



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



March 2013

N.Y.M.S. (973) 470-8733

Volume 7 (27) Number 3

Meeting at NYMS in Clifton

Winter-Spring 2013 Lecture Series

Sand Collecting: Its Study and Imaging

Where: NYMS in Clifton, N.J

When: Sunday March 24th, 2013 1:30pm

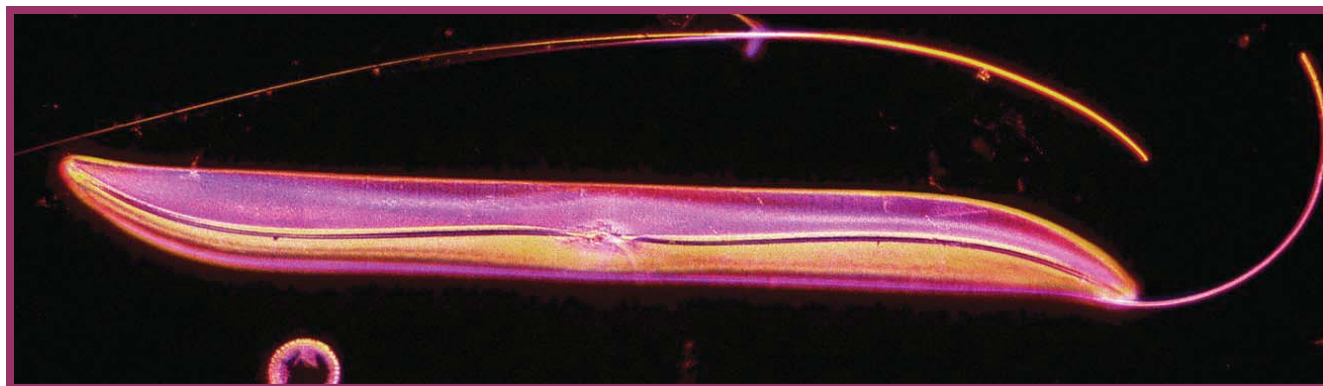
Speaker: Jan Hinsch

"If you are an amateur microscopist in search of an inexhaustible source of specimens consider sand. Geologically sand is defined as particles > 0.0625 and $< 2\text{mm}$. It may be of mineral origin or fragments of shells or corals. Sand is beautiful to look at, both in transmitted and in incident light with moderate to medium powers. For a more analytical view of sand the polarized light microscope is essential. When equipped with a spindle stage it is possible to measure the two or three refractive indices by immersion methods.

CV: Jan Hinsch: Joined Leica/Leitz 1958, retired in 2003, Immigrated to the US 1964, lived in Durham NC, Washington DC, 1978 Moved to NJ 1978, appointed director of the Leitz Microlab, Member of NYMS, 1995 Ashby Award, 2002 Ernst Abbe Award, shared with Mortimer Abramowitz and Ernst Keller.

Doors will be open at Noon. Refreshments will be available. For additional information, or in case of inclement weather, please contact Mel Pollinger (pollingmel@optonline.net) or (201)791-9826 before the day of the meeting, or by cell= (201) 314-1354 no later than 1 PM (meeting day only). **Following the meeting, NYMS members and their guests are welcome to join the speaker for Dinner at a selected, local restaurant. Cost to members and their guests is \$35.00 per person. Please contact Program Chair, John Scott at nyconsnfdn@aol.com or by cell at (646) 339-6566 no later than noon on Saturday to RSVP for dinner.**

Diatom (Gyosigma), 200x, Rheinberg Illumination + polarized light – Image by Mel Pollinger



Save a Tree: Get The Extended Newsletter: By Email Only

Board of Managers (updated)

Diaczuk, Peter, pedicopete@earthlink.net; (212) 237-8896, Expy June 2013,President
Scott, John, nyconsnfdn@aol.com; Expy June 2015,Vice President, Program Chair
Pollinger, Mel, pollingmel@optonline.net; (201) 791-9826, ... Expy June 2014,Treasurer, Editor, Librarian
Klaus, Angela, Ph.D., klausang@shu.edu; Expy June 2015,Secretary, Education Chair
O'Leary, Don, dkoleary@verizon.net; (201) 368-8849,Expy June 2013,Curator, Facilities Manager
Reffner, John A., Ph.D., jareffner@cs.com; (203) 348-8098,Expy June 2014, Awards Chair...President
McCann, Mary, mccanns@tiac.net;(617) 484-7865,Expy June 2015,Membership Chair
Huemmer, Craig, chuemmer@hotmail.com; Expy June 2015,Board member
Mayer, Gary, mayer@co.somerset.nj.us; Expy June 2014,Board member
Perlowitz, Seymour, perlowitzs@hotmail.com; Expy June 2013,Board member
Reffner, John Jr., jrr1lp@gmail.com; (cell): (215) 527-1882, Expy June 2014,Board member
Scal, Roland, Ph.D., rscal@qcc.cuny.edu; (718) 631-6071,Expy June 2013,Board member

Dues and Addresses

Please remember to mail in your Dues to:

Mary McCann,
Membership Chair
McCann Imaging
161 Claflin Street
Belmont, MA 02478

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 \$300 (payable within the year)

To avoid missing notices:

Notify Mary McCann and 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
Don O'Leary
Mel Pollinger

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.



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



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 by visiting the NYMS website, or emailing: pollingmel@optonline.net

Dues for 2013 are due!

Buy and Read a Good Book on Microscopy.



Open House for Members Day at Clifton on Sunday January 27, 2013 Proves a Boone for Members

Having our building open for informal gatherings usually leads to some rather interesting discussions amongst the members who show up. All of NYMS' scopes, books, slides, etc. are made available to members at these times. We looked at prepared slides from the NYMS collections. At this meeting, Jan Hinsch set up his microscope to observe temporary mounts of diatoms. A discussion of this and other microscopically related subjects then ensued. **Come to the next one, you will enjoy it.**

Inter/Micro 2013

Inter/Micro is an internationally recognized conference that attracts microscopists from all areas of light and electron microscopy. Research presentations during the first three days cover techniques and instrumentation, environmental and industrial microscopy, and forensic and chemical microscopy. The final two days will be a hands on microscopy workshop,

Call for Papers

July 15-19, 2013 - Inter/Micro: 64th Annual Applied Microscopy Conference, Chicago, IL, USA

Titles & Abstracts due by April 15, 2013

Upcoming conferences

July 15-19, 2013

Inter/Micro: 64th Annual Applied Microscopy Conference, Chicago, IL, USA

Hosted by: McCrone Research Institute

Contact: Julie Antia

e-mail: intermicro@mcri.org

julie@mcri.org

www.mcri.org

Phone: 312-842-7100

Fax: 312-842-1078

Sent to me by Thom Hopen, member of NYMS:

"Thought you would like to see what our member Julian Gray has accomplished."

Past President of the Georgia Mineralogical Society
Thomas J. Hopen



From: Julian Gray [mailto:julian.gray@comcast.net]

Sent: Sunday, February 17, 2013 12:14 AM

To: Thom Hopen

Subject: Photo contest in Tucson

Hi

Wahoo! I won first place in Jeff Scovil's photomicrography contest at the Saturday evening banquet in Tucson tonight!! I think I get \$75 and my winning image in Rocks and Minerals magazine!! Winning image attached – **conical calcite from Laurion, Greece**. Edge to edge, the image covers 5 mm. I threw everything at this subject: focus stacking and high dynamic range software for you photo nuts.

Julian Gray

Got News?

Send it to The Editor. If you have images and/or article related to microscopy, or a letter to the editor, please send it to me. It could be an interesting book, mystery photo, website or anything else you believe may be of interest to your fellow NYMS members, don't be shy, send it to the Editor.

NYMS Welcomes Visitors

Although most NYMS events and meetings are held in Clifton, New Jersey on Sundays, the building may be opened for visitors at other times providing an appointment is made with Don O'Leary or Mel Pollinger at least two days prior to the desired appointment time. NYMS Headquarters at Clifton, NJ will be open by appointment only to members from 8:00pm to 10:00 pm most Tuesday evenings.

Those members wishing to visit must call Don O'Leary or Mel Pollinger to confirm. Don's cell-phone number is (201) 519-2176 or email: dkoleary@verizon.net. Mel's Home phone number is (201) 791-9826 or email: pollingmel@optonline.net

From The Editor... if you have email:

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

Dues for 2013 are due!

Need to use a Microscope?

The various microscopes that are presently set up on the main floor of the New York Microscopical Society building in Clifton, N.J. are there for the use of its members.

Microscope Cleaning Kit

A complete set of tools and accessories to keep your microscope in optimum operating condition. The kit is put together by our Curator/Educational Chairman and available directly from NYMS for only \$35.00 plus shipping & handling, or may be purchased at a meeting. Call or email Mel Pollinger or Don O'Leary for details (see page two for contact numbers).

Also: Slide boxes 100 capacity, used: \$5.00 while they last

Answer to Mystery Photo for Feb. 2013



Tree stump in a Meadowlands pond: Did you guess correctly? Photo by Mel Pollinger

Mystery Photo for Mar. 2013



Want to take a guess? Send it to me by email or call me: pollingmel@optonline.net, (201) 791-9826

Additional Historical NYMS Supplements

Email Newsletter recipients will also be getting copies of NYMS Newsletter pdf back-Issues from 2007. Copies of older newsletters will be sent as I convert them.

Got something you want to sell, trade or publish in the Newsletter and/or on the website? Write, call or send an email message to:

201-791-9826 or pollingmel@optonline.net (images ok)

or

Mel Pollinger, Editor
NYMS Newsletter
18-04 Hillery Street
Fair Lawn, NJ 07410



Supporting Member

NYMS Newsletter Extended

Section, March 2013

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

In This Section:

- NYMS Members Day
- Micro-Garden at the Hinsches
- Hi-Res Diatom Imaging
- EAS Call for Papers
- Science Photo Winners
- Spring NYMS Microscope Courses
- Items for Sale by NYMS
- Membership Application
- SCONYC FlyerApril 2013
- Last page images

Open House for Members Day at Clifton on Sunday January 27, 2013 Proves a Boone for Members

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The Garden Under The Microscope

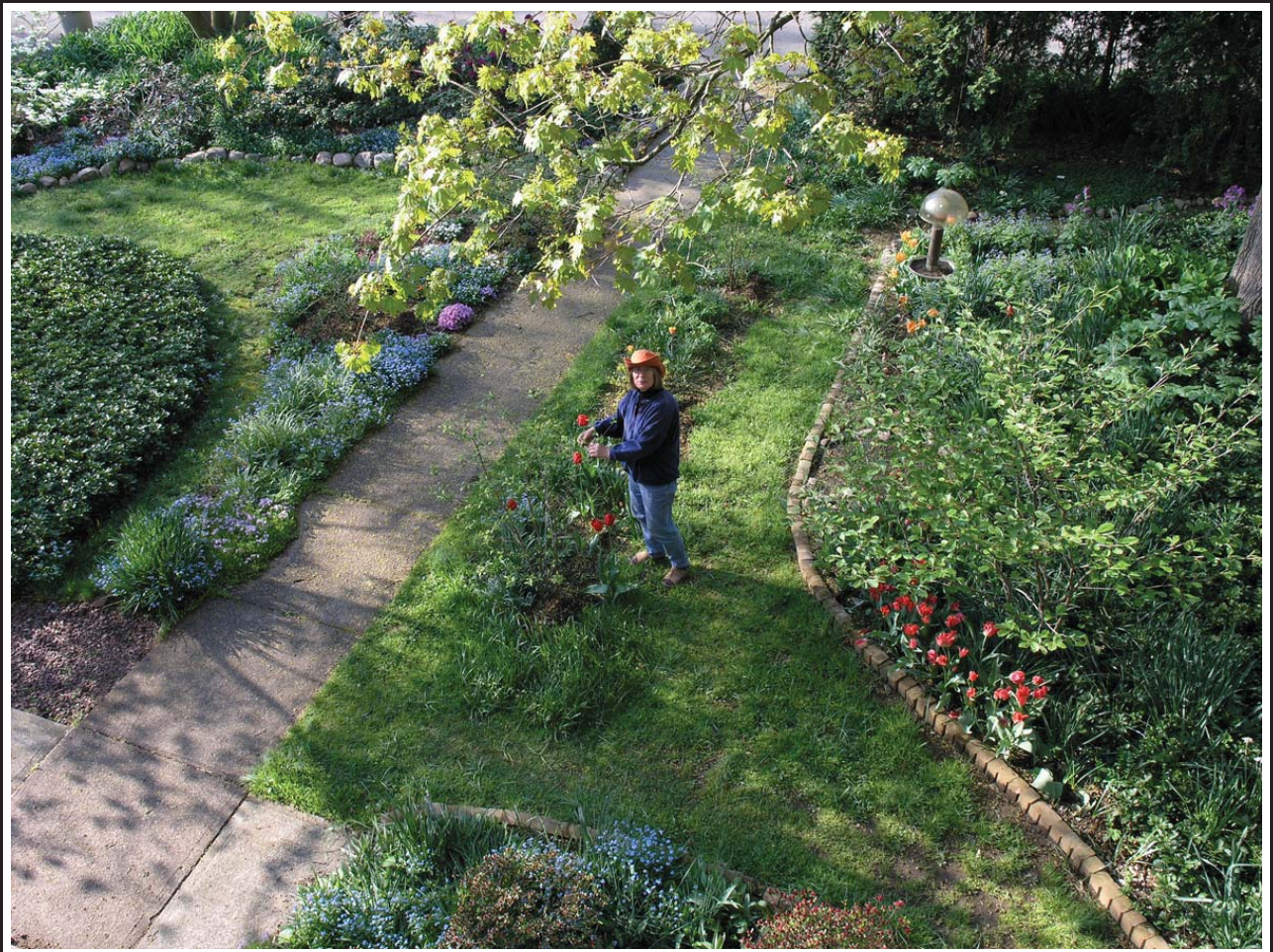
by Jan & Wiebke Hinsch

Part 1

The Magnifying Equipment and Dandelions.

Jan & Wiebke Hinsch gave a talk at our holiday party in December: “The Garden under the Microscope.” We will show you an excerpt of their pictures.

Jan and Wiebke look at their garden from different perspectives. Wiebke is a master gardener and her garden reflects her love for plants, design, and environmental responsibility. She taught Jan to look at the garden as an endless source of miraculous things with which to feed his microscope. This talk therefore is a synthesis of Jan’s and Wiebke’s passions



The Garden Under The Microscope The Magnifying Equipment



The Garden Under The Microscope

Dandelion



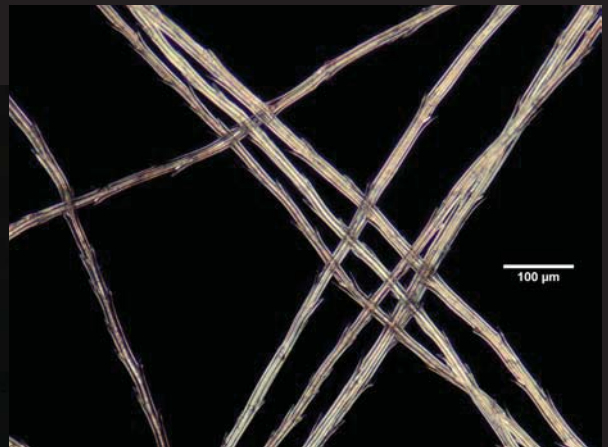
Dandelion flower



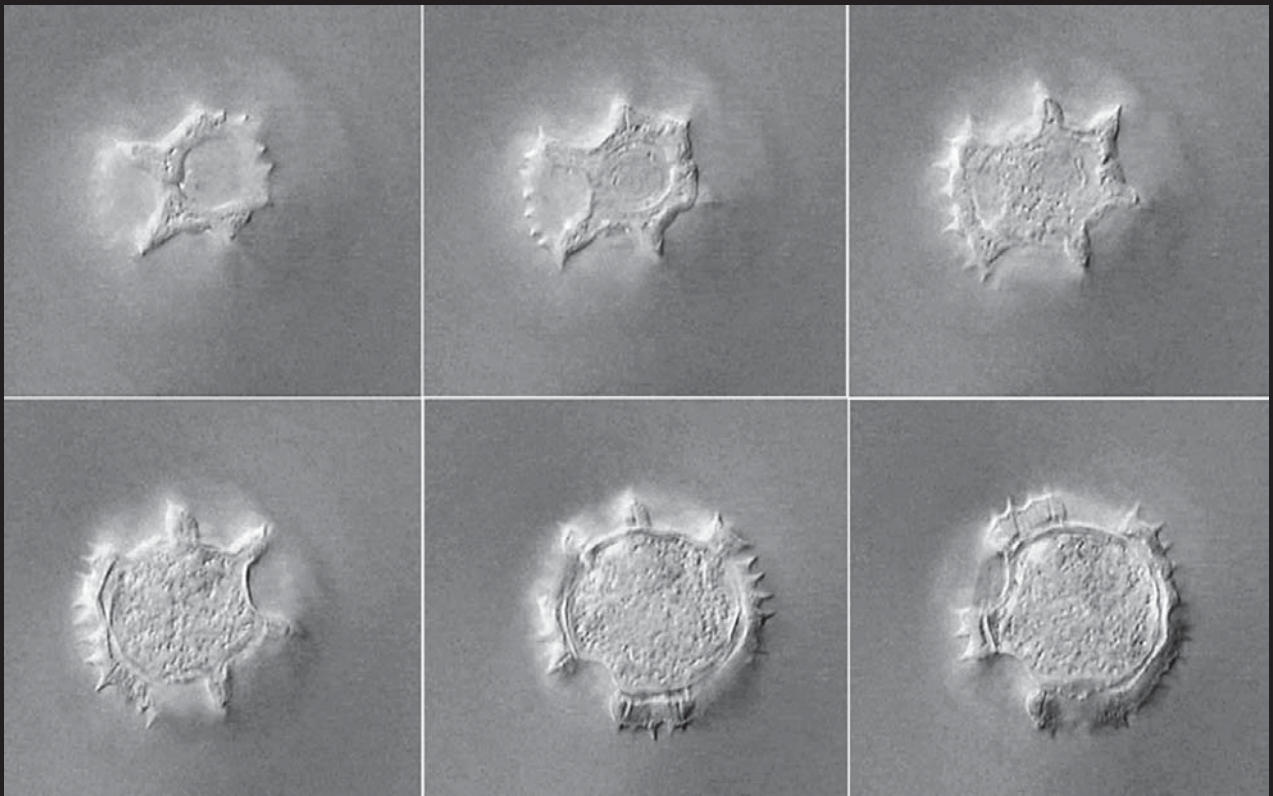
Airborne
Seed



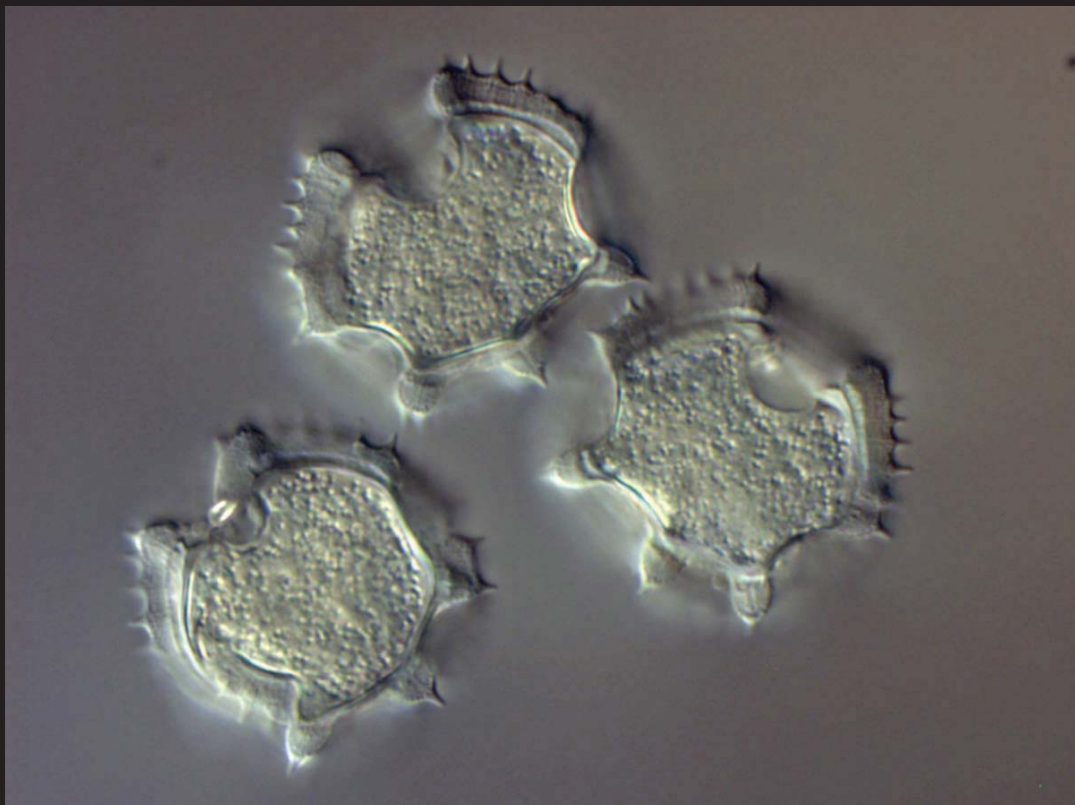
Seeds



Seed hairs



Through Focus Dandelion pollen, DIC



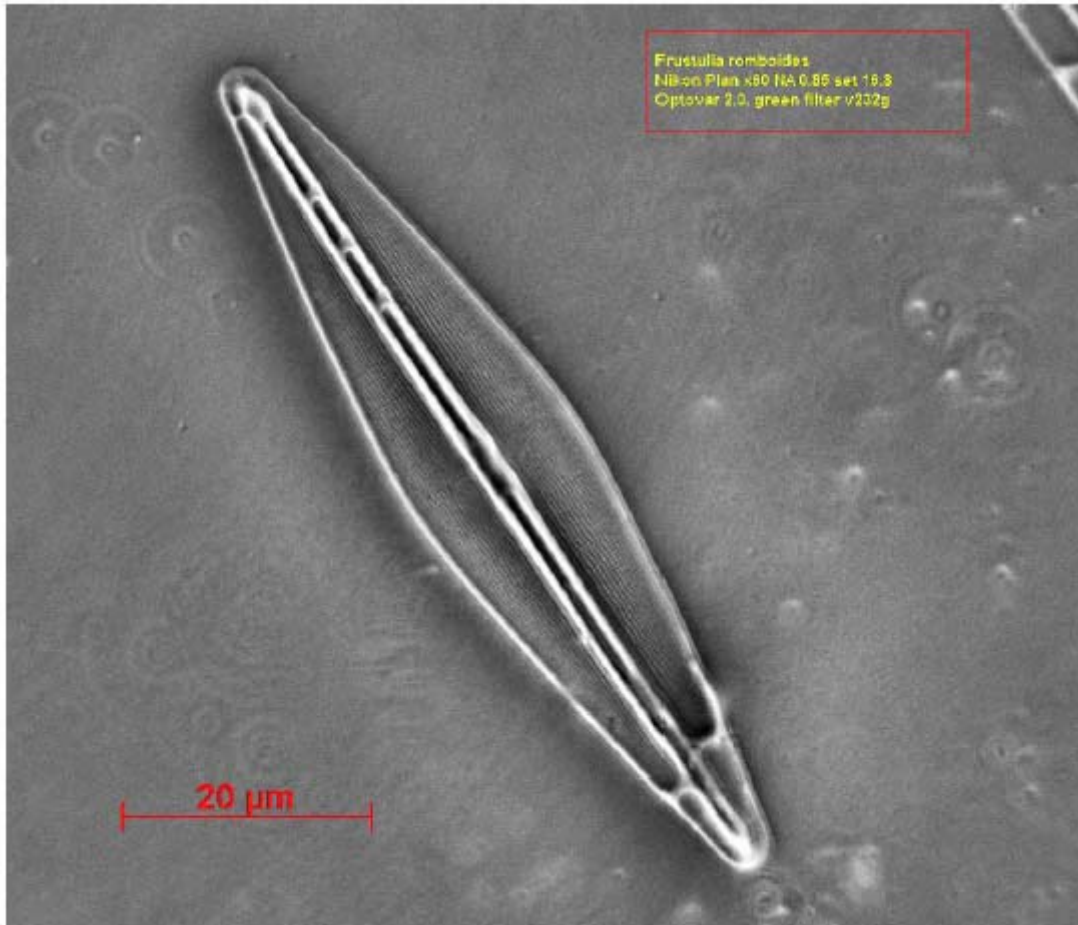
Dandelion Pollen

**HIGH RESOLUTION PHOTOGRAPHS
WITH CIRCULAR OBLIQUE LIGHTING.
By Yannis Tsamouris, ATHENS GREECE**

My passion with microscopy started when I was at the first grade of high school and I looked at a microscope preparation of living protozoa during a biology class. From that time on I became obsessed with microscopy and I bought my first toy microscope soon after. It was a Japanese microscope with glass lenses and from the first moment I experimented to achieve a better picture with higher magnification trying to achieve what I was seeing in the pictures of my biology books. Eventually my experiments ended with a broken microscope thrown into the garbage.

I started again many years after this wonderful experience when I had the spare time and the money to become involved with more professional equipment. eBay was a great help and for the last 15 years I've been gathering a lot of hardware and experience of manipulating this intricate machinery. I have to admit that this magazine was a great inspiration to me and gave to me access to many aspects of amateur microscopy and how to find practical solutions to problems that any amateur microscopist faces every day in handling these wonderful instruments. I experimented a lot with all the current techniques like dark field, Rheinberg light staining, Phase contrast and Differential Interference contrast (DIC).

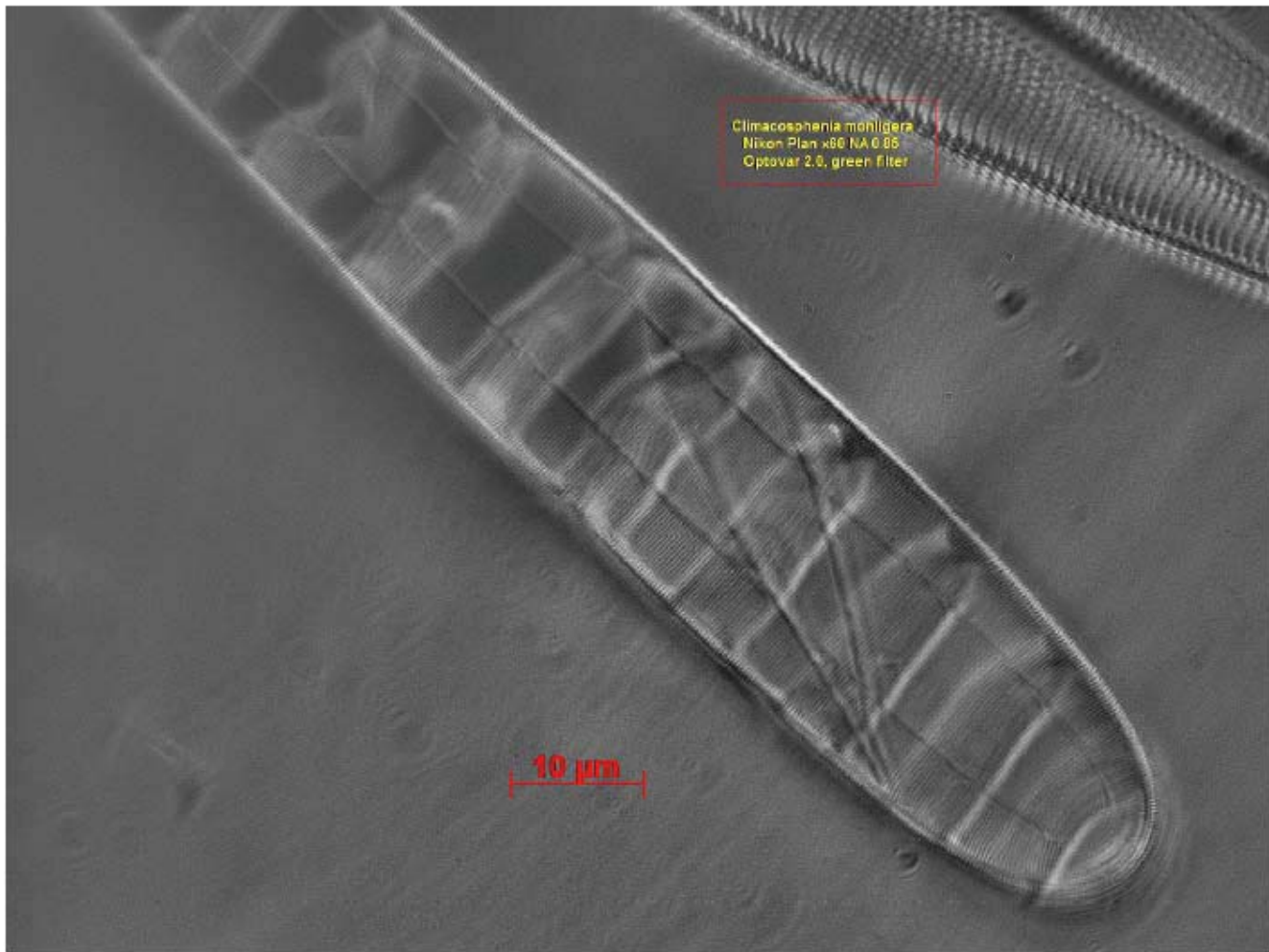
One of the first accessories I acquired with a Leitz Ortholux microscope was the Heine condenser. When I started taking photographs with a CCD camera I observed that I could take very clear pictures with high resolution. After many trials I ended up with the following results that show the hidden capabilities of circular oblique lighting that according to my opinion is capable of providing high resolution pictures without even immersion objectives. The microscope I used is a modified Zeiss Photomicroscope III with a Heine condenser adapted to it, a special illumination setup made by me which can provide quite parallel rays of light and a Zeiss Axiocam MRC5 CCD camera which gives superb results. The photographs that follow show that with this arrangement you can resolve even with a dry lens (Nikon Plan x 60 NA 0.85) the striae of *Frustulia rhomboides* which according to D.B.Murphy (*Fundamentals of Light Microscopy* pp 94) has a period of 0.29 μm /stria. According to theory this resolution can be achieved only through oil immersion lenses. The preparation I used is the 8 FORM TEST SLIDE and the 100 FORM SLIDE by K.D.KEMP



Frustulia rhomboides Nikon Plan X 60 NA 0.85 dry green filter.

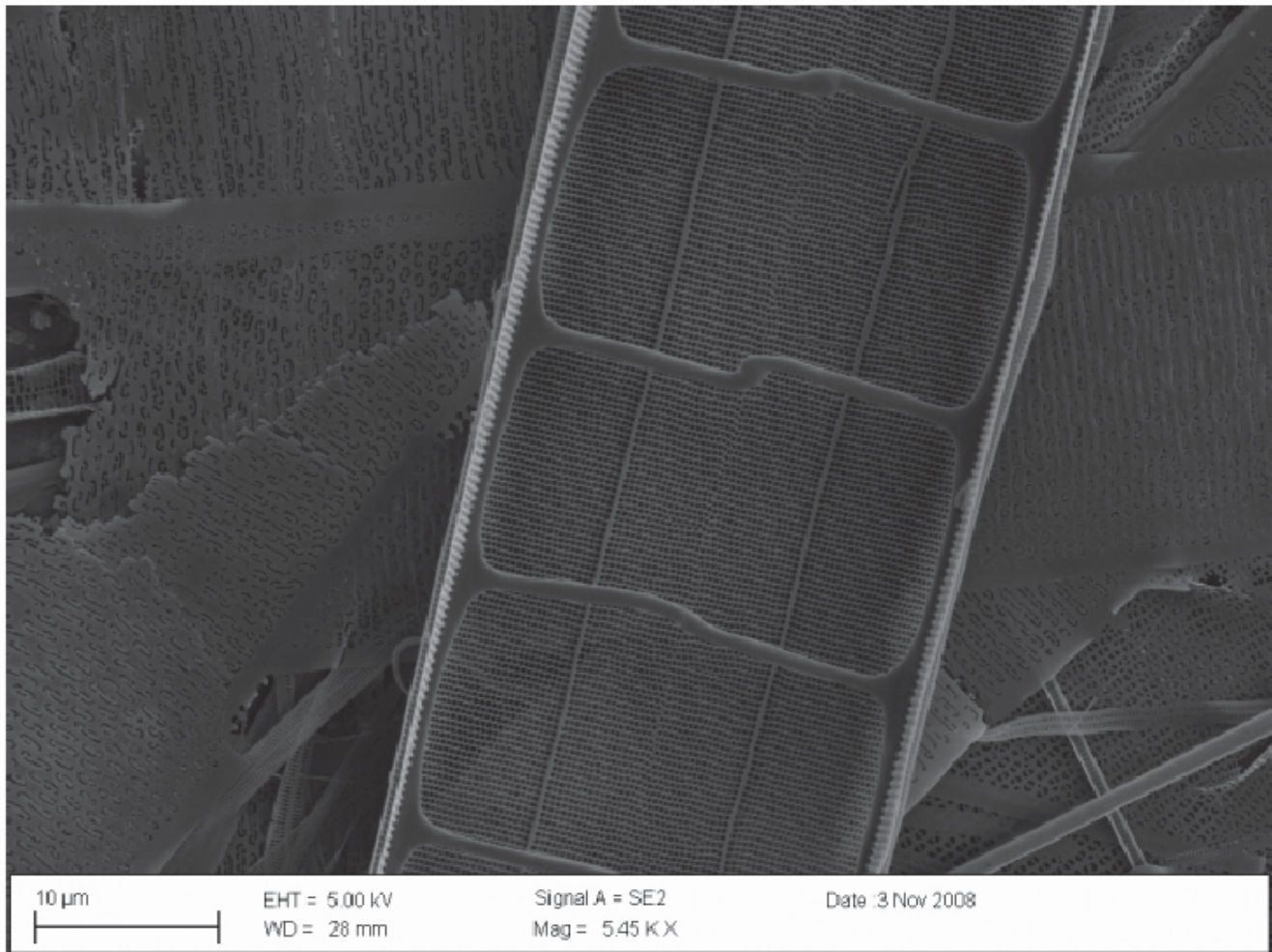
As you can see from this photograph, although the resolution is inferior compared to the microscope live image, not only the striae are resolved but also the pores. This is made more clear in the following picture taken with a 15MB photographic camera (OMAX) and processed with the Adobe Photoshop.

The most striking photograph I achieved was the resolution of the individual pores in the striae of the following diatom (*Climacosphenia moniligera*) for which I calculated three (3) striae per 1µm and about four (4) pores per 1µm. The microscope image is very clear but the resolution of the MRC5 camera (pixel 3.4 µm) is not enough to capture such small details. The sample is from Klaus Kemp 100 Type diatom slide.



Climacosphenia moniligera Nikon plan X 60 NA 0.85 dry, green filter.

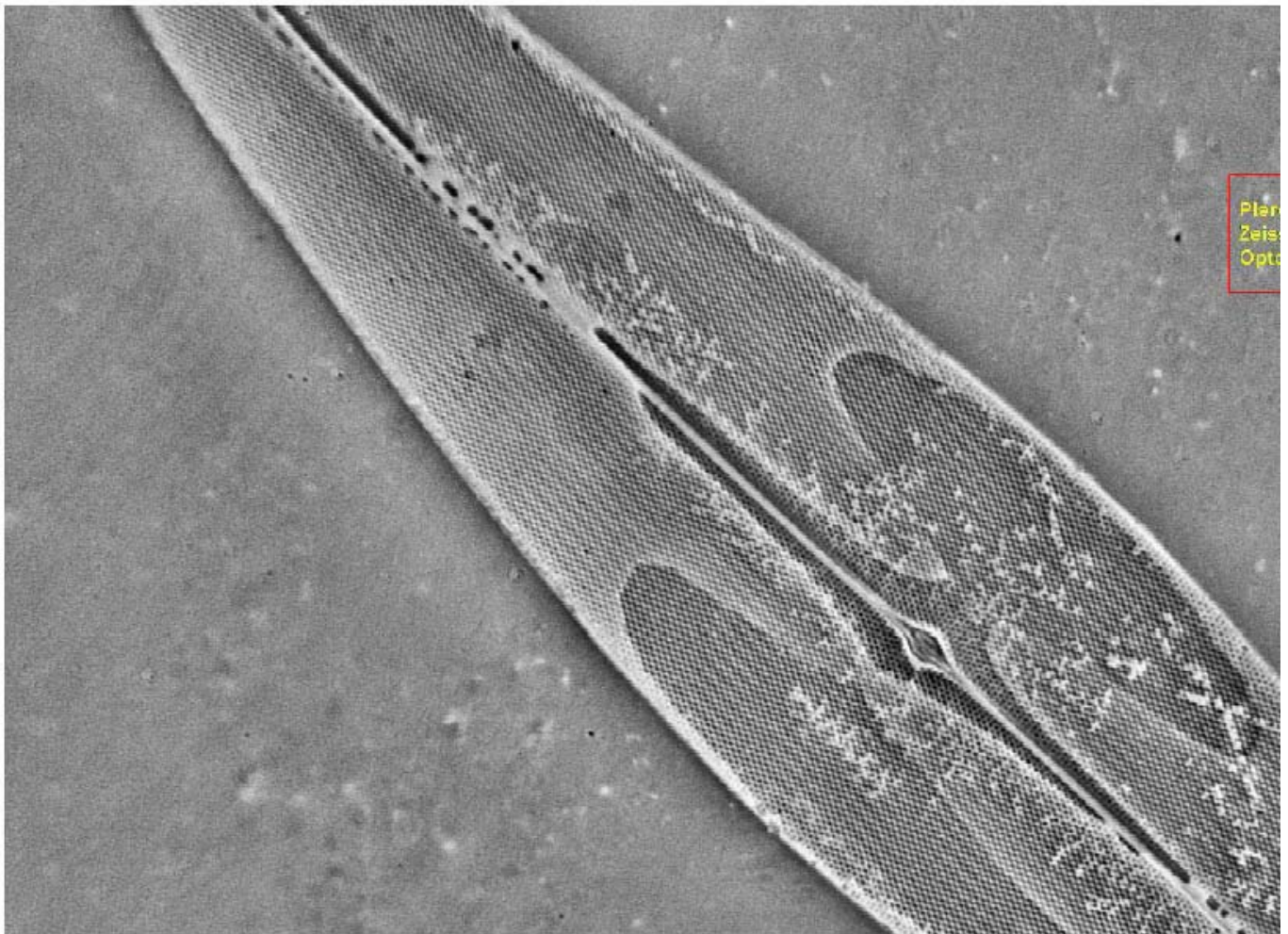
The SEM image which is hosted at Protist Central (photo credit Chris Lobban) shows a striae spacing of 0.40 microns and a pore spacing of 0.33 microns.



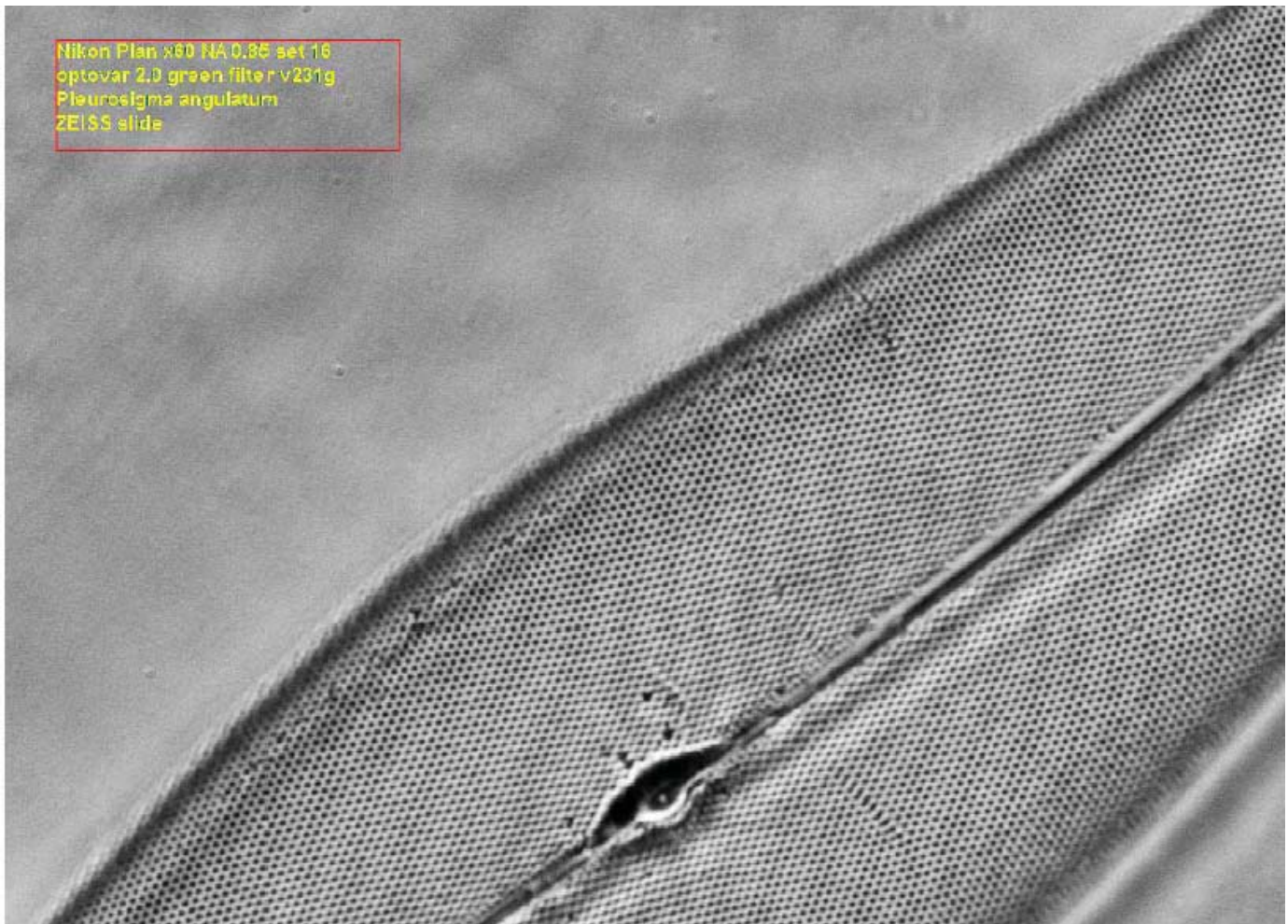
This is further confirmed in the following photograph taken with the OMAX 15MB photographic camera.

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With the same technique and moderate optics the resolution and the depth of field is great.

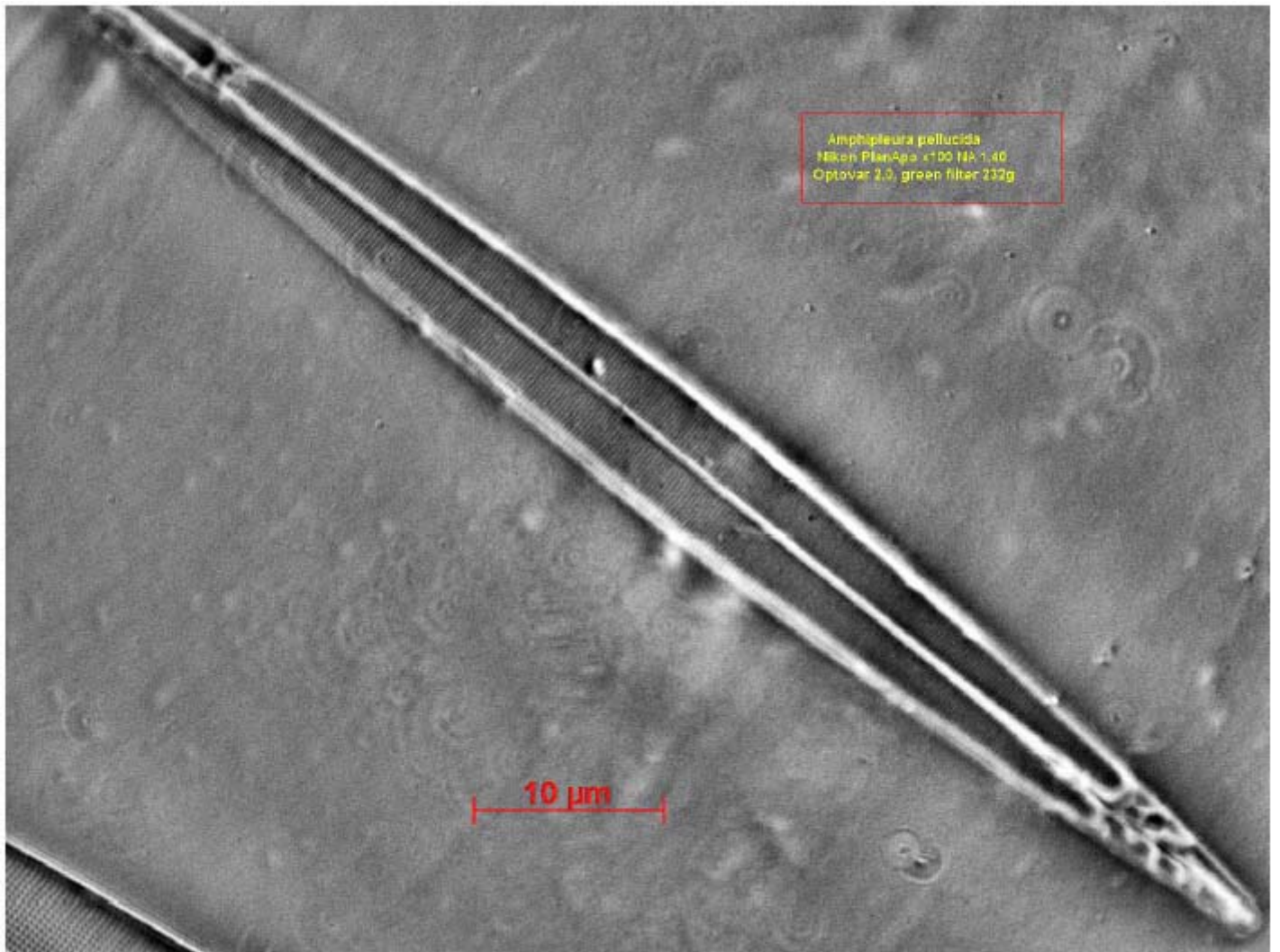


Zeiss Plan x 40 NA 0.65 dry, green filter. *Pleurosigma Angulatum* 0.53 μm / stria



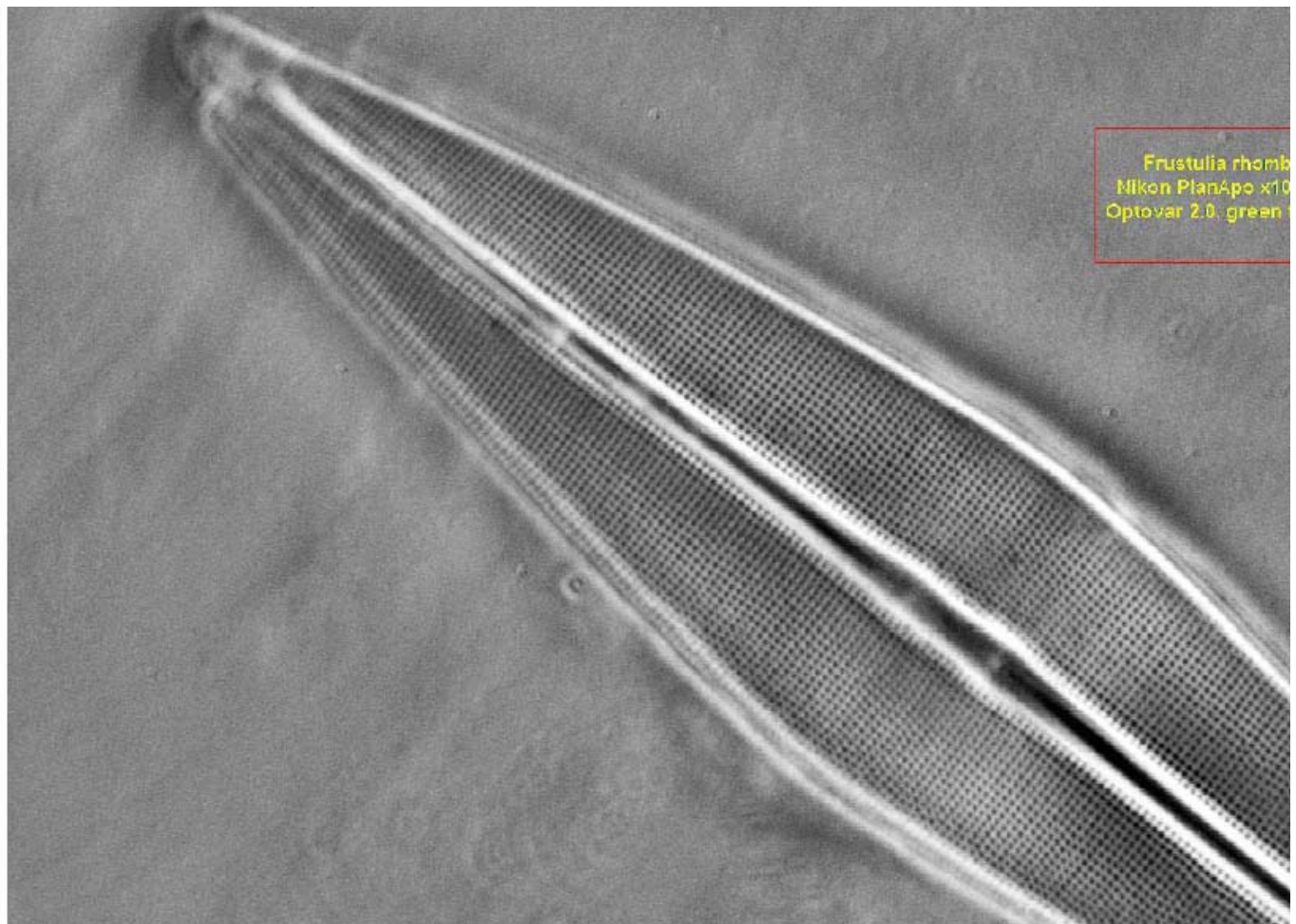
Pleurosigma angulatum Nikon Plan x 60 NA 0.85

With an oil immersion objective the results are more striking.



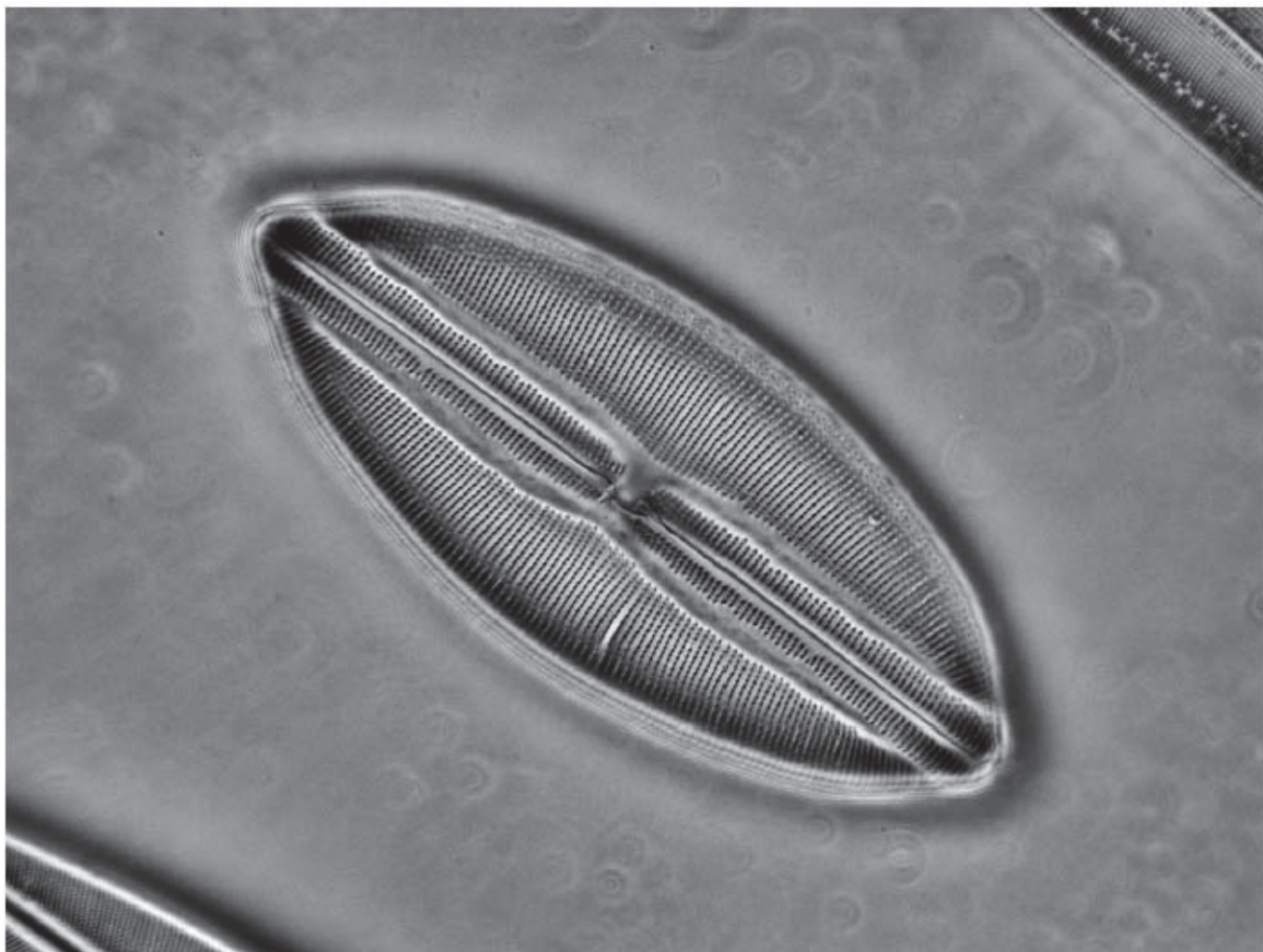
Nikon PlanApo X 100 NA 1.40 oil green filter.

Amphipleura pellucida Period 0.25 μ /stria



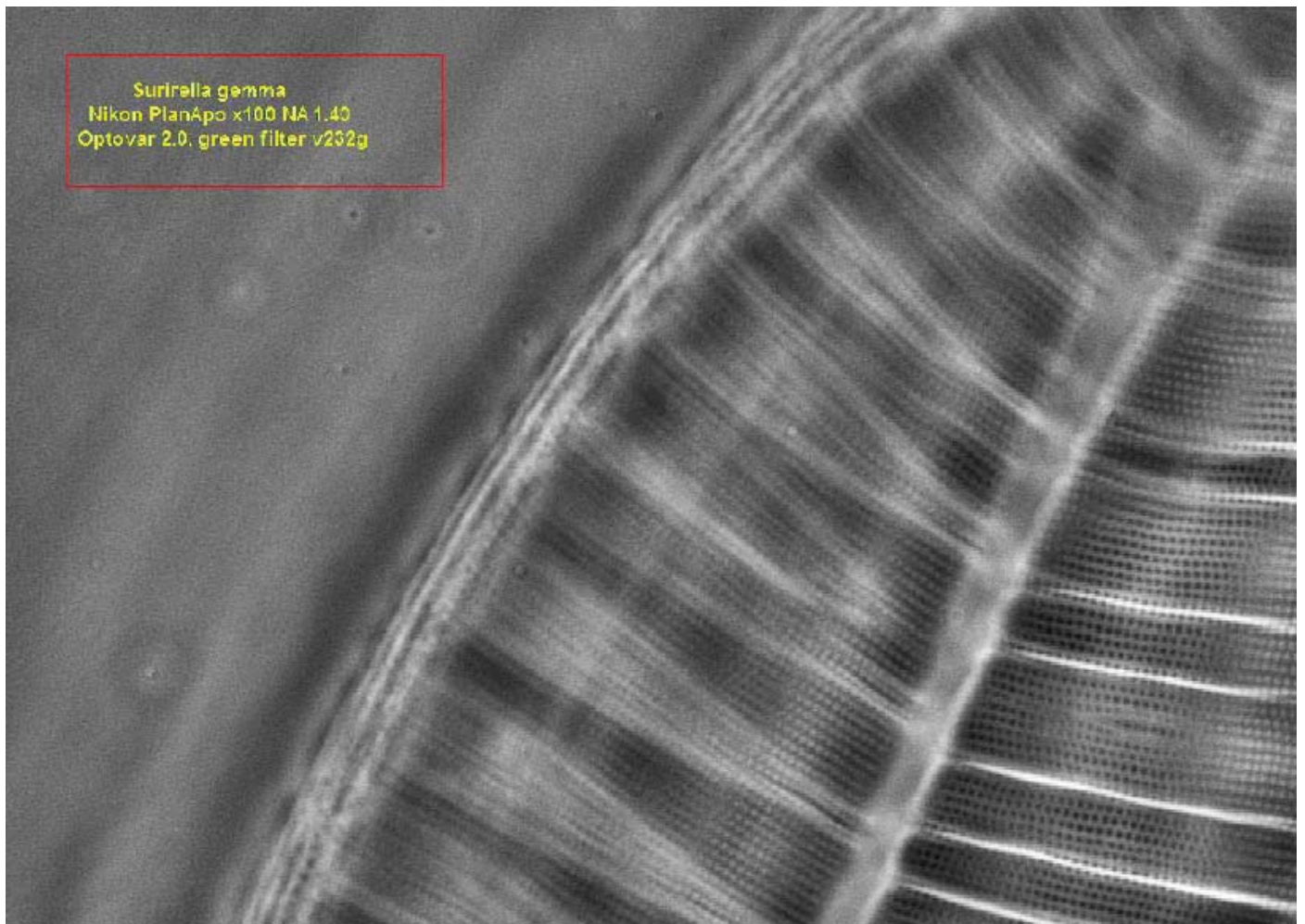
Nikon PlanApo x100 NA 1.40 oil, green filter.

Frustulia rhomboides Period 0.29 μm /stria



Nikon Plan Fluor X 40 NA 1.30 oil, green filter.

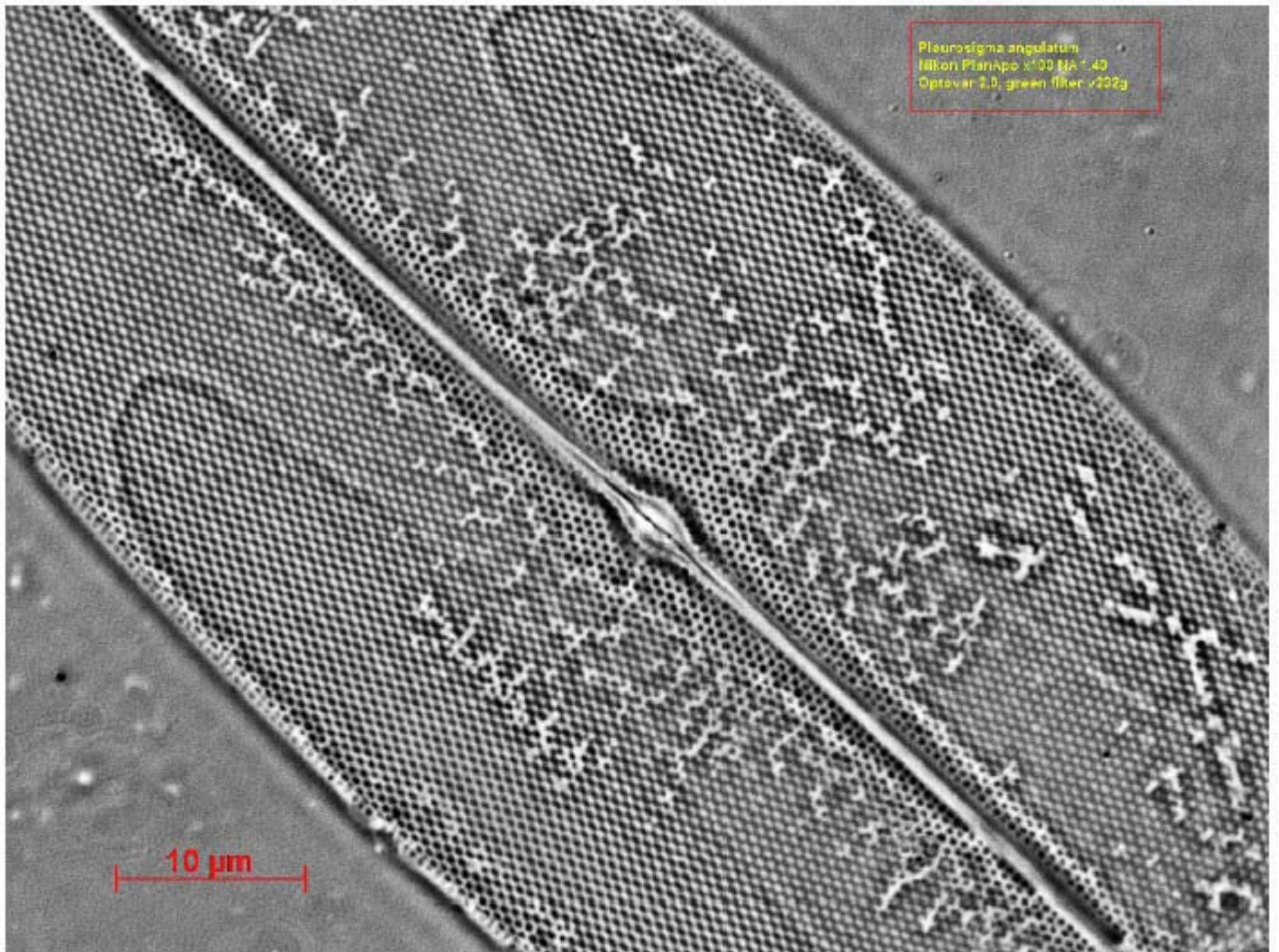
Navicula hennedyi



Suriella gemma
Nikon PlanApo x100 NA 1.40
Optovar 2.0, green filter v232g

Nikon PlanApo X 100 NA 1.40 oil green filter.

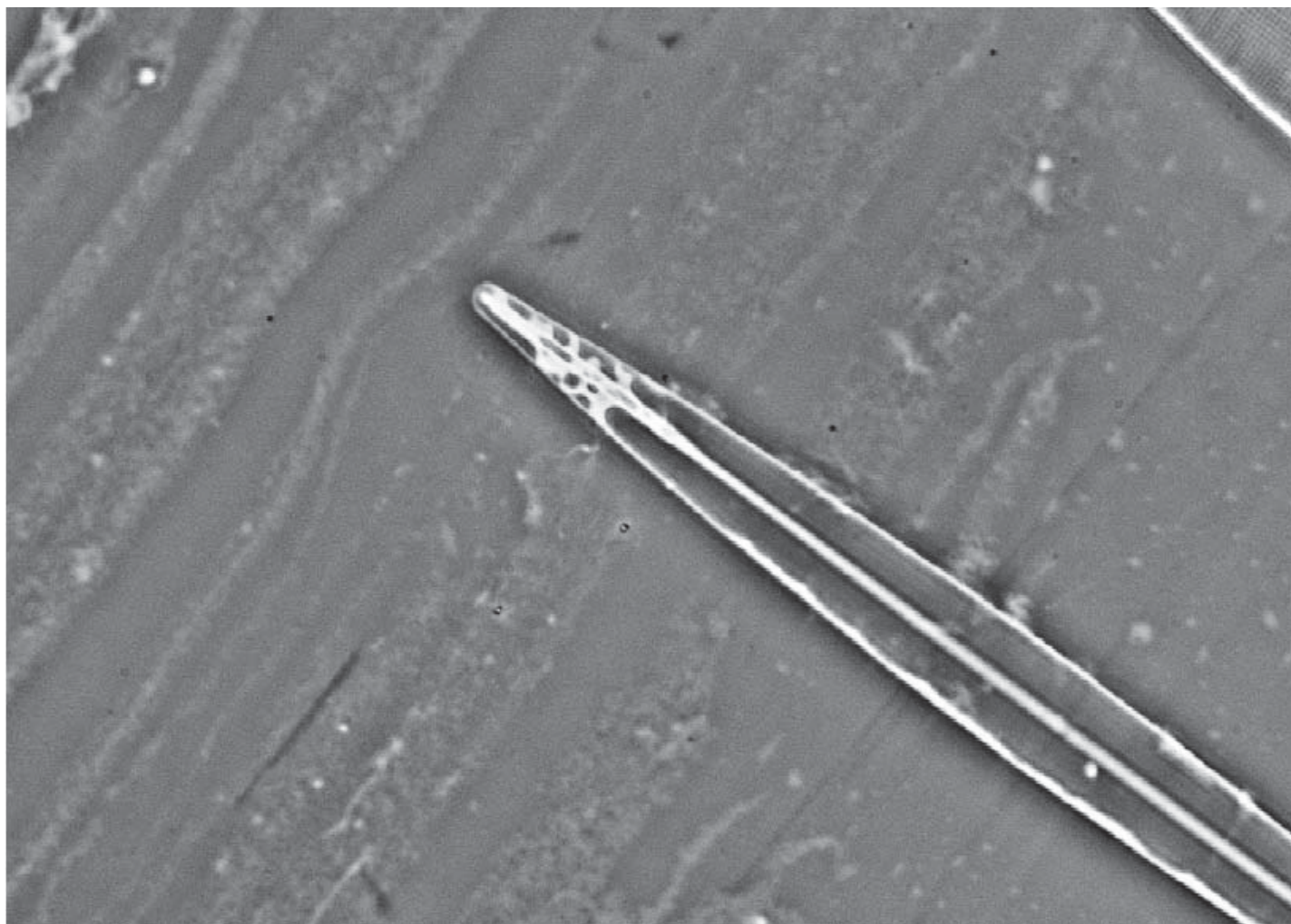
Suriella gemma Period 0.50 μm / stria



Nikon PlanApo x 100 NA 1.40 oil, green filter.

Pleurosigma angulatum Period 0.50 μm/stria

If we compare the above photographs with the results that we get with the customary techniques of Phase contrast and DIC the results speak for themselves.



Zeiss Phase PlanApo x 60 NA 1.40 oil green
filter, Zeiss Phase condenser NA 1.40 oiled.

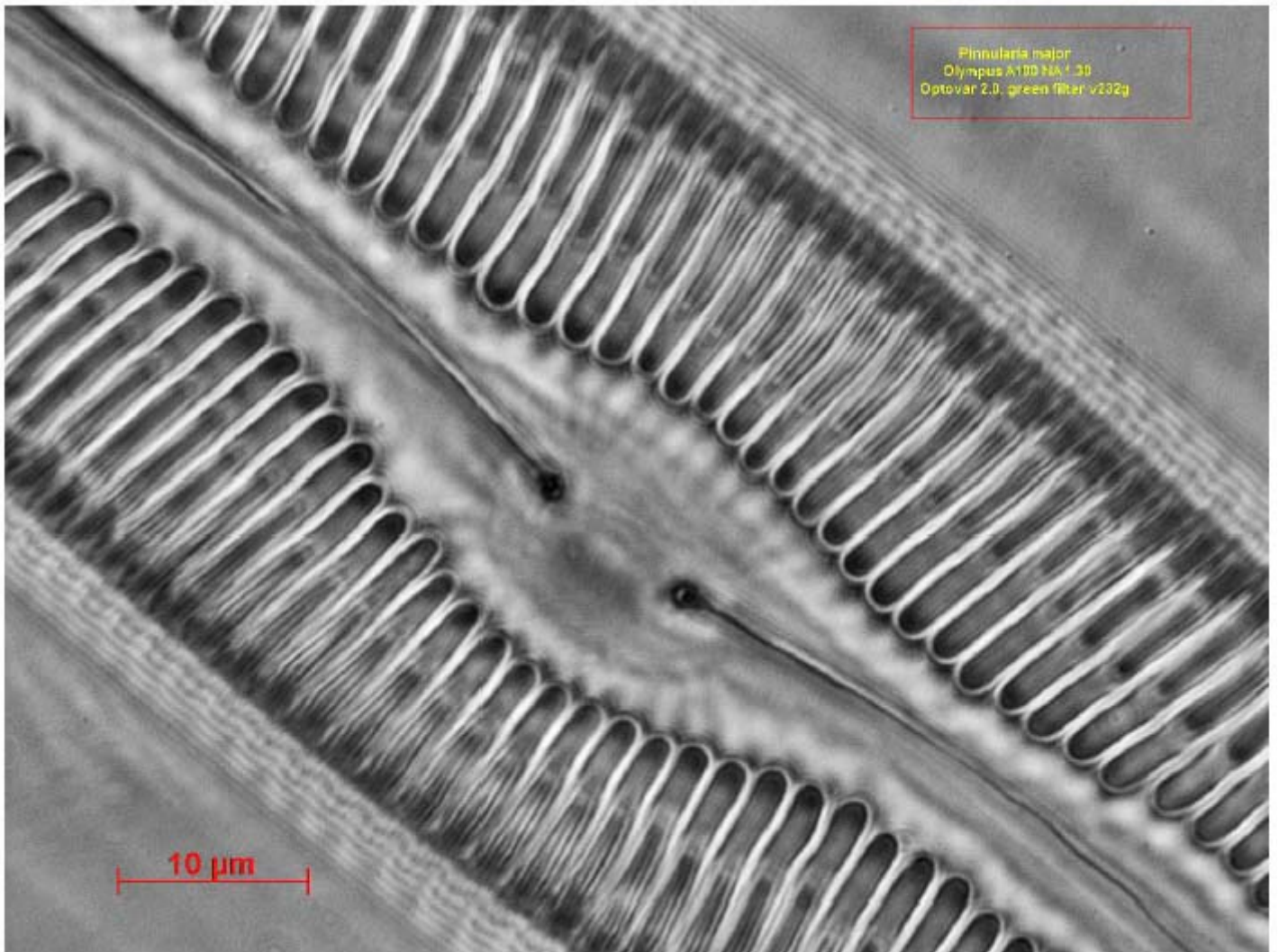
Amphipleura pellucida.



Zeiss PlanApo x 60 NA 1.40 with DIC slide, blue filter.

Frustulia rhomboides.

Some more photographs give us a glimpse to the beauty of the crystal palaces
where the diatoms
live. (Olympus x 100 NA 1.30 oil).

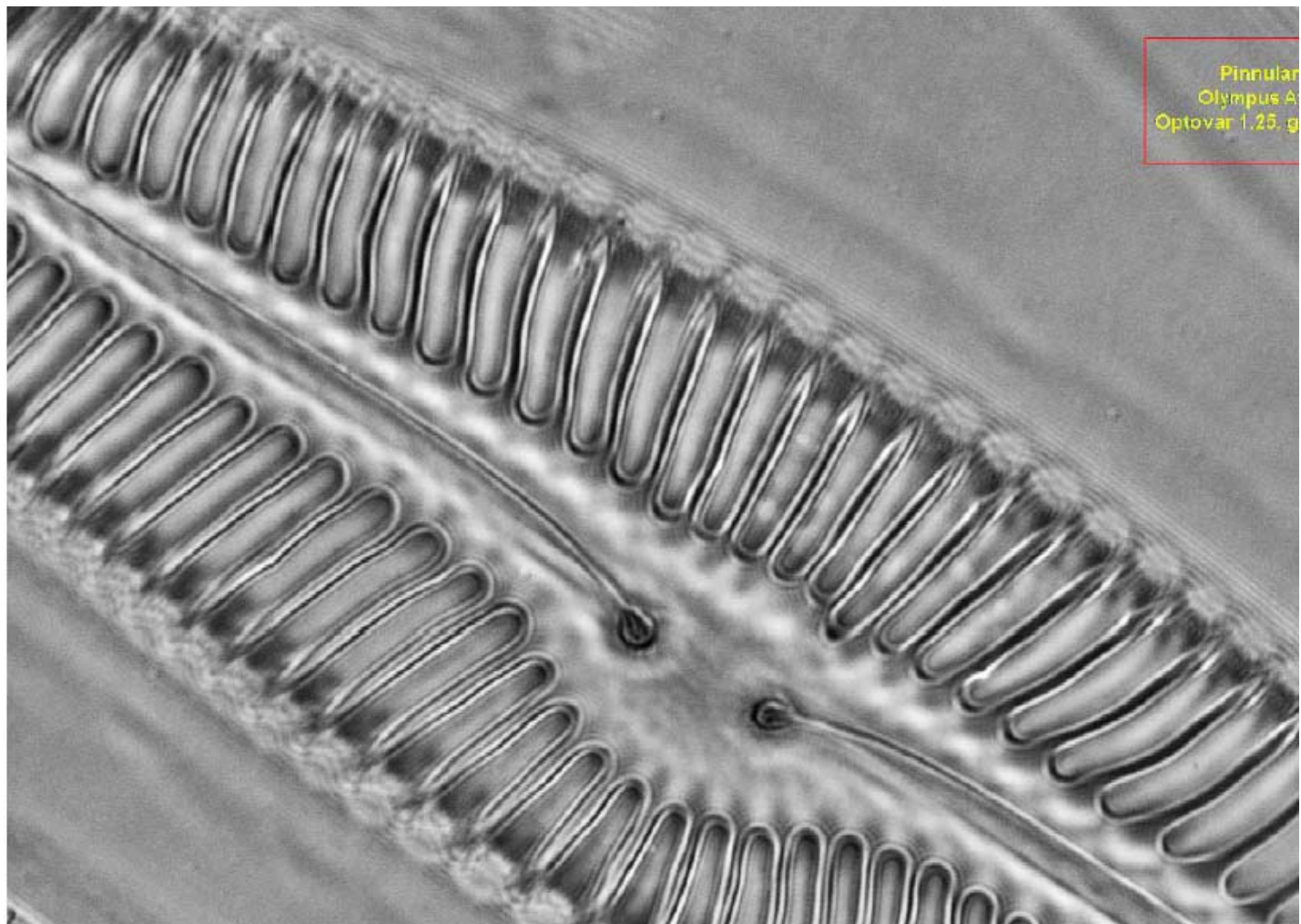


Pinnularia major
Olympus A100 NA 1.30
Optovar 2.0, green filter v232g

10 μm

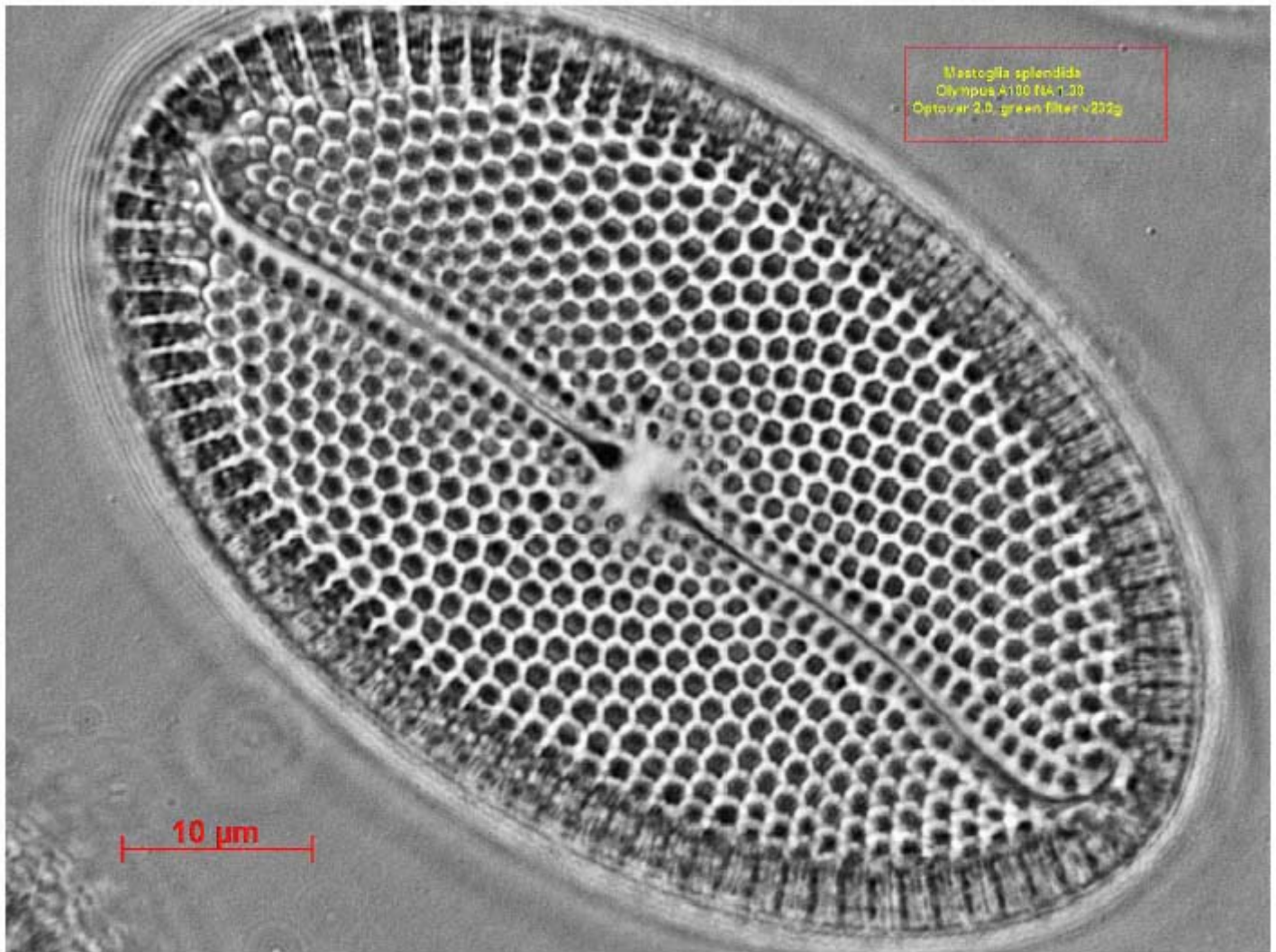
Pinnularia major

Olympus A100 NA 1.30 oil green filter



Pinnularia alpina

Olympus A100 NA 1.30 oil green filter



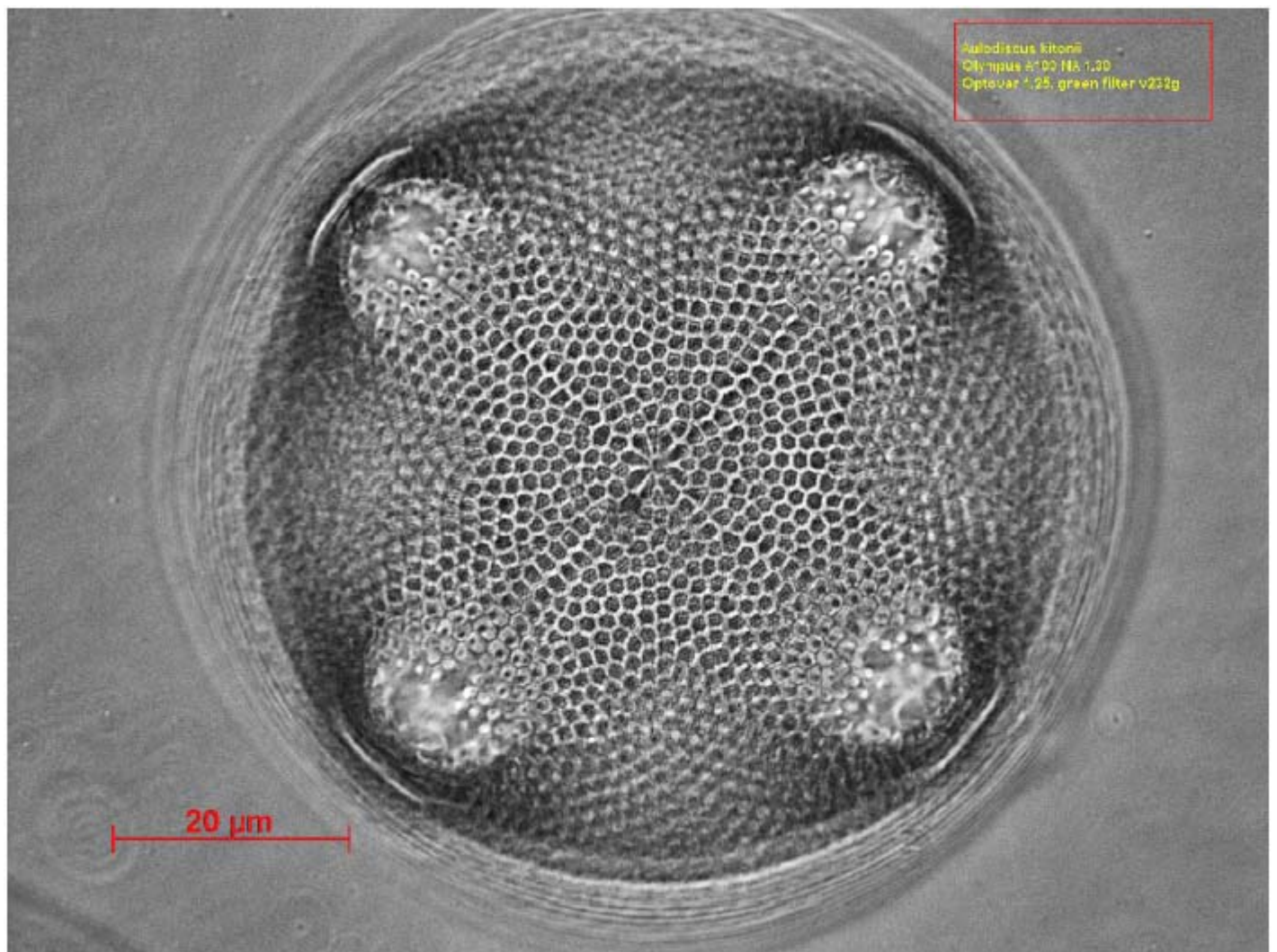
Mastoglia splendida

Olympus A100 NA 1.30 green filter



***Eunotia clavata*,**

Olympus A100 NA 1.30 oil, green filter v232g



Aulodiscus kitionii

Olympus A100 NA 1.30 oil

If you study the photographs by zooming in you can appreciate the details they contain. I dare to make the assumption that in the light that comes out of the objective lens after its interaction with the specimen there is a lot more information than we are used to suppose. It's up to us to find the way to gather it. The COL provides an easy and cheap method to get the highest possible resolution with great depth of focus.

REFERENCE

Douglas B. Murphy "Fundamentals of light microscopy and electronic imaging"
A JOHN WILEY & SONS INC., PUBLICATION

Article reformatted from Micscape Magazine and published here with permission of the author.

Comments to the author may be sent to: tsani@ath.forthnet.gr

Main Identity

From: "Eastern Analytical Symposium" <newsletter@eas.org>
To: <pollingmel@optonline.net>
Sent: Friday, March 01, 2013 11:37 AM
Subject: EAS: Abstract Submission Open



Analytical In Motion

Knowledge > Network > Career

Call For Papers Open: March 1 - April 15

Abstract Submission Is Open

March 1-April 15, 2013

We invite you to be a part of the program by contributing a paper for oral or poster consideration. EAS seeks contributions from scientists in many areas of analysis, which makes its program uniquely strong, see list of topics listed on the right.

The Eastern Analytical Symposium and Exposition is the second largest conference and exposition for laboratory science in the U.S. dedicated to the needs of analytical chemists and those in the allied sciences. We offer high quality cutting-edge technical sessions and state-of-the-art short courses, workshops and seminars.

Please note that all abstracts must be submitted electronically via the EAS website.

Reminder: Invited speakers should not submit abstracts to EAS until requested.

Submit at: www.EAS.org/asubmit

Submission Details:

Please carefully review the following information:

- Invited speakers must **not** submit abstracts to EAS until requested
- All contributed abstracts must be submitted through our web site at www.EAS.org/asubmit. No faxed, e-mailed, or mailed abstracts will be accepted.
- Please note that no one author may submit and present more than two posters.
- All abstracts must be a **maximum of 250 words** or less.
- All abstracts will be acknowledged via e-mail.
- The title of the presentation and the list of authors that you

Areas of Interest

Bioanalysis
 Chemometrics
 Conservation
 Science
 Consumer Product
 Analysis
 Environmental
 Analysis
 Food Analysis
 Forensic Analysis
 Gas
 Chromatography
 Hyphenated
 Methods
 Industrial Hygiene
 Laboratory
 Automation
 Laboratory
 Management
 Laboratory
 Miniaturization
 Liquid
 Chromatography
 (HPLC and UPLC)
 Mass Spectrometry
 (all areas)
 Microchemistry
 Microscopy
 Nanoscale
 Pharmaceutical
 Analysis
 Process Analytical
 Science
 Quality-by-Design
 Sample Preparation
 (SPME, SFE,
 Microextraction)
 Science Education
 Sensors
 Separation Science
 (all areas)
 Solid State Analysis

submit are final, and may not be changed.

- The abstract that you submit will be considered to be your final abstract that will be printed in the abstract book for the 2013 Eastern Analytical Symposium.

Space Analytics
Spectroscopy
Surface Science
Trace Level
Analysis

Presenting authors of contributed submissions will be notified in or before July 2013 of the status of the abstract and its session assignment.



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Contact Us

(732) 449-2280
askeas@eas.org
P.O. Box 185
Spring Lake, NJ 07762

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Eastern Analytical Symposium | PO Box 185 | Spring Lake | NJ | 07762



New York Microscopical Society
Bernard Friedman Memorial Workshops
Use of the Microscope & Polarized Light Microscopy
April 27, May 4, 11, 18, 25, June 1, 8, 2013

A basic course on light microscopy which will cover the following topics:

Theory of microscopy, Kohler Illumination
Diffraction Theory, Contrast Methods
Polarized light, Phase Contrast, Interference
Hoffman contrast, Rheinberg, Dark-field & oblique Illumination

An advanced course on polarized light microscopy which will cover the following topics:

The nature of polarized light
The origin and interpretation of interference colors
Birefringence and crystal orientation, The Indicatrix
Compensation and variable compensators
Interference figures and their interpretation

The workshop will consist of seven consecutive Saturdays of lectures and hands on labs to cover the theoretical and practical aspects of microscopy. The course instructors are *Jan Hinsch* formerly of Leica Microsystems, Inc., *Dennis O'Leary* of Micro-Optical Methods, *Mary McCann* of McCann Imaging, *John Reffner* of John Jay College and N.Y.M.S. Instructor *Don O'Leary*.

WHEN: April 27, May 4, 11, 18, 25, June 1, 8, 2013. 10AM to 4 PM

WHERE: One Prospect Village Plaza, Clifton, NJ 07013, accessible by public transportation. Information on car pools and transportation will be provided.)

COST: \$695 for NYMS members, \$725 for non-members (includes membership) Lunch and course materials are included. Checks made out to NYMS.

HOW: Register using form below. Limited to the first 12 registrants.
Send form to: Mel Pollinger, 18-04 Hillery Street, Fairlawn, NJ 07410-5207

FURTHER INFORMATION: Call Angela Klaus, 973-761-1840, avklaus2@yahoo.com

PLEASE MAIL THIS APPLICATION WITH YOUR PAYMENT

Registration Form Use of the Microscope & Polarized Light Microscopy

N.Y.M.S. Member _____ (\$695) Non-Member _____ (\$725), April 27 to June 8

Registration for Use of the Microscope only (4 Sessions)

N.Y.M.S. Member _____ (\$395) Non-Member _____ (\$425), April 27 to May 18

Registration for Polarized Light Microscopy Only (4 Sessions)

N.Y.M.S. Member _____ (\$395) Non-Member _____ (\$425), May 18 to June 8

Name _____

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Please send your application and payment directly to:

NYMS Spring 2013 Courses
c/o Mel Pollinger, Treasurer
18-04 Hillery Street
Fair Lawn, NJ 07410-5207

Photography



FIRST PLACE WINNER AND PEOPLE'S CHOICE

Biomaterial Single Crystals

Pupa U. P. A. Gilbert and Christopher E. Killian;
University of Wisconsin, Madison

*T*hese fantastical structures could be a creation of Antoni Gaudí, the surrealist architect. In reality, they are the microscopic crystals that make up a sea urchin's tooth. Each shade of blue, aqua, green, and purple—superimposed with Photoshop on a scanning electron micrograph (SEM)—highlights an individual crystal of calcite, the abundant carbonate mineral found in lime-

stone, marble, and shells.

The curved surfaces of the crystals look nothing like normal calcite crystal faces, however, says biophysicist Pupa U. P. A. Gilbert of the University of Wisconsin, Madison. Gilbert studies biomineralization: the process by which living organisms produce mineral structures such as bones and teeth. Sea urchin teeth in particular are “fantastic,” she says, because they defy our expectations of what a crystal should look like in nature. Instead of flat sides and sharp edges, the sea urchin produces “incredibly complex, intertwined” curved plates and fibers that interlock and fill space in the tooth as they grow. Though made of a substance normally as soft as chalk, the teeth are hard enough to grind rock, gnawing

holes where the sea urchins take shelter from rough seas and predators. Layers of continuously regenerating crystals slough off and reveal new crystals as the teeth wear down, self-sharpening with use.

On first seeing the SEM image of the tooth in black and white, Gilbert and staff scientist Christopher E. Killian were dumbstruck: “I had never seen anything that beautiful,” she says. However, the black-and-white image made it difficult to distinguish the individual crystals, so she applied the colors to highlight how the crystals intertwine and connect. The resulting image is a “virtuosic combination of chemistry, biology, and art,” says judge Michael Reddy. The fact that sea urchins have evolved to produce self-sharpening teeth is “just wild,” he says.



HONORABLE MENTION

X-ray micro-radiography and microscopy of seeds

Viktor Sykora, Charles University; Jan Zemlicka, Frantisek Krejci, and Jan Jakubek, Czech Technical University

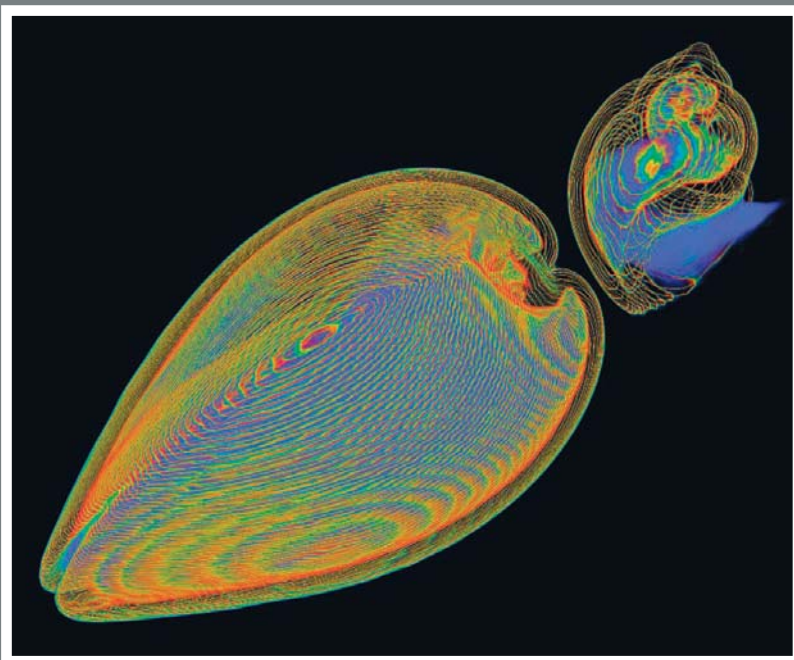
*F*urred, fringed, and barbed, these fruits with tiny seeds—each seed no bigger than 3 mm across—look almost guaranteed to get stuck in your socks. However, biologist Viktor Sykora of Charles University and his colleagues at Czech Technical University in Prague saw the seeds not as common stickers but as works of art. To image the seeds' fine details, the team used high-resolution, high-contrast x-rays (left) along with traditional microscopy (right). The most challenging part of the 20-hour process, Sykora says, was to find a way to fix the seeds in place using a material that would be invisible in the final image. Although high-resolution x-rays are commonly used to visualize the internal structures of small objects without destroying them, according to the authors it has never before been applied to the visualization of seeds. "The number of details that could be seen in the final image delighted us," Sykora says. He hopes that the images will motivate more scientists to use the technique in plant biology, as well as inspire painters, designers, and architects. "We should realize how much beauty, elegance, and wit can be found in nature and in seemingly ordinary things," he says.

HONORABLE MENTION

Self Defense

Kai-hung Fung, Pamela Youde Nethersole Eastern Hospital in Hong Kong

*T*his is no shell game, but a matter of life or death. The clam (left) can snap its bivalve shell shut at the first sign of a threat. The whelk (right) has evolved another strategy: The spiral shell provides a series of barricades to potential invaders. It also has a trick up its shell to foil the clam's defense. After softening the clam's single-layered shell with secretions, it can drill a hole right through and eat the clam for lunch. This dramatic example of two different evolutionary strategies for self-defense caught the eye of radiologist Kai-hung Fung at Pamela Youde Nethersole Eastern Hospital in Hong Kong, who has won numerous awards for his creative use of CT scanning to make art. To create this image—which he says was commissioned as a backdrop for a marine-themed musical—Fung used a CT scanner to image thin slices of the whelk and clam, then rendered their contours in rainbow colors to highlight their complex structures. Creating such images involves balancing "two sides of a coin," he says. "One side is factual information, while the other side is artistic."



New York Microscopical Society Items For Sale

N.Y.M.S. Microscope Covers

Item #	Size	Member Price	List Price
MT-003	Small Microscope or Stereo	\$18.00	\$20.00
MT-004	Lab Microscope or Large Stereo	\$23.00	\$25.00
MT-005	Large Lab Scope	\$28.00	\$30.00
MT-009	Large Lab Scope with Camera	\$31.00	\$33.00
MT-010	Universal Scope with Camera	\$36.00	\$40.00
MT-012	X-large Scope	\$45.00	\$50.00

N.Y.M.S. Microscopes (see next page 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	\$20.00
NYMS Patch	\$5.00
Microscope Cleaning Kit	\$35.00
NYMS Lapel Pin	\$10.00

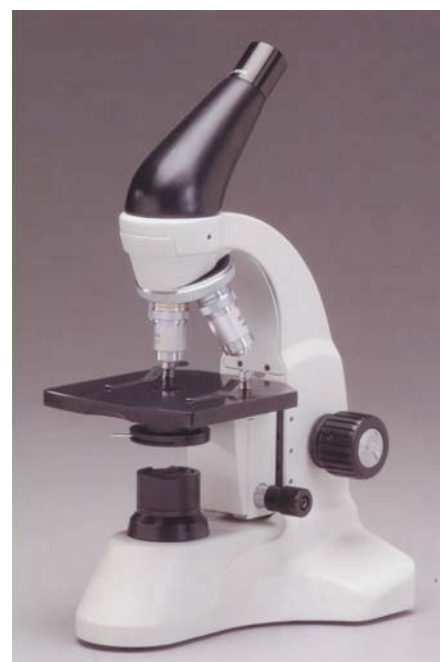


Model 131: Tungsten

Model 131-FLU: Fluorescent



Model 185: 20x



Model 125-LED Cordless



New York Microscopical Society

Return to: **Mary McCann**
161 Claflin Street
Belmont, MA 02478

Please Print

I hereby apply for membership in the New York Microscopical Society.

Name: (Dr., Ms., Mr.) Nickname
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Would you prefer to receive NYMS mail at home ☐ At work ☐ By e-mail (best way) ☐
Principal work or interest in Microscopy

On what topic are you available as a speaker?

Would you like information about NYMS committees? Yes ☐ No ☐ Awards ☐ Membership ☐
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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 \$300 (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, Clifton, NJ 07013 Telephone (973) 470-8733

SCONYC

Our 36th year celebrating science !

Science Council of New York City

36th Annual All-Day Conference and Luncheon

In Cooperation with the
NYC Department of Education
& the NYS Education Department



Taste of Science

Special
Workshops
For All Levels
Science
Teachers

Saturday, April 6th 2013

8:00 AM – 4:00 PM

On Site Registration begins at 7:30 a.m.

Stuyvesant High School
345 Chambers Street @ West Street

Member Associations of SCONYC

- * Catholic Science Council-Diocese of Brooklyn * Chemistry Teachers Club * Educators for Gateway *
- * Elementary School Science Association * New York Biology Teachers Association *
- New York City Science Teachers Association of NYS * New York Microscopical Society *
- * New York State Marine Education Assoc. * Physics Club of New York * Science Supervisors Assoc. *

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- * New York State Science Olympiad, Inc * Brooklyn Food Coalition *
- * United Federation of Teachers Outdoor – Environmental Education Committee *

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<http://www.sconyc-ny.org>

Please Note: Due to Insurance Restrictions, there will be NO strollers, bags with wheels, or shopping carts allowed in the Exhibit Area.



KEYNOTE ADDRESS: “David Kraus Lecture”

9:30-10:15 AM

Sustainability at Home and at School: Saving the Planet 3 Times a Day!

Amie Hamlin has been the Executive Director of the New York Coalition for Healthy School Food since its founding in 2004. Previously she was the director of a non-profit environmental organization on Long Island and director of a tobacco-control program in Binghamton, NY. In her current position, she wrote a NYS legislative resolution to promote healthy plant-based entrees and nutrition education in schools which passed unanimously in 2004. Her organization’s mission is to implement these recommendations. She will be speaking about the connection between our diet and the environment, and changes we can make to reduce global warming, pollution, and resource consumption. In addition she will talk about her agency’s signature programs: **Cool School Food** – developing and introducing plant-based entrees in partnership with school districts, restaurants, and others (in Ithaca and New York City), and **Wellness Wakeup Call** – nutrition education in the form of “easy to digest” sound bites read over the loudspeaker each morning, in two versions: K-5 & 6-12.

Conference Highlights

- ☐ **Coffee, Tea and refreshments**
- ☐ **Optional hot buffet luncheon is available at midday**
- ☐ **Exhibits of books and classroom materials**
- ☐ **Certificate for six hours of participation**
- ☐ **Panels and workshops on all levels of science teaching**
- ☐ **Workshops of special interest on all levels for new teachers**
- ☐ **Commercial Workshops and Free Educational Materials**
- ☐ **Informal educational resources of the city including museums, zoos, Aquarium, environmental, centers, and related organizations**
- ☐ **Easy to Reach via all major Subways and NJ PATH system.**
- ☐ **LIMITED parking on surrounding streets or parking lots**

The Day at a Glance:

7:30- 9:30	Registration
7:30- 9:00	Coffee, Tea and Muffins
8:00- 9:00	Session A
9:15- 10:30	General Session and Keynote Address
10:30- 2:00	Exhibits and Free Materials
11:30- 12:30	Session B
12:30- 1:30	Luncheon or Exhibits
1:40- 2:40	Session C
3:00- 4:00	Session D
4:00	Door Prize giveaways (Coat Check Area)

Presentation Sampler, Past and Present:

BIOLOGY-CHEMISTRY-EARTH SCIENCE- PHYSICS- ENVIRONMENTAL SCIENCE- FORENSIC SCIENCE- BIOTECHNOLOGY AND MORE.

- **WATER QUALITY ANALYSIS: FROM LOW TO HIGH TECH**
- **ACTIVITIES AND DEMONSTRATIONS FOR YOUR PHYSICS CLASS**
- **PROBLEM-BASED LEARNING**
- **USING NASA RESOURCES**
- **SCIENCE RESEARCH PROJECTS**
- **MARINE SCIENCE: AN INTERDISCIPLINARY APPROACH**
- **3D WORKSHOP BY KEY NOTE SPEAKER**

36th Annual SCONYC CONFERENCE – Science Council of New York City

TASTE of SCIENCE

Saturday, April 6, 2013

Stuyvesant High School, 345 Chambers Street, New York, NY 10282

Keynote Speaker: Amie Hamlin

"Sustainability at Home and at School: Saving the Planet 3 Times a Day!"

Panels and Workshops on ALL levels of Science teaching, Free materials, Commercial Workshops,
Exhibition of books and equipment

IF YOU WISH TO REGISTER ON-LINE, CLICK ON <http://www.sconyc-nyc.org/WebPages/ConferenceRegistration.html>
OTHERWISE FILL IN & MAIL THE FORM BELOW

Registration Information Form: Please duplicate this form for additional registrants. All those who register by **MARCH 6th**, will be eligible for door prizes.

PLEASE PRINT

Last Name: _____ First Name: _____ M.I.: _____

Home Address: _____

City: _____ State: _____ ZIP Code: _____

Area Code: _____ Home Phone Number: _____ - _____ E-mail: _____

SCHOOL OR INSTITUTION: _____

School phone number (area code) _____ (number) _____ ext. _____

Check where applicable

POSITION: ☐ Full-time teacher ☐ Supervisor ☐ Student-Teacher ☐ Science Education Student ☐ Other

TEACHING LEVEL: ☐ Early Childhood ☐ Elementary ☐ IS/Jr. High ☐ High School ☐ College

ORGANIZATION AFFILIATION(s) check box(es) for the organizations of which you are a PAID member.

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|---|--|--|
| <input type="checkbox"/> Catholic Science Council | <input type="checkbox"/> Chemistry Teachers Club of NY | <input type="checkbox"/> Educators for Gateway |
| <input type="checkbox"/> Elementary School Science Assoc. | <input type="checkbox"/> NY Biology Teachers Assoc. | <input type="checkbox"/> New York City STANYS |
| <input type="checkbox"/> New York Microscopical Society | <input type="checkbox"/> NYS Marine Education Assoc. | <input type="checkbox"/> Physics Club of NY |
| <input type="checkbox"/> Science Supervisors Assoc. | <input type="checkbox"/> Brooklyn Food Coalition | |

Registration fee: (Circle ONLY one price below PLUS LUNCH if preregistering)

On-Site Registration Starts 7:30 am April 6, 2013	EARLY BIRD REGISTRATION BY MARCH 6th	ON-SITE REGISTRATION APRIL 6th	HOT BUFFET LUNCH ONLY IF Preregistered
Full Time Undergraduate & Graduate College Student *	\$ 17	\$ 22	+\$ 15
Other than College Student	\$ 22	\$ 32	+\$ 15

* Name of college _____ Instructor _____

* Major _____ Year of Graduation _____

Full time undergraduate & graduate students must include a copy of their UNDERGRADUATE or GRADUATE College ID and Current Course Schedule with this form *This discount is NOT FOR Full time TEACHERS

Amount Enclosed \$ _____	MAIL this COMPLETED REGISTRATION FORM AND A CHECK or MONEY ORDER. Payable to <u>SCONYC</u> BEFORE MARCH 11 TH to: HARRY KRANEPOOOL 31-31 138 TH STREET APT 4D FLUSHING, NY 11354-2633
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*Please complete a separate REGISTRATION FORM for each individual.
Additional copies of this form are available at www.sconyc-nyc.org*

Science Council of New York City

36th Annual All-Day Conference and Luncheon

Saturday, April 6, 2013

8:00 A.M. to 4:00 P.M.

Registration Opens at 7:30 AM

Save \$\$ Register Early! Mail In Registration

Deadline March 6, 2013



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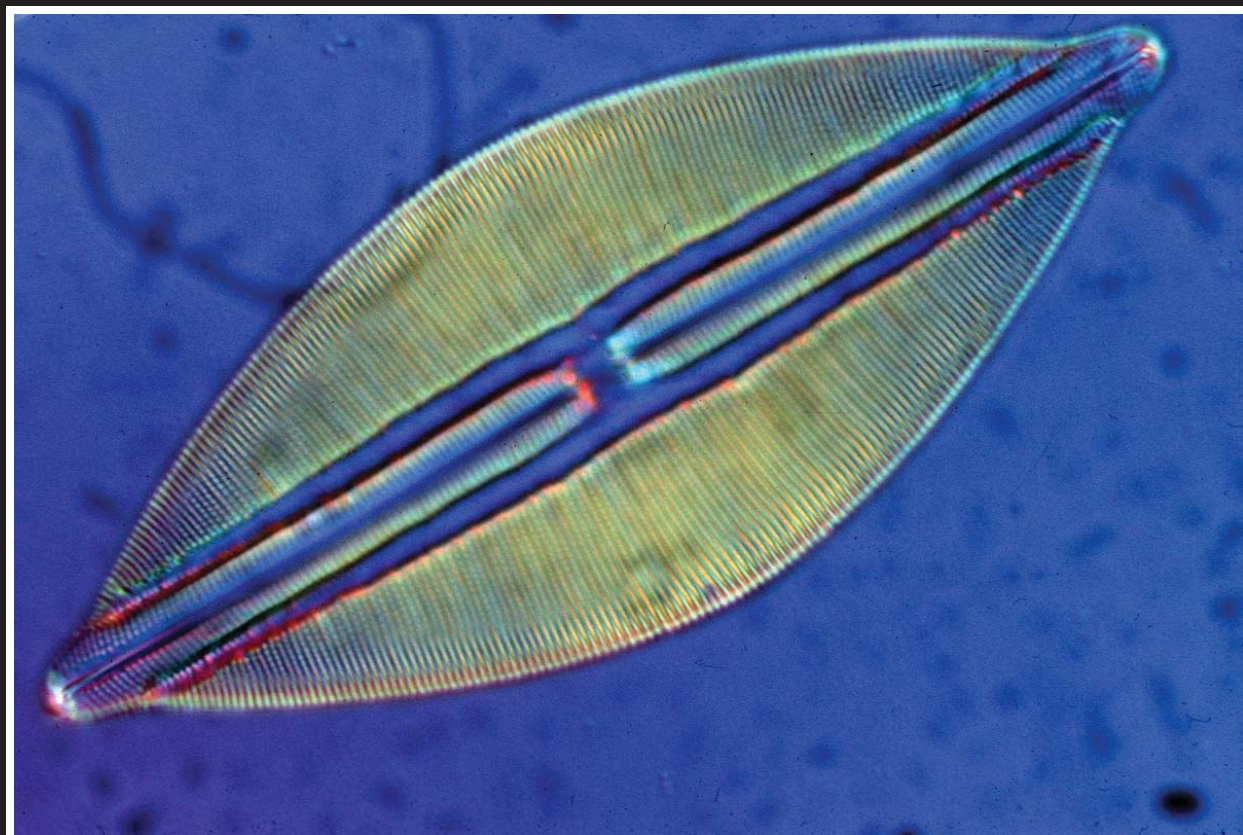
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Milt Brent, COORDINATOR STANYS-NYC Sconyc13@yahoo.com	PROGRAM BOOK Dahlia McGregor Science Skills Hulan Jack Borough of Manhattan Community College	PUBLICITY COMMITTEE John Augenstein John Cunningham Brooklyn Tech H.S. cleverpig@msn.com	FACILITIES COORDINATOR Elizabeth Fong Stuyvesant HS 345 Chambers Street New York, NY 10282

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Mineral specimen: Conicalcrite, Field width 5mm. Photomicrograph by Julian Gray



Navicula lyon, 640x (Sep 1970 frame#7) Photomicrograph from the Eric Grave Archives