○ 9 ○ April ○ 2013

NESM news

PROMOTING THE INTERCHANGE OF KNOWLEDGE OF MICROSCOPY AND ITS TECHNIQUES IN NEW ENGLAND

President's Letter –

Let Light Shine into Young Minds

Dear Fellow Microscopists,

I remember my first microscope. I was six years old and had just started 1st grade. The school was a couple blocks away from our apartment, so my mom would walk me to and from school. There was a toy store on our route. Every day I would see behind the store's window these little black-and-metallic things, which resembled small robots with elongated heads sitting on their hind legs and holding a small tray. Oh boy, was I into robots at that age! When I asked my mom, she told me "those are not robots; they are microscopes, tools that are used to see very small things." That explanation did not deter me; they still looked like robots, and I still wanted one really bad. After days of begging, my mom gave in and bought me one. That little microscope became one of my favorite toys for the years to come. I cannot even guess how many hours I spent reflecting sun light off its little mirror and looking at samples of all kinds. When I was not using it as a microscope, it was serving other purposes, like acting as a robot (of course!) or becoming a pseudo-scientific gadget in my make-believe sci-fi games inspired by the TV series Star Trek and Space: 1999. It looked exactly like the vintage microscope that I found for sale in an online store (see photo right). You may call me nostalgic or sentimental, but as soon as I saw it I could not resist buying it.

That little microscope was the first scientific instrument to shine some light into my developing mind, to show me the wonders of the natural (and sometimes unnatural or man-made) world on a much smaller scale, and to generate sparks of interest in me towards scientific exploration. A couple years later, my younger uncle Turgay gave me a more sophisticated microscopy set for my birthday. The new microscope was significantly larger, had four objective lenses instead of three, had an integrated battery-powered light source in addition to the mirror, and came in a set with various slides, stains, dissection tools and other goodies. My third childhood microscope was even more sophisticated. It looked like a miniature TV. It was battery-powered, and instead of an eyepiece it had a frosted-glass screen to view the samples (see photo right). I looked very cool and displayed awesome images. Thinking back, I feel so lucky that I was blessed with these wonderful toys at such a young age.

Unfortunately, I do not have my childhood microscopes anymore; they got lost during my transition to adulthood, when I left my parents' nest and migrated to United States. However, they served their purpose extremely well. The awe and sense of wonder they invoked in my young mind later helped me define my career path in science and engineering. Now, I am a father of two wonderful boys, Bora (8) and Kaya (almost 4). They have so many modern, high-tech toys and games, but I am concerned and a bit sad. I am concerned because they do not have, towards any of their toys, the appreciation and awe I had towards my microscopes. Their attention span is so short that a new toy becomes an old one on the same day. They are more interested in the virtual joys offered to them through the digital media such as PC, TV, tablets, phones, gamepads etc., which are so ubiquitous that they are almost impossible to ban or even limit. I am sad because my sons may not ever feel the joy of playing with a simple microscope for hours at a time… unless I do something.

Well, I did something by registering and bringing my older son Bora to the last NESM meeting at Boston University. In contrast to my initial worries and predictions, I was pleasantly surprised that he actually liked being among the "grown-up

kids who like to play with [very] expensive microscopy toys", kept his attention through most of the two talks, and did not complain at all. So there seems to be hope for the new generation after all. I am planning to bring him to the next NESM meeting at Woods Hole as well. Although he is going to miss a day of school, I think it is so much more important to stimulate children with activities of scientific exploration at an early age. On behalf of the NESM board of directors, I encourage you to register and bring your daughters, sons, nieces, nephews, friends' kids, neighbors' children, teenagers you have been mentoring, anyone young who may enjoy microscopy and science, to that meeting. If you are planning to, please let us know. Even if there is a small group of young minds, we would like to organize some activities to keep them engaged and entertained. I am hoping that these little events will be the beginning of many more educational activities to come from NESM. Please help us make NESM an organization not only for the "grown-up" kids, but also the real ones. Share your thoughts and suggestions with us about what else we can do. Let the light of science illuminate the young minds around you. I hope to see you all at Woods Hole. Until then…

Fettah Kosar, Ph.D.
Interim NESM President

30th Annual Spring Workshops at the Marine Biological Laboratory

Thursday, May 2, 2013

1:00PM **Welcome:** Louie Kerr, *NESM Treasurer*

1:10PM **Workshops Part I**

2:30PM **Afternoon Break:** Coffee and refreshments

3:00PM **Workshops Part II**

5:00PM **Closing Remarks:** Louie Kerr, *NESM Treasurer*

Workshop Abstracts

Note: Workshops run concurrently.

High Pressure Freezing and Quick Freeze Substitution Methods – Kent McDonald, University of California, Berkeley
Capacity: 20
TBA

Microanalysis with Optical and Infrared Microscopy – Thomas Tague Jr. & Fred Morris, Bruker Optics
Capacity: 6
This workshop will be focused on the principles of sample observation and characterization utilizing optical microscopy and infrared microscopy. Optical microscopy is traditionally the best tool for visual characterization allowing careful observation of the physical properties of the sample. Infrared spectroscopy, in general, is used to determine the sample chemical properties. Applications to art, pharmaceutical products, forensic evidence, and material science samples will be presented to demonstrate the capabilities of spectroscopic microanalysis as well as the limitations therein. Lastly, sample preparation and presentation for microanalysis will be demonstrated.

A demo unit of the LUMOS system will be available for hands on time. Feel free to bring samples to analyze.

VISIT
nesmicroscopy.org
for more details

Registration Online

$15 Workshops *(includes coffee and refreshments)*

30th Annual Spring Symposium at the Marine Biological Laboratory

Friday, May 3, 2013

9:00AM **Registration (Swope Center):** Coffee and refreshments

10:00AM **Welcome (Meigs Room):** Fettah Kosar, *NESM President*

10:10AM **"Investigating neuronal signaling in dendrites, axons and synapses using fluorescence microscopy and organic voltage-sensitive dyes"**, Dejan Zecevic, Ph.D., *Yale University School of Medicine*

10:50AM **"Microscopic Vibrational Analysis in the World of Art"**, Thomas Tague Jr., Ph.D., *Bruker Optics, Inc.*

11:30AM **Vendor/Poster Session**

12:30PM **Lunch (Swope Center)**

1:50PM **Keynote: "From live cells to resin sections in 6 hours",** Kent McDonald, Ph.D., *University of California, Berkeley*

2:15PM **Afternoon Break:** Coffee and refreshments

3:00PM **"Exploring functional interactions and dissociations between discrete brain regions during memory task performance in rats",** Amy L. Griffin, Ph.D., *University of Delaware*

3:40PM **TBA**

4:20PM **Closing Remarks:** NESM Board

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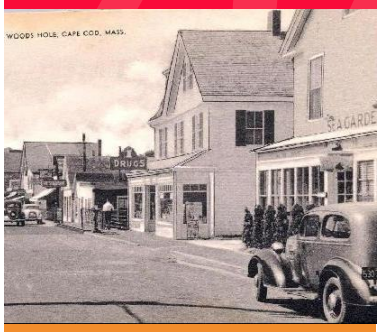

Registration Online

$115 Exhibiting Vendors *(includes 6'x3' table and drape and a regular member registration)*

$60 Regular Members

$85 Regular Non-members *(includes 2013-year membership)*

$30 Student Members

$40 Student Non-members *(includes 2013-year membership)*

$50 Retiree Members

$60 Retiree Non-members *(includes 2013-year membership)*

MARINE BIOLOGICAL LABORATORY
1888
WOODS HOLE

Student Poster Session

The 30th Annual NESM Spring Symposium Student Poster Session

Friday, May 3th, 11:30 - 12:30PM
in Swope Center

PRIZES AWARDED TO THE BEST STUDENT POSTERS!

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Past & Future Meetings:
The Year So Far

46th Annual Fall Symposium & Business Meeting, Gordon College – November 30, 2012

The 46th Annual Fall Symposium and Business Meeting were held on November 30th at Gordon College's Ken Olson Science Center. The evening consisted of five technical talks, a buffet dinner, and a business meeting. NESM attendees received a warm welcome from Gordon students and a delightful dinner in a beautiful and inviting atmosphere.

The technical talks began with Dr. Barbara Beltz and her graduate student, Paula Chaves da Silva describing how microscopy has aided them in identifying the hematopoietic system as a potential source for first-generation neuronal precursors. Dr. Alexander Smetana of NanoInk Inc. followed by educating the audience on innovations in nanoscale printing with his talk on Tip Based Lithography.

After a brief break for refreshments, the technical talks continued with a visually stunning presentation by Dr. James Weaver. Dr. Weaver of the Wyss Institute received many "ooh's" and "aah's" from the audience as he shared the latest developments in wide-field, polychromatic, and stereo SEM. Dr. Pavel Dorozhkin extended the discussion of innovative techniques by presenting his work on the integration of atomic force microscopy with optical spectroscopy. Dr. Dorozhkin outlined the advantages and difficulties involved in Tip Enhanced Raman Scattering as a technique to increase spatial information and resolution.

After a beautiful dinner, the technical talks continued with the keynote speaker, Dr. Darlene R. Ketten of the Woods Hole Oceanographic Institute. Dr. Ketten gave a captivating and dynamic talk about her work on understanding the anatomy of biosonar. Dr. Ketten described how she uses conventional and MicroCT imaging to gain insight into head, pinnal, and cochlear cytoarchitecture in marine mammals and the implications of these structures for ultrasonic encoding and acuity. Dr. Ketten shed light on the world of underwater acoustics and importance of auditory information in aquatic ecosystems.

At the conclusion of the technical talks, Dr. Fettah Kosar, NESM President 2013, led the business meeting portion of the evening. Dr. Kosar discussed many of the new initiatives taken by the NESM Board over the past year. These initiatives include a conscious effort to increase our student membership and student presence at NESM meetings by dramatically reducing registration fees and adjusting the society bylaws to promote activity from young professionals and recent graduates. The business meeting ended with the election of seven members to office: Blair Rossetti – President Elect 2014, Jared Kelly – Clerk 2014, Louis Kerr – Treasurer 2013, Monica Zugravu – Corresponding Secretary 2014, Dr. Trevor Wardill – Biological Science Director 2013, Dr. Jennifer Ross – Biological Sciences Director 2015, and Robert Brandom – Physical Sciences Director 2015.

NESM would like to kindly thank Dr. Ming Zheng and Gordon College for again providing a beautiful venue to host our 46th Annual Fall Symposium and Business Meeting. The meeting was a fantastic success with all of the attendees leaving with full brains and full stomachs.

Blair Rossetti
NESM President-Elect

Spring Meeting, Photonics Center, Boston University, MA – February 28, 2013

Our 2013 February meeting was held at the Photonics Center at Boston University. Thanks go to Anlee Krupp and the NESM board for all their efforts in organizing this meeting. NESM is also very grateful to the speakers, BU Photonics Center staff and all our attendees. With the cooperation from all of us, we had a wonderful time among our NESM family. We also give warmest welcome to our youngest NESM member Bora: Welcome on board, Bora!

Our host, Anlee Krupp, gave us an impressive tour of the facilities. During the tour, everyone was amazed by this well-equipped Photonics Center: it has all levels of facilities aiming at nano-photonics research, ranging from photonics materials growth, photonics device fabrication, up to micro/nano-characterization. This tour was also quite educational, especially for our student and other junior members.

After dinner, Professor Daniela Nicastro from Brandeis University gave a talk on 3D electron tomography. At the beginning of Dr. Nicastro's talk, she gave a very fundamental, though still straight-forward introduction into electron tomography combined with different specimen preparation methods. Then this presentation was followed by more thorough discussions of strengths and limitations of 3D electron tomography, along with a few exemplary applications to biological specimens. Dr. Nicastro concluded this wonderful talk by pointing out that cryo-ET in combination with some other related rapidly growing techniques is providing new views of the 3D structure of cellular organelles and molecular machines at unprecedented resolution.

The second talk was given by Professor Chuanhua Duan from Boston University about enhanced ion and molecule transport in nanofluidics. This presentation gave us a broad overview of nanofluidics physics, as well as exciting applications including power generation, flow control and enzyme sensing. Dr. Duan shared with us his in-depth research experience of nano-channels design, fabrication, and characterization. His enthusiasm for integration of fundamental science and various real-life applications was greatly appreciated.

All in all, this meeting was a great success. We had a good turnout and all attendees enjoyed the beautiful facilities and dynamic and intriguing presenters. We strongly encourage more student and young members to participate in our NESM meeting and relevant activities in the near future.

Huiliang Zhang, Ph.D.
Physical Sciences Director

NESM News *live*

Looking for upcoming meeting dates? Wondering how to become a NESM member? Interested in affiliated societies? Keep updated on all things NESM by checking us out on the web. Visit our homepage, nesmicroscopy.org, for the latest information on meetings and events. Peruse the website to find membership applications, Society documents, and contact information. Scan the QR codes below with your smartphone to find NESM on the web.

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Many thanks to those who help keep the NESM motor running

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NESM would like to extend our deepest thanks and appreciation to all of our Corporate Members. Your sustained commitment to NESM allows us to continue to promote excellence in microscopy here in New England. NESM would also like to thank our affiliated societies – MSA, MAS, and ConnMS – for their continued support.