying her time on the land, is currently writing her third book on the geology of the Niagara Escarpment.

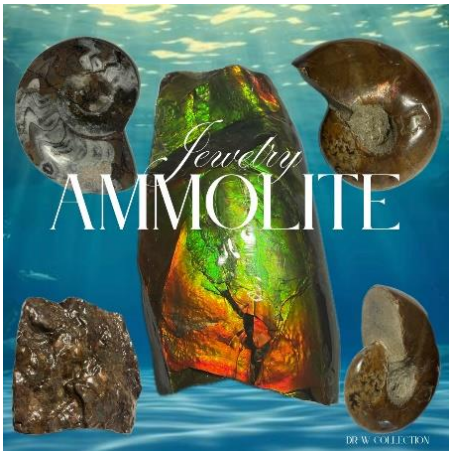
Beth Gilhespy will take participants on a journey to explore the geology of the Niagara Escarpment. She'll explain the Escarpment's formation hundreds of millions of years ago and its landscape today. Beth will have fossil and mineral samples with her to help bring the Niagara Escarpment geology and ancient coral reefs to life. Woven throughout the presentation will be tales of her adventures and misadventures while writing her Walking Through

Time geology books, as well as her work in land preservation with the Escarpment Biosphere Conservancy.
Conservancy, 437-331-1341

Ammonite to Ammolite

Ammolite is an iridescent gemstone cut from the fossilized shells of ammonite. The most valuable and rare color is purple, gold and crimson. Only 5% of ammolite that has been found is jewelry grade. Photos and text, P. Wozniak. Diane Jaskot provided the idea for this article.

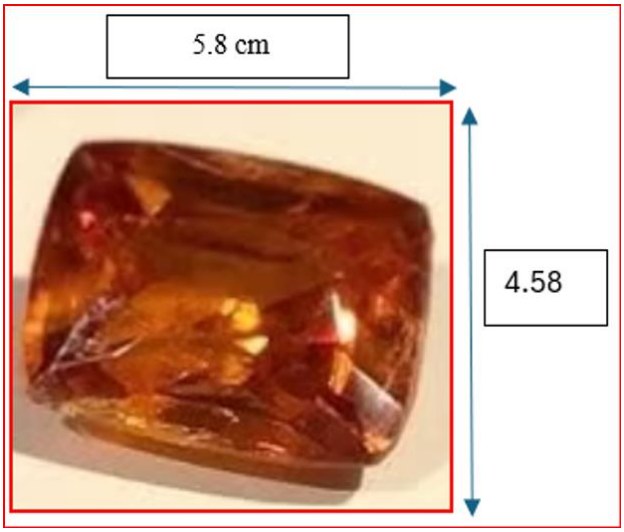
The shell is aragonite (calcium carbonate) which is the same material found in pearls.



The iridescent outer coating of the shell is between 0.5-8mm thick which after polishing becomes 0.1-3mm thick (so do not over Polish). This layer creates a rainbow of plated color shapes depending on the material around it where the color is attributable to vanadium, strontium, titanium, silica, manganese, magnesium, iron, copper, barium, aluminum and chromium. It is rare and the best milieu for color, pattern and plate shape occurred at the Bearpaw formation which was once the Bearpaw sea in Alberta Canada.

Rarest Mineral in the World - Kyawthuite

This new mineral was found in Mogok, Burma (Myanmar) in 2010. The translation of Mogok from Indonesian is 'Strike'. It was officially 'discovered' and recognized as a new mineral in 2015 by the International Mineralogical Association after being thoroughly analyzed using many types of instrumentation.
Kyawthuite is pronounced Cha-too-ite. There are many incorrect articles and few photos of the raw uncut stone. The following photos have the unfaceted mineral, but one was found without any size scale.



The Faceted Gemstone/mineral.
The dimensions are for the faceted top edge and right edge.

Photo of the raw mineral.

The stone was a waterworn small rectangular prism. The Kyawthuite was obtained by the geologist and gemologist Kyaw Thu in Chang-gy (Myanmar). [gee, I wonder how it got its name?] He originally thought it was scheelite but when he faceted the stone it looked unusual. It is very small at one-third of a gram, or 1.61 carats. He sent it to the Gemological Institute of America in Bangkok. Thailand. Its chemistry was thought to be like synthetic bismuth antimonite ($BiSbO_4$) but the real formula was $Bi_3Sb_5O_4$. **This chemical formula had never been found in nature before**. Lab experiments on bismuth antimonite showed that crystals formed at the high temperature of cooling magma.
It was found in an *alluvial deposit within a Pegmatite igneous host rock.
The faceted stone has an orange colour with red overtones. There is a white streak caused by contact with a rough, hard surface.
It also has a few hollow tube inclusions called en-echelon veins from the shear stress when it was formed. It is believed that the inclusions are probably from the stone's origin.


An example of tube inclusions in Tube agate. Tube inclusions may be filled with mineral materials.
*Inclusions are often trapped materials or minerals within the structure of the mineral or gem during its formation. There are many types of inclusions in metals and alloys like carbides, sulphides, oxides and sometimes sand or other casting defects.

Alluvium is loose clay, silt, sand or gravel that has been deposited by running water in a stream bed on a flood plain.

11-Year-Old Girl Finds Ancient Fossil on the Beach In Somerset, England

A new species? Ruby Reynolds found what may be the largest ancient marine animal ever found. She is with her father at her right side (dark grey top), and with the two fossil experts. Her fossils are on the table. She found one fossil and then went back to find more. The long one is part of a fossilized jawbone. The species is part of the extinct ichthyosaur group. Its size was estimated to be 2.5 school bus lengths. That is almost as long as the blue whale.
Ichthyosaurs (fish lizard) prospered for millions of years and had various sizes and shapes.

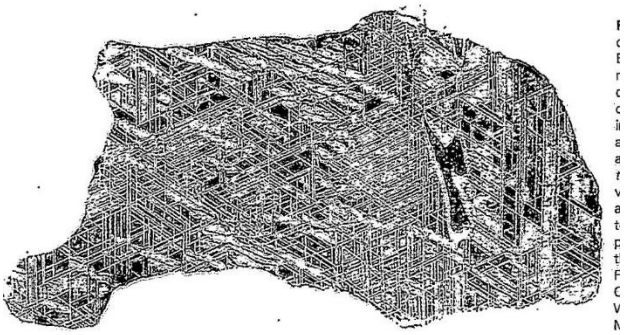
Ruby Reynolds and her dad, centre, pose in 2020 with the dinosaur experts who helped her identify the fossil she discovered, which sits on a table in front of them.


Artist: Todd Marshall, U of Edinburgh

An Interesting Fossil/Structure to Collect

Widmanstatten structures form in very old meteors that travel through space for millions of years. During that time the liquid interior cools down very slowly. The meteors that form this structure contain

Iron and Nickel.



Above: The Widmanstatten structure after polishing and etching with acid. This is the Edmonton (Kentucky) iron meteorite. This octahedral structure has crystallography-controlled intergrowth of two types of Iron-Nickel namely Kamacite (5 weight % Nickel) and Taenite (27-65 Weight % Ni). The larger inclusion is Troilite (FeS-with a different structure).

When melted together in a furnace the two minerals mix well just below the melting point. At meteorite temperatures below 900 to 600 °C, the two alloys with different nickel content are stable: kamacite with lower Ni-content (5 to 15% Ni) and taenite with high Ni (up to 50%). These meteorites have a mixture with a Nickel content in the middle of the range.
This leads to very slow cooling conditions due to the vacuum of space, and the growth of kamacite plates along certain crystallographic plates in the Taenite crystal lattice (octahedral form). This happens by diffusion of Ni in the solid alloy at temperatures between 450 and 700 °C. This requires slow cooling, at about 100 to 10,000 °C/Million years, with total cooling times of 10 million years or less. (some of this information was from Wikipedia).

Widmanstatten structures have also been found in some alloy steels that have controlled cooling, or with Martensite particularly during tempering. This typically involves the formation of needle or plate-like growths of cementite (Fe_3C) within the crystal boundaries of the martensite.

Above: Widmanstatten morphology in Aluminum-4 atomic percent Silver alloy.
Source: Phase Transformations in Metals and Alloys, 2nd Edition, by Porter and Easterling.

Scientists are interested in meteorites since they may give information about how the Universe formed. There are some Physicists who do not believe the big bang theory.

Cube structures with several sides having the structure are rare and are quite beautiful.

A New Developing Mining Method

In-situ leaching and bio-mining: These techniques extract minerals directly from the ore without removing the rock, reducing surface destruction and waste generation. Bio-mining uses microorganisms to isolate metals, offering a cost-effective alternative to traditional chemical methods. This is still under development.

This amazing photograph was taken using a

Transmission Electron Microscope. The scale bar is 0.001314 mm.
The figure show microorganisms using mainly hematite (Fe_2O_3) as food. One bacterium is shown in the photo with the white outline. The bacteria respire by transferring electrons to the reduced iron meaning breathing at that level. The ferric iron is the product.
Source: The 23rd Edition of Manual of Mineral Science, by Klein and Dutrow.
Note: This book is still available as an ebook (Vitalsource).