



## Wickenburg Gem & Mineral Society, Inc.

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[www.wickenburggms.org](http://www.wickenburggms.org)

*The purpose of this organization shall be to educate and to provide fellowship for people interested in rocks and minerals; to foster love and appreciation of minerals, rocks, gems, and the Earth.*

### IT IS OFFICIAL – WULFENITE IS ARIZONA'S STATE MINERAL

On Wednesday, March 22, 2017, Governor Ducey signed HB2092, amending Section 1, Title 41, chapter 4.1, and article 5 of the Arizona Statutes, by adding section 41-860.04, to read: *Wulfenite is the Official State Mineral.*



**Red Cloud Mine Wulfenite**  
Photo by Stan Celestian

**Official Arizona Symbols**  
State Gemstone - Turquoise  
State Fossil - Petrified Wood  
State Metal - Copper  
State Mineral - Wulfenite

**Formula:**  $PbMoO_4$  (lead molybdate)

**Crystal System:** Tetragonal

**Crystal Forms:** tabular to pyramidal

**Color:** usually: orange, yellow, butterscotch, reddish-orange, orangish-yellow; rarely: clear, brown, olive-green, black

**Cleavage/Fracture:** 2 directions - one distinct, one indistinct; irregular to sub-conchoidal fracture

**Tenacity:** Brittle

**Luster:** adamantine, resinous

**Streak:** white

**Specific Gravity:** 6.5-7

**Hardness:** 3

**Associated Minerals:** mimetite, galena, vanadinite, limonite, cerussite, smithsonite, anglesite, hemimorphite, vanadinite

## WULFENITE

By Susan Celestian

In honor of our new state mineral, I will write about Wulfenite this month. It certainly is a mineral that you may encounter at numerous rockhounding sites around Arizona.

Wulfenite is one of two minerals (the other being Vanadinite) that are definitively characteristic of Arizona. While it is found around the world (notably Tsumeb, Morocco, Mexico, New Mexico), most U.S. outstanding occurrences are in Arizona - Red Cloud Mine, Glove Mine, Rowley Mine, Defiance Mine, Hilltop Mine, Silver Bill Mine, Mammoth-St. Anthony or Tiger Mine, Old Yuma Mine, 79 Mine, Toughnut Mine, Finch Mine, Total Wreck Mine, and other minor locations.

It certainly is not unusual for the occasional wulfenite crystal to be found in the highly mineralized rocks of central and southern Arizona.

First discovered in Austria, wulfenite was originally named by Ignaz van Born in 1772 as "plumbum spatiosum flavo-rubrum, ex Annaberg, Austria" (quite a mouthful!), but was re-named in 1845 by Wilhelm Karl von Haidinger, for an Austrian mineralogist-botanist-alpinist, Franz Xavier von Wulfen. It does form a series with stolzite ( $PbWO_4$ ), a similar and rare mineral in which tungsten (W) replaces molybdenite.

Occurring as a secondary mineral in the oxidized zone of lead deposits, wulfenite is a lead (Pb) and molybdenum (Mo) ore mineral. Literally, hundreds

*Wulfenite continued on page 2.....*

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## Meeting Minutes — March 10, 2017

The meeting was called to order by Craig Jones 7:00. The pledge of allegiance was recited. Guests and new members were introduced.

Calvin Webb gave a presentation called "What We Don't Know About Volcanoes". Discussion and questions followed. Calvin brought pieces of Colorado Rhodonite for everyone to take. There was also a fake Tribolite, and a piece of coal painted aluminum (to mimic silver in the movies).

A reading of the minutes was skipped. Debbie gave the treasurer's report.

Anyone who needs a name tag should see Debbie, as she will order them next month.

Steve is working on scholarship forms. Every year, we help Wickenburg High School graduation by contributing \$100 to help with activities. It was moved and seconded to do this again this year.

The outing on March 2, for mushroom rhyolite and Apache tears was well attended (around 40 people). The March 9 trip to Fourth of July Peak for drusy had around 14 people. Anyone with ideas for new trips should see Jim or Craig.

March 14, there is a Rock Sale at North Ranch. There are some large tumblers and grit for sale. The exact address will be emailed. 10:00-2:00 March 14, is the Stanton meeting. As it is pie day, members should bring pie.

March 18, we are going to Vulture Mine. Cost is \$10. The tour starts at 10:00. Be there by 9:30, as they close the gates at 10:00. Joyce is our guide. After the tour we will go to Joyce's place for a tour and potluck.

March 21st, we will meet at Al & Irma's. There will be rocks, etc for sale. There will also be a potluck. Bring chairs.

There was no new business, and no old business.

The Show and Tell winner was Rick J.

Door prize winners were Curtis F., John D. Rick J., Alyson A., Joe W., and Paula S.

The meeting closed at 8:35.

Respectfully submitted, Allison A., acting secretary

.....*Wulfenite continued from page 1*

of tons of crushed wulfenite was shipped to processing plants, out of Arizona. For example, it is reported that 130 tons of wulfenite concentrate was shipped out of the Rowley Mine.

A secondary mineral is one that forms after the original ore deposit is emplaced. The original minerals are altered by weathering or hydrothermal (hot water) invasion. Sometimes, secondary minerals are higher in the target ore, than the original minerals, as the alteration processes can concentrate the elements. For example, chalcopyrite is a primary ore mineral for copper, and is about 35% copper; while chalcocite, a secondary ore mineral, is 80%, and azurite is 55% copper. In the case of wulfenite, however the primary ore mineral was probably galena, at 86% lead, or cerussite, at 78% lead; while wulfenite is only 56%. However, the alteration processes may have turned an ore deposit, with widely dispersed ore minerals, into one with a greater concentration of ore minerals.

The crystals commonly are tabular -- sometimes extremely thin, and other times fairly chunky. Often the edges are beveled, by pyramid faces. And sometimes the crystals are distinctly bi-pyramidal. If you go to <http://www.minerals.net/mineral/wulfenite.aspx>, you will see a row of crystal forms. Click on one, and you will be taken to a frame of rotatable crystals, by Smorf Keyboard Controls.

*Wulfenite continued on page 3.....*

## NOTES FROM THE EDITOR

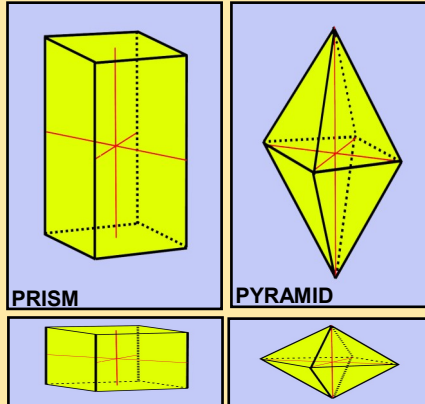
I would love to have some pictures from field trips! Snap a couple and send them to me.

Deadline for the newsletter is the 27th of the month.

Mail or Email submissions to:  
Susan Celestian, editor  
6415 N 183rd Av  
Waddell, AZ 85355  
azrocklady@gmail.com

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Crystals in the tetragonal system have 3 axes: 2 of equal length and one of different length, so the crystals are generally tall or squat, with a square cross-section. See Figure 1.



**FIGURE 1 Forms of the Tetragonal System** As illustrated in the tetragonal system diagrams, the horizontal axes are of equal length, and the vertical one is either shorter or longer. Diagrams by Susan Celestian

Some wulfenite specimens are pictured below (Figures 2-8):



**FIGURE 2 Red Cloud Mine Wulfenite** This is a classic locality, known around the world for its distinctive bright orange-red wulfenite crystals. Photos by Stan Celestian



**FIGURE 3 Mexican Wulfenite** These crystals are very chunky, with a nice butterscotch zoned color. Locality: Los Lamentos, Chihuahua, Mexico Photo by Stan Celestian



**FIGURE 4** These crystals, are classic tabular tabular crystals, without edges beveled by pyramidal faces, as displayed by most of the photos in this article. Photo by Stan Celestian

**FIGURE 5 Rowley Mine Wulfenite**

The Rowley Mine, near Theba, in the Painted Rock Mountains, Maricopa



County, AZ produces very clear, crisp orange crystals that are often associated with orange balls of mimitite, visible in the photos. Photos by Stan Celestian



**FIGURE 6 79 Mine Wulfenite** These delicate brownish-orange crystals are about 0.75 inches wide Photo by Stan Celestian

Wulfenite continued on page 4....



**UPCOMING AZ MINERAL SHOWS**

**Monthly - Tempe, AZ** Gallery TCR , 906 S Priest, #107; Sat 9-6; Free. For dates, go to: [https://www.facebook.com/pg/gallerytcr/events/?ref=page\\_internal](https://www.facebook.com/pg/gallerytcr/events/?ref=page_internal)

**March 18-19 - Cottonwood, AZ** CKM Productions, LLC; Mingus Mt. HS, 1801 E Fir St.; Sat 10-5, Sun 10-4; Admission: \$3, Children under 12 free.

**March 25-26 - Anthem, AZ** Daisy Mountain Rock and Mineral Club; Boulder Creek High School Gym, 40404 N Gavilan Peak Pkwy; Sat 9-5, Sun 10-4; Admission: \$3/adult, \$2 seniors/students; children free.

**March 31, April 1-2 - Tucson, AZ** Flagg Mineral Foundation; Desert Botanical Gardens, 2021 N Kinney Rd; Mineral Sale Friday evening, Program Saturday 8-4, Field Trip Sunday; Registration: \$45. More information and registration form can be downloaded at -- <http://flaggmineralfoundation.org/home/minerals-of-az-symposium/>

**May 6-7 - Kingman, AZ** Mohave Co. Gemstoners; Kingman Academy of Learning, 3420 N Burbank Av.; Sat 9-5, Sun 9-4; Admission: free.

**May 27-28 - Pinetop, AZ** White Mt. Gem and Mineral Club; Hon-Dah Convention Center, 777 Hwy 260; Sat 9-6, Sun 10-4; Admission: \$2/adult, \$1/seniors.

**May 27-28 - Bisbee, AZ** City of Bisbee; Queen Mine, 478 N Dart St.; Sat-Sun 9-5; Admission: free.

**June 2-4 - Flagstaff, AZ** Coconino Lapidary Club Gem, Mineral and Jewelry Show, Silver Saddle Outdoor Market, Hwy 89N & Silver Saddle Rd (3.5 mi north of Flagstaff Mall); 9-4 daily; Admission: free.

**August 4-6 - Prescott Valley, AZ** Prescott Gem and Mineral Club; Prescott Valley Event Center, 1301 Main; Fri-Sat 9-5, Sun 9-4; Admission: \$5/adult, \$4/seniors, children under 12 free.

If you are travelling, a good source of shows AND clubs is <http://www.the-vug.com/vug/vugshows.html> or <http://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=AZ> For out-of-the-country shows: <http://www.mindat.org/shows.php?current=1>

A good source for a list of Arizona Mineral Clubs and contact information is [http://whitemountain-azrockclub.org/Public\\_AZ\\_Clubs\\_Links.html](http://whitemountain-azrockclub.org/Public_AZ_Clubs_Links.html)

**UPCOMING WGMS FIELD TRIPS**

**NO FIELD TRIPS SCHEDULED AT THIS TIME**

*Wulfenite continued from page 3.....*



**FIGURE 7** This is another Arizona classic. Wulfenite covered by drusy quartz, from the Finch (aka Barking Spider) Mine. Photo by Stan Celestian

**FIGURE 8** This crystal is a bit unusual, in that it is pyramidal, rather than prismatic (tabular). It is a beautiful reddish-orange color, and hails from the Aurora Mine, Cuchillo Parado, Coyame, Chihuahua, Mexico. Photo by Stan Celestian



**Officers and Chairperson**

- President:** Craig Jones.....208-523-9355
- Vice President:** Mel Canter ..... 502-641-3118
- Secretary:** Judy Zimmerlee..... 517-652-1355
- Treasurer:** Debra Keiser..... 928-684-1013
- Program Director:** Dale Keiser..... 928-684-1013
- Publicity:** currently open position
- Membership:** Roma Hagan ..... 602-469-7662
- Editor:** Susan Celestian ..... 602-361-0739
- Field Trip:** Craig J, Bob B, Mel C
- Show Chair:** Beth Myerson.....480-540-2318
- Scholarship Chair:** Steve Hill..... 928-533-3825
- Historian:** Jeanine Brown..... 928-684-0489

Meetings are held the **2nd Friday most months at Coffinger Park banquet room**. Potluck dessert at 6:30 pm. Business meeting at 7:00 pm. **Exceptions: February and December** meetings are held on the **first Friday of the month**. We do not meet in the summer — **no meetings in June, July or August**.

**Membership Dues: \$15.00 Adults per Person**  
**\$ 5.00 Juniors and Students**

**Meeting Dates for 2017**

**Wickenburg:** Jan 13, Feb 3, Mar 10, Apr 14, May 12, Sept 8, Oct 13, Nov 10, Dec 1

**Stanton meets** Thursday after the Wickenburg meetings.  
Jan 19, Feb 9, Mar 16, Apr 20, May 18, Sept 14, Oct 19, Nov 16, Dec 7 (subject to change)

Susan Celestian, editor  
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