



# Smoke Signals



Gem & Mineral Club

June 2013

## Club Events:

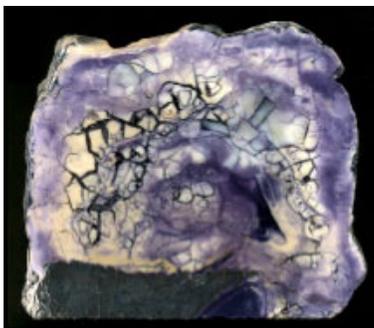
**Workshop Day – Sunday July 14th, Noon-5pm** at the Moore house – 718 Franklin Ave Davenport, IA 52806. You can work in our workshop, learn lapidary techniques, or bead upstairs. Learn something new or just work along with others. Your choice. For more info please contact Craig or Kellie at 563-445-3034. Hope to see you there!

## Upcoming Events:

**DATE & LOCATION CHANGE – August 9-11, 2013** (Fri-Sun): 48th Annual Gem-Mineral-Fossil Show & Swap. Fri; 10-6:30, Sat: 9-6:30, Sun: 10-4. FREE ADMISSION. Lawrence Co. Fairgrounds, just south of Bedford, IN. 11265 W. US50, Bedford, IN. Directions: 1.2 mi. south of IN37 & US50, go west 0.7 mi. on US50. Contact: Dave Treffinger at 812 295-3463.

**August 25-26, 2013** (Sa-Su): Peoria Academy of Science Annual Gem & Mineral Show. Grand Hotel, 4400 N. Brandywine Dr., Peoria, IL. Sa: 9-5, Su: 10-6. Free admission and parking.

**Sept. 21-22, 2013** (Sa-Su): ROCK and ROCK\_RELATED AUCTION. Cedar Rapids, IA. Contact Marv Houg (319) 364-2868 or Tom Whitlatch (319) 362-0684 or [www.cedarvalleyrockclub.org](http://www.cedarvalleyrockclub.org).



Stone”

*Bertrandite, or “Tiffany*

## The Lapidarist’s Notebook

Bertrandite var. Tiffany Stone by Ken Casey

When thinking of a rare opal, which also may occur with purple fluorite, what do we call it? Why Bertrandite, of course. Also called “Tiffany Stone” and “Opalized Fluorite,” among other titles, this crackled, mottled rock was introduced recently as a lapidary stone. Though pure Bertandite is a mineral all its own, it forms part of the gemmy matrix of “Tiffany Stone”.

Bertrandite itself was named after French mineralogist Emile Bertrand in 1883. It was found first near Nantes, France. Perhaps the “Tiffany” part was after renowned jeweler and stained-glass lamp maker, Louis Comfort Tiffany.

This mineral occurs in Beryllium-rich pegmatites as those found in western Maine, or as an alteration product of beryllium ore as in the western United States. The former occurrence is as Bertandite crystals, the latter as an opalized micro-conglomeration of associated minerals.

Some of the constituents of the opal-byproduct, known as “Tiffany Stone” are: opal, fluorite, beryllium ore, rhodonite, dolomite, quartz, and manganese oxides. With weathering, they somehow combine to form a radiant violet-hued gem, prized by lapidaries. The crystalline-structured form has chemical formula:  $\text{Be}_4\text{Si}_2\text{O}_7(\text{OH})_2$ .

The gemmy, purple variety is more of a trade-named “mineralogical mutt.” A few years ago, it was featured as a novel and rare gemstone at the Tucson, Denver, and Moab Shows.

A bit pricy, this loosely-named “Bertrandite” gem is difficult to come by, because its main source is from a beryllium mine in Utah, now closed to collecting. Perhaps you may be lucky enough to find another source on one of your adventures out west.

Source: Gem Cutters News February 2013, Geogram, June, 2009

*Ed. Note:* Wayne and DeLane Cox were very happy to bring back some small pieces they found on their recent trip to Utah. Several of the pieces have a peachy-pink as the primary color, but they are very lovely. Hopefully Wayne will get to shape them this summer.

Via Rock, Pick and Chisel June, 2013 Vol. 13, No. 6

# The Lapidarists' Notebook

## Recommended Polishes for Lapidary

Materials By Delane Cox

From Benjamin E. Schmidt

[Ed. note: I found this list of recommended polishes in some old files recently. It was compiled by Ben Schmidt at least 10 years ago. Ben was an excellent cutter and so I thought I would share the list with you.]

**Key:**    **CO – Cerium Oxide**  
          **CH – Chrome Oxide,**  
          **DI – Diamond**  
          **LA – Linde A**  
          **TO – Tin Oxide**

Actinolite: TO  
Agate: CO, TO  
Alabaster: TO  
Amazonite: TO  
Amber: TO  
Amblygonite: TO  
Andalucite: TO  
Apatite: LA, CH  
Aventurine: TO  
Azurite: TO, CH  
Apophyllite: CH  
Aragonite: CH  
Axinite: CO  
Barite: CH  
Benitoite: CO  
Beryl: CO, TO, DI  
Bloodstone: LA  
Brazilianite: TO  
Calcite: TO, CH  
Cassiterite: TO  
Celestite: CH  
Cerossite: CH  
Chrysoberyl: DI  
Coral: TO  
Corundum: DI  
CubicZirconia: DI  
Danburite: TO  
Datolite: TO  
Diopside: CH  
Diopase: CO  
Diorite: CO, TO, LA, CH  
Epidote: TO  
Euclase: TO  
Feldspar: CO, TO  
Fluorite: TO, CH  
Garnet: CO, TO, LA, DI, CH  
Goldstone: CO, TO

Hematite: CO  
Hickoryite: LA  
Howlite: CO, TO, LA, CH  
Hypersthene: TO  
Jadeite: CO, TO, LA, CH  
Jasper: CO, TO, LA, CH  
Kyanite: TO  
Labradorite: TO, CH  
Lapis Lazuli: TO, LA, CH  
Lepidolite: CH  
Limestone: CO, TO, LA, CH  
Malachite: TO, LA, CH  
Moonstone: TO  
Nephrite: TO, LA, CH  
Obsidian: TO, CH  
Onyx: CO, TO, CH  
Opal: CO, TO  
Peridot: TO, LA, DI  
Petrified Wood: CO, TO, LA, CH  
Phenacite: TO  
Pollucite: TO  
Quartz: CO, TO  
Rhodochrosite: TO, LA, CH  
Rhodonite: CO, LA, CH  
Ruby: DI  
Rutile: LA  
Sapphire: DI  
Scapolite: CO  
Scheelite: CH  
Serpentine: TO, LA, CH  
Smithsonite: TO  
Sodalite: CO  
Sosolite: CO  
Spinel: TO, LA, DI  
Spahlerite: CH  
Spodumene: TO  
Sunstone: TO  
Thompsonite: CO  
Tiger-eye: CO, TO, LA  
Titanite (sphene): TO  
Topaz: TO, LA, DI  
Tourmaline: TO, LA, DI  
Turquoise: CO, TO, LA  
Unakite: CO  
Varicite: CO, TO, LA  
Vesuvianite: CO  
Williamsite: LA  
Wonderstone: TO, LA  
Wulfenite: CH  
Zircon: TO  
Zoisite: CO

Via Rock, Pick & Chisel December 2012 Vol 12, No. 12,  
GEM CUTTERS NEWS 3/98 via Glacial Dr if ter 12/99

## Bench Tips by Brad Smith

### CUTOFF WHEELS

Cutoff wheels are inexpensive and do a great job cutting or shaping steel. You can use them to sharpen tool points, cut piano wire to length, make slots, and sharpen worn drills. Other uses include modifying pliers and making your own design stamps.

My preference is the one inch diameter size. Be sure to hold the wheel firmly so nothing moves to break the disk, and definitely wear your safety glasses. Those are little flakes of hot steel coming off the disk.

BTW - Cutoff wheels are poor at soft metals like copper, silver and gold. Soft metals clog up the cutting edges.

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### DEBURRING JUMP RINGS

When cutting jump rings from large gauge wire for chain making, you'll notice the saw leaves a small burr. An easy way to remove these is to tumble the rings with some fine-cut pyramids. Only a minute or so is needed, and in fact you don't even need a tumbler. I just put a handful of pyramids in a wide mouth plastic jar and shake for a bit.

You can find these pyramids in the tumble finishing section of most jewelry supply catalogs.

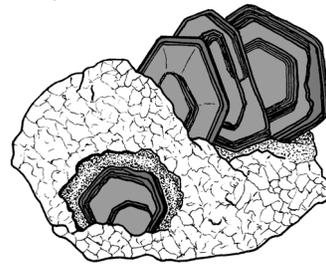
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Acknowledgement to be included with each publication:

More Bench Tips by Brad Smith are at  
[facebook.com/BenchTips/](https://www.facebook.com/BenchTips/)  
or see

"Bench Tips for Jewelry Making" on Amazon

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**Ores** are the building blocks of most of the things that make life what we know it today. Most of the important items we enjoy or rely on are made - at least in part -

by metals and other materials that were mined from the ground. And the source of those materials - copper, iron, silver, gold, silicon - is minerals.

What is an "ore"? An ore is a naturally occurring mineral from which it is profitable to extract elements or compounds, usually metals. Notice that for a mineral to be an ore, it must be *profitable* to extract the metal or elements it contains. Therefore, if a mineral contains gold, but it would cost more to remove the gold than they would get when they sell the gold, it is not an ore. The funny thing with business is that a deposit of minerals might not be an ore today. But something changes, and the metal it contains becomes more valuable. Or, perhaps, a new, less expensive process for removing the mineral from the ground is invented. Then the price of the metal is *more* than the cost of removing it and the mineral now becomes an ore when it wasn't before.

In this issue we will look at a lot of different minerals that are ores of various metals and some non-metal elements that have become important to modern life. Most of the drawings are in black and white for our youngest fans to color.

It is our hope that this issue will help you understand the usefulness of minerals in our daily lives. There is an interesting saying that comes from the mining industry: "If it is not grown, it must be mined." Perhaps you yourself might become a mine engineer or even a mine owner some day and it will be your job to extract from the ground the minerals and materials that we rely on every day.

Via Mini Miners Monthly Vol. 7 No. 3 March 2013

## Peacock Ore: Prettiest when Tarnished



**By: Mei Poy**

When something is dirty, we usually clean it. We have car washes, dishwashers, and washing machines. We live in a world of dirt that has been made more sterile than ever before in history. However, some things are made prettier when they aren't clean. The copper Statue of Liberty is now green from the tarnish building up over the years, and now it is famous for this green color and not its original brown color. Peacock ore is another example of a famously unclean specimen. It is a rock commonly found in the collections of beginning rock collectors and admired for its vibrant and metallic colors. Peacock ore is a pet name, referring to rocks made of the minerals bornite and chalcocite. The colors of peacock ore are actually tarnish upon the ore's surface. There are many unique properties that define this beautifully dirty rock.

The official chemical formula of bornite is  $\text{Cu}_5\text{FeS}_4$  and chalcocite is  $\text{Cu}_2\text{S}$ . The ore is very soft, with a hardness of three on the Moh's hardness scale. This opaque rock has a beautiful metallic luster that is a result of the metallic elements within the ore. Peacock ore is very brittle and streaks a gray black color.

In addition to these basic characteristics, peacock ore has wide structural variety. These rocks can be found in isometric crystals, but only at extremely high temperatures. For peacock ore at temperatures lower than 228 degrees Celsius, or 442.4 degrees Fahrenheit, the ore is found in globular and unstructured formations. The structure can be a number of various formations, such as tetrahedral, octahedral, dodecahedral, or

orthorhombic. The cleavage of peacock ore is very poor because the rock is more globular than crystalline in shape.

The most interesting aspect of peacock ore is its unique colorations. At first glance, peacock ore appears to be a rock made of metals that glimmer rainbow colors. However, this is only partly true. The process that causes peacock ore to have a variety of colors is similar to rust on a car. The paint on a car protects the metal structure underneath from the air. When the paint is scratched away and the metal is exposed, you will see rust form. This red-orange compound is created when the iron on the car and oxygen in the air react. Similarly, the colors of peacock ore are a result of what is called oxidation, an elemental reaction with oxygen. This tarnish forms on the outer surface where the copper in the rock comes in contact with the air. However, the oxides from peacock ore are stronger than rust, so the tarnish protects the rest of the rock from being oxidized. The oxidation occurs at an atomic level and the beautiful colors you see are actually only atoms thick. If you were to scratch the surface or break the rock, you would find that this rainbow rock is actually more of a red brown color. Although this is true, removing the tarnish or breaking the rock and exposing untarnished areas will start the oxidation process all over again, and a new layer of tarnish will form within a few hours.

The color of the tarnish is also fascinating. Over time, the tarnish actually turns black; however, the specimens we usually see are colored with greens, yellows, blues, and purples. The greens and yellows are from the oxidation of chalcocite, and the blues and purples are from the bornite. The oxidation of the copper in the minerals results in the creation of some copper oxide, which is  $\text{Cu}_2\text{O}$ . This solid is black, but the fact that it is formed at an atomic thinness on the peacock ore allows for the beautiful colors. Colors are created when light bounces off objects. Light has a property called wavelength, which can be long and short. Certain wave lengths we cannot see, but the wavelengths we can see cause our eyes to register different colors. The various wave lengths proceed in the order of the rainbow with red as the longest and purple as the shortest. White light is actually a

**Rubies****By Maria McEwen**

mixture of all the various wavelengths. As stated before, a person can see colors because of light bouncing off an object. As the light bounces, some of the light is absorbed, and the rest bounces off. Depending on the wavelengths bouncing off, the eyes see different colors. The thickness of the layer of tarnish in a certain area causes the variation in color. A thicker area absorbs more of the shorter wavelengths and causes a blue or purple color instead of a green or yellow. The thicker the layer gets in a certain area, the closer that area gets to being black, which is when the tarnish absorbs all visible wavelengths.

The world is so worried about dirt and germs that we live our lives trying to sterilize everything with our antibacterial soap and hand sanitizer and disinfectant aerosol cans. We have endless websites and discussions on how to best polish silverware or to remove tarnish from copper. However, those who study or simply enjoy rocks know better than to sterilize the world because there are so many treasures hiding in the dirt and the mud just waiting to be admired. As much as we love to be clean, we cannot be afraid of the dirt. Remember, don't judge a book by its cover, but a pretty cover never hurts.

**Sources**

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"What Is Peacock's Ore in Chemistry?" *The Times Of India*. Bennett, Coleman & Co. Ltd, 26 Jan. 2003. Web. <[http://articles.timesofindia.indiatimes.com/2003-01-26/open-space/27284724\\_1\\_colours-ore-chemistry](http://articles.timesofindia.indiatimes.com/2003-01-26/open-space/27284724_1_colours-ore-chemistry)>.

Via **CHICAGO ROCKS AND MINERALS SOCIETY**  
THE PICK AND DOP STICK May 2013

The Bermuda Triangle.....Atlantis.....hidden treasure! Stuff of fantasy? Or could there actually be a giant Ruby crystal buried beneath the ocean floor of the infamous Triangle? According to esoteric traditions discussed at length by former geologist James Tyberonn on his website called "Earth-Keeper," (1) not only does a giant Ruby exist, but during the month of December 2012 it was expected to be reactivated after lying dormant for over 12,000 years. For more details, check out the archives on the above-referenced website.

Considered to be related to both December and January by Zodiacal tradition, (2) Rubies are unquestionably beautiful to contemplate during the often drab and colorless winter months. Associated with solar energy in Hindu tradition, as well as in their modern role as Cancerian birthstones, (3) Rubies are available to warm the hearts of all of us in the form of breathtaking photographs of jewelry belonging to almost any historical period you might care to explore.

Cautionary information is available for anyone contemplating the purchase of a Ruby to present to that special someone on Valentine's Day. Several articles discuss the subject of "Lead glass-filled Rubies," also called "Composite" or "Hybrid" Rubies. Supporting photographs allow viewers to compare the altered stones with authentic Rubies. The composite material is frequently a mix of 50% low-grade corundum and 50% glass filler that is heavily treated to improve transparency, resulting in stones that can be easily damaged beyond repair. (4)

Rubies are thought to have been available in Sri Lanka as far back as the 13th century when Marco Polo wrote of finding them there. (5) The famous explorer may have been referring to Spinel,



## 2013 Officers and Directors

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Secretary	Diane Preslar	(309) 786-1523
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Rock Show Co-Chair	Craig Moore	(563) 445-3034
Scholarship	Board of Directors	(563) 445-3034
Bulletin Editor	Kellie Moore	(563) 445-3034
MWF Liaison	Vacant	

The purpose of this non-profit organization is to promote interest in collecting, studying and working with gems and minerals and fossils. Organized in 1955, the Black Hawk Club joined the Midwest Federation of Mineralogical & Geological Societies in 1959. It is also a member of the American Federation of Mineralogical Societies. Meetings are held on the third Tuesday of every month, September through May at 6:00P.M. in the Hauberg Civic Center, 1300 24th Street, Rock Island, IL. Picnics are held at various locations during June, July, and August. Annual Dues: Individual Membership: \$15.00, Senior Couples: \$12.00, Senior Individual: \$10.00, Family: \$20.00.

### Newsletter Submissions:

Please send submissions for publication (announcements, photographs, notes, letters, articles, etc.) in the Smoke Signals newsletter to the Editor no later than the first day of the previous month. For example, August 1 for the September issue. Advance items are appreciated. Material may be e-mailed to Kellie Moore at [kalsinean1@aol.com](mailto:kalsinean1@aol.com), or submitted via the U.S. Mail:

**Kellie Moore**  
**718 Franklin Ave**  
**Davenport, IA 52806**

If e-mailing an article, it may be included within the body of the e-mail message or sent as an attachment.

Copyrighted material submitted for publication must be accompanied by a written release from the copyright holder. All material submitted is subject to editing. No anonymous submissions will be considered; however, the submitter's name will be withheld or a pseudonym may be used at the submitter's request. The deadline for all submitted work is the 20th of the month before it is to be published. Late and/or unused entries may be published in later issue.

**Looking forward to receiving an article from you!**

**Editor:** Kellie Moore 718 Franklin Ave, Davenport, IA 52806.

**Disclaimer:** The conclusions and opinions expressed in *Smoke Signals* are those of the authors and do not necessarily represent those of the Officers, Editor, or members of the club.

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Affiliations

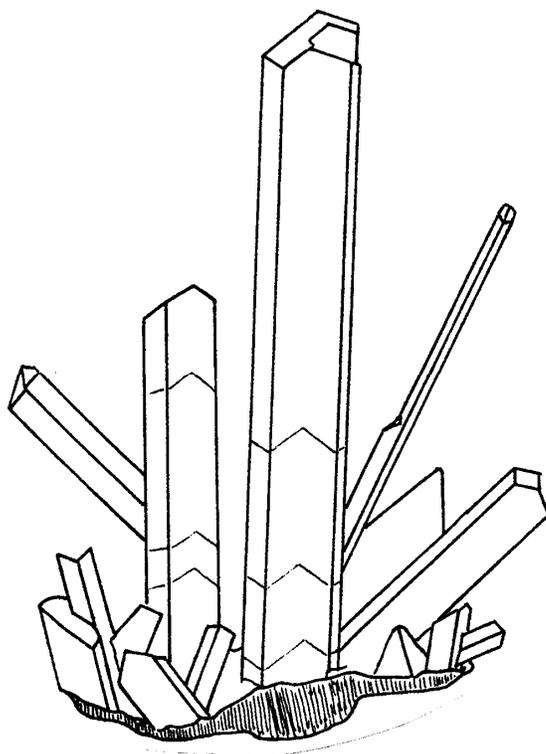
Midwest Federation of Mineralogical & Geological Societies

<http://www.amfed.org/mwf/>

American Federation of Mineralogical Societies

<http://www.gaminer.org/afms.htm>

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# *Smoke Signals*



**Black Hawk  
Gem and Mineral  
Club, Inc.**

**June 2013**

**Volume 58 Number 6**

**Blackhawk Gem & Mineral Club  
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