



# Smoke Signals



Gem & Mineral Club

March 2016

## Club Activities -

**April Club Meeting:** Our next meeting is Saturday April 30<sup>th</sup> Noon - 1pm at the Davenport Public Library on Eastern Ave. Rm A - located through the Coffee shop area. This meeting will be followed by a workshop.

**Wire Wrapping workshop:** Saturday April 30<sup>th</sup> 1-4pm at the Davenport Public Library on Eastern Ave. Rm A - located through the Coffee shop area.

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## Upcoming events:

### April:

**9-10: CANTON, IL** Fulton County Rockhounds Annual Show, Donaldson Community Center, Wallace Park, 250 S. Avenue D. Contact: George Coursey, (309) 368-2947; [courseyfarm@gmail.com](mailto:courseyfarm@gmail.com)

**9-10: MARION, IL** Southern Illinois Earth Sciences Club Annual Show. Pavilion of the City of Marion, 1602 Sious Dr., Marion. Sat 10-6; Sun 10-5. Contact Mike Chontofalsky, (618) 532-0455; [chontofalsky@att.net](mailto:chontofalsky@att.net) [www.siesclub.org](http://www.siesclub.org)

**9-10: DES PLAINES, IL** Des Plaines Valley Geological Society Annual Show. Des Plaines Park District Leisure Center, 2222 Birch St., Des Plaines. Sat 9:30-5; Sun 10-4. Contact Lois Zima, (847) 298-4653.

**9-10: GREEN BAY, WI** Neville Public Museum Geology Club Annual Show. Green Bay Ramada Plaza Hotel, 2750 Ramada Way, Green Bay. Sat 9-5; Sun 10-4. Contact Randy Phillips, (920) 437-4979, [bay45@hotmail.com](mailto:bay45@hotmail.com)

**9-10: MONROE WI** Badger Lapidary & Geological Society, 46th Annual, Rock, Gem, Mineral, & Fossil Show. Sat 9-5 Sun 9-4 Monroe Senior High School, 1600 26th St., Monroe, WI 53566. Description: Ten dealers, excellent speakers, many beautiful club displays, lapidary demonstrations, club sales table, hourly door prizes, and educational films. Activities for kids: Fishpond, spinner game, scavenger hunt, quarry quest, rock polishing, and roving rock wizard. Food: Full Menu. Free Show - Free-will donation and free parking. Show Contact: Deb Wehinger, 708 W 2nd Ave, Brodhead, WI 53520; [jdrules3@gmail.com](mailto:jdrules3@gmail.com)  
Website: [www.badgerrockclub.org](http://www.badgerrockclub.org)

**16-17: DECATUR, IL** 65th Annual Mineral Gem & Jewelry Show sponsored by Central Illinois Gem & Mineral Club. Richland Community College Campus, Decatur. Sat 9-5; Sun 10-4. \$5 for both days. Seniors (59) and Scouts or Armed Forces in uniform are free. Contact Tony Kapta, (309) 830-6516; [cigmc@comcast.net](mailto:cigmc@comcast.net) [See flyer](#)

**16-17: CEDAR RAPIDS, IA** Cedar Valley Rock & Mineral Society Annual Show. Hawkeye Downs Expo Center, 4400 - 6th St. SW, Cedar Rapids. Sat 8:30-6; Sun 9:30-5. Contact Marvin Houg, (319) 364-2868, [m.houg@yahoo.com](mailto:m.houg@yahoo.com) [www.cedarvalleyrockclub.org](http://www.cedarvalleyrockclub.org)

**23-24: DAVENPORT, IA** Blackhawk Gem & Mineral Club Annual Show. Hotel Davenport, 5202 Brady St., Davenport. Sat 9-5; Sun 10-4. Contact Craig & Kellie Moore, (563) 445-3034; [kalsinean1@aol.com](mailto:kalsinean1@aol.com)

**30-MAY 1: FORT DODGE, IA** River Valley Rockhounds Annual Show. Iowa Cential Community College East Campus, 2031 Quail Ave, Fort Dodge. Sat 9-5; Sun 11-4. Contact Jim Baumer, (515) 955-6783; [jbaumer@frontiernet.net](mailto:jbaumer@frontiernet.net)

## Bench Tips by Brad Smith

### GRIPPING SMALL DRILLS

Drilling small holes can be a problem. With drills that are less than 1 mm (18 gauge or .040 inches), some chucks will not tighten down well enough to hold the drill securely.

The problem is easily solved in either of two ways - with a chuck adapter or by buying your small drills with a 3/32 inch shank size. Either way you have a large shank to be gripped in your drill press, Foredom or Dremel, so changing bits is fast and easy.



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**PRE-MADE BEZEL CUPS**

As a general rule of thumb I assume it's going to take me 15 - 20 minutes to make a bezel for an ordinary cabochon, so for some projects buying pre-made cups can save a lot of time. But if you go this route, keep in mind three things. First, try to get cups made from fine silver, not sterling. Fine silver is softer and burnishes over the stone more easily.

Second, you may have trouble matching the shape and size of the stone with the shape and size of the bezel cup. Purchased cups can only be found in a limited number of standard sizes. You may have to adjust your choice of gemstone to match the cup. The other consideration is that pre-made cups often have fairly low side walls. While these are fine for low-dome stones, they're not dependable for stones with steep side walls.



Lastly before setting, check the fit of your gemstone in the cup, particularly around the bottom. The bottom corners of a stamped cup are much more rounded than a bezel you would fabricate yourself. This causes a problem with stones that have a sharp edge around the bottom. Burnishing the bezel over one of these stones will place a lot of stress on the stone and may cause it to crack. To avoid this, I round off the bottom edge of the stone with a diamond file (or use sandpaper on soft stones).

## Definition of the Month

Allochthonous (adj) is derived from two Greek words:

\_VWWXY or allos, meaning other, or different;  
\_Z[X\XY or kthonos, meaning earth.

So, literally, allochthonous means 'different earth'; or 'stuff that's not from around these parts...' In tectonics, it is generally used to describe a sequence that has been moved a long distance from its original location by faulting (most usually, thrust faulting). For example, a sequence of sediments which were originally deposited in the deep sea, and have then been thrust over shallow marine or continental deposits of a similar age.

Via News Nuggets Vol 62 Nbr 6 June, 2015

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## TOOLS!

You should always carry an old, stiff paintbrush to brush clean specimens. When digging in old mine dumps, specimens are often covered with dirt or sand. Use the brush to wipe away dirt and sand perhaps exposing unique minerals.

The brush is also handy when working hard rock. If you are chipping away at the surrounding matrix to expose a crystal, you will generate a lot of dust and chips. Use the brush to keep your working area clean and avoid damaging any overlooked crystals in the process.

If you are working with fossils remember both mineral and fossils can be fragile!

Via News Nuggets Vol 66 #3 March, 2015

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## IDENTIFYING UNMARKED SOLDERS

There are plenty of ways to mark your sheet or wire solders, but suppose you forgot to mark them and have a couple that you can't identify. The answer is to compare the melting temperature of the unknowns with that of a known solder. What I do is take a thick scrap of copper or nickel and arrange several solders on it. Ideally, I would have a sample of easy, medium and hard known solders surrounding the unknown solder. Then I heat the plate from the bottom and watch the order in which the solders melt.



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## INEXPENSIVE ELECTRIC WAX PEN

You can make your own wax pen from a small soldering iron plugged into a light dimmer switch for heat control. Both components are easily found at Radio Shack, a big hardware store or at Harbor Freight. As an example of the components, see [www.harborfreight.com](http://www.harborfreight.com) items #43060 and #47887

File the tip of the soldering iron into the shape you prefer or even better get a soldering iron with replaceable tips. Then you can make several tip shapes for different tasks. Set the dimmer control just hot enough to melt the wax without producing any smoke.

A tip design that I find ideal for some work is a length of small gauge wire that lets me reach in around the model to melt some wax. The wire is about 15mm long and 18 or 20 gauge. To conduct heat all the way to the tip, I use Sterling wire and silver solder it into a hole on the end of a copper or brass rod that will fit into the soldering iron.

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

Get all 101 of Brad's bench tips in "Bench Tips for Jewelry Making" on Amazon  
<http://amazon.com/dp/0988285800/>

## Woolly mammoths died for want of a few herbs

IT WAS the superfoods wot dunnit. Woolly mammoths may have starved to death when changes in the climate deprived them of their best food: flowering herbs.

Perhaps unexpectedly given their size and the chilly climates they lived in, woolly mammoths are thought to have survived on a diet of steppe grasses. But that's not the whole story. A study of frozen stomach contents and frozen DNA found in the dirt across the Arctic suggests that the ice-age megafauna primarily ate a richer class of plants called forbs. At first glance the difference seems negligible. Forbs are flowering herbs, and modern examples include clover. But whereas grasses are tough to digest and relatively low in nutrients, forbs are high in protein.

By painstakingly looking at the plant DNA found in permafrost samples dug out of 200 locations across the Arctic, Eske Willerslev at the University of Copenhagen in Denmark and his colleagues were able to paint a picture of the landscape between 50,000 years ago and today. They found that at first, the far north was covered in a rich diversity of forbs. What's more, the gut contents of some of the big animals that lived in the region, like mammoths and woolly rhinoceroses, showed that these nutritious wild flowers were an important part of their diet (Nature, DOI: 10.1038/nature12921).

"This is technically a great achievement," says Adrian Lister of the Natural History Museum in London.

But the forbs didn't last. "Around 20,000 years ago, at the height of the ice age, the environment became very, very cold and dry, and we see a major drop-off in the diversity of forbs," says Willerslev. "They still dominate the ecosystem, but their diversity declines."

The real killer came at the end of the ice age 12,000 years ago. Grasses and shrubs began to take the place of the forbs – a change in the landscape that coincided with the decline of the iconic ice-age megafauna. As forbs are stimulated by being

trampled underfoot, the decline in forbs from 20,000 years ago probably brought about a feedback cycle in which having fewer animals caused plant diversity to fall, further reducing food supplies and animal populations.

"Our study really changes the general concept that before the last warming period you had a massive grass steppe that was fundamental to sustaining a huge diversity of mammals," says Willerslev. "In fact it was a diverse steppe of forbs and these were probably crucial."

The theory may also explain why reindeer were the only big ice-age animals Movie Camera to survive. Today, reindeer munch on grasses and sedges in summer, and eke a living out of low-energy lichen in the winter. The forbs' decline would have passed them by.

*Note : The above story is based on materials provided by Catherine Brahic to newscientist*

Read more:

<http://www.geologypage.com/2014/03/woolly-mammoths-died-for-want-of-few.html#ixzz3RlakZQT6>

Via News Nuggets Vol 66 Nbr 3 March, 2015



## Minerals via Periodic Table Groups –Group 2 Metals

Second of a series by Jim Kraai

Let's start out by looking at the second column, called the Group 2 metals. We're starting with Group 2 because we're more generally familiar in the Midwest with the minerals associated with this column.

The top row is Group which is the column number. The second row, called Valence, indicates how many electrons in the outer shell a regular atom of that type is willing to share (+) or receive (-). All of the Group 2 atoms share two electrons and that determines how they combine chemically with other atoms.

Ignoring Radium (Ra) which is radioactive and Beryllium (Be), which is rare in the universe; we're left with Magnesium (Mg), Calcium (Ca), Strontium (Sr), and Barium (Ba). All of these metals, in their pure form, are silvery white, react with air on contact, most react dramatically with water, and most have compounds that are highly toxic.

**Calcium** -The mineral associated with this Group we encounter most often is limestone, which is mostly massive crystals of calcite and aragonite which are made of calcium carbonate, abbreviated chemically as CaCO<sub>3</sub>. Limestone and altered limestones underlay nearly 100% of the Midwest. Most groundwater contains calcium carbonate, which is one of the minerals that characterizes "hard water."

### Metal Substitution, Mobility, and Other Group 2 Carbonates

-Under different circumstances and processes, these metals appear and get substituted for each other easily because of the similarity in the way they interact with things chemically.

Minerals dissolved in groundwater are a good example of how minerals are 'mobilized' and able to move or be either concentrated or depleted within a geologic region. The transformation of limestone to dolomite, composed of magnesium carbonate is a good example of Magnesium, the element above Calcium in the periodic column, having similar chemistry and one of the ways two minerals can be 'associated minerals.' In the case of dolomite, both Calcium and Magnesium have been mobilized under conditions that favored the substitution of Magnesium for Calcium in limestone.

	Carbonate – CO <sub>3</sub>	Sulfate – SO <sub>4</sub>
Mg	Magnesite, metamorphic	Epsomite, Epsom sats, evaporites
Ca	Calcite, aragonite, sedimentary	Gypsum, anhydrite, selenite
Sr	Strontianite	Celestine
Ba	Witherite	Baryte

Similarly, but much less often, we find other carbonates of the Group 2 metals. Strontium carbonate in mineral form is known as strontianite,

a rare fluorescent mineral. The barium carbonate mineral, witherite, has been found nearby, for example, in the Cave-in-Rock District of Illinois and Kentucky.

**Group 2 Sulfates** –Again, the Group 2 sulfate we encounter the most is the sulfate of Calcium, abbreviated as  $\text{CaSO}_4$ . Calcium sulfate is what makes up most of what we encounter as gypsum, anhydrite, and selenite.

Other sulfates within this group are baryte, with Barium substituted. Strontium carbonate, in the mineral celestine, a mineral associated with nice blue crystals that Rick Olson has found in a gypsum quarry in Iowa. Magnesium sulfate we encounter as epsom salt and the mineral epsomite is encountered as efflorescence on cave and basement walls.

If this is interesting, you may want to learn more about how carbonates become sulfates, since we have so much of both in central North America.

Via News Nuggets **Vol 66 Nbr 3 March, 2015**

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**Group 2 Metals - bits of information from mindat.org and gemdat.org:**

## Carbonates

Magnesite can be dyed to imitate lapis, turquoise (chelsea: common reddish), coral. Calcite is named after Latin "calx" - lime. It is a very common mineral with wide range of colors and forms. Calcite may exhibit fluorescence, phosphorescence, thermoluminescence and/or triboluminescence.

Aragonite is a polymorph of calcite, having the same chemical composition but a different physical structure. When aragonite is heated to  $400^\circ\text{C}$  it will convert to calcite. Aragonite forms the basis for many organic gems, such as coral, mother-of-pearl and pearl.

Strontianite is an uncommon low-temperature hydrothermal mineral formed in veins in limestone. Witherite occurs in hydrothermal veins as a low-temperature mineral. Witherite dust is toxic, it is dangerous to inhale it.

## Sulfates

Evaporite is a name for a water-soluble mineral sediment that results from concentration and crystallization by evaporation from an aqueous solution.

There are two types of evaporate deposits: marine, which can also be described as ocean deposits, and non-marine, which are found in standing bodies of water such as lakes.

Evaporites are considered sedimentary rocks.

Epsomite is the same as the household chemical, Epsom salt, and is readily soluble in water. It absorbs water from the air and converts to hexahydrate with the loss of one water molecule and a switch to monoclinic structure.

Gypsum is a very common mineral in sedimentary environments. It is found as massive material (Alabaster), clear crystals (Selenite) and parallel fibrous variety (Satin spar).

Anhydrite was named by A. G. Werner in 1804, from Greek "an" - without and "hydor" - water, because of the absence of water of crystallization, in contrast with the presence of water in gypsum.

Selenite is named after Greek word for the Moon, referring to the moonlight effect from cleavage surfaces.

Celestine occurs mainly in sedimentary rocks such as bedded deposits of gypsum and halite. Celestine is also in bedded limestone and dolomite, in cavities.

Baryte is used as an additive in drilling fluids, as a white pigment, e. g. in cosmetic products and in paints.

Baryte is used as a filling material for polymers and papers.

Baryte is the main source of barium.

Via News Nuggets **Jan 15 Vol 66 No 1**

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## MINERAL HARDNESS

Moh's Hardness Scale	Approximate Hardness of Common Objects
Talc	1
Gypsum	2
Calcite	3
Fluorite	4
Apatite	5
Feldspar	6
Quartz	7
Topaz	8
Corundum	9
Diamond	10

	Fingernail (2.5)
	Copper penny (3.5)
	Iron nail (4.5)
	Glass (5.5)
	Steel file (6.5)
	Streak plate (7.0)

- *Mohs Hardness Scale* is named after its inventor, Friedrich Mohs. This means that an apostrophe is not needed when typing the name of the test. "Moh's" and "Mohs'" are incorrect. Did you notice the error in the diagram in this article?
- Report hardness tested with Mohs scale, as "Mohs Hardness", because *there are other scales*.
- Minerals such as kyanite have *different hardness in different directions*.
- Minerals that are part of a solid solution series *can change in hardness* as the composition varies. Atomic bonds between some elements are stronger than others. An example is garnet which has a composition of  $X_3Y_2(SiO_4)_3$  where X can be Ca, Mg or Fe and Y can be Al, Fe or Cr. Garnets with different compositions have different hardness. Garnets *range in hardness from 6.5 to 8*.

Image:<http://regentsprep.org/Regents/earthsci/graphics/mohssscale.jpg>

Source:<http://geology.com/minerals/mohs-hardness-scale.shtml>

During the test, some materials might fail in other ways. They could break, deform, or crumble instead of scratching, providing more clues!

Via News Nuggets Jan 15 Vol 66 No 2

## Is this Lava or Magma?

People commonly think of lava and magma as a liquid, like molten metal, but geologists find that magma is usually a mush—a partially melted fluid loaded with mineral crystals. As it cools, magma crystallizes into a series of minerals, some of which crystallize sooner than others. Not just that, but as the minerals crystallize, they leave the remaining magma with a changed chemical composition. Thus a body of magma evolves as it cools, and it also evolves as it moves through the crust, interacting with other rocks.

Lava is the extrusive equivalent of magma.



<http://geology.about.com> Lava flow on Hawaii.

Via News Nuggets Jan 15 Vol 66 No 1

## 2015 Officers and Directors

President	Craig Moore	(563) 445-3034
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## Committee Chairpersons

Membership	Kellie Moore	(563) 445-3034
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Rock Show Chair	Kellie Moore	(563) 445-3034
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 Wednesday 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

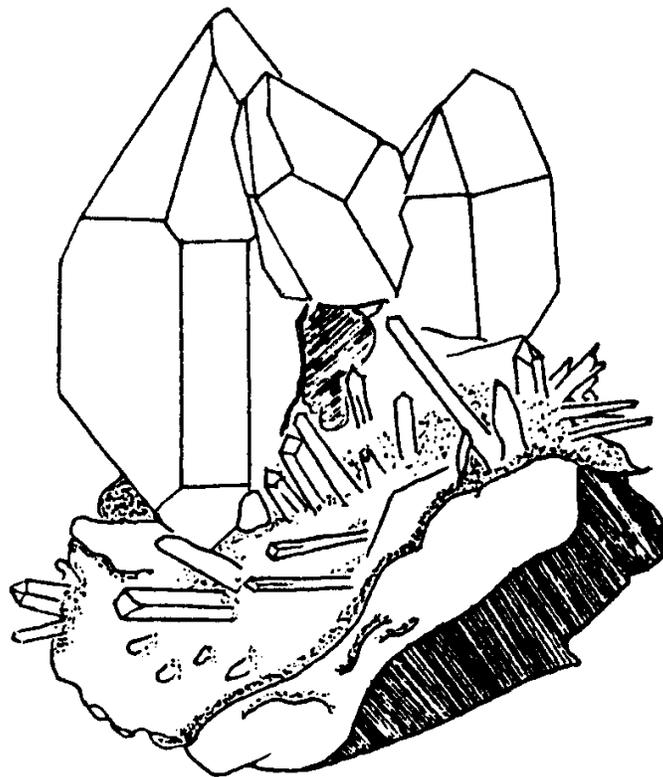
Midwest Federation of Mineralogical & Geological Societies

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

American Federation of Mineralogical Societies

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

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# *Smoke Signals*



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

# **March 2016**

**Volume 61    Number 2**

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