

HUI PŌHAKU 'Ō HAWAII

Rock & Mineral Society of Hawai'i, Inc.



Meeting Times

MEETING

Wednesday
April 26, 2017

6:15-8:00 pm

Makiki District Park
Admin Building

NEXT MONTH

Beryl's

LAPIDARY

Every Thursday

6:00-8:00pm

Makiki District Park
2nd floor Arts and
Crafts Bldg

MEMBERSHIP DUE COSTS 2017

Single: \$10.00

Family: \$15.00

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

Petrified Wood By Dean Sakabe

April's topic is Petrified Wood. Petrified wood is a fossil which has been preserved for millions of years by the process of petrification. Petrification turns wood into quartz crystal which is very brittle and shatters. Even though Petrified wood is fragile, it also happens to be harder than steel.

Petrified wood possesses exquisite color and retains much of the woods detail. Some pieces of petrified wood have retained the original cellular structure of the wood, and the grain of the wood can easily be seen. Petrified wood can be found throughout the desert regions.

The process of petrification begins with three raw ingredients : Wood, water and mud. In the case of the Petrified Wood found in the Petrified Forest, Arizona. The petrification began during the Triassic Period when conifers fell to the ground and into the waterways. These logs were then swept and tumbled downstream along with sediment and other debris. These logs then settled on the bottom, to be covered in sediment. Here devoid of oxygen, which would have caused the conifer to deteriorate. In fact, 400 feet of sediment was deposited in the plain by the rivers that originated from the volcanic mountain range. The layer of sediment



Petrified Forest, Arizona



Petrified Wood, Arizona

Yellow Minerals

is now known as the Chinle Formation.

The mud that covered the logs contained volcanic ash which was a key ingredient in the petrification process. As volcanic ash began to decompose it released chemicals into the water and mud. This water then seeps into the wood and forms into quartz crystals. As the crystals grew over time, the wood became encased in the crystals which over millions of years, turned the wood into stone.



Limbcast, Virgin Valley, Nevada

It's not wood that makes petrified wood colorful. Instead it is the chemistry of the petrifying groundwater. Minerals such as manganese, iron, and copper were in the water during the petrification process. These minerals give petri-

fied wood a variety of color ranges. For example Quartz crystals are colorless, however when iron is added to the process the crystals become stained with a yellow or red tint.

Here is a list of minerals and related color hues that could be produced :

- Copper - green/blue
- Cobalt - green/blue
- Chromium - green/blue
- Manganese - pink
- Carbon - black
- Iron Oxides - red, brown, yellow
- Manganese Oxides - black
- Silica - white, grey

Petrified wood is a fossil of the original woody material that often exhibits preserved details of the bark, wood, and cellular structures. The specimens with near-perfect preservation are unusual; however, specimens that exhibit clearly recognizable bark and woody structures are very common.



Petrified Wood, Seed Fern, Gokwe, Zimbabwe

Petrified Wood

been replaced by agate. "Silicified wood" is wood that has been replaced by any form of silica, including opal and agate.

One of the most famous localities for viewing petrified wood is Petrified Forest National Park near the community of Holbrook in northeastern Arizona. About 225 million years ago, this area was a lowland with a tropical climate and covered by a dense forest. Rivers flooded by tropical rain storms washed mud and other sediments into the lowlands. Enormous coniferous trees up to 9 feet in diameter and 200 feet tall lived and died in these lowlands. Fallen trees and broken branches were often buried by the river sediments. Nearby volcanoes erupted numerous times. These eruptions blanketed the area in volcanic ash with a high silica content.

Rapid burial allowed the plant debris to escape destruction by oxygen and insects. The soluble ash was dissolved by groundwater flowing through the sediments. The dissolved ash served as a source of silica that replaced the plant debris, creating petrified wood. Trace amounts of iron, manganese and other minerals were included in the silica and gave the petrified wood a variety of colors. These sediments, plant debris, and volcanic ash became part of a rock unit known today as the Chinle Formation.

In the millions of years after the Chinle Formation was deposited, the area was uplifted and the rocks deposited above the Chinle were eroded away. The petrified wood is much harder and resistant to weathering than the mud rocks and ash deposits of the Chinle. Instead of eroding away, the wood accumulated on the ground surface as the surrounding mud rocks and ash layers were eroded away. That is why areas of the Park are covered with a litter of petrified wood trunks, branches and fragments. Today, visitors to the park can observe the petrified wood and photograph it; however, collecting petrified wood in the park is prohibited.

It is sometimes found where volcanic activity covered plant material with ash, mudflows or pyroclastic debris. It is found where wood in sedimentary deposits was replaced by minerals precipitated from groundwater. It is especially abundant around coal seams, although many of the wood specimens in these locations are casts and molds rather than petrifications. One of more unusual material from Western Australia is known as "peanut wood." This is because of its oval markings, which happen to be the actual boreholes drilled by the clam



Petrified Wood, Peanut Wood, Gascoyne,
Western Australia

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!*

Officers

President

Matthew Martin

Vice President/Admin.

Jon Bly

BLYJ1966@Gmail.com

Vice President/Lapidary

Dean Sakabe

Dean.d.sakabe@verizon.com

(808) 282-6681

Treasurer

Debbie Iijima

Secretary

Blair Ishitani

Newsletter Editor

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, 6:15-8 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.

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.



Petrified Wood, Teredo Shipworm Bored, Isle of Sheppey, Kent, England

In the United States, noteworthy locations where abundant fossilized wood can be seen include:

- Petrified Forest National Park near Holbrook, Arizona
- Petrified Palm Deposits in the Catahoula Formation of Louisiana, Texas and Mississippi
- Ginkgo Petrified Forest near Wanapum Reservoir, Washington
- The Petrified Forest near Calistoga, California
- Mississippi Petrified Forest near Flora, Mississippi
- The Gilboa Fossils near Gilboa, New York
- Florissant Fossil Beds near Florissant, Colorado
- Gallatin Petrified Forest near Yellowstone, Wyoming
- Escalante Petrified Forest State Park near Escalante, Utah
- Petrified Wook Park in Lemmon, South Dakota (a rock sculpture park - some made of local petrified wood)

Collecting petrified wood can only be done on private property where permission has been obtained from the landowner, or on limited tracts of government lands where small quantities are allowed to be collected for personal use. Before you collect, get permission and find out the collecting rules from the owner of private property or from the agency in charge of any government land where collecting will occur.

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