

# HUI PŌHAKU 'O HAWAI'I

## Rock & Mineral Society of Hawai'i, Inc.



VOLUME 46, NO. 1

JANUARY 2011

### RED MINERALS

BY DEAN SAKABE

Red minerals-- the color so nice we cannot get enough of it! In August we profiled some red minerals. Red Diamonds, Ruby, Jade, and Opals were also highlighted in previous issues. So this month, we will continue the little discussion on other red minerals.

Rhodochrosite (whose name means rose-colored) is a very attractive mineral with very distinctive one-of-a-kind color (1). This manganese carbonate ( $MnCO_3$ ) has a vivid pink-rose. In a massive form, its pink and white bands are extremely attractive and are often used in semi-precious jewelry. Rhodochrosite is often carved into figurines and tubular stalactitic forms are sliced into circles with concentric bands that are truly unique in the mineral kingdom. Fine crystals are sometimes cut into gemstones, however rhodochrosite's softness and brittleness limit it as a gemstone for everyday use.

There are many localities for rhodochrosite that are of great renown. Beyond a doubt, the best locality for rhodochrosite is the Sweet Home Mine in Colorado. It is unmatched for its superb rhodochrosite crystals that exhibit the best features of the species, a fine bright rose color and sharp well formed crystals. Some specimens from here are quite large and of world class distinction.

Other localities have produced some fine specimens as well. Catamarca, Argentina has an old Inca silver mine that has produced fine stalactitic examples of rhodochrosite that are unique and very attractive. Cut cross-

sections reveal concentric bands of light and dark rose colored layers. These specimens are carved and used for many ornamental purposes.

Mont Saint-Hilaire, Quebec, Canada has produced many fine rare minerals but it also produces some nice rhodochrosite specimens as well. Specimens from here are generally small, but have a good color and are associated with rarer minerals.



(1) Rhodochrosite, Sweet Home Mine, Alma, Colorado



(2) Rhodochrosite, Uruchacua Mine, Ancash Department, Peru

### MEETING

Wednesday

January 26

6:15-8:00 pm

Makiki District

Park

Administration

Building

### NEXT MONTH

Agates

Wednesday

February 23

### LAPIDARY

Every Thursday

6:30-8:30pm

Second-floor Arts

and Crafts Bldg

Makiki District

Park

### MEMBERSHIP

DUE COSTS

2010

Single: \$10.00

Family: \$15.00

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### **BE SURE TO RENEW YOUR MEMBERSHIP USING THE ATTACHED FORM!**

There are many Peruvian rhodochrosites (2) (3) localities that have produced a number of good specimens. These crystals are usually paler in color than other specimens, but are accented by interesting metal sulfide minerals. N'Chwanging Mine, Hotazel, South Africa has produced possibly the best examples of scalahedral crystals of rhodochrosite. The unusual crystal habit is due in part to this being one of a few sedimentary crystallizing environments for the species. Most other localities are the result of metamorphism, late stage igneous intrusion or more commonly hydrothermal precipitation.



(3) Rhodonite, Chiurucu Mine, Dos de Mayo Province, Huanuco Department, Peru

Spinel (9) is a very attractive and historically important gemstone mineral. Its typical red color, although pinker, rivals the color of ruby. In fact, many rubies, of notable fame belonging to crown jewel collections, were found to actually be spinels. Perhaps the greatest mistake is the Black Prince's Ruby set in the British Imperial State Crown. Whether these mistakes were accidents or clever substitutions of precious rubies for the less valuable spinels by risk taking jewelers, history is unclear. The misidentification is meaningless in terms of the value of these gems for even spinel carries a considerable amount of worth and these stones are priceless based on their history, let alone their carat weight and pedigree.

Today, expensive rubies are still substituted for by spinel in much the same way a diamond is substituted by cubic zirconia. Not to commit a fraud or theft but to prevent

one. Spinel may take the place of a ruby that would have been displayed in public by an owner who is insecure about the rubies safety. The spinel probably is still valuable but better to lose a \$100,000 dollar spinel than a \$1 million dollar ruby!

Spinel and ruby are chemically similar. Spinel is magnesium aluminum oxide and ruby is aluminum oxide. This is probably why the two are similar in a few properties. Not suprisingly, the red coloring agent in both gems is the same element, chromium. Spinel and Ruby also have similar luster (refractive index), density and hardness. Although ruby is considerably harder (9) than spinel, spinel's hardness (7.5 - 8) still makes it one of the hardest minerals in nature.



(9) Red Spinel, Mogok, Burma

Spinel may be the poorer cousin of ruby, but its pinker color and other qualities make it attractive in its own right. Spinel typically forms in well formed octahedrons. But it is famous for a type of twinning that bears its name, the Spinel Twin Law. Spinel Law twinning is also found in other isometric minerals such as diamond, galena, cristobalite, magnetite, franklinite and other members of the spinel group. This type of twinning produces a twin plane that is parallel to one of the octahedral faces. The plane acts as a mirror plane and produces a left and right side that are mirror images of each other. This may not sound

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## Red Minerals, page 3

spectacular for a very symmetrical mineral like spinel which is loaded with mirror planes. However this mirror plane is not parallel to any of the others and actually lowers the symmetry of the crystal (only in appearances though).

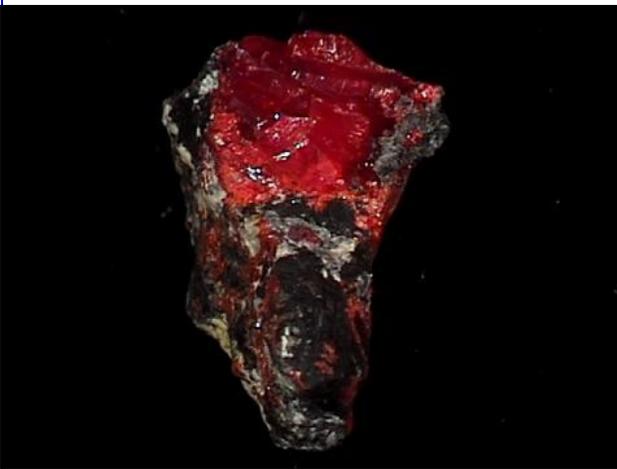
A good description of the twin is hard to explain, but here it goes. The plane falls (of course) in the center of the crystal, dividing it in half. The two octahedron faces parallel to the twin plane are equilateral triangles. Each point of the triangles is doubled across the twin plane with an indentation between them. The crystal looks like it has trigonal symmetry, but the three indentations are a clue that this crystal is a twin. Twins of spinel are rare, but their popularity makes them readily available on the market.

Realgar (4) the name "Realgar" comes from Arabic *rahj al ghar* = powder of the mine

Realgar is an oddball among the sulfides. It is one of only a few sulfides that are not metallic or opaque or blandly colored. Its structure is analogous to that of sulfur and resembles sulfur in most respects except for color (the name "*ruby sulfur*" has been applied to realgar). Sulfur has a structure composed of 8 sulfur atoms linked in a ring. Realgar's structure alternates between sulfur atoms and arsenic atoms producing rings of  $As_4S_4$ . The arsenic atoms affect the structure altering it from sulfur's orthorhombic symmetry to realgar's monoclinic symmetry.

Realgar occurs in hydrothermal veins with valuable metal sulfide ores and its bright red color can be an aid to prospectors. It also can be found in hot spring deposits and as a volcanic sublimate product (crystallizing from vapors). Realgar gets its name from the Arabic words for "*powder of the mine*" (*rahj al ghar*). Realgar is famous for some wonderfully beautiful specimens. Some specimens can have a deep ruby red color with an amazing clarity and a high luster. The color of realgar is truly something to appreciate and cherish. But realgar's beauty is sometimes fleeting.

It is an unstable mineral and will alter to a different mineral, pararealgar and eventually to a powder. This process takes time and is accelerated by exposure to light. Specimens should be stored in dark, enclosed containers, and only exposed to light for the brief enjoyment of its owner and friends. This sounds extreme, but wonderfully beautiful realgar specimens are worth preserving for as long as possible. If you are wondering how quickly the deterioration occurs, the answer is immediately, but fortunately very slowly. Ancient Chinese carvings of realgar are still in existence, (5) but badly affected by the deterioration. The deterioration of realgar was thought to produce the closely related yellow orpiment, but this was recently proven to be false and the deterioration product is in fact yellow-orange pararealgar. In old paintings and manuscripts, realgar was a common pigment for paints and dyes. Many of these paintings now have a yellow or orange hue where once the color must have been an original red.



(4) Realgar, Getchell Mine, South Pit, Potosi District, Humboldt County, Nevada



(5) Realgar, Shi Meng Mine, Shi Meng, Hunan Province, China

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Rhodonite is an attractive mineral that is often carved and used in jewelry. It is named after the Greek word for rose, *rhodon*. Its rose-pink color is distinctive and can only be confused with rhodochrosite and the rare mineral, pyroxmangite,  $MnSiO_3$ . Rhodochrosite however is streaked with white minerals such as calcite and is reactive to acids. While rhodonite does not react to acids and is usually associated with black manganese minerals and pyrite. Pyroxmangite is a little harder to distinguish because the two minerals are closely related and x-ray studies are usually needed when found massive. Crystals of pyroxmangite are often twinned as is not the case with rhodochrosite crystals. Crystals of rhodonite, while not in nearly the same abundance as massive rhodonite, are still found and distributed on the mineral markets. They come from a few notable localities and are considered classics by collectors.

Purpurite (6) (7) forms a series with the mineral heterosite. Purpurite is the manganese rich end member and heterosite is the iron rich end member. Purpurite is a very rare mineral that would get much attention in the semi-precious stone market due to its striking color, if it were not for this rarity. Purpurite is an alteration product of an equally rare mineral called lithiophyllite,  $LiMnPO_4$ . The alteration takes place atom by atom and actually forms what is called a pseudomorph or "false shape". A pseudomorph is a mineral that has the shape of one mineral but has a different chemistry and/or structure. The alteration is an oxidation reaction with the manganese ion going from a positive two (+2) charge in lithiophyllite to an ion with a positive three (+3) charge in purpurite. With the change in charge in the manganese ion, the lithium ion is then lost. Often some of the original lithiophyllite is still present in most purpurite specimens. The purple color of purpurite is truly unique in the mineral rainbow.



(6) Purpurite, Sandamap Mine, Usakos, Namibia



(7) Purpurite, Colorado

Valentinite (8) is a high lustered, often fibrous oxide mineral. It forms sprays of crystals that are usually matted to the host rock in radiating clusters. Its adamantine (gem-like) to pearly luster serves to add a nice quality to this uncommon antimony mineral.

Valentinite is dimorphous with the mineral senarmontite. Both minerals have the exact same chemistry, but they have different structures. Senarmontite is isometric and valentinite is orthorhombic. It is similar to the situation between diamond and graphite. Valentinite is associated with senarmontite as well as stibnite. Actually this association is no surprise since both senarmontite and valentinite are oxidation products of the antimony sulfide.



(8) Valentinite, Příbram, Czech Republic

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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 FACEBOOK PAGE! LET'S GO LIKE IT!

[HTTP://WWW.FACEBOOK.COM/PAGES/ROCK-AND-MINERAL-SOCIETY-OF-HAWAII/103902329673700?v=wall&ref=sgm](http://www.facebook.com/pages/Rock-And-Mineral-Society-Of-Hawaii/103902329673700?v=wall&ref=sgm)

### MAHALO TO MARKUS FOR ESTABLISHING OUR ROCK FACE!

## THE METAPHYSICAL PROPERTIES OF RED MINERALS BY JADE EMORY

I ordinarily would consider red minerals a first-chakra stone, because that's the color of physical survival needs represented by the chakra at the base of the spine, the coiled kundalini before it rises when an enlightened Master gives the student spiritual initiation.

But so many red minerals have manganese content that I have found them healing to emotional traumas of the heart chakra, especially African Rhodochrosite. Even the manganese in pink rose quartz is reputed to help depression. So the 'rule' about rainbow colors conforming to the 7 chakras seems too rigid to be applicable to the metaphysical uses of gemstones.

Ruby, also a rose-red more than a red-red, is a heating stone, giving confidence and a regal bearing to would-be royalty, but it can cause fevers if a person has too much emphasis on fire signs already in their birth chart..

Vanadinite is one of the most earthy red stones around, even though it is a true red-red. I think that its structure helps it as a grounding stone.

Red minerals are gorgeous!

### PARKING AT MAKIKI PARK

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

## Rock & Mineral Society of Hawai'i, Inc.

### 2008 Officers

#### *President*

Faye Chambers  
621-6710  
cateyes@hawaii.rr.com

#### *Vice President/Admin.*

Ed Sawada

#### *Vice President/Lapidary*

Dean Sakabe  
535-5012 (day)  
625-2671 (eve.)  
dsakabe@verizon.net

#### *Treasurer*

Debbie Iijima  
539-4552 (day)

#### *Secretary*

Jade Emory

#### *Newsletter Editor*

Elise Thomasson  
elise.thomasson@gmail.com

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 Keenamoku 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](mailto:elise.thomasson@gmail.com)

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Hawai'i, Inc.  
P.O. Box 23020  
Honolulu, HI 96823-3020

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P.O. Box 23020  
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