Southern California Society
for
Microscopy & Microanalysis

Full-Day Symposium

Saturday
March 3, 2012

B E C K M A N I N S T I T U T E
at Caltech

Microbeam Analysis Society Invited Speaker

David Williams
The Ohio State University

Your SCSMM Board has been working hard to bring you an excellent program for the upcoming March 3 Symposium to be held at CalTech. First, we are very pleased that our Microbeam Analysis Society National Tour Speaker will be David Williams of The Ohio State University. Not only is Dave a former President of MAS, he is also co-author of the text book "Transmission Electron Microscopy", a mainstay for all materials science microscopists.

As has become a tradition, our one day symposium also includes a competition for graduate students. The best platform presentation and the best poster presentation not only come with cash awards to support travel to M&M, the M&M program committee has also offered a place in the program for these two winning papers.

Our board is also evolving. At a brief business meeting at the Symposium, we will present a new slate of candidates to constitute the board in 2012/2013. The proposed board membership is identified elsewhere in the newsletter and we hope you will support our new team. And I would like to acknowledge the many years of hard work made by outgoing board members Mike Pickford (secretary for many years and most recently web site manager), Bill Tivol (member at large) and John Curulli (secretary).

Finally, I would like to acknowledge our corporate members, flyer advertisers, and meeting sponsors. At this meeting, coffee breaks by Oxford Instruments, and our lunch is sponsored by FEI. These significant sponsorships make our meetings what they are. Please remember to visit the vendor booths and help make the vendors sponsorships worthwhile for them.

John Porter
President, SCSMM

2012 Symposium Tentative Schedule

07:30 – 08:50	**Registration**
08:50 – 09:00	Welcome address
09:00 – 09:30	Structure and dissection of biological complexes *in situ* using cryogenic transmission electron microscopy *Morgan Beeby, California Institute of Technology*
09:30 – 10:00	Electron Tomography of HIV in Gut-Associated Lymphoid Tissues *Mark Ladinsky, California Institute of Technology*
10:00 – 10:15	Vendor Talk
10:00 – 10:15	Vendor Talk
10:45 – 11:00	**Coffee Break** *Sponsored by Oxford Instruments*
11:00 – 11:30	Transmission Electron Microscopy of Incandescent Lamps and Liquid Water *Chris Regan, University California at Los Angeles*
11:30 – 12:15	Reflections on Microscopy & Analysis: From Viewing the Small World to Leading on a Larger Stage *David Williams, The Ohio State University*
12:15 – 13:30	**Lunch Break,** Vendor Exhibits and Graduate Student Poster Judging *Sponsored By FEI*
13:30 – 13:45	Business Meeting
13:45 – 15:00	Five Student Presentations
15:00 – 15:30	*Elitza Tocheva, California Institute of Technology*
15:30 – 15:15	**Coffee Break** *Sponsored by Oxford Instruments*
15:30 – 16:00	Vendor Talk *FEI*
14:30 – 15:00	*Stephan Kraemer, University California at Santa Barbara*
15:15 - 15:45	Student Awards Presentations and Closing Statement

Directions

Exit the 210 Freeway westbound at Hill Ave. or eastbound at Lake Ave. Go south to Del Mar Blvd. From Hill, turn right (west); from Lake turn left (east). Proceed to Wilson Ave. and turn south on Wilson. Park in the first parking structure on the right. Do not park in any space that has a name on it or says "carpool". The Beckman Institute is just across the street from the parking structure. There is a map available at: http://www.caltech.edu/map. The parking structure is #123 and the Beckman Institute is #74.
You may also locate the building on Google Maps or on your GPS by using the following co-ordinates: 34°08'20.98" latitude, -118°07'36.29" longitude.

BECKMAN INSTITUTE
at Caltech
Caltech MC 139-74
1200 E. California Blvd.
Pasadena, CA 91125

Registration & RSVP

Advanced reservation is required.
The event is limited to 100 participants.

Due to the generous support of our corporate members, registration for this meeting is included in the membership dues

Respond no later than 5 p.m. Friday, February 24th, 2012
Please contact
Jim Kulleck
james.kulleck@jpl.nasa.gov

Regular annual membership for the 2011-2012 term is $10 and $3 for students.
For further details visit SCSMM web site
www.scsmm.org

Membership Application 2011 - 2012

About SCSMM

The **SOUTHERN CALIFORNIA SOCIETY FOR MICROSCOPY & MICROANALYSIS** is dedicated to increasing interest and information in all areas of microscopy and microanalysis, including, but not limited to: transmission electron, scanning electron and electron microprobe, ion probe, microbeam analysis, optical and confocal microscopies, and microspectroscopies. You are invited to join, or renew your membership in the society.

The Society generally meets four times per year at various locations throughout the greater Los Angeles area. The program usually begins with a Social Hour followed by Dinner, then a brief Business Meeting and finally the Scientific Program which consists of one or two presentations in the biological and physical sciences selected to be of sufficient breadth and interest to appeal to the entire membership.

Among our current members are students (graduate and undergraduate), post-docs, college and university professors and research assistants, laboratory directors, vendors of electron microscopes, microanalysis and/or related equipment, laboratory technicians, technologists, assistants, and many others. Their professional work spans the full range of the biological, medical and physical sciences.

In order that we may have precise records, please complete all of the information included on this application, including both your work and home addresses. You may indicate at which address you wish to receive SCSMM mailings. Fax numbers and e-mail address will be used to notify you of last minute changes in scheduled events. This information will be used only for SCSMM business. **The published list of members will include only your work address, phone number, fax number and/or e-mail address and will only be made available to members and meeting sponsors of SCSMM. You may request that your name not be included in the published list.** If your company or laboratory has a web site, we would like to publish this in a directory of services available to Southern California microscopists.

CORPORATE MEMBERSHIP: Corporate members are entitled to place two individual's names on the rolls per membership. Your membership will be acknowledged throughout the year via SCSMM Meeting Announcements and Newsletters. Corporate members are invited to place advertising in our Meeting Announcements and Newsletters. The cost for this is $250 per 8½ x 11" page and helps to defray the cost of the mailings. You are also invited to sponsor one of our meetings at which you may give a short presentation or product demonstration. Your $200 donation will provide food and beverage (non-alcoholic) for the pre-meeting social hour and includes a one page advertisement in the Meeting Announcement for that meeting. For more information on Corporate Memberships, please contact our Vendor Liaison, Mark Armitage, at micromark@juno.com, phone (818) 677-4575.

Membership Application 2011 - 2012

Membership Valid Through August 31, 2012

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Corporate Memberships are entitled to two individual member listings. If you have selected a Corporate Membership, please copy this form and provide details for the second listing. Write "**2nd Listing**" at top of form.

Please attach a check for the appropriate amount made payable to SCSMM. You may bring this form along with your dues to any of our meetings or mail to:

SCSMM
C/O John Curulli
University of Southern California – UPC
814 Bloom Walk, CEM building room 101B
Los Angeles, CA 90089-0101

ABSTRACTS

Structure and dissection of biological complexes in situ using cryogenic transmission electron microscopy

Morgan Beeby
California Institute of Technology

Cryogenic transmission electron microscopy offers the unparalleled opportunity to observe biological complexes in situ within the cell. Because many such structures are functional in situ but can dissociate upon purification, this represents the first method in which we can observe many stuctures in their functional form. The bacterial flagellar motor, a nanometer-scale proteinaceous propeller, is one such structure. Using the flagellar motor as paradigm for understanding macromolecular function in the context of intact living cells, I describe recent comparative work to assess the diversity of this widespread family of structures across the bacteria. We discovered that there are extensive differences between the motors, despite a conserved core. These comparative observations enabled us to begin to dissect flagellar motors and identify the genes that code for their components, both ubiquitous and not. These provide invaluable insights into possible functions for the differences, and provides an ideal case study for understanding the evolution of macromolecular diversity in living cells.

Electron Tomography of HIV in Gut-Associated Lymphoid Tissues

Mark Ladinsky
California Institute of Technology

The human digestive system is one of the first lines of defense against infection and is home to almost half of the body's immune cells. As such, in HIV-positive patients the gut harbors large populations of the virus, especially at early stages of infection. At later stages, following depletion of T-cells, the virus may remain in regions of the gut where it is inaccessible to anti-retroviral drug therapy. We are using high-resolution electron tomography and immuno-EM to study HIV-infected gut tissue from humanized mouse models and biopsies from HIV-positive human patients. Our goal is to study early and late events of HIV infection in situ, identify the cells that harbor the virus at specific locations within the gut and determine where and how the virus may "hide" from HAART therapy. Both mature and immature (budding/recently-budded) virions can be identified by distinct structural features and by immunolabeling with antibodies against specific HIV antigens. Pools of mature HIV are often found in the intercellular spaces of the Crypts of Lieberkühn and viral budding profiles are detected on a small subset of cells in the mucosa and in villus lamina propria. Specific cell types (T-cell, macrophage or dendritic cell) can be assessed by ultrastructural features and accurately determined by immunoEM. The nature and location of virus pools gives us insight to how the virus may evade HAART and may suggest new therapies directed to these specific structures.

Transmission Electron Microscopy of Incandescent Lamps and Liquid Water

Chris Regan
University California at Los Angeles

At UCLA's Electron Imaging Center for Nanomachines we are developing new capabilities for characterizing nanoscale electronic devices. By combining modern microfabrication techniques with in situ transmission electron microscopy we are able to observe functional devices over an enormous range of temperatures and pressures. From single carbon nanotubes we construct tiny incandescent lamps (visible to the naked eye), and bring them to 2200 K in vacuum inside the TEM. Using similar technology we fabricate electron-transparent chambers that can be filled with liquid water at atmospheric pressure. These fluid-filled cells allow us to study operating electrochemical devices (e.g. batteries) at nanometer resolution. Movies depicting silicon nitride sublimation, nanobubble dynamics, and dendritic crystal growth from aqueous solution will be shown.

Reflections on Microscopy & Analysis: From Viewing the Small World to Leading on a Larger Stage

David Williams
The Ohio State University

By some standards, I have had a successful career as a professor and an administrator, spanning the range from assistant professor to president of a Carnegie Tier–I research university. I was honored to receive the "Henry Clifton Sorby Lifetime Achievement Award of the International Metallographic Society (IMS) at their recent 2011 meeting. The word "lifetime" is a somewhat sobering adjective, and it prompted me to think what in fact had I learned in my professional lifetime that might be of use to others, particularly to younger academics and researchers early in their careers. So, in the talk (given first at the recent IMS/MAS/MSA meeting), I present my thoughts first on what the future holds for TEM and also on how one can have a useful career as an electron microscopist / materials scientist and a university administrator and the lessons learned from both sides, which occasionally feed off one another.

The Southern California Society for Microscopy and Microanalysis wishes to acknowledge the following Corporate Members who faithfully advertise in our Meeting Announcements, sponsor meetings and have renewed their commitment to our society for the 2011 - 2012 year.

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