

HUI PŌHAKU 'O HAWAI'I

Rock & Mineral Society of Hawai'i, Inc.



VOLUME 44, NO. 11

AUGUST 2009

GREEN MINERALS

BY DEAN SAKABE

This month's theme is green minerals. They are easily found in one's jewelry collection, and any given gathering of people usually yields several people wearing (green) Jade pendants, bangles, or rings. Chinese turquoise, that is, the green variety, is being seen more in the marketplace. Looking in the sand around our beaches, one can also find small olivine fragments mixed in with the sand.

Green minerals are so plentiful, the hardest part about this month's choice is how to decide what to include, so in an effort to not make this too long, here is a short list.

Garnets – Garnets are hard and many are fit for gem use. It is common to not refer to garnets by their true name (i.e. Almandine), referring to them simply as "Garnet". The garnets as a group occur in almost all colors, even blue. A recent color change variety of Garnet has been found in Kenya. The **Demantoid** variety (1) of andradite garnet, which is relatively rare, is the most valuable form of garnet. The combination of its color and fire give it unsurpassed splendor. Demantoid garnets can be identified by its characteristic "horsetail" inclusions. The **Tzavorite** variety of grossular garnet is brilliant green. Tzavorite is found the bushland along the frontier between Kenya and Tanzania, in the National park, where our story begins. The name is to honor the Tzavo National Game Park and the Tzavo river running through this area, Henry Platt, the former president of Tiffany & Co, had suggested the name Tzavorite. The **Uvarovite** variety (2) of grossular garnet, the rarest of the familiar garnets, only occurs in very small crystals, and a crystal large enough for faceting is usually preserved as a mineral specimen.

Diopase (Iron Aluminum Silicate) (3) is one of the few minerals that can challenge emerald's deep green color. Unfortunately, Diopase is rather soft, with good cleavage, therefore it is usually not made into gemstones. Mineral specimens of diopase are a treasure for anyone who likes deep green colors. The specimens are often deeply colored, and show well developed crystals. The crystal faces of the rhombohedrons, are very reflective due to a high luster. Furthermore, the crystals can be very clear, even though they sometimes appear to look cloudy due to the deep color.



(1) Demantoid Garnet (Jeffery Mine, Shipton township, Quebec, Canada)

MEETING

Wednesday

August 26

7:00—9:00 pm

Makiki District

Park

Administration

Building

NEXT MONTH

Calcite

LAPIDARY

Every Thursday

7pm-9pm

Second-floor Arts
and Crafts Bldg

Makiki District

Park

MEMBERSHIP

COSTS

2008

Single: \$10.00

Family: \$15.00

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Green Minerals, page 2

Emerald (Beryllium Aluminum Silicate) is the green variety of the mineral beryl (4). The green color of emerald is unparalleled in the gem kingdom, caused by small amounts of chromium and enhanced by traces of iron. Unlike other beryls, emeralds often contain inclusions and other flaws. These flaws are not looked on negatively, like the are for other gemstones. Instead, the flaws are considered part of the character of the stone, and are used to assure the purchaser that they have a natural stone, versus a lab grown emerald.

Hiddenite, the green variety of spodumene, is a rare and attractive gem mineral, for the most part known only to collectors. The green color varies from a yellowish to a bluish green, although it sometimes approaches emerald green. Hiddenite is strongly pleochroic, meaning there is a color intensity variation when a crystal of it is viewed from different directions. The top and bottom of the crystal reveal the deepest colors and knowledgeable gem cutters take advantage of its effects. Hiddenite was found in Alexander Co., North Carolina, in the latter part of the nineteenth century. New deposits have been unearthed in Madagascar and Brazil. Due to hiddenite's cleavage, splintery fracture and strong pleochroism, it is considered a gem cutter's challenge.

Gaspeite (Nickel Magnesium Iron Carbonate) is considered a rare mineral, being found in only a few localities, however it is becoming a popular mineral in the semi-precious stone markets. It is being used as a cabochon in sterling silver jewelry. Gaspeite's almost apple green color is quite unique and not hard to mistake. Gaspeite is found as a secondary mineral around nickel sulfide deposits, and it was thought of as just a gangue mineral by miners when it was encountered and usually placed in the mines dumps or tailings. A gangue mineral is a mineral that probably contains the ore metal, but its chemistry is such that processing it is either impossible or unprofitable. Such was the case with gaspeite despite being rich in nickel. Gaspeite is named for

its type locality of Gaspé Peninsula, Lemieux Township, Gaspé-ouest County, Quebec, Canada, but the best material of late is coming from North of Perth, Australia.

Jade is the gem variety of Jadeite and Nephrite. Jadeite is almost never found in individual crystals, and is composed of microscopic interlocking crystals that produce a very tough material. Nephrite is actually not a mineral, but a variety of the mineral Actinolite. Nephrite is composed of fibrous crystals intertwined in a tough compact mass. The toughness of jade is remarkable, it has a strength greater than that of steel and was put to work by many early civilizations as axes, knives and weapons. It was later that jade became a symbolic stone used in ornaments and other religious artifacts during the eons. Today, jade is valued for its beauty. Its many colors are appreciated but it's the emerald green color that jadeite produces so well that is highly sought after by collectors. This emerald green jade called "Imperial Jade" is colored by chromium, other colors are influenced by iron (green and brown) and manganese is thought to produce the violet colors. Nephrite is usually only green and creamy white, while jadeite can have the full range of jade's colors.



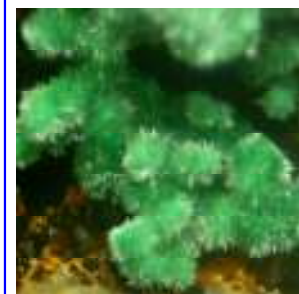
(4) Emerald (Bakhi Mine, Panjshir, Afganistan)



(2) Uvarovite (Outokumpu, Ita-Suomen Laani, Finland)



(3) Diopside (Tantara Mine, Shinkolobwe, Katanga, Zaire)



(5) Malachite (Mineral Hill Mine, Talingaboolba, NSW, Australia)

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Green Minerals, page 3

Malachite (Copper Carbonate Hydroxide) – Malachite (5) is named for the Greek word for "mallow", a green herb. Its banded light and dark green designs are one-of-a-kind, and give it a unique ornamental quality unlike that of any other stone. It forms the banding from subtle changes in the oxidation states of the surrounding pore waters, but the exact mechanism is still not well understood. Although its massive carvable forms are well known, its crystalline forms are much rarer and are only recently becoming widely available to the average mineral collector. One of its more unique habits is its fine acicular crusts and tufts. At times appearing as a mat of thin hairs or as a carpet of green velvet. Another unusual habit is its stalactitic habits.

Moldavite – These Tektites are poorly understood. They are irregularly shaped, sometimes looking like blobs of glassy substance, or at times intricately-shaped nodules. They have no crystal structure, and are similar to obsidian, however they are not associated with volcanic processes. Their chemistry is unique and somewhat unexplained. It is postulated that many odd events occur during a meteor's impact because of the tremendous heat and pressure produced. Tektites may be fused glass that formed during an impact of a meteor with layers of rock on the Earth's surface. Tektites occur in broad bands in specific localities in different parts of the world. These bands produce characteristically similar tektites and are sometimes loosely associated with meteorite craters or suspected craters. The odd and diverse chemistry of the tektites could be a result of unique meteorites hitting unique rock types with the combinations producing particular effects. Some tektites, called Moldavites (6), are especially prized for their clarity and unique green color. Moldavites are found in a "splash field" centered around Moldavia in former Czechoslovakia and are believed to have come from a meteorite crater in Germany.



(6) Moldavite (Bohemia, Czech Republic)

Olivine (Magnesium Iron Silicate) - Olivine is known by many names, besides its actual mineral names, forsterite and fayalite. It is known as "chrysolite", "evening emerald" and peridot (7). Chrysolite is an old German name that was applied to gem quality olivine, now it is sometimes used to refer to light yellowish green olivine. Evening emerald is a name given to olivine's gemstone variety, peridot, by some jewelers in some attempt to increase the value of the stones. Peridot is the birthstone of August and is a very affordable gemstone with a unique green-yellow color. Most peridot is actually the magnesium rich forsterite and its color is caused by the presence of iron ions. Fayalite's higher iron content makes for darker, less attractive specimens that are not generally used as gemstones. The best colored peridot has an iron percentage less than 15% and includes nickel and chromium as trace elements that may also contribute to the best peridot color. Olivine is found in igneous rocks and marbles that formed from metamorphosed impure limestones. The early crystallization of olivine is the reason that molten lavas can contain crystallized grains of olivine. Olivine is also found in iron-nickel meteorites, not just as small grains but as significantly sized crystals sometimes occupying over 50% of the meteorites volume. Thinly cut slices of these meteorites are extremely attractive with the polished steel gray of the iron and the embedded grains of gemmy green olivine.

Right (7) Peridot (St. John's Island, Red Sea, Egypt)



Left (8) Variscite (Goias, Brazil)

Variscite (Hydrated Aluminum Phosphate) is a phosphate mineral that is sometimes confused with turquoise (8). It is usually greener than turquoise. Variscite, can be used as a semi-precious stone because it has distinctive color patterns. Variscite occasionally alters into other phosphate minerals. This occurs in what were perhaps weak layers of a nodule, since only portions of the variscite nodules are altered. The most common alteration mineral is crandallite and gives some nodules a yellow or white layer.

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The Metaphysical Properties of Green Minerals, page 4

SPECIAL COLUMN BY JADE EMORY

In India, the physical body is considered to have 7 energy centers, called "chakras".

The 4th chakra is located in the heart; its worldly function is personalized love, the balancing of passion and compassion, and its healing color is green. The 4th chakra is considered the first of the spiritual chakras. Green minerals, depending on their chemical and structural composition, work on the heart chakra. In fact, when I lived in Canada, and participated in Native American Medicine Wheel ceremonies, the question I was most often asked by the more modest participants was, "How can I open my heart?"

The best mineral to not only open the heart, but to dissolve the psychic and psychological blockage that inhibits the love-expression of the heart, is octahedral fluorite, especially in juicy green, although I have heard of success with people using other colors of fluorite.

However, tinctures for internal use cannot be made with fluorite because it is too toxic for that kind of use.

Emerald, a stone strongly correlated with the planet Venus, which in itself governs love in one's astrological birth chart, is another superb stone for green healing energy to apply to the heart. It especially empowers the higher heart chakra attribute of forgiveness, a major key to mental health.

Chromium minerals in general have a calming effect on a person's psyche, and they also help allay diabetes. Some people use African or Arizona diopside for this purpose.

Russian Uvarovite, a gorgeous cluster of small green crystals just sings when it is worn at the 4th chakra. If the rock sings, the heart also sings. Mine sure does when I wear my Uvarovite pendant.

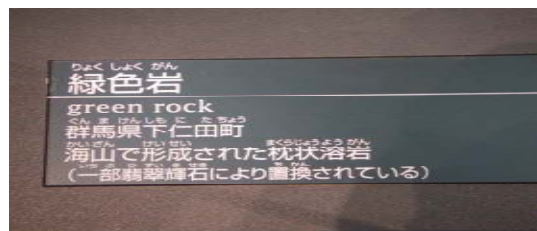
Many people get caught up in cerebral intellectual gymnastics, worldly acquisition, power dynamics, anything but really letting themselves love and be loved, because the vulnerability is too real, too scary to them. I encourage people to let themselves absorb the healing energy of green minerals so that they can balance out their more assertive yang impulses with the yin receptivity of true love.

A valued green mineral (which also comes in many other colors) is jade, both Nephrite and Jadeite, both of which are reputed to retain the love of the wearer in the gem itself, making jade an especially valuable heirloom to pass on to one's family.

SPECIAL COLUMN BY DEAN SAKABE

Members periodically ask me if I am able to identify different rocks that they bring to the Lapidary class. Sometimes I can and sometimes I cannot, and when I cannot, my usual pithy answer is "a brown rock" or "a green rock", or something in that line.

Now you folks may think that I am flippant about these answers, however I am totally justified. On a recent visit to the National Science Museum in Tokyo, I came upon not one, but two examples of green rocks found in Japan. How do I know it is a green rock? Well, that is what the label says it is, and we always believe in the labels.



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News and Notes, page 5

DOOR PRIZES

Please note that we have instituted door prize drawings at our monthly meetings. Because of Hawaii's gambling laws, these drawings cannot be conducted in the common "raffle" format where tickets are sold. Rather, each *paid* member attending the meeting will receive a drawing ticket upon request. A voluntary donation of \$1.00 is requested and encouraged. Drawings will be conducted at the end of the meeting with available prizes awarded in random order. You must be present to win. Please remember: if you win a prize, please bring one to the next meeting. This helps to keep our drawings going. Thank you.

WE HAVE A WEBSITE!

http://pohakugalore.net/Hui_pohaku/Hiu_pohaku_1.html

MAHALO TO MARKUS FOR HELPING US GET OUT OF THE ELECTRONIC STONE AGE!

2009 ROCK SHOW

OCTOBER 17 & 18

OUTRIGGER WAIKIKI HOTEL

11AM—7PM

CONTACT KEITH KRUGER FOR BOOTH INFORMATION

PARKIGN AT MAKIKI PARK

Parking along Keeamoku St. starts at 5:30
After that, good luck because it drops off really fast.

Rock & Mineral Society of Hawai'i, Inc.

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The Rock & Mineral Society meets on the 4th Wednesday of each month (except for adjusted dates in November and December) at the Makiki District Park, 7:00 - 9:00 pm. Enter from Keeaumoku Street. Parking is free but limited.

The Newsletter is published monthly, some days prior to the meetings and is distributed in electronic format by email (Adobe Acrobat PDF file attachment). Printed copies are "snail" mailed to those who do not have email. The electronic format usually contains full-color images; the print version may be limited to B&W due to reproduction costs.

Any newsletter comments are appreciated, and can be sent to elise.thomasson@gmail.com

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