

Northwest  
Micro Mineral  
Study Group

# MICRO PROBE



SPRING, 2008

VOLUME X, Number 7

SPRING MEETING . . . . .VANCOUVER, WASHINGTON

May 3, 2008

9:00 am to 5:00 pm

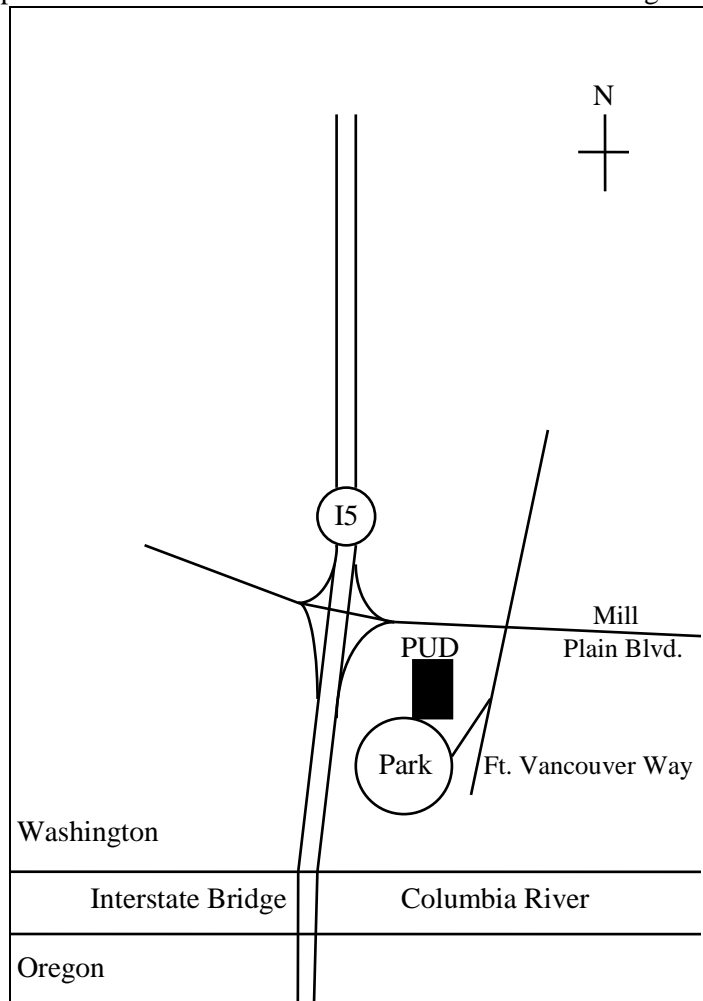
Clark County P. U. D. Building  
1200 Fort Vancouver Way  
Vancouver, Washington

Come celebrate spring talking about your favorite minerals. Bring your microscopes and something for the free table to share with others. There should be lots of time for sharing and swapping, as no formal talk has been planned. We will have our usual brief business meeting in the afternoon, to be followed by our update session to find out what localities are actively producing material and are good bets for collecting trips. We will also review the status of projects and talk about ideas for additional ones.

If you have slides of mineral specimens or collecting localities that you would like to share with the group, bring them along; we will have a projector and screen waiting. .

The kitchen area is again available and we will plan on sharing lunch together. As always, the club will provide the basics for sandwiches, so bring goodies to make lunch special.

In the evening, many of us plan to go to a local buffet restaurant, so please join us if you can.



## Barahonaite, a New Mineral from Gold Hill, Utah

Don Howard

After many years languishing under the inelegant name, *Unknown #2*, the beautiful, pale blue crystals found in the tunnel on the 80 ft. level at Gold Hill Mine, Tooele Co., Utah has an official name. In an article soon to be published in Canadian Mineralogist, Joan Vinals, John L. Jambor, Mati Raudsepp, Andrew C. Roberts, Joel D. Grice, Michael Kokinos and William Wise will announce the new mineral **Barahonaite**.

Why has it taken so long to establish this material as a valid new mineral? There was certainly plenty of material at Gold Hill to analyze, but the tiny crystallites were so thin that a detailed study of the structure of the material was not possible. Barahonaite, as reported in the upcoming article, was actually analyzed from material from a new find at the Dolores prospect in Murcia Province, southeastern Spain.

The new mineral, as it occurs in Spain, is actually two, varying a bit in composition:

**Barahonaite-(Fe)**  $(\text{Ca,Cu,Na,Fe}^{3+},\text{Al})_{12}\text{Fe}^{3+}_2(\text{AsO}_4)_8(\text{OH})_x \cdot n\text{H}_2\text{O}$   
is yellow with a greenish tint, and occurs as razor-thin, tabular, composite crystals, up to 20  $\mu\text{m}$  long.

**Barahonaite-(Al)**  $(\text{Ca,Cu,Al,Na})_{12}\text{Al}_2(\text{AsO}_4)_8(\text{OH})_x \cdot n\text{H}_2\text{O}$   
is pale blue in color. At Gold Hill, it forms beads, coalesced beads, and crusts of sub-millimeter thickness whose surfaces commonly glisten because of the presence of platelets, up to 50  $\mu\text{m}$  in diameter, that are extremely thin.

The material is no longer collectable, but at one time there was considerable barahonaite-(Al) on the wall near the entrance to the 80 ft. level. It makes very attractive specimens.

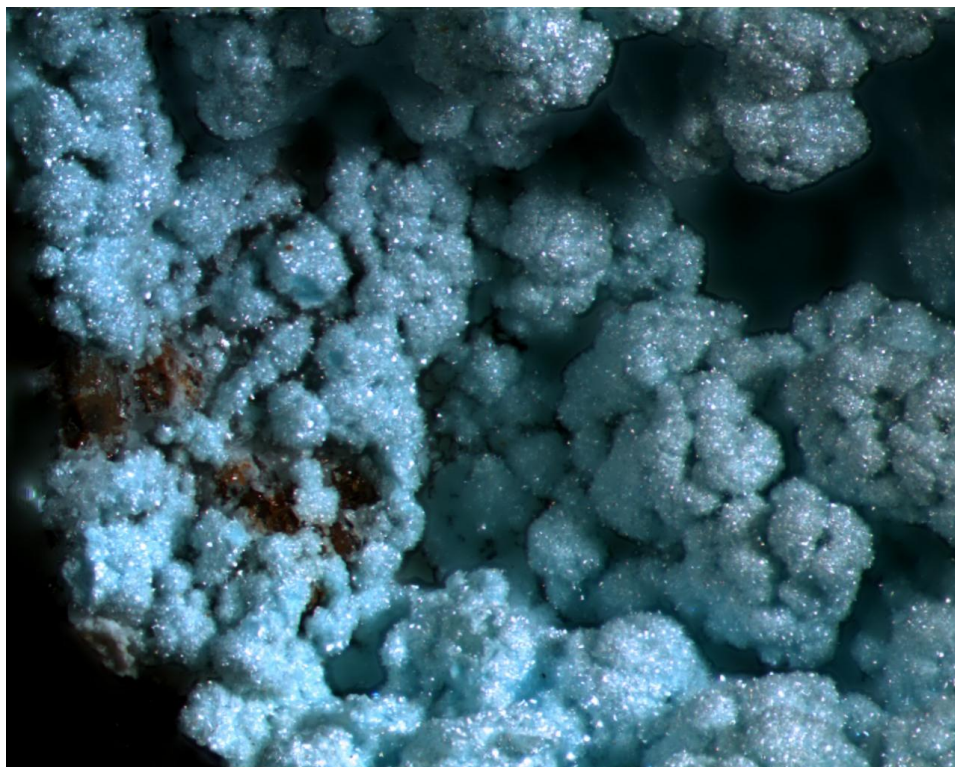
## Other News from Gold Hill, Utah

After reconsideration of the data, much of the material that has been recently labeled thometzekite should more properly be considered to be **Gartrellite**.

**Thometzekite**  $\text{Pb Cu}_2 (\text{AsO}_4)_2 \cdot 2 \text{H}_2\text{O}$  has been found at Gold Hill, but it is a blue-green mineral.

**Gartrellite**  $\text{Pb Cu Fe}^{+3} (\text{AsO}_4)_2 [(\text{H}_2\text{O}) (\text{OH})]$  is yellow to yellow-green in color. Recent specimens show the gartrellite as yellow-green blobs and crusts on rusty-colored arsenosiderite and colorless scorodite.

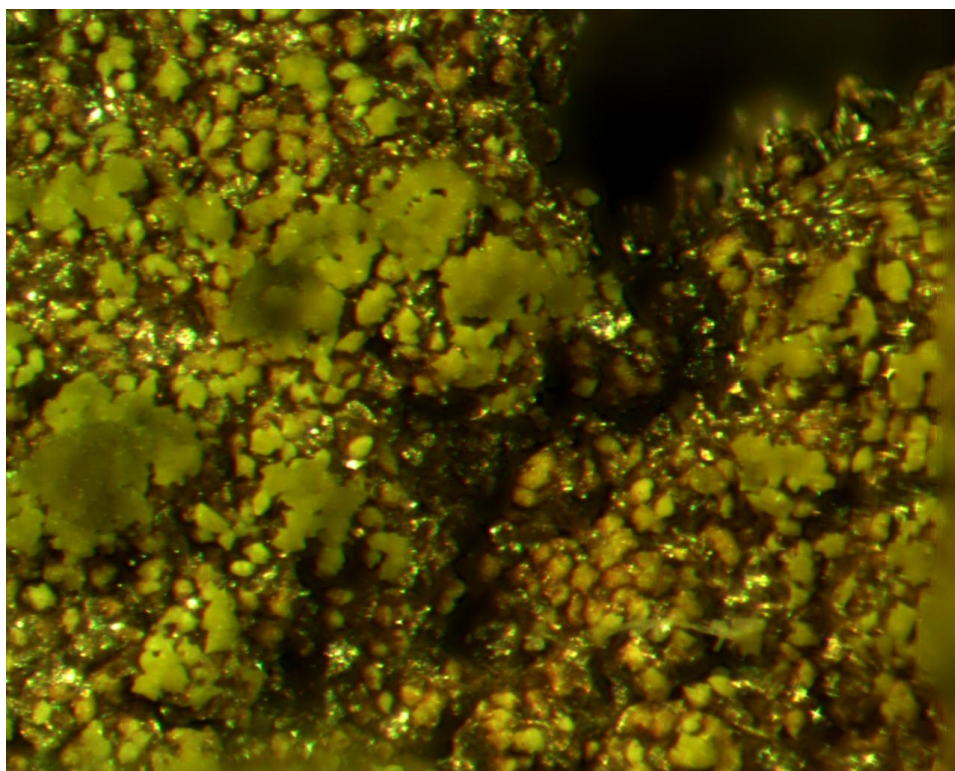
Similar material from the nearby Queen of the Hill Mine is probably also gartrellite.



Barahonaite-Al

Gold Hill Mine, Tooele Co., Utah

(x60)



Gartrellite

Gold Hill Mine, Tooele Co., Utah

(x60)



## IN MEMORY OF PAUL LAWSON

It is with sadness that we must report the passing of one of our members of long standing. Paul Lawson left us on Christmas Eve at the age of 89. His breadth of interest and enthusiasm for matters of geology and history will be missed, as will the odd and interesting things that he often brought to our meetings.

Paul really had two careers. First and foremost, he was an Army officer, rising to the rank of Lieutenant Colonel. He fought throughout the entire engagement in World War II, beginning in Iceland, then the North African campaign, through Sicily and Cassino, often behind enemy lines. He received the Silver Star and three Bronze Stars, among other awards, for his heroism. He ended as post commandant of the Fort Vancouver Barracks, from which he retired in 1961.

Following retirement, he returned to Portland State University to earn a degree in geology. It was during that period, in an Astronomy class, that I first came to know him. Once he found out about my interest in minerals, he insisted that I come to a meeting of the NWMSG in Raymond, Washington.

Shortly after graduation, Paul went to work for the State of Oregon Bureau of Mining and Land Reclamation. In that capacity, he toured the state, visiting just about every mining operation. He was thoroughly knowledgeable of the geology and mineral resources of Oregon. In that capacity, he worked another twenty plus years, retiring again in 1987.

Paul had a lifetime interest in the land, its history, and its geology. From his vantage point in Vancouver, he was well aware of the progress of road building of Interstate 5, and he collected regularly in the Kalama area during the project. In addition, he had material from a variety of places that he had collected over the years. All of it went to the Rice Museum, and some of it we were able to enjoy on our free table last year.

Another thing that fascinated Paul was books. He donated over 1500 rare books and journals on Northwest history and archeology last year to the Fort Vancouver National Historic Site, where he had served as a volunteer for sixteen years. He donated his extensive collection of books on geology, mineralogy and paleontology to Portland State University's Geology Department.

Paul has had a real impact on mineral resources in the Northwest, as well as on our organization. His influence, and his fresh viewpoint, will surely be missed.

Donald Howard

## Is it Diopside or is it Augite?

Don Howard

In the last issue, we announced that the correct identification for magnesiohornblende should be fluoro-edenite, and suggested that some of the material observed in cavities of the rock from the spillway at Lemolo Lake was probably diopside. Well, the detailed chemical analysis of both these minerals is now in, and it is worthwhile to take a look at it.

Let's start with the data on the material from Lemolo Lake. Standard ideal formulae for the two minerals involved are as follows:

Diopside	$\text{Ca Mg Si}_2 \text{O}_6$
Augite	$(\text{Ca,Na}) (\text{Mg,Fe,Al,Ti}) (\text{Si,Al})_2 \text{O}_6$

Judging from this, one would suppose that the major difference would be iron substituting for the magnesium, since aluminum and titanium are usually present only in very minor amounts.

But it is not so simple as that. Pyroxene proper is actually a series composed of four end members:

Diopside	$\text{Ca Mg Si}_2 \text{O}_6$
Hedenbergite	$\text{Ca Fe Si}_2 \text{O}_6$
Clinoenstatite	$\text{Mg}_2 \text{Si}_2 \text{O}_6$
Clinoferrosilite	$\text{Fe}_2 \text{Si}_2 \text{O}_6$

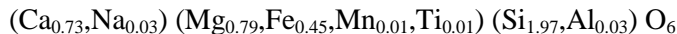
Naturally occurring pyroxenes are usually a mixture of the four. Two intermediate states are still recognized as valid species:

Pigeonite	$(\text{Mg,Fe,Ca}) (\text{Mg,Fe}) \text{Si}_2 \text{O}_6$
Augite	$(\text{Ca,Na}) (\text{Mg,Fe,Al,Ti}) (\text{Si,Al})_2 \text{O}_6$

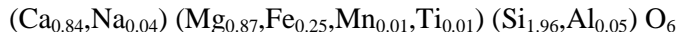
As all these formulae imply, there are two specific sites for the cations. Calcium and sodium are limited to just one of the site, while magnesium and iron can occupy either. Current working criteria for naming the material **diopside** seems to be that the one site has at least 90% occupancy of Ca and Na; lower occupancy of that site would lead to the name **augite**.

Etienne Medard reports the following analyses:

Summit Rock



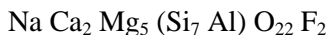
Lemolo Lake



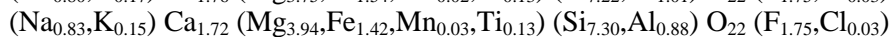
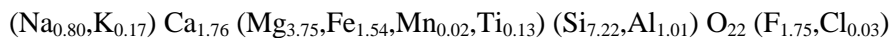
For the green material from Summit Rock, the Ca+Na in the first site only amounts to about 75%, with the remainder being made up by iron, hence the darker color. The mineral easily falls into the range of **augite**. But for the yellow crystals from Lemolo Lake, the totals are 88% and 90% for the two analyses, putting it right on the border between the two minerals. So it could be called either way, and indeed may vary from one to the other between different cavities. Because of the light color, I choose to call mine diopside.

In point of fact, this may be made a moot point in the future. The intermediate states between enstatite  $\{\text{Mg}_2 \text{Si}_2 \text{O}_6\}$  and ferrosilite  $\{\text{Fe}_2 \text{Si}_2 \text{O}_6\}$  used to be called hypersthene  $\{(\text{Mg,Fe})_2 \text{Si}_2 \text{O}_6\}$ , but that name has been officially discredited and dropped. The trend in recent years has been to remove intermediate species names in favor of only end member names. If and when that occurs, the names *augite* and *pigeonite* will undoubtedly be dropped, and all of this material will fall under the broad term of diopside.

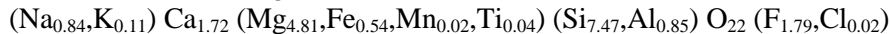
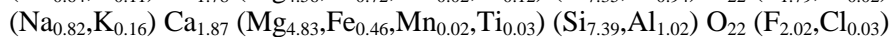
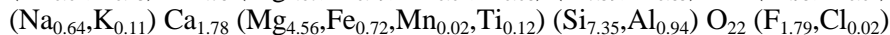
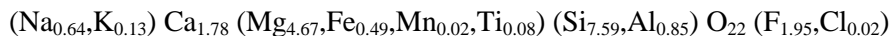
The data makes a much stronger case for the identification of **fluoro-edenite**, whose ideal formula is given as:



#### Summit Rock



#### Lemolo Lake



All of the samples are silicon-rich. The low calcium means that iron is partially substituting in that site. The much lower magnesium and higher iron content of the crystals from Summit Rock would explain their darker brown color compared to the pale brown to nearly colorless needles observed at Lemolo Lake. The value of fluorine near 2 really seems to confirm the identification.

We would like to personally thank Etienne for his recognizing what these crystals really were, and his efforts to confirm his suspicions quantitatively and share the results with us.

## THE MICROPROBE

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## Update on Zeolite Species

Donald G. Howard

In the last five issues, we have dealt with zeolite species that have been described since the publication of "Zeolites of the World", and older species that have been included in the zeolite grouping by committee recommendation. We now come to the much more difficult new rule that has made many former zeolite names into group headings, and new species by adding a chemical symbol suffix. (See Microprobe, Vol.VIII, #7, page 6 for a list.)

In essence, the rules now in vogue name zeolites according to their framework structure. Minerals with identical structures would become a single mineral. If the committee had stopped at that point, it would have reduced the number of names, which probably would have been a good thing. However, they instead expanded the number of names by adding a suffix according to the most abundant cation present. This had the effect of more than doubling the number of individual 'species'. This way of naming makes considerable sense for many minerals, in that the chemical composition is closely related to the conditions under which the mineral crystallized. However, for zeolites, the cations are very loosely held, and easily exchanged by ground-water solutions.

For the collector trying to properly label a specimen, this raises great problems. About the only way to ascertain the most abundant cation is through a detailed quantitative chemical analysis. This has been done on a relatively tiny percentage of occurrences. Even then, individual specimens from the same locality may show different dominant cation. In some cases, the composition may grade sufficiently from one end of the crystal to the other, or from the center to the outside.

In a few cases, where the nature of the ground water is sufficiently characteristic, the dominant cation can be inferred from the environment. Thus, specimens found within the tidal surge of coastal waters are almost certainly sodium-rich. (Identical appearing specimens found farther up the cliff above the beach, however, may have some other cation dominant.) Another example are zeolites found in the basalt layers underlying the extensive, borax-rich deposits at Boron, California.

With the properties of most members of a group being so similar, it seems redundant to repeat most of the data that is normally present. With one notable exception, therefore, we are going to restrict the data presented to type locality and chemical composition, and list only those occurrences that have been analyzed or otherwise have a high probability of possessing the requisite composition.

Finally, a word about consistency. Chemical variants sharing a single lattice structure that were named *previous to the adoption of the new rule* were in general not changed to conform. Thus we are left with the analcime group (analcime, pollucite, wairakite) instead of naming them after the oldest member of that structure:

Wairakite	rather than	leucite-Ca
Pollucite	rather than	leucite-Cs
Leucite	rather than	leucite-K
Analcime	rather than	leucite-Na
Ammonioleucite	rather than	leucite-NH <sub>4</sub>

Other examples:

Phillipsite	rather than	Harmotome-Na, K, & Ca
Barrerite	rather than	Stellerite-Na

The gismondine group (gismondine, amicitite, garronite, gobbinsite) has been left untouched.

Here, then, are the new entries:



## BREWSTERITE

**Brewsterite-Ba**

Type locality: Gouverneur Talc Co. #4 wollastonite mine, Harrisville, Lewis Co., New York.

**Brewsterite-Sr**

Type locality: Strontian, Argyll, Scotland, UK.

Other localities:

Yellow Lake, Ollala, British Columbia, Canada

Burpala Pluton, North Baikal Region, Siberia, Russia

## CHABAZITE

**Chabazite-Ca**

Type locality: Col de Lares, Val di Fassa, Italy.

Other localities:

Gads Hill, Mole Creek (near Liena), Tasmania, Australia

Nova Scotia, Canada

Kazakov Hill, northeast of Turnov, Bohemia, Czech Republic

Yerandowana, Poona, India

Osa Quarry, Rome, Italy

San Venanzo Quarry, Terni, Italy

**Chabazite-K**

Type locality: Tufo Ercolano, Ercolano Naples, Italy.

Other localities:

Vallerano Quarry, Rome, Italy

**Chabazite-Na**

Type locality: biggest "Faraglione" facing Acitrezza, Sicily, Italy.

Other localities:

Richmond, Victoria, Australia

Narre Warren, Victoria, Australia

Vaalvo, Faroe Islands

Dunseverick, Co. Antrim, N. Ireland

Bowie, Graham/Cochise Co., Arizona

U.S. Borax open pit, Boron, Kern Co., California

Fossil Canyon, San Bernardino Co., California

**Chabazite-Sr**

Type locality: Suoluaiv Mountain, Lovozero alkaline Massif, Kola Peninsula, Russia

## CLINOPTILOLITE

**Clinoptilolite-Ca**

Type locality: Kuruma Pass, Fukushima Prefecture, Japan.

Other localities:

Altoona, Wahkaikum Co., Washington

**Clinoptilolite-K**

Type locality: Hoodoo Mountains, Wyoming.

Other localities:

Clackamas River, Clackamas Co., Oregon

**Clinoptilolite-Na**

Type locality: Barstow Formation, 1.6km east of the mouth of Owl Canyon,  
San Bernardino Co., California.

Other localities:

Kamloops Lake, British Columbia, Canada  
Agoura, Santa Monica Mountains, Los Angeles Co., California  
U.S. Borax open pit, Boron, Kern Co., California  
Richardson's Ranch, Madras, Jefferson Co., Oregon  
Tunnel Beach, Oceanside, Tillamook Co., Oregon  
Yaquina Head, Agate Beach, Lincoln Co., Oregon

**DACHIARDITE****Dachiardite-Ca**

Type Locality: Monte Capenne (near San Piero), Campo, Elba Island, Italy.

Other localities:

Rhodope Mts., Bulgaria  
Hatsuneura, Chichijime Island, Japan  
Onoyama Mine, Kagoshima Prefecture, Japan  
Hokiya-dake, Nagano Prefecture, Japan  
Hassayampa, Arizona  
Agoura, Los Angeles Co., California  
Yaquina Head, Lincoln Co., Oregon  
Cape Lookout, Tillamook Co., Oregon  
Altoona, Wahkaikum Co., Washington (crystal terminations)  
Lower Geyser Basin, Yellowstone National Park, Wyoming (drill cores)

**Dachiardite-Na**

Type Locality: La Palaccia & Orli di Fassa, Alpe di Siusi, Balzano, Italy.

Other localities:

Tanzenberg, Kapfenberg, Styria, Austria  
Francon Quarry, St. Michel, Montreal Island, Quebec, Canada  
Tsugarwa, Niigata Prefecture, Japan  
Yaquina Head, Agate Beach, Lincoln Co., Oregon  
Altoona, Wahkaikum Co., Washington (bases of the crystals)

*[NOTE: a slightly K-rich variety from Yellowstone National Park, Wyoming, has not been recognized as a separate member of the group, probably because of the very variable chemistry.]*

**ERIONITE****Erionite-Ca**

Type locality: Maze, Iwamure district, Niigata Prefecture, Japan

Other localities:

Montresta, Nuoro, Sardinia, Italy (overgrowth on levyne)  
Nidym River (left tributary of the Lower Tunguska), Siberia, Russia  
Cape Lookout, Tillamook Co., Oregon

**Erionite-K**

Type locality: Swayze Creek, near Durkee, Baker Co., Oregon.

Other localities:

Chase Creek, Falkland, British Columbia, Canada  
Pass Valley (near Deadmans River), Savona, British Columbia, Canada  
Thumb Butte, Graham Co., Arizona  
Yaquina Head, Agate Beach, Lincoln Co., Oregon

**Erionite-Mg**

Type locality: Sasbach, Kaiserstuhl, Germany (crystal tips).

[NOTE: This member does not seem to be recognized, probably because of the intimate intergrowth with offretite.]

**Erionite-Na**

Type locality: Cady Mountains, San Bernardino Co., California.

Other localities:

Dunseverick, Co. Antrim, N. Ireland (on levyne)

Tunnel Beach, Oceanside, Tillamook Co., Oregon (as hairs and 'fisheye' balls)

## FAUJASITE

**Faujasite-Ca**

Type locality: Hasselborn (near Ilbeshausen), Vogelberg, Hessen, Germany.

Other localities:

Annerod, Hesson, Germany

Grossen-Buseck, Germany

**Faujasite-Mg**

Type locality: Sasbach, Kaiserstuhl, Germany.

**Faujasite-Na**

Type locality: Sasbach, Kaiserstuhl, Germany.

Other localities:

Aci Reale, Catania, Sicily, Italy

Salt Lake Crater, Honolulu, Oahu, Hawaii

Cima Dome, Table Mountain (near Valley Wells), San Bernardino Co., California

## FERRIERITE

**Ferrierite-K**

Type locality: Santa Monica Mountains, Los Angeles Co., California.

Other localities:

Itokura Mercury Mine, Hokkaido, Japan

Lovelock, Pershing Co., Nevada

**Ferrierite-Mg**

Type locality: Kamloops Lake, British Columbia, Canada.

Other localities:

Weitendorf, Styria, Austria

Monte Lake, British Columbia, Canada

Oladri Mountain, Monastir, Cagliari, Sardinia, Italy

Albero Bassi, Santorso, Vicenza, Italy

Leavitt Park, Sonora Pass, Tuolumne Co., California

**Ferrierite-Na**

Type locality: Altoona, Wahkaikum Co., Washington.

Other localities:

Agoura, Los Angeles Co., California

## GMELINITE

**Gmelinite-Ca**

Type locality: Montecchio Maggiore, Vicenza, Italy.

**Gmelinite-K**

Type locality: Mt. Alluair, Lovozero alkaline Massif, Kola Peninsula, Russia.

Other localities:

Fortelongo Quarry, Fara Vicentina, Vicenza, Italy

**Gmelinite-Na**

Type locality: Montecchio Maggiore, Vicenza, Italy.

Other Localities:

Victoria, Australia

Parrsboro, Nova Scotia, Canada

Magheramorne Quarry, Larne, Co. Antrim, N. Ireland

U.S. Borax open pit, Boron, Kern Co., California

Prospect Park, Patterson, New Jersey

Cascade Head, Tillamook Co., Oregon

Mt. Solo, Longview, Washington

## HEULANDITE

**Heulandite-Ca**

Type locality: *not assigned* (This is the most common variety.)

Other localities:

Cape Blomidon, Nova Scotia, Canada

Kozakov Hill, Turnov, Bohemia, Czech Republic

Faroe Islands

**Heulandite-K**

Type locality: Albergo Bassi, Vicenza, Italy.

**Heulandite-Na**

Type locality: south of Challis, Custer Co., Idaho.

Other localities:

Tsuyazaki, Fukuoka Prefecture, Japan

U.S. Borax open pit, Boron, Kern Co., California

**Heulandite-Sr**

Type locality: Campegli mine, Eastern Liguria, Italy.

## LEVYNE

**Levyne-Ca**

Type locality: Dalsnypen, Sandoy Island & Naalso Island, Faroe Islands

Other localities:

Merriwa District, New South Wales, Australia

Clunes, Victoria, Australia

Farsky Hill, Zezice, Czech Republic

Montresta, Nuoro, Sardinia, Italy

Beech Creek Quarry, Mount Vernon, Grant Co., Oregon

Milwaukie, Clackamas Co., Oregon

**Levyne-Na**

Type locality: Chojabaru, Iki Island, Nagasaki Prefecture, Japan

Other localities:

Dunseverick, Co. Antrim, N. Ireland

Portmuck, Island of Magee, Co. Antrim, N. Ireland

## MAZZITE

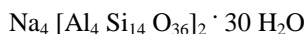
**Mazzite-K**

*The data and the entries under France in 'Zeolites of the World' are for Mazzite-K.*

**Mazzite-Na**

*Because the physical properties and nature of occurrence are substantially different, a complete data page has been included for this mineral.*

## Mazzite – Na



Named in 2005 for its close relationship to mazzite-Mg.

**Type locality:** U. S. Borax Mine, Boron, Kern Co., California

### Structure

**Crystal System:** Hexagonal

**Space Group:**  $P6_3/mmc$

**Crystal axes:**  $a=18.2343 \text{ \AA}$   
 $c=7.637 \text{ \AA}$



photo: William S. Wise

**Type of Structure:** The silica-alumina framework is identical to Mazzite-Mg, and therefore isotypic with the synthetic Zeolite  $\Omega$ . It consists of gmelinite-type cages superimposed by sharing hexagonal rings to form columns parallel to  $c$ . Adjacent columns staggered by  $c/2$  are cross-linked through ladders of non-planar 5-rings to form two different types of channels parallel to  $c$ , a large diameter 12-ring channel and an elliptical 8-ring channel. The Na ions are located at the center of the 6-rings between gmelinite-type cages rather than at the center of the cages, as with the Mg in mazzite-Mg.

### Physical Properties

**Color:** colorless

**Streak:** white

**Luster:** vitreous

**Hardness:**

**Density:**  $2.16 \text{ g/cm}^3$

**Fracture:**

**Cleavage:**

**Twinning:**

### Optical Properties

**Refractive Index:**

$$n_e = 1.472$$

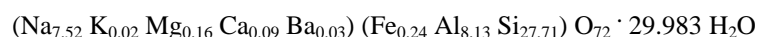
$$n_o = 1.471$$

biaxial positive

### Morphology

Forms as sprays of thin flexible fibers with a satiny appearance.

### Chemical Composition



### Occurrence

Fibrous clusters of very fine needles

#### Canada

Reported from Mont Saint-Hilaire as radial fibrous aggregates up to 2mm in diameter.

#### United States

**California:** Occurs in cavities in two subalkaline basalt flows about 10 meters thick present below the salt and borax layers in the U. S. Borax open pit at Boron, Kern Co. The mineral forms as clusters of fibers on ferroan saponite. The fibers are typically up to 2mm in length but only about  $10 \mu\text{m}$  in diameter. They are so fine that when the fluids drained from the cavities, the fibers collapsed into a lustrous mat. The only other mineral present in the cavities is analcime, but other cavities contain phillipsite-Na, gmelinite-Na, mordenite, clinoptilolite-Na, chabazite-Na, heulandite-Na, and ulexite.

**References:**

1. Arletti, R., Galli, E., Vezzalini, G. & Wise, W.S., *Mazzite-Na, a new zeolite from Boron, California: Its description and crystal structure*, **Am. Min.** **90**, pg 1186-1191 (2005).
2. *Mazzite-Na*, **Lapis**, **Jg30 #10**, pg 63 (2005).

**PAULINGITE****Paulingite-Ca**

Type locality: Three Mile School (near Ritter), Grant Co., Oregon.

**Paulingite-K**

Type locality: Rock Island Dam, Washington.

Other localities:

Chase Creek, Falkland, British Columbia, Canada

Riggins, Idaho Co., Idaho

**PHILLIPSITE****Phillipsite-Ca**

Type locality: Lower Salt Lake tuff, Puuloa Road, Oahu, Hawaii.

Other localities:

Moiiliili Quarry, Honolulu, Oahu, Hawaii

Three Mile School (near Ritter), Grant Co., Oregon

**Phillipsite-K**

Type locality: Capo di Bove, Rome, Italy.

Other localities:

Burnly Quarry, Richmond, Melbourne, Victoria, Australia

Mont Semiol, Montbrison, Loire, France

Cape Lookout, Tillamook Co., Oregon

Fish Creek Quarry, Clackamas River, Clackamas Co., Oregon

Rock Island Dam, Douglas Co., Washington

**Phillipsite-Na**

Type locality: Aci Castello, Sicily, Italy.

Other localities:

U.S. Borax open pit, Boron, Kern Co., California

Halloran Summit, San Bernardino Co., California

Yaquina Head, Agate Beach, Lincoln Co., Oregon

**STILBITE****Stilbite-Ca**

Type locality: *not assigned* (This is the most common variety.)

Other localities:

Ogilvie Wharf, Nova Scotia, Canada

Nasik District, India

Poona District, India

Villanova Monteleone, Sassari, Sardinia, Italy

Paterson District, New Jersey

Skookumchuck Dam, Thurston Co., Washington

**Stilbite-Na**

Type locality: Capo Pula, Cagliari, Sardinia, Italy.

Other localities:

Faroe Islands

## THOMSONITE

**Thomsonite-Ca**

Type locality: Old Kilpatrick, Dumbartonshire, Scotland.

Other localities:

Yellow Lake, Ollala, British Columbia, Canada

Kaaden, Bohemia, Czech Republic

Monte Somma, Vesuvius, Italy

Goble, Columbia Co., Oregon

Bear Creek Quarry, Drain, Douglas Co., Oregon

Beech Creek Quarry, Mount Vernon, Grant co., Oregon

Burnt Cabin Creek, Spray, Wheeler Co., Oregon

**Thomsonite-Sr**

Type locality: Mt. Rasvumchorr & Mt. Yukspor Khibiny alkaline Massif, Kola Pen., Russia.

Other localities:

Rosberg, Rossdorf, Darmstadt, Germany

Taymyr Peninsula, Russia

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This completes the current update. In the future, it is my intent to update this as more zeolites are described and as more localities are found and developed. In particular, the species with chemical suffixes will be expanded as further quantitative analyses are performed and published.

The author welcomes – no, covets is a better word – corrections and further additions from our readers. Please share with me any information you may have regarding the members of the zeolite family.

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