

MWF News

Midwest Federation
of Mineralogical and Geological Societies

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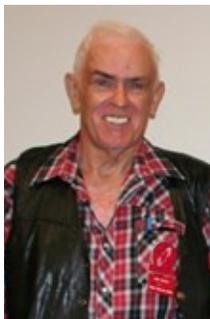
Member of the American Federation of
Mineralogical Societies



PRESIDENT'S MESSAGE

John Donker, MWF President

I would like to thank the Midwest Federation members and clubs for the many cards and visits, and the members who gave memorial contributions to the MWF, on the passing of my wife, Julia Donker, Michigan State Director. A special thanks to March Collins, MWF Scholarship Committee chair, and Valerie J. Meyers, Editor, for their memorial article in the MWF News. The MWF is like a second family. Thanks to all of you.



As the weather turns cold here in the north, many snowbirds head south and west to warmer weather. As you go on field trips or to sales, remember to pick up something for your club and for the MWF Silent Auction. Your pieces are always welcome.

Many clubs are working on setting up their spring shows and summer sales. Don't be afraid to help. Have a good time traveling, and remember, you can always check with the clubs in the area for the best places to rock hunt!

ANNOUNCEMENT COMING SOON!

Marge Collins, Scholarship Committee Chair

The 2020 MWF Scholarship Honoree has been chosen and will be announced soon. The honor is given annually to someone in a MWF club or in the professional world, such as a professor, who has been valuable to the study of earth sciences and to people who enjoy them.

The honoree, working with a university or college in the MWF region, chooses two students working on a master's degree or doctorate in the earth sciences, and each of those students receives a \$4,000 scholarship grant from the MWF Scholarship Fund. Given the cost of a college education these days, you can see why this is a valuable honor.

It's not too early for you and your club to begin working on a nomination for 2021. Any club member, either an individual or a couple, or an earth sciences professional deserving recognition is eligible. Nominations should include the reason for recognition and biographical information, including service to and

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MEET THE CHAIR: PUBLIC IMAGE & COURTESY

Susan Stanforth, MWF 1st Vice President

One of my favorite MWF people is an amazing woman, Regina Kapta of Decatur, Illinois. She is the chair of the Public Image and Courtesy Committee; if you need help with public outreach of any kind, she's the one to call.



Regina Kapta.
Photo courtesy of
Susan Stanforth.

She has been a very welcoming friend to me in MWF. But what I recently discovered is that she has a wonderful blog that includes great rockhounding stories about mineral collecting, field work and advice on how to develop a rock club. Check out her blog at <http://earthinsync.com/blogs/terra-harmonica>, email her at earthinsync@comcast.net, or call her at 217-233-1164.

WHY I LOVE THE MIDWEST FEDERATION

Susan Stanforth, 1st Vice President

The Midwest Federation is a wonderful community of kind, loving rockhounds. I started out a few years ago doing the Silent Auction and then was recruited to hold offices. My experience has been incredible. Everyone (and I mean everyone) that I have met in this process has been so very supportive.

One of my favorites is the amazing Marge Collins, who has guided me with so much great advice. She knows everything about the Federation due to her longstanding commitment to this organization. Also, the past president Kevin Ponzio is someone I follow religiously. He is a calming and intelligent source of all things mineral. I so enjoy his travelogues – check out the MWF Facebook page. And he always has time for any of your concerns.

Another benefit for getting involved with this group is being invited on amazing field trips. Our paleontology chairwoman, Debbie Hamilton, took me on a crinoid-seeking adventure in Alabama. Yes, we found crinoids but, also, surprisingly, the area was filled with puddingstone.

I also was invited by the Austin rock club to Arkansas for crystals, of course, but also we found variscite and my personal favorite, wavellite. It was a fruitful and exciting trip, except for my painful hookup with fire ants in the woods. My advice – NEVER sit on a log during a bathroom break.

Meeting the AFMS leadership is also a wonderful part of being in the MWF. I recently had a conversation with Steve Weinberger, who spent an hour sharing his knowledge of different rock club activities. Everyone should check out the AFMS Newsletters online. Feel free to contact them for information. Don't be shy. I also spoke with 2020 AFMS President David Wayment recently, and he was happy to encourage and advise me. Again, always a positive experience.

So, to sum up, you will never find a better group of people to join. Even if your local club is not exactly meeting your needs, come join us. Reach out and make contact with our officers, state directors and executive committee people. They are waiting to hear from you. We are all willing and ready to aid you in your love of all things mineralogical.

**DEADLINE CALENDAR**

All American Club Awards: Entries are due to the MWF program on **Feb. 1, 2020**. For information, contact Mary Ann Rich (birdman035@hotmail.com).

MWF Website Contest: Entries are due on **March 15, 2020**; the winning two entries will be submitted to the AMFS Website Contest. For information, contact Dave Fanger, rockfanger@gmail.com.

Rockhound of the Year Awards may be submitted at any time for certificates and a mention in the MWF News. Contact Steve Shimatzki, sjs132@gmail.com.

MWF Executive Committee Meeting, sponsored by Indian Mounds Gem & Mineral Club in conjunction with the club's annual show, will be April 11, 2020 in Wyoming, Michigan.

WEBSITE CONTEST NOW TAKING ENTRIES

Dave Fanger, Website Contest Chair

Please participate in the upcoming 2020 website contest! The MWF Website Contest is accepting applications through March 15, 2020. This contest is open to all MWF clubs in good standing. Participating in the contest helps each club improve its website through bench-marking. Each club is held to at most one entry.

Contest rules and a submission form are on the AFMS 2020 Website Contest page, amfed.org/web/website_contest. The top two MWF websites will qualify for the national contest in February.

If you are interested in submitting your club's website to the contest, please have your club's webmaster contact Dave Fanger, at rockfanger@gmail.com, with any questions.

UPCOMING EVENTS

Date and Time	Organization	Place	Contact
Feb. 29-March 1 Sat 9:30-5, Sun 10-4	Des Plaines Valley Geological Society	Park District Administrative Center, 2222 Birch Street, Des Plaines, IL	Mike Hanley, Geodeguy@att.net
Feb. 29-March 1 Sat 11-6, Sun 10-6	The Roamin Club	Schoolcraft Community College, 18600 Haggerty Road, Livonia, MI	Todd Gall, Roaminrockhound@gmail.com
March 6-8 Fri & Sat 10-6, Sun 11-4	Eastern Indiana Gem & Geological Society	County Fairgrounds, 861 N. Salisbury, Richmond, IN	Judy Burton, JLEEBurton@woh.RR.com
March 7-8 Sat 10-6, Sun 10-5	Geodeland Earth Science Clubs	Student Union Ballroom, Western Ill. University, Murray Street, Macomb, IL	Deb Coursey, courseyfarm@gmail.com
March 13-15 Fri 10-8, Sat 10-7, Sun 10-5	Association of Earth Science Clubs of Greater Kansas City	KCI Expo Center, 11730 NW Ambassador, Kansas City, MO	Bruce Stinemetz, brucestinemetz@att.net
March 14 Sat 6-9	Silent auction of the Chicago Rocks & Minerals Society	Gymnasium, St. Peter's United Church of Christ, 8013 Laramie, Skokie, IL	Jeanine N. Mielecki, jaynine9@aol.com
March 14-15 Sat 10-5, Sun 10-4	Rock swap of the Kettle Moraine Geological Society	County Fair Park, 3000 Highway PV, West Bend, WI	John Rettler, johnrettler@gmail.com
March 21-22 Sat 10-5, Sun 10-4	Earth Science Club of Northern Illinois	County Fairgrounds, 2015 Manchester, Wheaton, IL	Dave Carlson, fossil54@att.net
March 27-29 Fri 4-8, Sat 10-7, Sun 10-5	Rock Hobby Club	Machinist Auditorium, 12365 St. Charles Rock Road, Bridgeton, MO	Roy Hurlburt, hurlburt@juno.com
March 28 Sat 10-5	Rock swap of the Midwest Mineral & Lapidary Society	St. John's Lutheran Church, 13115 Telegraph Road, Taylor, MI	Lou Talley, ltalley1970@gmail.com

CONTRASTING LUMINOSITY SHOWS IN TWO SECTIONS OF ONE CALCITE SPECIMEN

Calvin Harris, South Suburban
Earth Science Club (Illinois)

Introduction

This essay describes the observations regarding luminescent characteristics of a calcite specimen from the Sweetwater Mine in Missouri. The mineralogical conditions that formed this specimen allowed this sample to be studied as two separate entities. The attributes regarding calcite appear typical. However, the luminescent features observed are not generally anticipated, and information gained from studying this specimen is intended to supplement existing references regarding calcite from this location, as well as serve as an introduction for more comprehensive study.

The calcite specimen is part of my study collection of minerals that exhibit fluorescence and phosphorescence. This collection mainly focuses on fluorescent minerals such as aragonite, calcite, strontianite, barite, fluorite and sphalerite that originate from various localities.



An employee of The Doe Run Company, which owns Sweetwater Mine, operates a front-end loader by remote control. Photo from doerun.com.

Geological Setting

Briefly, the Sweetwater mine is a Mississippi Valley Type (MVT) deposit located near Ellington, Missouri, Viburnum Trend District, Reynolds County, Missouri. MVT deposits are epigenetic, where low temperature (50°-200° C) saline solutions infiltrate limestone or dolostone strata. The Sweetwater mine has abundant quantities of lead and zinc for mining; nickel and cobalt are also mined.

Minerals such as calcite can be found, and fluorescence can occur when sufficient quantities of manganese and lead ions become incorporated within the crystalline structure of this mineral. It is likely that trace quantities of these ions were constituents of the saline solution. Additionally, decayed vegetative matter in the form of fulvic and humic acid can percolate through strata and form calcium salts of these acids. These compounds can function as organic activators. Rather than incorporate within the crystalline structure of calcite, these substances can bond to microscopic surfaces by adsorption.

Specimen Acquisition

Occasionally, I attend the South Suburban Earth Science Club's annual show, which is held at Prairie State College, Chicago Heights, Illinois. As a courtesy, a mineral dealer of long acquaintance allows me to examine minerals even when he is assisting other customers. He is equipped with a cardboard box that provides a darkened area to inspect candidate specimens with an ultraviolet lamp. I use a Raytech dual band ultraviolet unit in these situations. This unit provides shortwave and longwave radiation separately or in tandem. During an inspection, I noticed that the calcite crystals on the upper section of a specimen provided a red chromatic, moderately intense response to shortwave radiation, so I bought the sample for additional study.

Specimen Description

The upper section of this specimen consists of several truncated rhombohedron calcite crystals ranging from 3 inches to 3/16 of an inch on edge. These crystals are yellowish-brown in daylight, translucent and situated atop of a dark-gray limestone matrix. Additionally, small, unidentified gray druzi crystals are also present.



Specimen's upper section by daylight. Photo by Calvin Harris.



CLUBS HONOR ROCKHOUNDS OF THE YEAR, CONTINUED

(Continued from page 1)

membership in rock clubs, honors, and, in the case of professionals, papers or books written and degrees earned in the earth sciences field.

Nominations are sent to a member of the Board of Selectors, whose names and contact information will be printed in the MWF Directory, due out in the spring. For more information before that time, you can write to me at margecollins45@yahoo.com. *Who can your club honor?*

As this honor is so valuable to our future geologists of all kinds, please consider a donation to the American Federation of Geological Societies' Scholarship Foundation. The donations are pooled, and then the funds for two scholarship grants are sent every year to each of the six participating federations, including the Midwest Federation. Your club could just send a donation in its own name, use the donation to honor a valued club member, or donate in the memory of a cherished member.

Contributions to AFMS Scholarship are tax-exempt. You can use the form below or include a note with appropriate information. You receive acknowledgment and when applicable, and upon request, a note is sent to next of kin.

Donor(s) name: _____ Donation: \$ _____

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Memorial or Honoring (if applicable): _____

Next of Kin: _____, _____
(if applicable) (name) (relationship)

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Donations and memorials, payable to AFMS Scholarship, should be mailed to the MWF Scholarship Committee c/o Marge Collins, 3017 Niles-Buchanan Road, Buchanan, Michigan 49107.



*March Issue Submission Deadline
Is Feb. 8th!*

CONTRASTING LUMINOSITY IN ONE CALCITE SPECIMEN, CONTINUED

In contrast, the lower section of this specimen consists of minute, white, steep scalenohedral calcite crystals that are about 2/16 of an inch on edge. These crystals are associated with poorly formed galena crystals and partially formed chalcopyrite crystals.

Specimen's lower section by daylight. Photo by Calvin Harris.



Test Methods

Three different SuperBright II units and a SuperBright III unit were employed. These units are manufactured by UV SYSTEMS, Inc. The SuperBright II units emit 253nm (shortwave), 312nm (mid-wave), and 351nm (longwave) wavelengths; the SuperBright III unit provides 370 nm (longwave) radiation. A portable lead-acid battery distributed by UV SYSTEMS was also employed. The SuperBright units were placed some 3-4 inches from the specimen to determine fluorescence and were placed approximately 1-2 inches from the specimen to evaluate phosphorescence. Phosphorescence was evaluated before fluorescence to avoid eye sensitivity adjustment; I determined that a 10-second or 25-second exposure time was needed for careful observation.

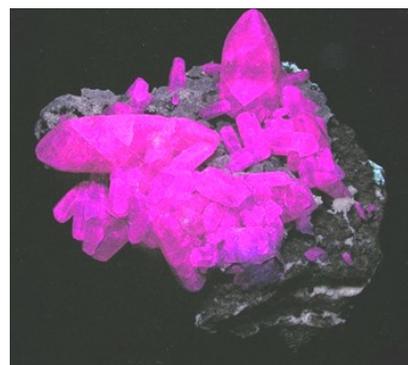
A Vivitar 283 photographic flash unit was employed to evaluate *flash*, or intense phosphorescence of short duration. Only the upper portion of the specimen exhibited this property. *Flash* can be determined with conventional ultraviolet light sources by moving the light source quickly across the specimen, while the flash unit and specimen are stationary, which allows a better controlled testing arrangement. Moreover, the flash unit generally provides a more pronounced result than the conventional sources. The flash unit was used at its maximum output of visible, as well as ultraviolet, light. I held it at a distance of about 2-3 inches from the specimen. Evaluation is conducted by closing

one's eyes when the unit is discharged then observing the *flash* immediately after the discharge is completed.

Phosphorescence caused by discharging photographic flash bulbs and later flash units is well known among spelunkers and speleologists, who noted this effect while photographing stalactites and other speleothems. However, the application for studying mineral luminosity is less known. I began to experiment with electronic flash units some years ago to determine *flash*, which can be observed from certain calcite and other carbonate specimens. This application is best suited when inorganic activators are present; there is no advantage when organic activators are present. Currently, I use the Vivitar 283 flash unit during my investigations of fluorescent minerals.

Results from Exposure to Ultraviolet Radiation

Upper section of specimen: The mid-wave wavelength evoked a fluorescent response from the large calcite crystals that was more color saturated and brighter than the effects provided by other wavelengths. Interestingly, magenta rather than the typical red-orange response was observed. Moreover, shortwave radiation typically provides color saturation and intensity that are more prominent than other wavelengths. Application of the various wavelengths did not evoke significant difference in fluorescence regarding the druzy crystals. These crystals provided a gray, low intensity response.



Upper section of the specimen under mid-wave UV radiation. Photo by Calvin Harris.

Phosphorescence was noted when the specimen was exposed to different wavelengths, but neither the large calcite nor druzy crystals gave this response. The reaction was likely due to calcite or another carbonate mineral that formed below the immediate surface. A 25-second exposure time was needed for careful

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CONTRASTING LUMINOSITY IN ONE CALCITE SPECIMEN, CONTINUED

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observation. The shortwave wavelength provided a 7-second response of moderate-low intensity, while the mid-wave radiation gave an 8-second, gray-white, low-intensity response. The 351 nm longwave wavelength provided a gray color, very weak intensity, which lasted 3 seconds. The color induced by the 370 nm longwave wavelength could not be determined; this was accompanied with extremely weak intensity. Moreover, these responses were restricted to a very small area of the specimen.

The mid-wave radiation was the only wavelength that provided *flash*; a magenta color with low intensity was noted. However, the Vivitar 283 flash unit provided the typical red-orange response. This response was notably brighter than the results gained by the conventional ultraviolet source.

Lower section of specimen: Fluorescence was evident when the four conventional wavelengths were applied. The mid-wave wavelength provided the most intense response, followed by the longwave wavelengths, while the shortwave radiation produced the weakest response. A gray, chromatic response was generated by the shortwave light, while the other wavelengths produced a cream-white response.



Lower section of the specimen under mid-wave UV radiation. Photo by Calvin Harris.

A 10-second exposure time was sufficient to evaluate phosphorescence. Generally, a gray, low-intensity response occurred upon exposure to the conventional wavelengths. The mid-wave wavelength provided the most prominent luminescent response. This wavelength evoked a 15-second response which far exceeded the other responses, which include 5 seconds for the shortwave and 4 seconds for the longwave wavelengths

Discussion

This specimen is a manifestation of two different mineralogical processes based on the luminescent responses aside from its physical attributes. Overall, the mid-wave radiation provided the most notable results among the wavelengths applied.

The fluorescence of the upper section was a crimson hue likely caused by the inorganic activators manganese and lead. The conventional ultraviolet light sources produced a crimson luminescent response regarding fluorescence and *flash*. However, only the Vivitar 283 flash unit provided the red-orange response commonly observed in calcite specimens.

The lower section shows features that are typically caused by the presence of organic activators. The daylight color of the specimen, coupled with pastel fluorescent and phosphorescent responses, suggests the presence of these chromophores. However, in most cases the luminescent intensity is brighter and chromatic response is more vibrant than the results found in this study.

This is a rudimentary study featuring a calcite specimen from Sweetwater Mine with distinctive features not typical of specimens from this area, using recently developed sources of ultraviolet wavelengths and an alternative source of this radiation. This paper may serve as a starting point for additional study by specialists using spectrographic and chemical methods of analysis.

Selected References

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PARTING SHOT



Erosional landscape around Zabriskie Point on the California side of Death Valley National Park. Photo by Jan Pearson.