Friends of Mineralogy

Midwest Chapter Newsletter for

November – December 2023

Mogilia Calcite - Calvin Harris

This edition includes……

Treasurers Report

2023 Interim Financial Report 10/15/2023

We began the year with $10,472.12. This included $555 in 2023 dues for 27 members. We currently have 89 members for 2023 (up 5 from ’22).

We have received new donations of $233. This brings unaudited 2023 revenue to $1,511.00

On the expense side we have paid $308.00 in National dues; $16.00 for 2022(4 members) and $292.00 for 2023(73 members). We owe National $64.00 for 16 members.

Our insurance premium of $650.00 for 2023 has been paid. We also paid $107.88 for 1 year of web hosting and $13.90 for website security certification. Our PayPal service fee was $39.19. Total 2023 expenses to date are $1,079.78. This brings our current treasury total to $10,884.08.

2024 Dues

A motion will be made at the November meeting to leave the chapter dues unchanged for 2024.

Remember, any new members that have not ever signed a Chapter Liability Agreement should print the form, and bring it to your next field trip, signed and witnessed. You may find the form here:

https://www.fommidwest.org/registration-forms/

As always, contact me if you have any questions.

Jeff Spencer - Treasurer

treasurer@fommidwest.org

513-476-2163

Upcoming Field Trips……

Field Trip Locality: Melvin Stone - Williamsport Plant – ***This trip been officially announced and registration is open.***
Date of Trip: Saturday October 28, 2023
Time of Field Trip: 8:00 am - 1:00 pm
BE AT THE QUARRY NO LATER THAN 8:00 am DRESSED & READY TO DO PAPERWORK AND RECEIVE ON-SITE TRAINING
Address: 13124 Crownover Road, New Holland, OH

Field Trip Locality: Graymont Dolime - ***Please do not try to sign up for the Genoa trip until it is officially announced by the field trip coordinator.***
Date of Trip: Saturday November 04, 2023
Time of Field Trip: 8:30 am - 1:00 pm
BE AT THE QUARRY NO LATER THAN 8:30 am DRESSED & READY TO DO PAPERWORK AND RECEIVE ON-SITE TRAINING
Address: 21880 West State Road 163, Genoa, OH 43430

Upcoming FM Chapter meeting

Our Chapter needs to hold its annual meeting in the next month or so. It would be most helpful if the members could forward any action items that they are aware of (other than elections) to Randy Marsh at marsh.rg@pg.com.

NOW ACCEPTING NOMINATIONS FOR FM MIDWEST CHAPTER BOARD OF DIRECTORS

The FM Midwest Chapter is seeking candidate board member nominations for the 2023 election. Board candidates may be self-nominated or nominated by another Chapter member. We are seeking any member who would like to contribute to the operation of Friends of Mineralogy Midwest Chapter but, in particular, individuals who are willing to serve as a member of the Executive Committee. Please send nominations to Randy Marsh at marsh.rg@pg.com by November 1, 2023.

Kind regards,

Randy Marsh

PLEASE WELCOME AND SUPPORT OUR NEW NEWSLETTER EDITOR, JOHAN MAERTENS! HE WILL BE PROVIDING US AN EXCELLENT NEWSLETTER WITH THE FIRST EDITION OF THE 2024 YEAR.

THANKS TO ALL FOR GIVING ME YOUR SUPPORT IN THAT ROLE OVER THE LAST 10+ YEARS.

TOM BOLKA

Determining if a Calcite Specimen from Mogilia mine, Bulgaria is Manganocalcite

by, Calvin Harris

Introduction

Occasionally, a specimen may not be adequately identified even by several owners. I acquired a specimen that was identified as calcite ($CaCO_3$) associated with non-fluorescent sphalerite. Upon close inspection, it appears to be manganocalcite or manganese-bearing calcite ($CaMnCO_3$). Under daylight conditions, this variety of calcite displays various shades of pink depending on the amount of divalent manganese (Mn^{+2}) present. It is often fluorescent and under mid-wave radiation it displays a greater degree of luminosity compared to other wavelengths. When crystals are present, they typically have a rhombohedral form. The color and crystalline form of this specimen are comparable to known manganocalcite specimens, as well as, descriptions found in reference publications. This paper provides a detailed comparison of the luminescent qualities of the Mogilia mine specimen with managnocalcite specimens to help determine its identity.

The fluorescence and brief intense phosphorescence of this specimen will be compared to eight manganocalcite samples from six localities. Shortwave radiation that causes the red-orange fluorescence in calcite is due to trace quantities of manganese and co-activator lead. However, the fluorescence caused by mid-wave radiation is likely due to the coactivator, cerium.

The luminescent effects will be produced by four wavelengths of ultraviolet radiation from conventional sources. These include 254nm (shortwave); 312nm (mid-wave); 351nm (longwave); 370nm (longwave). Additionally, brief intense phosphorescence or *flash* will be produced by a photographic flash unit (indeterminant wavelength).

Geological Setting

The Mogilia mine specimen was formed in the Madan Orefield, which is situated in the West Rhodope metallogenic zone. This area consists of upper and lower suites made of marble and other metamorphic rocks. The marble beds are where the majority of the ore deposition took place. Calcite forms within lead-zinc ore deposits featured by low temperature conditions. Carbonate deposition occurs between 90°-160° Celsius, while sulfide (sphalerite) deposition takes place at 50° Celsius. The Madan Orefield is known for notable quantities of manganese.

Reference Manganocalcite Specimens by Locality

Casapalca mine, Lima, Peru

Androvo mine, Bulgaria

Undisclosed location in Pakistan

Hanzula District, Peru

Racracancha mine, Peru

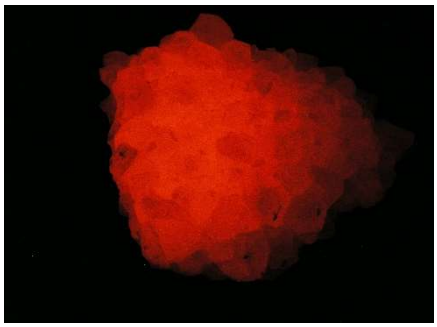
Undisclosed location in Peru

Methods and Procedures

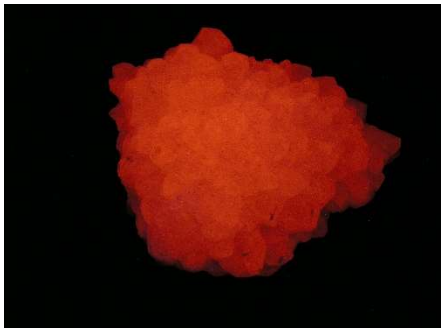
Three, SuperBright II lamps and one SuperBright III lamp were the sources of ultraviolet radiation. The SuperBright II lamps emit wavelengths measuring 254nm (shortwave), 312nm (mid-wave) and 351nm (longwave), while the SuperBright III lamp emits a longwave wavelength of 370nm. The lamps were placed 3-4 inches from the specimens to observe fluorescence. A DC portable battery powered unit was used to operate the ultraviolet lamps.

A Vivitar 283 photographic flash unit is a source of ultraviolet radiation and can be used to generate a highly visible red-orange *flash* in calcite. It is effective when held 2-3 inches from a specimen. Observation should occur immediately after the flash unit has discharged and never beforehand. *Flash* occurs when divalent manganese (Mn^{+2}) and co-activator, divalent lead (Pb^{+2}) are present in sufficient quantities. Currently, the specific ultraviolet wavelength emitted by this device has not been determined. It is very likely shortwave, which is known to cause *flash* using conventional ultraviolet sources.

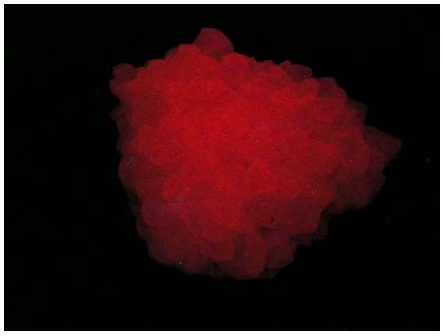
Androvo Mine – Daylight



Androvo Mine – Flash



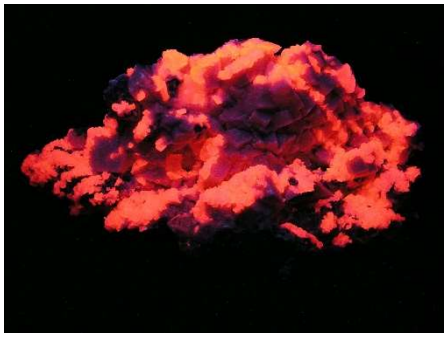
Androvo Mine – Mid wave



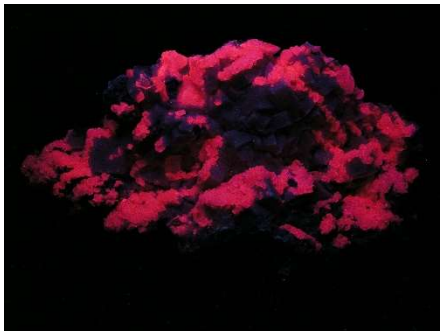
Androvo Mine – Short Wave

Mogilia Calcite – Daylight

Mogilia - Flash



Mogilia – Mid Wave



Mogilia – Short Wave

Results

Mogilia mine, Madan, Bulgaria

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Low-intensity; red-orange (burnt-orange) color.	Moderate-bright intensity; red-orange color.	Moderate intensity; red-orange color.	Moderate-low intensity; red-orange color.
Flash: Bright intensity; less color saturation compared to conventional UV sources.				

Casapalca mine, Lima, Peru

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Bright intensity; red-orange color.	Same as Shortwave.	Same as Shortwave.	Same as Shortwave.
Flash: Red-orange, less saturated than conventional ultraviolet sources; very bright intensity.				

Casapalca mine, Lima, Peru

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Upper area: moderate-bright intensity. Bottom area: bright intensity. Red-orange color in both areas.	Upper and lower areas display bright intensity. Veins displayed increased intensity. Red-orange color in all areas.	Moderate-bright intensity; homogeneous display, no distinction in veins or sections.	Similar to LW1, except lower intensity.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Hanzula District, Peru

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Low intensity; red-orange color.	Moderate-bright intensity; red-orange color.	Moderate-low intensity; red-orange color.	Low intensity; red-orange color.
Flash: Moderate-bright intensity; less color saturation compared to conventional UV sources.				

Androvo mine, Bulgaria

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Moderate intensity; red-orange color.	Moderate-bright intensity; red-orange color.	Moderate intensity; red-orange color.	Similar to MW.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Racracancha mine, Peru

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Moderate-bright intensity; red-orange color.	Bright intensity; red-orange color.	Moderate-bright intensity; red-orange color.	Moderate-bright intensity; red-orange color.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Pakistan

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Bright intensity, red-orange color.	Same as SW, except brighter intensity.	Same as MW.	Slightly brighter than LW1.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Peru

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Moderate-bright intensity; red-orange color.	Bright intensity; red-orange color.	Similar to MW.	Bright intensity; red-orange color.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Peru (additional specimen)

Wavelength	Shortwave (254nm)	Mid-wave (312nm)	Longwave (351nm)	Longwave (370nm)
Fluorescence	Moderate-bright intensity; red-orange color.	Moderate-bright intensity; red-orange color.	Similar to MW.	Moderate intensity; red-orange color.
Flash: Very bright intensity; less color saturation compared to conventional UV sources.				

Discussion:

While the color and crystal forms of the Mogilia mine specimen compared favorably with the known samples, the most notable feature was the response caused by mid-wave radiation, which generally produced greater luminescent intensity compared to the shorter wavelength and at times the longer wavelengths. Typically, the fluorescent response in calcite evoked by shortwave radiation exceeds the color saturation and intensity caused by longer wavelengths. The *flash* produced by the electronic flash unit had unexpectedly less color saturation compared to the effect using ultraviolet lamps.

The luminescent features of the Mogilia mine specimen are comparable with the reference manganocalcite samples, although not completely identical. Nevertheless, comparison of the physical and luminescent properties, as well as, information regarding the Madan Orefield suggests that the Mogilia mine specimen is very likely manganocalcite. Quantitative chemical analysis to determine the presence and concentration of cesium would help collaborate identification of this specimen.

Selected References

Hurlbut, Jr. Cornelius S., W. Edwin Sharp. Dana's Minerals and How to Study Them. 4th Edition. John Wiley & Sons, Inc. New York 1998. p. 57.

Petrussenko, Svetoslav. "Minerals of Madan Orefield, Bulgaria." The Mineralogical Record, Nov./Dec. 1991 Vol. 2, No. 6, p. 439-445.

Robbins, Manuel. Fluorescence, Gems and Minerals Under Ultraviolet Light. 1994. Geoscience Press, Inc., Phoenix, Arizona, p. 203.

Mindat, (2023) reference search: Manganese-bearing Calcite.

Terlingua-type Calcite from New Point Stone St. Paul Quarry, St. Paul, Shelby Co., Indiana

JOHAN MAERTENS

Cincinnati, Ohio, USA

Collectors of fluorescent minerals are familiar with the beautiful multi-wavelength fluorescent response of Terlingua calcite. By definition, "**Terlingua calcite**" shows a bright blue fluorescence response under UV-C (short wave) with bright and long-lasting blue phosphorescence. Under UV-A (long wave) it responds with bright pink fluorescence. Under UV-B (medium wave) it responds between UV-C and UV-A. Original Terlingua calcite is found in only one place: Terlingua, Brewster Co., Texas. Terlingua-type calcite from other locations shows a similar fluorescence/phosphorescence response under UV radiation, and is commonly found in several locations in Mexico, such as Boquillas Del Carmen and Nuevo Leon. However, Terlingua-type calcite has also been found in lesser-known locations, such as Indiana and Ohio (Sugar Creek Stone Quarry, in Washington Court House) in the Midwestern US.
These are calcite specimens collected by Johan Maertens from Shelby Co. Indiana showing a classic Terlingua-type fluorescence response.

Terlingua-type calcite on a limestone matrix, colorless, pink to white cleavage rhombohedrons are known from the Cave Stone Co. Quarry, Norristown, and Meshberger Stone Quarry, both in Indiana. These calcites are described in Manual Robbins' book ("Fluorescence, Gems and Minerals Under Ultraviolet Light," 1994, p. 77) for its classic Terlingua-type fluorescence and Midwestern US location.

Indiana has another mine that also produced these unique "Terlingua" type calcites: the Barrett Paving Materials Quarry in Middleboro, north of Richmond, Indiana in Wayne County.

The New Point Stone St. Paul Quarry, St. Paul, Shelby Co. calcite specimens presented here, show the classic Terlingua-type bright blue fluorescence with lasting phosphorescence under UV-C, and a bright pink response under UV-A.

The specimens were retrieved from the thin bedded upper part of the Geneva Dolomite Member in the Muscatatuck Group (Lower Devonian, roughly 400 million years old). Although crystal-lined pockets do occur randomly throughout the Geneva, a series of cavities, generally elongate to bedding, occurs in the top layers of exposed Geneva. Around the pockets, the limestone is porous and partially weathered to a friable, sandy consistency. There is an oily smell from fresh fractured rock. Many vugs in the Geneva Dolomite are filled with white, late-stage spar calcite cement, and the matrix surrounding the vugs consists of porous brown, sucrosic dolomite.

1 Calcite specimens under visible light. Cleavage sections about 50mm wide. New Point Stone St. Paul north pit, Indiana 2023

2 Calcite specimens under UV-C radiation. Cleavage sections about 50mm wide. New Point Stone St. Paul north pit, Indiana 2023

3 Calcite specimens under UV-C radiation (254nm), with a classic Terlingua-type, bright blue/white fluorescent response. Cleavage sections about 50 mm wide. New Point St. Paul plant north pit Indiana 2023

4 Calcite specimens after UV-C radiation (254nm), with Terlingua-type, blue/white phosphorescence response. Cleavage sections about 50 mm wide. New Point St. Paul plant north pit Indiana 2023

5 Calcite specimens under UV-A radiation (365nm), with Terlingua-type, pink fluorescence. Cleavage sections about 50 mm wide. New Point St. Paul plant north pit Indiana 2023

6 Calcite specimens under UV-C radiation (254nm), with multi-color fluorescence. Cleavage sections about 100 wide. New Point Stone St. Paul north pit, Indiana 2023

Some claim blue color seems due to Eu2+ and Eu3+, acting cerium as activator.

According to The nature of unusual luminescence in natural calcite $CaCO_3$ by M. Gaft et al., activators of the uncommon blue luminescence in calcite are still uncertain.

http://www.minsocam.org/msa/ammin/toc/Abstracts/2008_Abstracts/Jan08_Abstracts/Gaft_p158_08.pdf

Discussion

The. New Point Stone St. Paul plant is new Midwestern location for Terlingua-type calcite. Massive fillings with calcite in fossil vugs in the upper Geneva member cleave to rhombohedral sections. The sections show growth zoning. Just 5% of collected specimens exhibit Terlingua-type fluorescence. We could not make a correlation between fluorescent specimens and location in the vugs, association.

Collecting Status

Access to this privately owned locality is restricted and formal permission must be granted by the Wanstrath family.
All specimens illustrated in this article were collected during a supervised survey with the operator's permission.
All New Point Stone's properties are company owned and posted. Access is restricted and permission must be obtained from the company to gain access on its sites. We encourage fellow collectors to respect the private property and to always obtain formal permission before entering and collecting at any locality.

ACKNOWLEDGMENTS

Thank you, Wanstrath family and New Point Stone staff, for the community outreach and for hosting mineral and fossil enthusiasts and for providing safe access to the locality for studying geology, paleontology and mineralogy.

Notes on author

Johan Maertens is a mineralogy enthusiast and field collector of minerals. He collects minerals in near-home exposures and documents localities with an emphasis on crystal habits – especially calcite. Mr. Maertens is an active member in local and regional mineralogical associations and is past president of the Pennsylvania Earth Sciences Association. He has won awards from the Eastern Federation of Mineralogical and Lapidary Societies Inc., and the Midwest Federation of Mineralogical and Geological Societies Inc., as editor and contributor for regional bulletins.

7 Calcite specimens under UV-C radiation (254nm), with multi-color fluorescence. Field of view about 170mm tall. New Point Stone St. Paul north pit, Indiana 2023

ORCiD

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Contact MR.CALCITE@VERIZON.NET

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All pictures and crystal drawings are by Johan Maertens of specimens in the Johan Maertens Collection.

Rockin' in the Alleghenies - JOHNSTOWN
FM-PA Annual Symposium and MINERAL, FOSSIL & GEM SHOW

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SYMPOSIUM & SHOW Nov.11, 2023 - Field Trip Nov. 12
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40 TABLES OF SELECTED VENDORS

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Friday evening Nov. 10: Meet & Greet - bring your mineral specimens to talk about.
Saturday Nov. 11: Hybrid Symposium - **ONLINE** or **IN PERSON**
8:00 a.m. to 5:00 p.m. at University of Pittsburgh - Johnstown
Six talks by knowledgeable **SPEAKERS** concentrating on **Pennsylvania Mineralogy & Geology** and more:
Gypsum Occurrence in the Vanport Limestone, Lawrence County, PA - by William Kochanov, PG
Minerals from Centre County: From the bottom of the quarry to the top of the Sky - by Dr. Andrew Sicree
A Model for the Cause of Iridescence in Plagioclase Feldspar and the Effect of Twinning - by Dr. Robert Altamura
The Geochemistry and Petrology of the Bald Hill Bentonites in SW PA - by C Howard, A Schreckengost, Dr. R Kerrigan
Examining Mineral Fluid Inclusions to Assess the Economic Potential of Allegheny Hydrothermal Systems - by Aleya Schreckengost
Minerals and Geological Investigations at the New Paris Quarry, PA - by W. Stephens PG and S. R. Lindberg

Silent Auction – Give-away Table – Meet Fellow Collectors
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Visit our web site for details, registration form, changes and updates: **www.rasloto.com/FM**

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Newsletter published bi-monthly in January, March, May, July, September and November. Please submit all information for publication in the newsletter by the 15th of the previous month.

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www.fommidwest.org

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www.friendsofmineralogy.org

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Our purpose is to organize and promote interest in and knowledge of mineralogy; to advance mineralogical education; to protect and preserve mineral specimens and promote conservation of mineral localities; to further cooperation between amateur and professional and encourage collection of minerals for educational value; and to support publications about mineralogy and about the programs of kindred organizations.