



Fall Meeting @ The Center for Biological Imaging, Harvard University, Cambridge

Registration Open

Meeting Description:

Join NESM for our annual Fall Meeting on Oct. 20, 2011 at The Center for Biological Imaging, Harvard University, Cambridge. The meeting is composed of five concurrent afternoon workshops and a dinner meeting.

Workshop Cost (space limited to 4 people per workshop)

\$15 All Members

Dinner Meeting Costs (including refreshments, dinner and two talks starting at 5:30PM):

\$20 General Members

\$45 General Non-members (includes 2012-year membership)

\$10 Student Members

\$35 Student Non-members (includes 2012-year membership)

\$10 Retiree Members

\$35 Retiree Non-members (includes 2012-year membership)

Walk-ins: Additional \$5

Bring a Colleague:

NESM members who bring two new members to join during 2012, will receive free membership for 2013!!!

Help us Spread the Word:

Post our flyers around campus and/or work and encourage students and colleagues to attend.

[Fall Meeting 2011 Colored Flyer V1](#)

[Fall Meeting 2011 Colored Flyer V2](#)

[Fall Meeting 2011 Black and White Flyer](#)

Meeting Schedule:

October 20, 2011 -

1:30-2:00 Workshop registration at the Center for Biological Imaging (CBI)

2:00-4:00 Workshops: BioSEM, BioTEM, CARS, Super Resolution SI/PAL-M, and X-ray MicroCT

4:00-5:00 Meeting registration and tour of CBI (including refreshments)

5:30-6:30 "Imaging the Connectome", Jeff Lichtman, Ph.D., Harvard University

6:30-7:30 Dinner

Workshops:

BioSEM: Variable Pressure and Environmental SEM Workshop – Adam Graham

In this workshop we will work with uncoated and unprocessed samples to demonstrate variable pressure on a Zeiss EVO SEM. This application is ideal for investigating native plant tissues and biological samples. We will also spend some time working in WET mode which allows us to image hydrated samples keeping the working chamber at 40-100% humidity. This capability has many interesting applications for both biological and material samples.

BioTEM: Energy Filtered Transmission Electron Microscopy (EFTEM) Workshop – Carolyn Marks

Energy filtering provides a way to achieve contrast in TEM samples composed exclusively of light elements. This workshop will cover the basics of working with an energy filtering system to increase contrast in biological and polymer samples. Attendees are encouraged to bring a prepared grid of a low contrast sample for examination. We will be using the Zeiss Libra 120 EFTEM housed within the Center for Nanoscale Systems at Harvard University

CARS Imaging Workshop – Dr. Arthur McClelland

Coherent Anti-Stokes Raman Scattering (CARS) imaging is a label-free optical imaging technique based on the Raman response of the sample. By using the anti-Stokes signal spectral interference from auto fluorescence that commonly plagues biological samples is suppressed. This nonlinear optical technique also allows the mapping of 3D distributions of small molecules in a sample. The workshop will cover the basics of CARS imaging and introduce users to the CARS imaging setup at Harvard's Center for Nanoscale Systems (CNS). CNS is an open user facility that is part of the National Nanotechnology Infrastructure Network.

Super Resolution: SI and PAL-M Imaging Workshop – Dr. Bernhard Götz

Structured Illumination (SI) and Photo-Activated Localization Microscopy (PAL-M) are two of the super resolution light microscopy techniques that have recently been developed and commercialized. SI has a resolution of ~100nm. PAL-M has a resolution of 20-40nm. This workshop will introduce these two super resolution techniques and introduce participants to the Zeiss Elyra system at Harvard's Center for Biological Imaging (CBI). The CBI is an open user facility at Harvard.

X-Ray Imaging and MicroCT Workshop – Dr. Turgut Fettah Kosar

X-Ray imaging has come a long way since the first radiograph taken by Wilhelm Conrad Röntgen in 1895. Over the last century, the techniques advanced from taking low-resolution two-dimensional (2D) projections of mostly biological samples to high-resolution imaging and three-dimensional (3D) reconstruction of volumes of a broad range of objects and artifacts. This 3D recreation of scanned sample volumes is commonly referred to as computed tomography (CT). A typical X-ray CT system can non-destructively produce both 2D and 3D images of samples made of almost any material. There are now stand-alone laboratory systems available on the market that are capable of achieving 50nm spatial resolution without the need of a very bulky and expensive synchrotron X-ray source. The applications of these techniques are very diverse, spanning fields such as medicine, materials science, mechanical and aeronautical engineering, microelectronics, geology, anthropology, museum studies, biological sciences, and many others.

This short workshop will provide an introduction to the basic theory and practice of X-ray imaging and CT at micrometer length scales, also known as X-ray microCT. We will go through the basics of using X-rays to image internal features of samples and creating 3D computer images. The workshop will be held on the X-Tek HMX ST 225 microCT system located in the Center for Nanoscale Systems' facilities at Harvard University. No prior knowledge of X-ray imaging is required.

Location:

Center for Biological Imaging, Harvard University, Cambridge

Biolabs Building, 16 Divinity Avenue, Cambridge, MA 02138

[Get Directions](#)

Parking:

1. Go to: <http://www.uos.harvard.edu/transportation/>
2. Select "Online Tools" on the left hand side of screen.
3. Click "One-Day Online Permit"
4. Click "Visitor"
5. Then select "Click Here To Register"
6. Complete the "Login Information" section of the Account Registration Page.

7. When filling in the "Personal Profile" section choose "Center for Nanoscale Systems" from the pull down list for "Department". Type in "3070" for "Department Code". You will need to remember this code as you will need it anytime you go to purchase a parking permit.
8. Once in the system, you should be able to follow the prompt to complete you purchase. The 52 Oxford St., 10 Everett St. and Broadway are the closest garages to the LISE building. The cost per day is \$13.00. Click the link to the campus map showing the location of the [52 Oxford Street Garage](#).
9. If you are going to arrive after 5:00pm, you can park in the SEAS parking lot behind LISE building for \$5.00. Select "SEAS Weeknights" from the pull down list and proceed with the instructions. Click the link to the campus map showing the location of the [School of Engineering and Applied Sciences \(SEAS\)](#). The parking lot is located behind the Pierce Hall:

Register Now

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