



Newsletter

Of the

New York Microscopical Society

1 Prospect Village Plaza
(66F Mt. Prospect Avenue)
Clifton, New Jersey 07013-1918
GPS: Latitude 40.8648N, Longitude 74.1540W



Nov-Dec 2018

Editor: (201) 791-9826

Volume 12 (32) Number 8



NYMS Winter Banquet 2018 at Landmark Tavern
Photos provided by Jean Portell



New York Microscopical Society Board of Managers

President and Secretary, 2018-2019, Brooke Kammrath, bkammrath@newhaven.edu; (203) 931-2989;
Manager 2016-2019, Membership Chair

Vice President, 2018-2019, John Scott, nyconsnfdn@aol.com; (646)339-6566;
Manager 2016-19, Program Chair, Curator, archivist, facilities assistant

Treasurer, 2018-2019 Mel Pollinger, pollingmel@optonline.net; (201)791-9826;
Manager 2017-2020, Newsletter Editor, Librarian, Facilities, Membership

Manager, 2017-2020 Lou Sorkin entsult@aol.com; (914)939-0917, Webmaster Pro tem

Manager, 2017-2020 John A. Reffner jareffner@cs.com; (203)358-4539 Past President

Manager, 2016-2019 Roland Scal rscal@qcc.cuny.edu; (718)631-6071

Manager, 2017-2020 Andrew J. Winter andrew.winter@co.middlesex.nj.us; (732)816-3793, Education Chair

Manager, 2016-2019 Seymour Perlowitz perlowitzs@hotmail.com; (718)338-6695

Manager, 2016-2019 Peter Diaczuk pedicoplanb@gmail.com; (212)237-8896, Past President

Manager, 2016-2019 Jay Holmes, jholmes@igc.org; (212)769-5039, Outreach program assistant

Manager, 2018-2021 Julie Cohen, julcoh3@gmail.com; (516) 608-1875

Manager, 2018-2021 Sally Warring, sallywarring@gmail.com; (917) 755-4110

Dues and Addresses

Please remember to mail in your

Dues to:

Mel Pollinger

Treasurer, NYMS

18-04 Hillery St.

Fair Lawn, NJ 07410-5207

Junior (under age 18) \$10

Annually

Regular \$30

Student (age 18 or above) \$20

Annually

Supporting \$60 Annually

Corporate (includes one
advertisement in NYMS News)

\$175 Annually

Life \$500 (payable within the year)

To avoid missing notices:

Notify Mel Pollinger if you have
changed your address, phone or
email.

Awards Given by the New York Microscopical Society The New York

microscopical Society
takes great pleasure in
recognizing and rewarding
individuals who have
contributed to either the
activities of the society or
to furthering microscopy.

These awards are
described in our website
and in a pdf file for our
email newsletter
recipients. All members
are eligible to nominate
individuals for these
various awards, and are
encouraged to do so.

John A. Reffner, Awards
Committee Chairperson

Awards Committee

Chair: John A.
Reffner

Members

Jan Hinsch

Peter Diaczuk

John R. Reffner



Mel Pollinger, Editor
18-04 Hillery St.
Fair Lawn, NJ 07410-5207

To Order Your NYMS Lapel Pins

Send a check in the
amount of \$12.00 per
pin to:
New York Microscopical
Society
c/o Mel Pollinger, 18-04
Hillery Street, Fair Lawn,
NJ 07410. To avoid
shipping & handling
charges, pins may be
purchased directly at
any NYMS meeting for
\$10.00.



The Mission of the New York Microscopical Society

is the promotion of
theoretical and applied microscopy and the promotion
of education and interest in all phases of microscopy.

Alternate Meeting Notifications

Please note that due to time constraints in publishing,
some meeting notices may be available by calling
Mel Pollinger at 201-791-9826, or emailing:
pollingmel@optonline.net

Please remember to pay your dues

Buy and Read a Good Book on Microscopy.



SCONYC

Science Council of New York City



Save the Date!!!

SCONYC 2019

All-day Science Conference

Saturday, April 6, 2019

Stuyvesant High School

- ❖ **An opportunity for teachers to share and get new ideas.**
- ❖ **See book and material suppliers.**
- ❖ **Receive free materials and eligible for door prizes.**
- ❖ **Meet representatives of informal education institutions.**
- ❖ **Get the latest information on the NYS P-12 Science Learning Standards which were approved by the Board of Regents year and are being implemented this year with teacher training**
- ❖ **Interested in making a presentation contact presenters@sconyc.org.**
- ❖ **Interested in an exhibit table contact exhibits@sconyc.org.**
- ❖ **Keynote Speaker**

Check our website in January for flyers and registration forms. On-line registration will be accepted. Register early and save \$.

www.SCONYC.org

Visitors Always Welcome to NYMS

Although most of our lecture meetings, workshops and classes are held in the NYMS Clifton facility on the last Sunday in the months of Jan., Feb., Mar., May, Sep. & Oct. The building may be opened for special purposes at other times, by appointment only. For such an appointment, please contact Mel Pollinger by phone at (201) 791-9826, M-F noon to 9:30pm, or by email at pollingmel@optonline.net.

From The Editor...

if you have an email address: Getting the newsletter by email means you can receive an **extended pdf version** that cannot be sent by "snail mail." Even if you only continue your USPS delivery of the newsletter, NYMS needs your email address for reporting priority events and special news. Being able to contact you quickly by email means better communication between you & NYMS■ Mel

Need to use a Microscope or Book?

The various microscopes and library are presently for use on the main floor of the New York Microscopical Society building in Clifton, N.J. To arrange for a visit, please contact John Scott, or Mel Pollinger (see pg 2 for details)

NYMS microscope slide collections are available for study at meetings and by appointment.

Additional Historical NYMS Supplements

Email Newsletter recipients can also receive copies of NYMS Newsletter pdf back-Issues from 2007. Copies of older newsletters will be included in the supplement section as I convert them.

Upcoming NYMS events are noted on the NYMS website and in the NYMS Newsletters both printed and email versions.

Save the Date! (see pg 3)

SCONYC 2019

All-day Science Conference presented by the Science Council of NY in which teachers can share and get new ideas.

**Saturday, April 6, 2019
Stuyvesant High School**

Registration information will be available early 2019 at:
www.SCONYC.org

Due to a scheduling conflict at UNH, the date for Microscope Day has changed to Wednesday April 17th. It will be held in the Alumni Lounge, rather than the Henry Lee Institute, which are next door to each other.

**Kind regards,
Brooke**

**Brooke Weinger Kammrath, Ph.D., D-ABC
ASSOCIATE PROFESSOR
Henry C. Lee College of Criminal Justice and Forensic Sciences
University of New Haven
300 Boston Post Rd. West Haven, CT 06516**

T: 203-931-2989

E: BKammrath@newhaven.edu

W: www.newhaven.edu

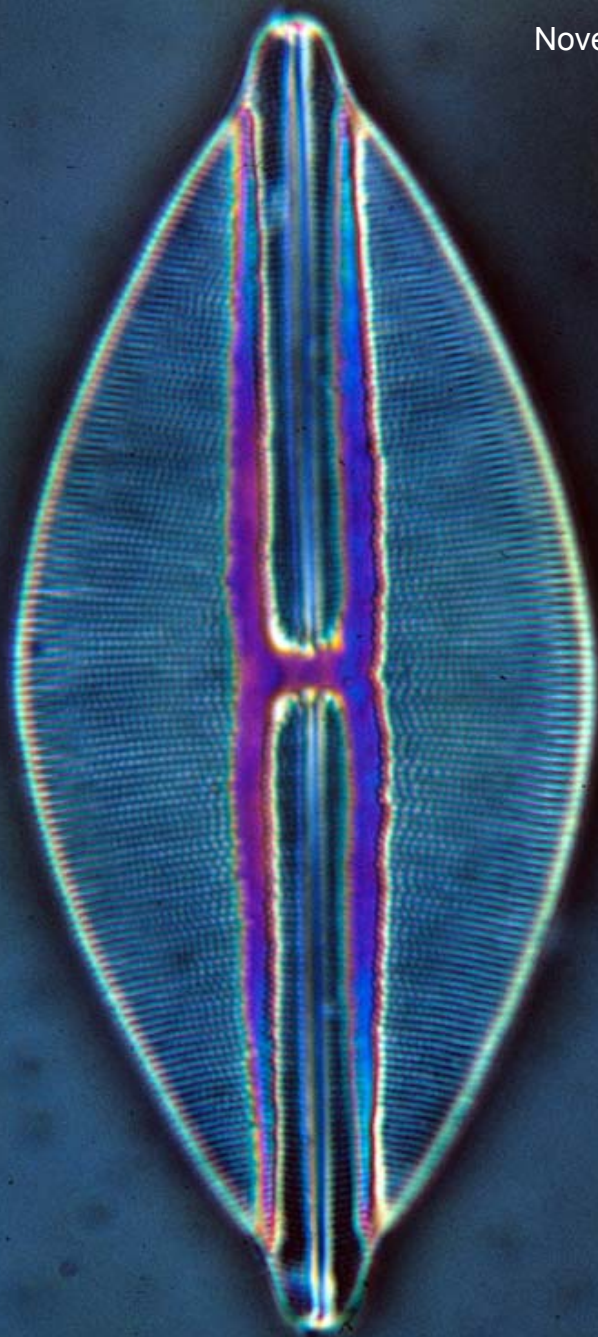
<http://www.newhaven.edu>



NEW YORK MICROSCOPICAL SOCIETY

NEWSLETTER SUPPLEMENT SECTION

November – December 2018



Navicula lyra 400x
Jan72
Photomicrograph by Eric Gravé

- ◇: Nicholas Petraco: Detection by Hanging Drop
- ◇: William Neuberg: Selenite
- ◇: NYMS Membership Application
- ◇: NYMS Items for Sale
- ◇: Directions to NYMS in Clifton, NJ
- ◇: NYMS Gallery

A Quick Method for the Detection of Single-Base or Double-Base Smokeless Powders Particles using the Hanging Drop Technique

Nicholas Petraco, M.S., D-ABC,¹ Michael Gittings, M.S.,² Marcel Roberts, PhD³

Keywords

Hanging Drop, Smokeless powders, Nitroglycerin

Abstract

Bulk smokeless gunpowder is manufactured in a large variety of shapes, sizes, and textures, making it challenging to differentiate between types of powders. One chemical discriminating parameter is the presence of nitroglycerin which often requires expensive instrumentation to be detected. By using the hanging drop technique it is possible to differentiate between single-base and double-base smokeless powders. The method resulted in a successful time effective and nondestructive result for the detection of nitroglycerin.

Introduction

Smokeless powders are typically utilized for sport and recreational purposes. However, they are also used in the construction of improvised explosive devices (IEDs) and may be encountered in any crime scene involving a firearm.¹⁻⁵

Smokeless powders are traditionally analyzed in a laboratory setting and require time consuming protocols and expensive confirmatory instrumentation. Previous studies cite the use of gas chromatography mass spectrometry (GCMS), high performance liquid chromatography (HPLC), ion chromatography, and micellar electro kinetic capillary electrophoresis.⁶⁻¹¹

Although the confirmatory result is advantageous, the potential drawbacks for many laboratories are a drain on limited economic resources and time constraints. In order to mitigate these potential disadvantages, an approach to screen evidence using presumptive tests may prove beneficial, although lacking in specificity, the gains are in diminished costs and reduction in time spent for the analysis.

Smokeless powders are commercially available in the single-base and double-base form. Triple-base ammunition; However, is typically reserved for military ordinance. Single-base powders contain nitrocellulose (NC) while double-base powders contain nitrocellulose and nitroglycerin (NG).¹²⁻¹⁵

Spot test have been used in the early twentieth Century to detect nitrocellulose and nitroglycerin in explosives.¹⁶ In this paper a spot test is utilized to quickly differentiate and identify single-base (SB) and double-base (DB) smokeless powders. The most efficient way to differentiate between these two common types of smokeless powder is by detecting nitroglycerin which is in DB and not in SB. In order to create a fast, effective, nondestructive, and economical spot test, the classic hanging drop method was combined with a classic color test for nitroglycerin.^{17&18} The test results were supported by confirmation of the presence or absence of nitroglycerin using GCMS presented in a separate paper.

Methods

Presumptive Test

The method's foundation is based on the hanging drop method. The test reagent mixture is composed of 2.0 mg of diphenylbenzidine (DPB) in 10 mL of sulfuric acid. Ten smokeless powders were obtained for tentative identification. This method was performed with five SB and five DB smokeless powders. Table 1 lists the smokeless powders analyzed using the method along with their classification as SB or DB.

The classification was determined by the ammunition's MSDS. A single pellet was placed onto a clean microscope slide and covered by a glass sublimation ring with an outer diameter of 22 mm (Figure 1).

Table 1. Experimental Smokeless Powders

Smokeless Powder	Classification
Alliant Unique	Double-base
Hercules 2400	Double-base
Hercules Bullseye	Double-base
Winchester Western Ball	Double-base
Hercules Blue Dot	Double-base
IMR 4350	Single-base
IMR 3031	Single-base
Dupont SR 4759	Single-base
Hogdon H110	Single-base
Hogdon H4831	Single-base

A 20 μl of DPB test reagent was placed onto a circular cover slip with a 22 mm diameter (Figure 2). The coverslip holding the DPB test reagent was inverted and placed on top of the ring such that the DPB test reagent acted as a hanging drop (Figure 3). The setup was placed onto a preheated 70 $^{\circ}\text{C}$ hotplate and allowed to warm for three minutes as illustrated in Figure 4. Figure 5 depicts the results obtained when a tiny drop of DBP reagent was applied to the cover glass to test one particle of known SB smokeless powder (on top) and one particle of known DB smokeless powder (on bottom).

Results

Spot Test

The hanging drop over the single-base pellet produced a no color change. The drop hanging over the double-base pellet produced a bluish/purple color reaction. The bluish/purple hue developed within 15 seconds. The reagent control did not produce a hue of any kind. The positive control, nitroglycerin, produced a consistent bluish/purple hue that was observed in the reaction for the double-base powder. The reaction time for the positive control was immediate. Figure 6 depicts the results observed in four reactions.

The top left corner sample is a single-base powder, the top right corner sample is nitroglycerin (positive control), the bottom left corner sample is a double-base powder, and the bottom right corner sample is diphenyl amine (negative control).



Figure 1 - One particle or wafer of smokeless is placed with a sharp tungsten needle on the surface of a glass microscope slide within the center of a glass ring.

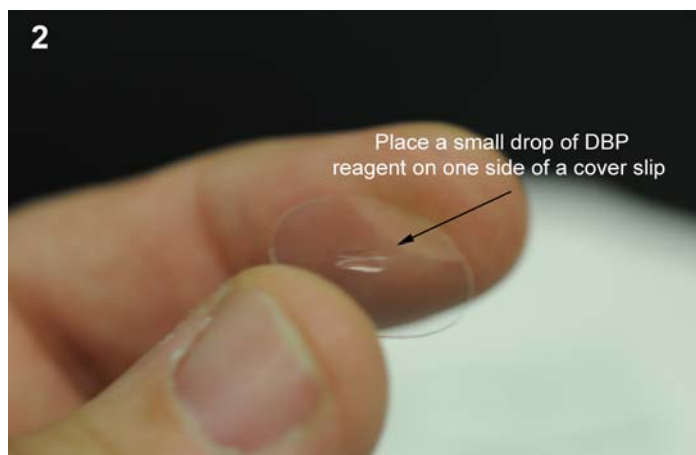


Figure 2 - A small drop of DBP reagent dissolved in concentrated sulfuric acid is placed on one side of a round glass cover slip.

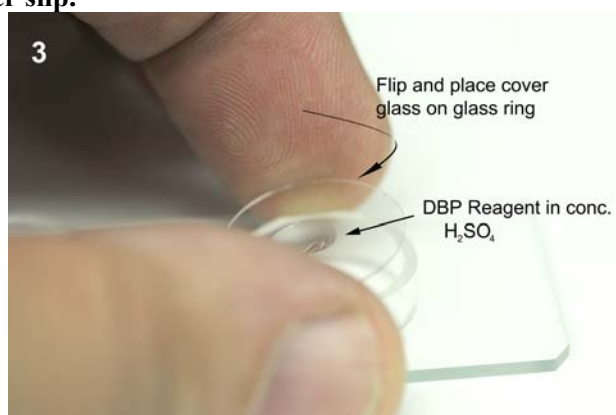


Figure 3 - The round cover slip containing the DBP reagent is quickly flipped over and carefully placed on top of the glass ring.



Figure 4 - The slide containing the blank (left) and the suspected particle (right) are placed on a hot plate and gently warmed for a few minutes.

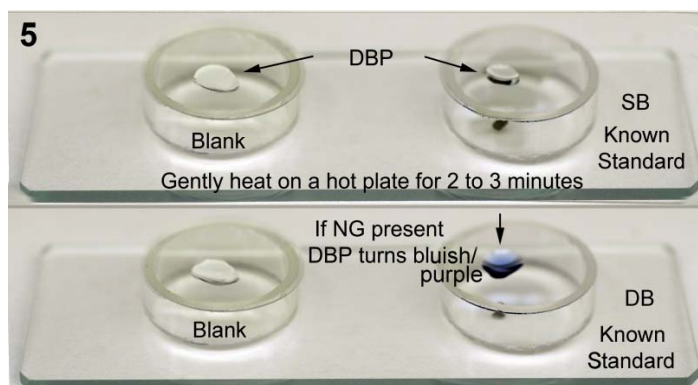


Figure 5 – Shown are a drop of blank reagent and a particle of a known SB smokeless powder (on top); and a drop of blank reagent and a particle of known DB smokeless powder (on bottom) after gently heating, note the distinctive color reaction.

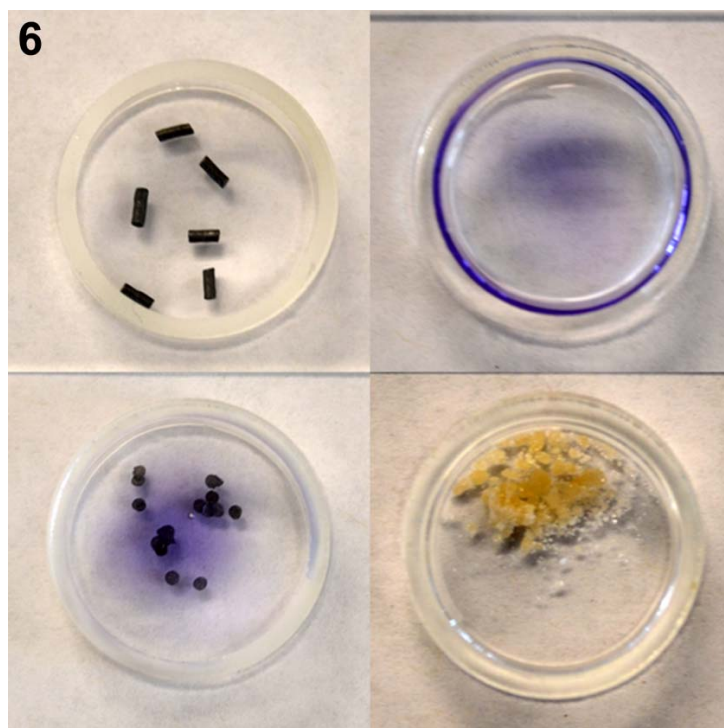


Figure 6 – Photographs of presumptive hanging drop method of single-base Powder (top left) ; Double-base Powder (bottom left) ; Nitroglycerin (top right); Diphenyl Amine (bottom right).

Discussion

The hanging drop approach to detect nitroglycerin in smokeless powders was successfully developed. The method is reproducible, cost effective, and nondestructive. A positive reaction produces a purple drop, when NG is present. It is necessary to note that the concentration of NG in bulk manufactured pellets

varies wildly, ranging as much as 4-40%. This results in small variations of time and intensity of purple in positive results.

Acknowledgments

We would like to thank Dr. Peter Diaczuk for his unfathomable knowledge of firearms and gunpowder and his assistance in obtaining smokeless powders, and Dr. John Gilligan for his valuable comments and suggestions concerning the NG concentration.

References

1. Stoffel, J., *Explosives and Homemade Bombs*, C.C. Thomas, 2nd ed., Springfield Ill, 1977, pp. 53-55.
2. Bors, D., Cummins, J., and Goodpaster, J., "The Anatomy of a Pipe Bomb Explosion: The Effect of Explosive Filler, Container Material and Ambient Temperature on Device Fragmentation," *Forensic Science International*, 234 (2014), pp. 95–102.
3. Jane, I., Brookes, P. G., Douse, J. M. F., and O'Callaghan, K. A., "Detection of Gunshot Residues Via Analysis of Their Organic Constituents," In *Proceedings of the international symposium on the analysis and detection of explosives*, (1983), pp. 475–83.
4. Royds, D., Lewis, S. W., Taylor, A. M., "A case study in forensic chemistry: The Bali bombings Talanta," 67 (2005), pp. 262–68.
5. Taudte, R. V., Beavis, A., Blanes, L., Cole, N., Doble, P., Roux, C., "Detection of Gunshot Residues Using Mass Spectrometry," *BioMed Research International*, 2014, pp. 1-15.
6. Miyauchi, H., Kumihasi, M., Shibayama, "The Contribution of Trace Elements from Smokeless Powder to Post Firing Residues," *Journal of Forensic Sciences*, 43(1) pp. 90-6.
7. Reardon M. R., MacCrehan W. A., Rowe, W. F., "Comparing the Additive Composition of Smokeless Powder and its Handgun fired Residues," *Journal of Forensic Sciences*, 45(6) pp. 1232-38.

8. Cascio, O., Trettene, M., Bortolotti, F., Milana, G., Tagliaro, F., *Analysis of Organic Components of Smokeless Gunpowder: "High performance liquid chromatography vs. micellar electro-kinetic capillary chromatography,"* Electrophoresis, 25, pp. 1543-47.
9. Muller, D., Levy, A., Vinokurov, A., Ravreby, M., Shelef, R., Wolf, E., Eldar, B., Glattstein, B., A "Novel Method for the Analysis of Discharged Smokeless Powder Residues," Journal of Forensic Sciences, 52 (1), 75-8.
10. Rhodes, G., *Crystallography Made Crystal Clear*, Third Edition: A Guide for Users of Macromolecular Models, 3rd Ed., Academic Press, 2006.
11. Meng, H. H., Caddy, B., "Gunshot Residue Analysis—a review," Journal of Forensic Science, 63, pp. 1038-42.
12. Wallace, J. S., Chemical Analysis of Firearms, Ammunition and Gunshot Residue," International forensic science and investigation series, CRC press.
13. Hardy, D. R., Chera, J. J., "Differentiation Between Single-Base and Double-Base Gunpowders," Journal of Forensic Sciences 24, (1979) pp. 618-22.
14. Douse, J.M.F., Smith, R. N., "Trace Analysis of Explosives and Firearm Discharge Residues in the Metropolitan Police Forensic Science Laboratory," Journal of Energetic Matter, 4 (1986) pp. 169–86.
15. Yinon, J. and Zitrin, S, *Modern Methods and Applications in Analysis of Explosives*, John Wiley & Sons, Inc., New York – London, 1993, p. 18.
16. Feigl, F., *Qualitative Analysis by Spots Test – Inorganic and Organic Application*, 3rd Edition, Elsevier Publishing Co., New York-Amsterdam, 1946, p. 488.
17. Chamot, E. M., and Mason, C. W., *Handbook of Chemical Microscopy*, Vol. II, John Wiley & Sons, Inc., New York – London, 1931, pp. 40-43.
18. Jungreis, E., *Spot Test Analysis*, 2nd Ed., Volume 141, Editor, J.D. Winfordner, Wiley Interscience, N.Y., 1996, pp. 101-2.

¹ Forensic Consultant and Adj. Assistant Professor of Forensic Science, 524 West 59th Street, NY, NY 10019.

² Graduate Student, John Jay College of Criminal Justice, 524 West 59th Street, NY, NY 10019.

³ Assistant Professor, John Jay College of Criminal Justice, 524 West 59th Street, NY, NY 10019.

Selenite Crystal Cleavages

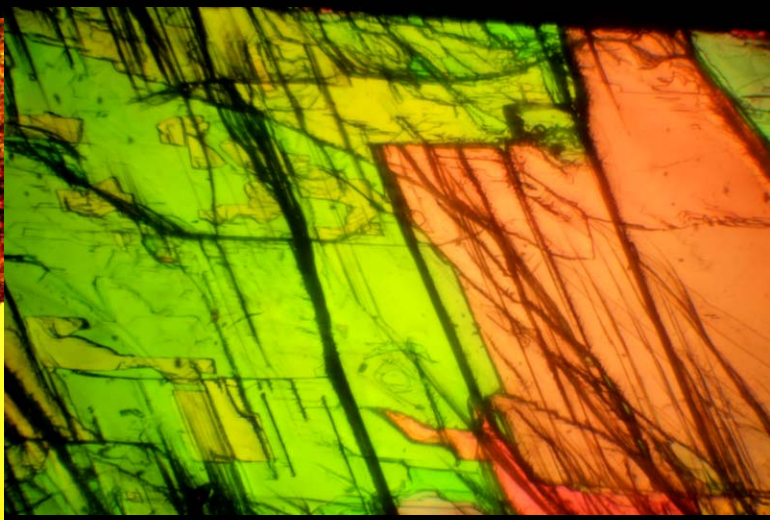
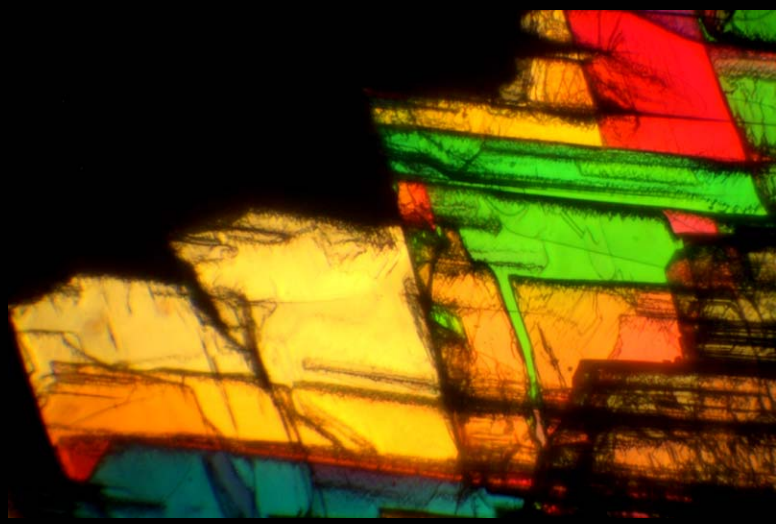
By Bill Neuberg

I thought I could make a gypsum plate for my polarizing microscope; so I looked up gypsum and found, *Gypsum occurs in nature as flattened and often twinned crystals, and transparent, cleavable masses called selenite*. I looked that up and bought a Selenite Healing Crystal for 5 dollars on Amazon.

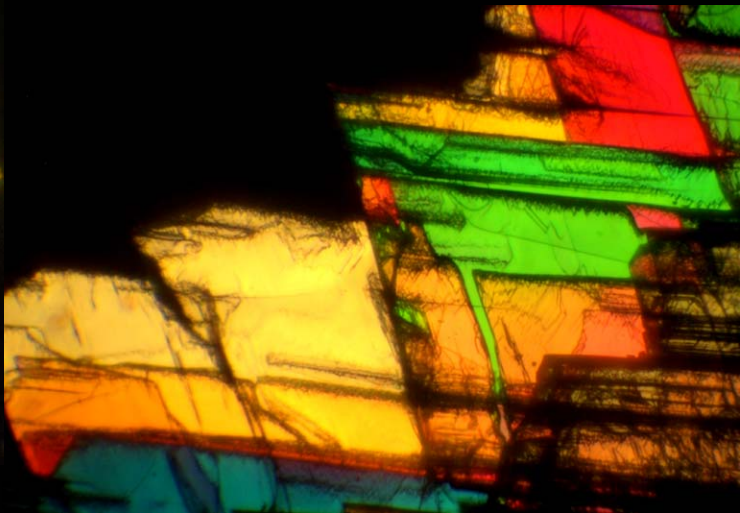
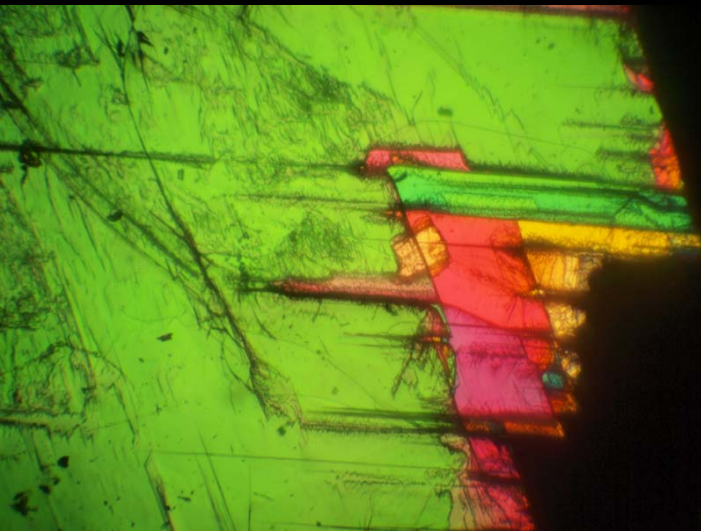
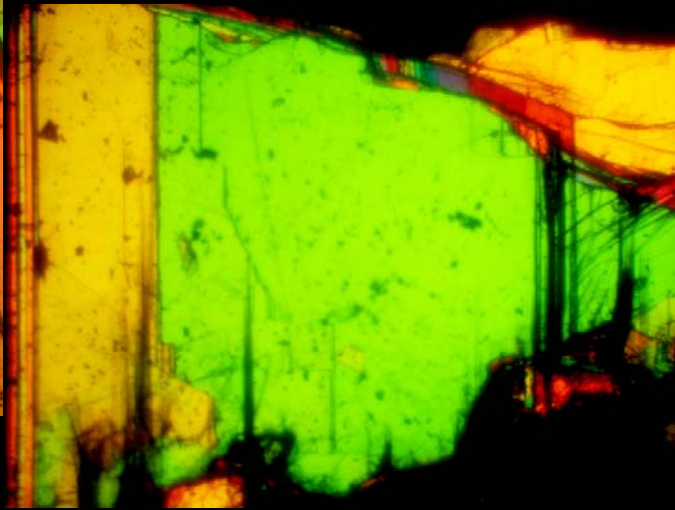
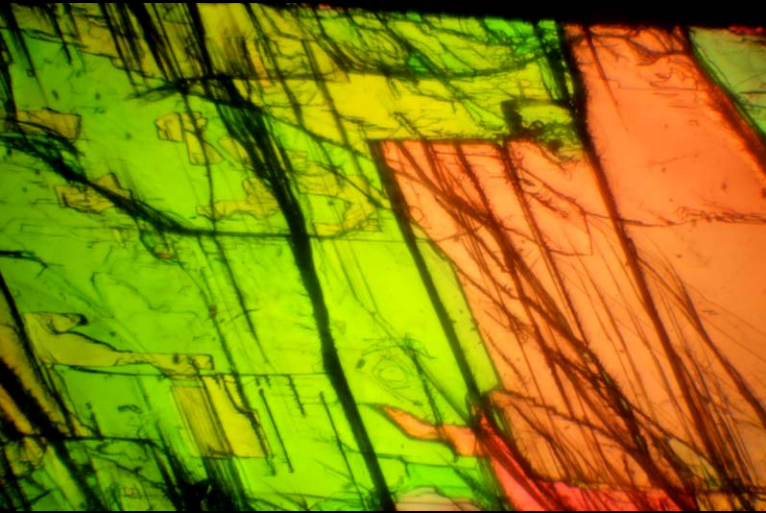
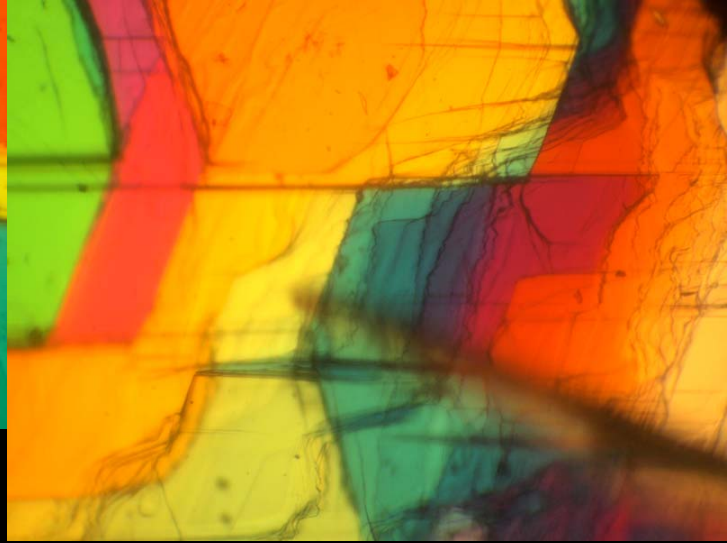
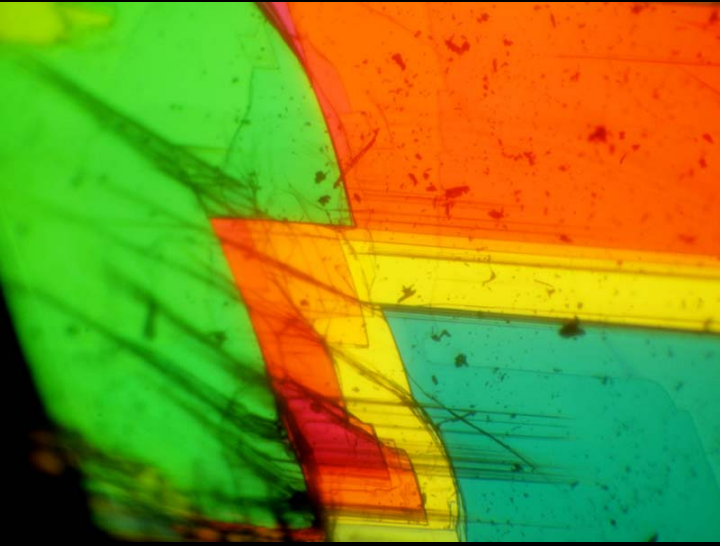
I proceeded to peel off a small piece to make my gypsum plate. (see Healing Crystal). I found it to cleave like mica, but softer and not as easily split, but I was able to cut it easily with a razor blade. (see 1 Selenite crystal)

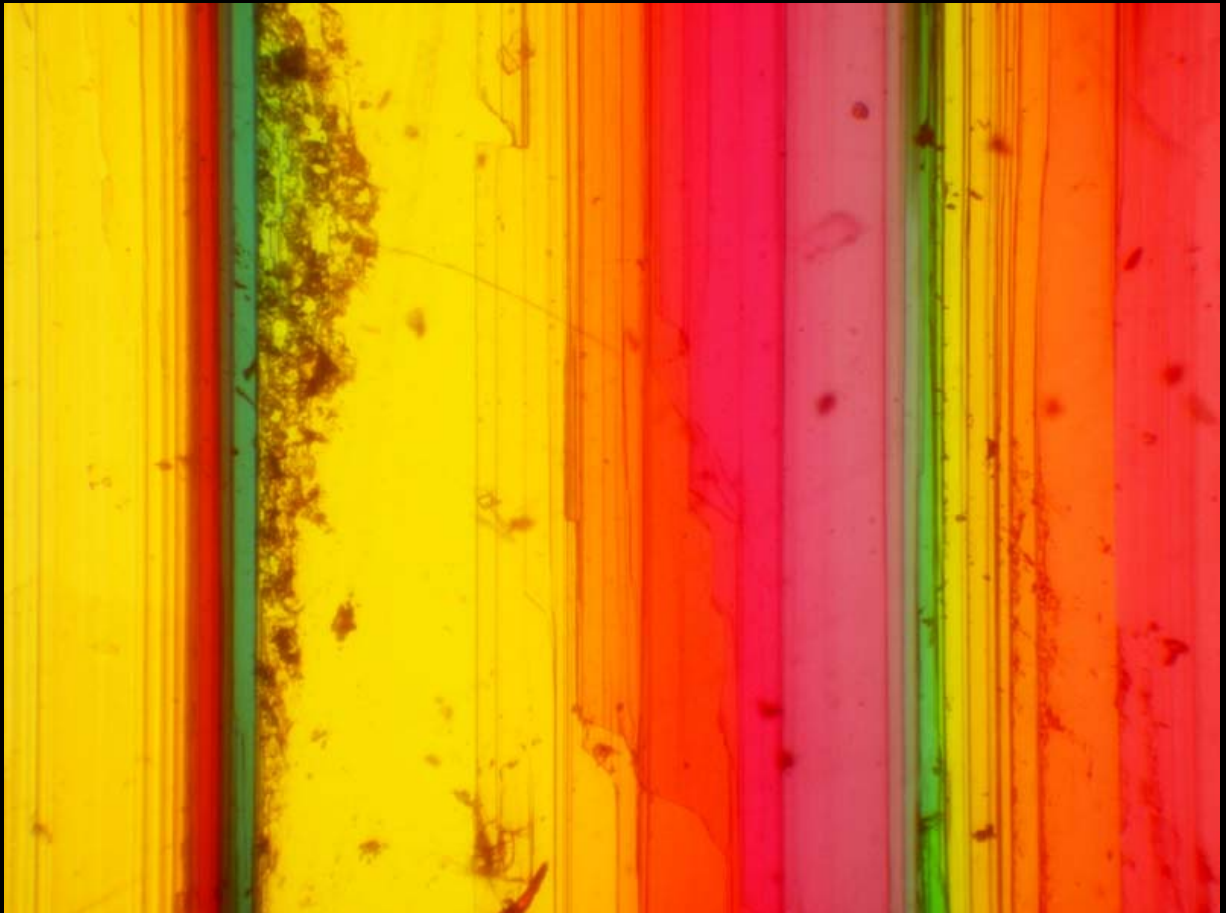
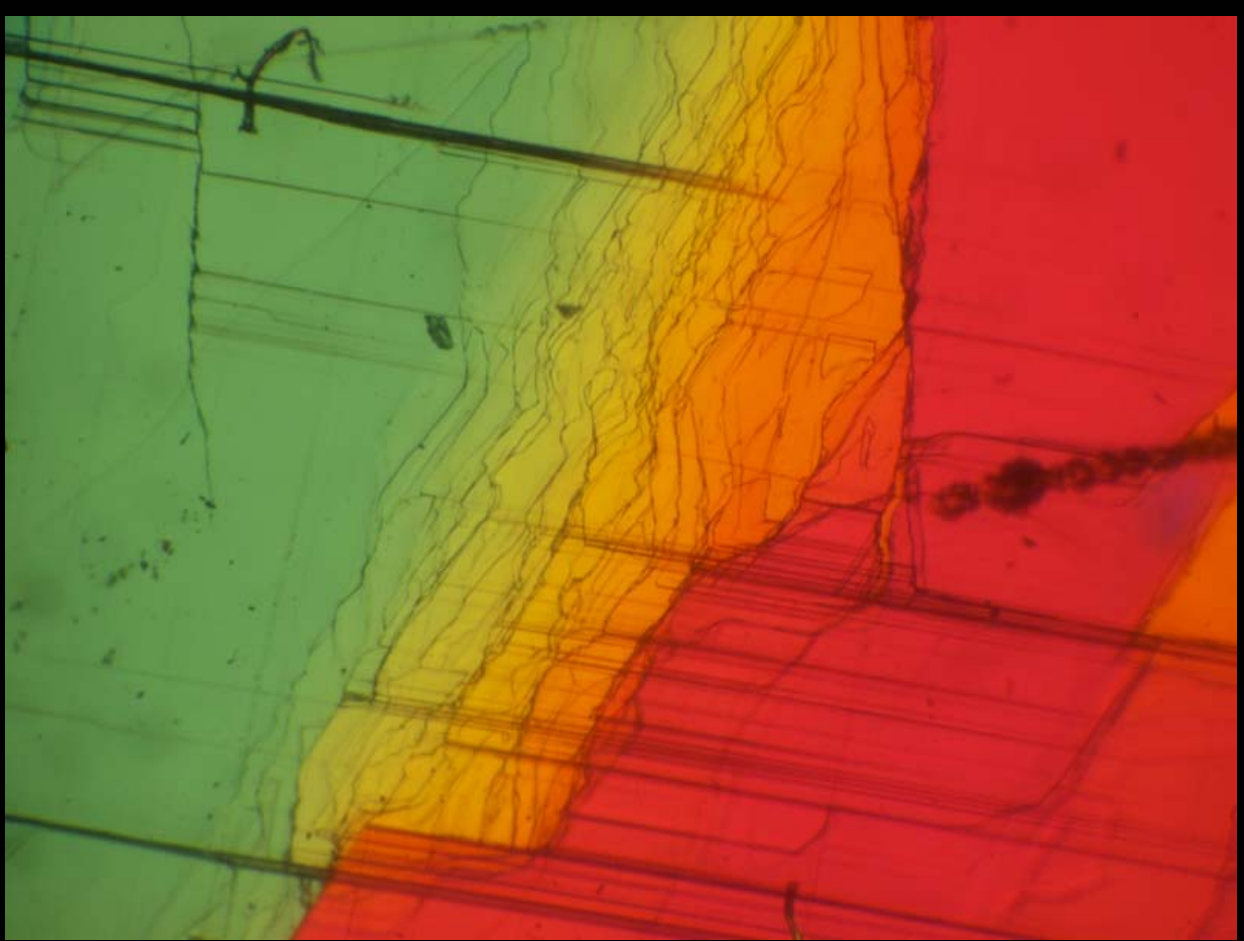
I tried to cleave off to the thickness that would give me the lambda plate, but had no success. Instead, I found that this mineral has overlapping plates that show the full range of polarization/interference colors that you see on a Michel-Levy chart. I proceeded to take artsy looking pictures using my Leitz Orthoplan, 1.6 objective, 10x/18 eyepiece, and Olympus Pen camera.

All the images show field widths of 3.6mm. Knowing that to be a true dimension, one can determine the actual area, or length of any part of the photo image.



Selenite





Selenite

NEW YORK MICROSCOPICAL SOCIETY BULLETINS

The following original-print bulletins can be purchased by NYMS members. The bulletins are limited in number and can be purchased, while they last, at \$2.00 each, 8 copies for \$10 plus \$2.00 S&H. Also, in limited supply are original-print NYMS journals, while they last at \$5.00 each. The journals date back to 1896. The bulletins, Journals and other out-of-archive publications may be viewed at the NYMS Library in our building in Clifton, New Jersey. If interested in owning a part of NYMS history, please contact Mel Pollinger by email pollingmel@optonline.net or by daytime phone at (201) 791-9826

Vol. 1 New York, N. Y., January, 1937 No.3

COLLECTING RECENT DIATOMS *By* JOSEPH F. BURKE

Vol. 1 New York, N. Y., February, 1937 No. -4

PREPARING RECENT DIATOMS *By* JOSEPH F. BURKE

Vol. 1 New York, N. Y., November, 1937 No.5

MOUNTING RECENT DIATOMS *By* JOSEPH F. BURKE

Vol. 3 New York, N. Y. June, 1951 No: 1

PREPARATION OF METAL FOR MICROSCOPICAL EXAMINATION

by F. Gordon Foster Fellow, New York Microscopical Society

Vol. 1 New York, N. Y., December, 1936 No.2

MAKING A ROCK SECTION

By GEORGE E. ASHBY

Vol. 1 New York, N. Y., February, 1936 No.1

THE MYCETOZOA

By ROBERT HAGELSTEIN

Vol. 2 New York, N. Y., April, 1944 No.1

THE HISTORY OF THE MICROSCOPE

By ROBERT HAGELSTEIN

Vol. 1 New York, N. Y., January, 1940 No.6

MOUNTING INSECTS BY THE PRESSURE METHOD, *By* Roy M. ALLEN

New York Microscopical Society Items For Sale

29-Feb-2016

N.Y.M.S. Microscope Covers

Item #	Size	Member Price	List Price
MT-003	Small Microscope or Stereo, 15"W x 17"H	\$18.00	\$20.00
MT-004	Lab Microscope or Large Stereo, 20"W x 18"H	\$23.00	\$25.00
MT-005	Large Lab Scope, 22"W x 21"H	\$28.00	\$30.00
MT-009	Large Lab Scope with Camera, 9"W x 19"Deep x 23"H	\$31.00	\$33.00
MT-010	Universal Scope with Camera, 11"W x 25"Deep x 23"H	\$36.00	\$40.00
MT-012	X-large Scope	\$45.00	\$50.00

N.Y.M.S. Microscopes (see below for images)

185	Monocular Dissecting Microscope	\$85.00	\$99.00
131	H.S. Student Microscope	\$190.00	\$245.00
131-FLU	H.S. Student Microscope (Fluorescent)	\$200.00	\$255.00
125-LED	H.S. Student Microscope (LED)	\$240.00	\$309.00

Other Items

NYMS Glossary of Microscopical Terms	\$30.00	\$35.00
NYMS Patch	\$5.00	\$7.00
Microscope Cleaning Kit*	\$40.00	\$45.00
NYMS Lapel Pin	\$10.00	\$15.00
NYMS Engraved Pen	\$7.00	\$10.00
Rotifer Book by Howard Taylor	\$20.00	\$40.00
*When available		



Model 131: Tungsten

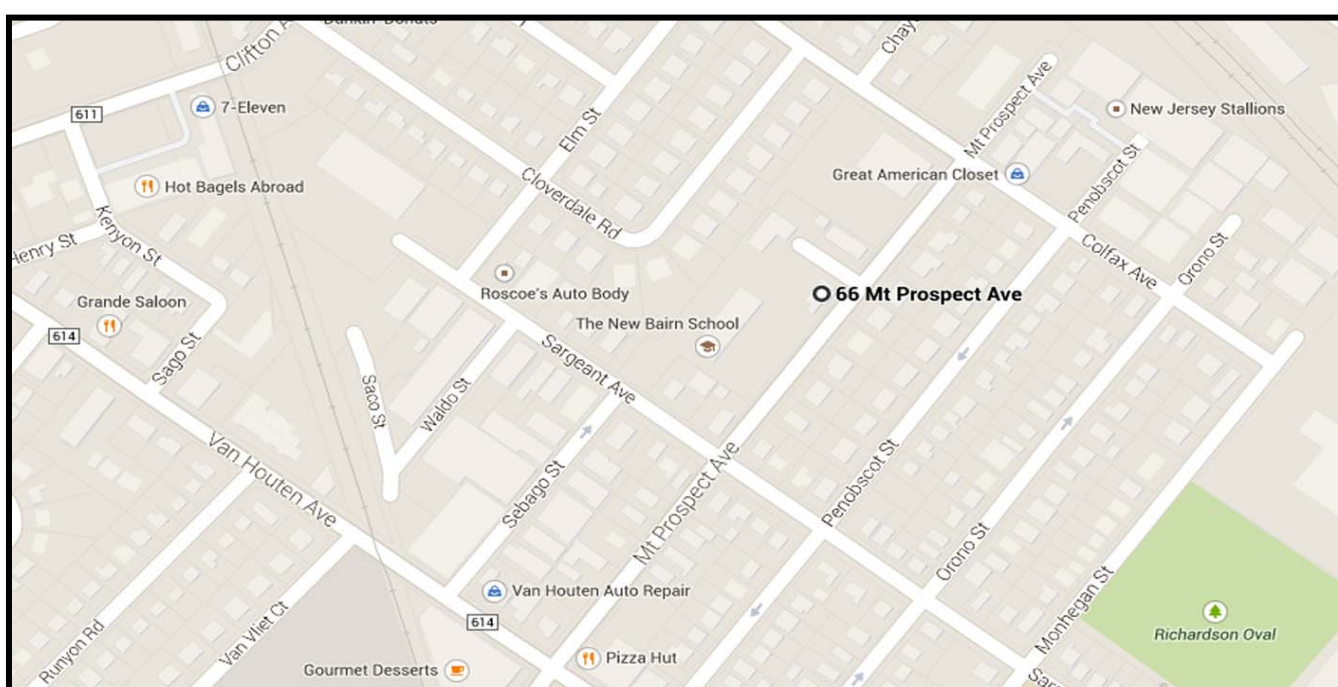
Model 131-FLU: Fluorescent



Model 185: 20x



Model 125-LED Cordless



Directions to NYMS Headquarters

**One Prospect Village Plaza
(66F Mount Prospect Avenue)
Clifton, NJ 07013**

**GPS: Intersection of Colfax & Mt. Prospect:
Latitude 40.8656 N, Longitude 74.1531W,
GPS: Our building: Latitude 40.8648 N,
Longitude 74.1540 W**

From George Washington Bridge:

Take Interstate Route 80 west to Exit 57A, Route 19 South. Take Route 19 to Broad Street and continue two lights to Van Houten Avenue. Turn Left. Go to second light, Mount Prospect Avenue and turn left. Building 66F is on the left side , one and a half blocks from Van Houton.

From Lincoln Tunnel:

Follow exit road to NJ route three west. Continue to Bloomfield Avenue exit. Turn right to Circle and go three quarters to Allwood Road West. Mount Prospect Avenue is a few blocks on the right (a small street) Turn right and go to first light (Van Houton) continue. Building 66F is on the left side , one and a half blocks from Van Houton.

From North:

Take Garden state Parkway South to Route 46 Clifton Exit. On 46 Make second exit to Van Houton Ave. Continue to third light Mount Prospect Avenue and turn left. Building 66F is on the left side , one and a half blocks from Van Houton.

From Route 46 coming from west:

Take Broad Street Exit in Clifton and follow Directions above from GW Bridge.

From route 46 coming from East: Take Paulson Avenue Exit in Clifton and follow to Second light, Clifton Ave turn right. Go to next light, Colfax, turn left, go three blocks and turn right on Mount Prospect Ave.. Building 66F is half block on right.

Public transportation from NY:

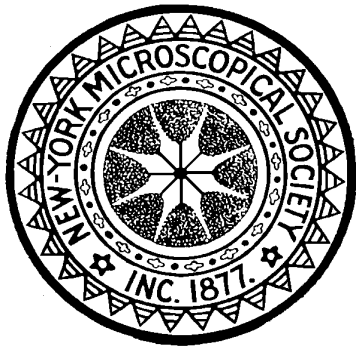
Take NJ Transit train from Penn Station to Secaucus Transfer Station. Change trains to Bergen Line to Clifton (call NJ Transit for schedules). From Clifton Station cross under tracks to first street and go left one block to Mount Prospect Street, turn right and Building 66F is one half block on Right.

If you plan to come by bus or train, please copy the links below into your browser:

http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=TripPlannerItineraryTo

http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=BusSchedulesP2PTo

http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=TrainTo



New York Microscopical Society

Please send with payment directly to:

New York Microscopical Society
c/o Mel Pollinger, Treasurer
18-04 Hillery Street
Fair Lawn, NJ 07410-5207

Please Print

I hereby apply for membership in the New York Microscopical Society

Name: (Dr., Ms., Mr., Mrs.).....Nickname:.....

Home Address:.....

Phone: (home or mobile).....Fax:Email:.....

Work Information: Company Name.....Work Address:.....

Work Phone:Email:.....

Would you prefer to receive NYMS mail at home? ☐ at work? ☐ by email (*best way*)? ☐

Principal work or interest in microscopy:.....

Would you like information about NYMS committees? Yes ☐ No ☐ Awards ☐ Membership ☐

Education ☐ Library ☐ Finance ☐ Curator ☐ Housing ☐ Program ☐ Publications ☐ History ☐

Academic and Honorary Degrees:

Degree	Conferring Institution	Date
--------	------------------------	------

Scientific Publications.....

Membership in Scientific Societies.....

Date of birth (optional if over 18)

I have enclosed a check for \$..... to cover my application fees for membership.

{Annual \$30, Supporting \$60, Life \$500 (payable within the year), Corporate \$175 (includes one advertisement in NYMS News), Junior \$5 (under 18 years old), Student (over 18) \$20.}

I understand portions of the above information may be used in NYMS publications.

I would prefer my home ☐ work ☐ address/phone included in the NYMS Directory

Signature.....Date.....

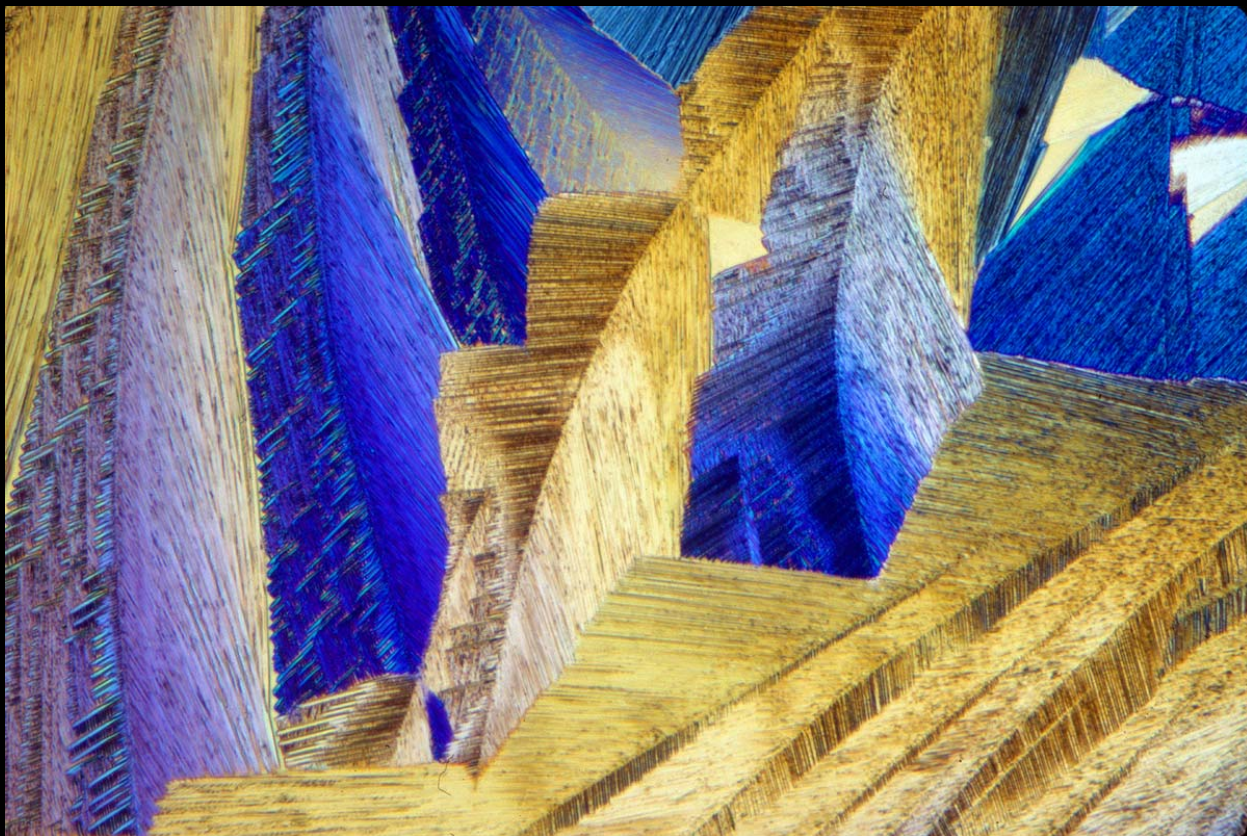
NYMS Headquarters: One Prospect Village Plaza (66 Mount Prospect Avenue), Clifton, NJ 07013



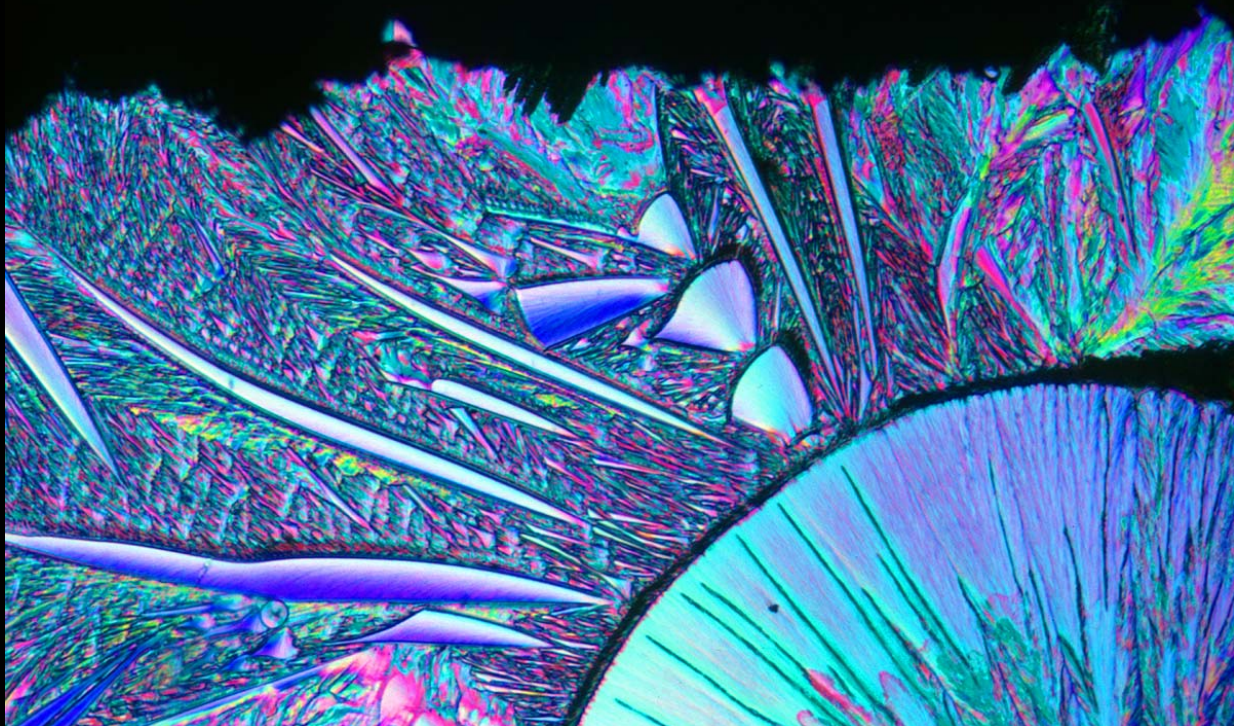
Bibenzyl, 50x (P1061210)b6x4x200: Photomicrograph by Mel Pollinger



Bibenzyl, 50x (P1061207)b6x4x200: Photomicrograph by Mel Pollinger



Butylated Hydroxy Toluol (BHT), 50x (P1053127)a6x4x20: Photomicrograph by Mel Pollinger



Bibenzyl, 50x (P1061204)a6x4x200: Photomicrograph by Mel Pollinger



Paramecium caudatum, 133x fr10 a6x4x200: Photomicrograph by Eric Gravé



Trichinella spiralis, 64x (198)a6x4x200: Photomicrograph by Eric Gravé