

# Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc., meeting in State College, Pennsylvania  
Contact information on back page

April, 2019

Visit our web site: [www.nittanymineral.org](http://www.nittanymineral.org)

Editor (see back page):

David C. Glick

April 17th meeting:

## Mineral Fluorescence: From Whence Comes the Light?

by  
Dr. William B. White  
Penn State

*Our April meeting will be held Wednesday the 17th in room 116 (the smaller auditorium) Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.*

*6:45 to 7:45 p.m.: Social hour, refreshments in the lobby*

*7:45 to 8:00 p.m.: Announcements, questions, answers about 8:00 p.m.: featured program*

*The event has free admission, free parking, and free refreshments, and is open to all; **parents/guardians must provide supervision of minors.** Bring your friends and share an interesting evening!*

Some minerals glow in the dark when excited by ultraviolet light (photoluminescence), electrons (cathodoluminescence), X-rays (Roentgenoluminescence), gas flames (candoluminescence) or other energy sources.

**Please see the complete abstract on page 4.**



Fluorescence with a longwave ultraviolet LED flashlight is demonstrated by Stuart Bingham at Minerals Junior Education Day. *D. Glick photo*

## Junior Rockhounds Free Weekly Meetings continue Monday evenings at Boalsburg Fire Hall

See **On the Schedule** on page 3,  
and <http://www.nittanymineral.org/juniors.htm>

## Minerals Junior Education Day

by David Glick, NMS President

Approximately 175 children in grades 1-8, and their parents, attended our 24<sup>th</sup> annual Minerals Junior Education Day on March 30. The balance sheet has not been finalized but it does seem that we made some money - not the primary goal, but a pleasing result. Stations this year were:

- Gold panning by GPAA
- Caves & karst by Lincoln Caverns
- Sedimentary rocks and petroleum
- Iron ore minerals & iron making
- Fossil shells (invertebrates)
- From coal to diamonds
- War paint: The streak
- Meteorites
- Sphere grinding machine
- Cleavage & fracture
- Local geology in art by AWG
- Ultraviolet fluorescence

NMS extends enthusiastic thanks to all organizers, volunteers, students, donors, participants, and sales table customers! See more photos on page 5.



Students learn about gems and how crystal structure affects their properties at Junior Ed. Day. *D. Glick photo*

## FEDERATION NEWS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies. The **Federations and our Society strongly encourage all members to read the monthly Federation Newsletters, available on their web sites**, which are linked from our web site, [www.nittanymineral.org](http://www.nittanymineral.org). We present brief summaries here in order to encourage readers to see the entire newsletters. There's a lot there!

The EFMLS Newsletter is now being distributed electronically; a link is available on our web site [www.nittanymineral.org](http://www.nittanymineral.org). The April issue is now on the EFMLS web site. It informs us of the passing of Carolyn Weinberger, probably the most active person in the Federation leadership over recent decades.

### Carolyn Weinberger

EFMLS President David Nock wrote on March 27:  
Dear EFMLS Rockhound Family,

"Carolyn went to join our fellow Rockhounds in that great collecting field in the sky, early Monday morning, 3/25/19.

It's with great sadness that I inform you that our "Queen of the EFMLS," Carolyn Weinberger, has passed away. She finally succumbed to her multi-year battle with leukemia-related illness. Carolyn's passion for most and especially the latter part of her life was running our Federation. A giant hole now looms in our extended Rockhound Family. She truly gave us her full-time effort. Carolyn was our foremost advocate (and our extended family of the American Federation of Mineralogical Societies) of our hobby and was our EFMLS News newsletter Editor for I don't know how many years. A lot of years!

Your Federation will be publishing a special edition newsletter in the next few weeks to honor her and her husband Steve's legacy **...Rest in Peace Carolyn**"

In the rest of the newsletter, all are invited to the EFMLS Convention in Monroe, New York, May 31-June 3. President David Nock provides his report to the 2019 AFMS Convention, including awardees (professors) and recipients (students) of the EFMLS portion of the AFMS Scholarship Fund. There's an illustrated article on "The Most Famous New Hampshire Beryl Specimen You've Never Seen."

The **AFMS Newsletter** was also edited by Carolyn Weinberger and has been delayed due to her death. *-Editor*

## We are saddened to hear the loss of Carolyn Weinberger by all of us...

*In Eastern Federation leadership  
from EFMLS News, April 2019*



...Our hope by now is that you have heard that the Matriarch of our Federation, Carolyn Weinberger, passed away on March 25th, 2019. She is now at peace after a long battle with leukemia related illness and was laid to rest on Friday, March 29. Please continue to keep Carolyn, Steve and their families in your thoughts and prayers.

She was more than just a leader of our Federation, she also had her hands in just about everything she could in regards to our hobby. She was active in Wildacres, American Federation of Mineralogical Societies, Desautels Micromount Symposium, Baltimore Mineral Society, Chesapeake Gem & Mineral Society and the Gem Cutters Guild of Baltimore, just to name a few. At this time, we won't go into the numerous awards she received.

This is more than a big loss, not just for us but, for the extended mineral community. Carolyn's presence extended far beyond the groups and activities she was involved in as she had a guiding presence to ensure that we follow guidelines and make everyone feel welcomed and treated fairly. Over the past few weeks, we have heard from so many folks who's lives have been touched by Carolyn. And we will continue to honor her in the future.

Your Federation will be publishing a special edition newsletter in the next few weeks to honor her and her husband Steve's legacy. Acclaimed author of mineral publications, Bob Jones, will be publishing an article in Rock & Gem magazine in the coming month about Carolyn. Stay tuned! Throughout this newsletter, we will be honoring Carolyn with tributes from her extended rock and mineral family. **...Rest in Peace Carolyn**

## Nadine Kofman

1943-2019

Well-known State College writer, historian, and enthusiastic community volunteer Nadine Kofman died Saturday, March 30, at age 75. Most recently she wrote for Town & Gown, and was deeply involved with the State Theatre. She was the



widow of the late State College Mayor Bill Welch. An interesting and detailed obituary can be found at <https://kochfuneralhome.com/tribute/details/1861/Nadine-Kofman/obituary.html>

Nadine was an NMS member in the 2000s and helped with our annual mineral shows. Being around her was always enjoyable; she will be missed in NMS as well as throughout her beloved community.

### ATTENDING THE APRIL MEETING?

Donations of a few high quality, labeled door prize specimens are invited.

Your donated snacks will be welcomed.

Bring a friend!

### On the Schedule:

#### May 15 regular meeting:

A Quarter-Century of Nittany Mineralogical Society, by David Glick (rescheduled from our February meeting which was cancelled due to snow).

As usual, no meetings are planned for June or July.

#### Junior Rockhounds meetings: 6:15-7:00 p.m.

Mondays at Boalsburg Fire Hall. Planned topics are:

Apr 15: Volcanoes and volcanic rocks

Apr 22: Fossils and sedimentary rocks

Apr 29: Gemstones, and more!

May 6: Crystals (how to measure them, how they grow)

See: <http://www.nittanymineral.org/juniors.htm>



Junior Rockhounds meeting at Boalsburg Fire Hall with Dr. Andrew Sicree, 2019. *D. Glick photo*

## APRIL MEETING DOOR PRIZES



Pale pink dolomite with yellow calcite, from the classic locality at Corydon, Indiana. Ex-John Passaneau.



Tumble polished petrified wood showing wood grain. Donated by Barbara and the late Michael Sincak.



Strontianite, Mount Pleasant Mills, PA. Ex-Pen Ambler.

## Mineral Fluorescence: From Whence Comes the Light?

William B. White  
Penn State

Some minerals glow in the dark when excited by ultraviolet light (photoluminescence), electrons (cathodoluminescence), X-rays (Roentgenoluminescence), gas flames (candoluminescence) or other energy sources. Light is energy so the excitation source must pump as much or more energy than is represented by the light coming out. The emitted light is called fluorescence if it goes out when the excitation is shut off and phosphorescence if there is an afterglow. Energy from the excitation source is stored momentarily in the mineral, rearranged, and then released as light. In fluorescent minerals the light re-emerges in microseconds to milliseconds. In phosphorescent minerals the light re-emerges more slowly, many milliseconds to seconds. More information is obtained from the actual spectra of the emission and excitation rather than simply the color. There are three broad storage and release mechanisms for luminescent minerals.

**Molecular phosphors:** the exchange takes place within individual molecules. Some minerals contain included organics such as the fulvic acid that give a blue-green luminescence to calcite deposits in caves. There is the green luminescence of many uranium minerals due to transitions within the  $\text{UO}_2^{2+}$  (uranyl) ion and the yellow luminescence of scapolite which is due to the  $\text{S}_2$  molecule. The energy rearrangement in molecular luminescence is within the molecule and does not depend strongly on crystal structure. The  $\text{UO}_2^{2+}$  ion will fluoresce in aqueous solution.

**Insulator phosphors:** Many silicates, carbonates, and phosphates produce fluorescent minerals but in pure form the compounds are transparent insulators. Luminescence arises from specific impurity ions, notably  $\text{Mn}^{2+}$ ,  $\text{Cr}^{3+}$  and others. Some are good; some are bad.  $\text{Fe}^{3+}$  can produce luminescence but  $\text{Fe}^{2+}$  poisons the luminescence. Minerals containing ferrous iron are rarely luminescent. The luminescence colors depend on the electronic structure of the impurity and also on the details of the crystal structure. Example: the green fluorescence of willemite and the crimson fluorescence of Franklin, NJ, calcite are both due to  $\text{Mn}^{2+}$ .

**Semiconductor phosphors:** The luminescence depends on the entire electronic structure of the crystal and its impurities, not the impurity alone. Impurity centers, a few atoms of nitrogen replacing atoms of carbon in diamond, for example, serve as traps that hold the excited electrons and produce luminescent diamonds. Thermoluminescence is a special case where heat provides the energy to pop the electrons out of their traps so that the minerals give off a burst of light when heated.

*Please attend our April 17<sup>th</sup> meeting to see Dr. White's illustrated presentation - Editor.*



A variety of minerals fluorescing under ultraviolet light.

*Photo by Hannes Grobe/AWI, from Wikimedia Commons, CCS-SA-2.5 license*

# Minerals Junior Education Day March 30, 2019



Peter Heaney (right) and Phil Molling explain the crystal structure of gemstones



Fascinated students examine fossils with discussion by Charles Miller (background) and John Dziak (front)



Andrew Sicree shows the streak of minerals - their color when powdered - and uses the powder to make face paint, or war paint



Fred Marschak explains meteorites, with lots of examples to see.



Members of the Gold Prospectors Association of America teach the kids to pan for gold



Jim Garthe's demonstration of shaping and polishing rock spheres includes aspects of artistic vision, hardness of minerals, and homemade machinery



Lincoln Caverns personnel explain caves, karst, and the solubility of limestone



Iron ore minerals and rocks and local ironmaking are explained by Paul Fagley of Greenwood Furnace State Park (left) and Bob Altamura (right)



Penn State students in the Association for Women Geoscientists use art to explain the rocks in our local geology and how their environments of deposition would have looked



Mike Canich discusses sedimentary rocks and their many uses, including petroleum reservoirs and production



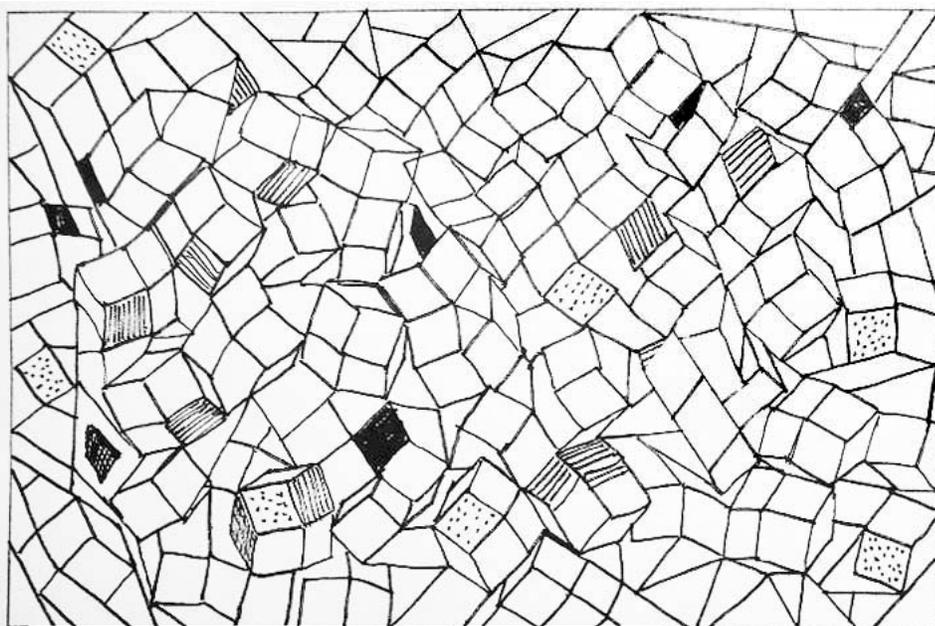
Penn State students explain the breakage of minerals (cleavage and fracture) and its relationship to atomic arrangement and crystalline mineral structure



Behind the curtain on the darkened stage, Stuart Bingham uses a variety of ultraviolet lamps, including a longwave LED flashlight, to demonstrate fluorescence of minerals

## FIND THE CRYSTALS

A **rhombic dodecahedron** is a twelve-sided three-dimensional shape which has three equal axes. This shape occurs in crystals in the isometric family of minerals which include garnet. Since we observe only one side at a time, we have only **six** sides facing us. Let's see how many of these shapes you can identify from the design of shapes in the rectangle presented here. Color them in if it helps. Use the example to the left to guide you. The shape may be turned in any direction and shows all six sides facing the reader. Textures in the drawing are only inclusions and do not affect any crystal.



The solution is on page 8.

Puzzle created by Professor Michael Kessler,  
EFMLS Regional Vice president.

## Geo-Sudoku

by David Glick

This puzzle contains the letters DEIGNOPRW ; one row or column spells the principle behind mineral streak. As usual, if you've read this issue, you've seen it or a variation of it. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 8.

			W	N	O	E	D	R
		E	I	D		N		
W	D				P			
R					I			
		O	N	P	E		G	D
N	G		R	W				
E	N					D		O
			O			P	E	
					R	I		

## 15 Years Ago in NMS

In April 2004, we had a lot going on. In March we had a great Geode Night with Jeff Smith. We were preparing for Minerals Junior Ed Day, the first time it was held in Spring rather than fall or summer, and the first time gold panning was offered by GPAA. We were also preparing for a June Symposium titled Pennsylvania Minerals Past and Present, which turned out to be our last Symposium. Skytop road construction had exposed collectible sulfides and related minerals. Bob Altamura presented our April program on A Review of Prehistoric Life from Precambrian to Recent (with an emphasis on Pennsylvania fossils). The May program was by Jay Lininger, editor and publisher of Matrix, a journal of the history of minerals.

### NMS BOARD MEETING NOTICE

NMS members are invited to attend Board of Directors meetings, which are generally held at 7:00 p.m. about two weeks prior to the general monthly meeting, although we do not meet every month. **The Board is meeting on April 11, and the next date for a full Board meeting has not been set.** Members who would like to attend should contact president David Glick to verify time and place; those who would like to have their discussion item placed on the agenda should contact him at least one week in advance of the meeting.

### Some Upcoming Shows and Meetings

Our web site <http://www.nittanymineral.org> has links to more complete lists and details on mineral shows and meetings around the country. See [www.mineralevents.com](http://www.mineralevents.com) for more.

**April 13-14, 2019:** Lehigh Valley Gem, Mineral & Jewelry Show 2019, by Saucon Valley Lions Club, Saucon Valley High School, Hellertown PA 18055. Sat 10-6, Sun 10-5.

**April 27, 2019:** Super Digg, 32 Evans Street, Franklin New Jersey 07416. 9AM to 11PM rain or shine, no age restrictions. Liability insurance & pre-registration Required. See <http://superdiggg.com/>.

**April 27-28, 2019:** Monongahela Rockhounds Gem, Mineral & Fossil Show, West Mifflin Volunteer Fire Hall Number Four, Skyview Hall, 660 Noble Drive Pittsburgh PA. Sat 10-6 Sun 10-4, free admission.

**May 18, 2019:** Earth Science Show & Sale, by The Rock & Mineral Club of Lower Bucks County, PA. Christ United Methodist Ch., 501 Wistar Rd., Fairless Hills PA. Sat. only, 9-3.

**May 18-19:** "World of Gems & Minerals" by Berks Mineralogical Soc. Leesport Farmers Market Banquet Hall, 312 Gernant's Church Rd. Leesport, PA 19533. Sat 10-5, Sun. 10-4. Tailgate section Sat. only.

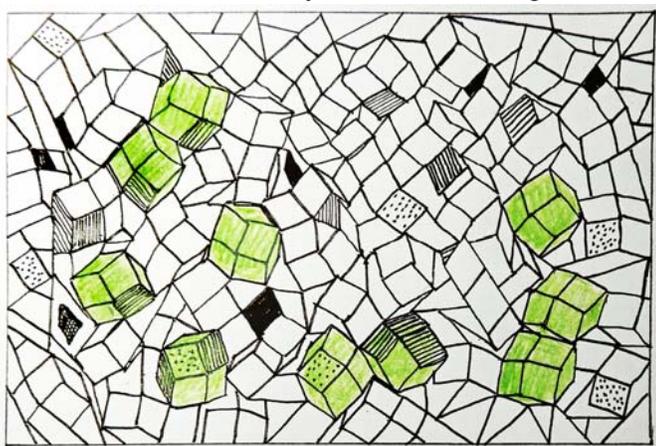
**June 1-2, 2019:** EFMLS Convention and Orange County Mineral Club Show, Monroe, New Jersey. (EFMLS meeting Fri. eve. May 31) <http://www.amfed.org/efmls/convention.htm>

### Geo-Sudoku Solution

G	P	I	W	N	O	E	D	R
O	R	E	I	D	G	N	W	P
W	D	N	E	R	P	G	O	I
R	E	D	G	O	I	W	P	N
I	W	O	N	P	E	R	G	D
N	G	P	R	W	D	O	I	E
E	N	G	P	I	W	D	R	O
D	I	R	O	G	N	P	E	W
P	O	W	D	E	R	I	N	G

### Crystal Puzzle Solution:

There are ten crystals in the design.



### INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you'd like to be part of our Society, dues are \$20 (regular member), \$7 (student rate), \$15 (seniors), \$30 (family of two or more members, names listed). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at [www.nittanymineral.org](http://www.nittanymineral.org)), make checks payable to "Nittany Mineralogical Society, Inc." and send them in as directed, or bring your dues to the next meeting.

**We want to welcome you!**

### CONTACT INFORMATION

#### mailing address:

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#### SOCIETY OFFICERS

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Membership Chair: David Glick (see above)  
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Door Prizes: Dr. Bob Altamura (see above)  
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The **Bulletin Editor** will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

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State College, PA 16801-7226

Newsletter submissions are appreciated by the first Wednesday of the month. Photographs or graphics are encouraged, but please do not embed them in word processor files; send them as separate graphics files (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.

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