



*Southern California Society
for
Microscopy & Microanalysis*

Fall Symposium

Thursday
November 3, 2011



University Club/Orange Grove Bistro

California State University Northridge
18111 Nordhoff Street
Northridge, CA 91330-8271

(818) 677-2076

FROM THE



DIRECTOR

Welcome to the 2011 / 2012 season of the Southern California Society for Microscopy and Microanalysis. We have two meetings planned for this year - in November and March.

On November 3, we have an evening meeting planned with a tomography theme. Our biological speaker will be Ariane Briegel of CalTech and our physical sciences speaker will be Alessandro Motura of UCSB. We will be meeting at CSUN (Cal. State University Northridge), a

new venue for our group and hopefully it will prove to be convenient for as many of you as possible. Program details are elsewhere in this mailing.

Our Spring Symposium will, once again, be an all-day meeting. We are in the process of putting together the program, but there will be a student session and a poster session. Once again, there will be a \$500 award for the best platform presentation and a \$300 award for the best poster. These awards are to support travel to the 2012 national M&M meeting - July 29-August 2, 2012 - Phoenix, AZ.

Our dues this year will remain \$10 for professionals and \$3 for students and that includes all meeting costs. Clearly, the bulk of our costs are covered by our sponsors, so please take the time to talk to our vendor representatives and maybe even buy their instruments! We are very grateful for their support.

We are also very fortunate that every year for a number of years we have had either an MAS or an MSA national tour speaker at one of our meetings. In March, we are negotiating to have Dave Williams be our MAS tour speaker. He gave an excellent talk at M&M and his tour talk will be based on that. However, the national societies pay all the travel costs of tour speakers and that support is much appreciated, too. So if you're not a member of one of the national societies, I strongly encourage you to consider joining one or both.

A very tentative date for our Spring Symposium is March 3. We hope to have a form date by our November 3 meeting.

Finally, I would like to thank our outgoing President, Krassimir Bozhilov for his hard work in putting together last year's program as well as the rest of the board for their continued efforts in putting on the local program each year. Nominally, we elect new officers at the November meeting, and we will have a short business meeting there. However, our same group of hardworking board members continues to serve and we would welcome some new enthusiastic board members to join us. Our VP Biological remains vacant and we would welcome a new board member with the skills to update and improve our web site. Please contact me if you would like to get involved as a board member.

John Porter, President
President, SCSMM

2011 Fall Symposium Tentative Schedule

5:30 PM Happy Hour

6:30 PM Dinner (buffet)

Scientific Program

7:30 PM Electron Cryotomography of Bacterial Chemotaxis Arrays

Ariane Briegel

California Institute of Technology

8:30 PM The TriBeam: Femtosecond Laser Aided Tomography in a DualBeam FIB/SEM

Alelssandro Motura

University of California, Santa Barbara

Registration & RSVP

Respond no later than 5 p.m. Friday, October 28th, 2011

Please contact

Jim Kulleck

(818) 354 5666

james.kulleck@jpl.nasa.gov

Regular annual membership for the 2010-2011 term is \$10 and \$5 for students.

For further details visit SCSMM web site

www.scsmm.org

Directions

From CA 118 Westbound

Exit CA 118 at Reseda Blvd and turn right. Travel 200 yards on Rinaldi to Reseda Blvd. Turn right on Reseda and travel 2.5 miles south to Prairie Street. Turn left and travel one-and-a-half blocks to information booth on the left.

From CA 118 Eastbound

Exit CA 118 at Reseda Blvd. Turn right on Reseda and travel 2.5 miles south to Prairie Street. Turn left and travel one-and-a-half blocks to information booth on the left.

From Interstate 405 Southbound

Exit Interstate 405 at Nordhoff St. and turn right. Travel 3.2 miles to Zelzah Ave. Turn right on Zelzah. Proceed through the light to parking lot G4 on the left. Information Booth is located in the lot.

From Interstate 405 Northbound

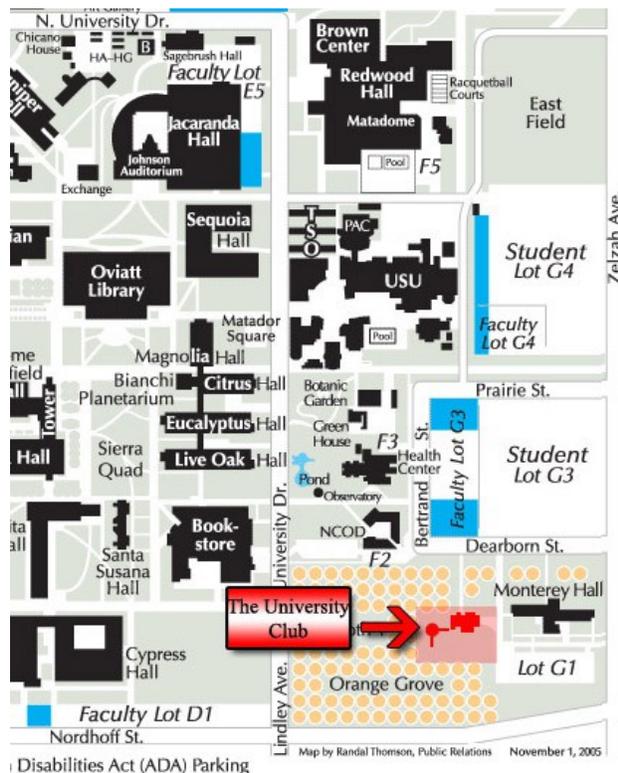
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University Club/Orange Grove Bistro is located on the corner of Dearborn Street and Zelzah Avenue

The University Club/Orange Grove Bistro Parking is Lot G1

California State University Northridge
University Club/ Orange Grove Bistro
18111 Nordhoff Street
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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 \$125 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 (626) 969-5197.

Electron Cryotomography of Bacterial Chemotaxis Arrays

Ariane Briegel

California Institute of Technology

Abstract

Chemotactic bacteria utilize a highly sensitive and adaptable sensory system to swim towards attractants and away from repellents. Effectively, they constantly assess their current environment using a rudimentary "memory". This "memory" enables them to bias their otherwise random swimming motion, prolonging swims up nutrient gradients. Changes in nutrient concentrations are detected by a polar, highly organized sensory patch of transmembrane receptor proteins together with a number of accessory proteins. Attractants and repellents bind to the sensory domains, thereby regulating the activity of a histidine kinase, which phosphorylates a soluble messenger protein. This messenger protein in turn diffuses through the cytoplasm to the flagellar basal body, where it modulates the direction of flagellar motion. Electron cryotomography (ECT) makes it possible to visualize chemoreceptor clusters in bacteria *in vivo* to macromolecular resolution (4-8 nm). While high-resolution crystal structures of the individual chemotaxis proteins are available, their arrangement and position in the arrays remain unclear. Understanding this "mesoscale" architecture of the clusters is critical, however, since it is vital to the arrays' emergent properties of cooperative signal amplification and regulation. We have used ECT to investigate a wide range of diverse bacterial species, revealing a universal architecture of the chemoreceptor arrays in hexagonal lattices with a center-to-center spacing of 12 nm, suggesting a universal mechanism of transmembrane signaling amongst bacteria. We are now investigating the structural effects on the chemoreceptor arrays upon nutritional changes in their environment.

Biography

I am currently a research scientist in the cryo-EM laboratory at the California Institute of Technology. I have a strong interest and background in exploring bacterial ultrastructure using many state-of-the-art microscopy techniques, including electron cryotomography (ECT). I earned my PhD in the laboratory of Professor Wolfgang Baumeister, one of the leading laboratories in the ECT field. In 2005 I joined the lab of Professor Jensen, which is well known for employing state-of-the-art ECT equipment for bacterial structure research. I have continued working on bacterial ultrastructure, especially the architecture of bacterial chemoreceptor arrays.

The TriBeam: Femtosecond Laser Aided Tomography in a DualBeam FIB/SEM

Alessandro Motura

University of California, Santa Barbara

Abstract

Gathering 3D data is becoming increasingly essential to the characterization and simulation of materials. Recent years have seen the emergence of several techniques designed to obtain 3D data, each operating within a specific length-scale and limited in regards to the type of data that can be obtained. At UCSB, the Pollock research group transformed a FEI Strata DB 235 DualBeam microscope into a TriBeam instrument by incorporating a femtosecond laser into the system. The femtosecond laser allows for in situ material ablation at high material removal rates. The high frequency (1kHz) of ultra-short (150fs) laser pulses means ablation occurs with virtually no thermal damage to the surrounding area. Therefore, high resolution imaging, as well as crystallographic and elemental analysis, can be performed without intermediate surface preparation and without removing the sample from the chamber. As a result, the TriBeam combines the high resolution and broad detector capabilities of the DualBeam microscope with the high material removal rates of the femtosecond laser, allowing it to collect datasets approaching 1mm^3 .

Biography

Alessandro obtained his PhD from Imperial College London in 2010, where he worked under the supervision of Prof. Mike W. Finnis and Prof. Roger C. Reed. After obtaining his PhD, Alessandro joined the research group of Prof. Tresa M. Pollock, at the University of California in Santa Barbara. Alessandro's primary research interests are atomic-scale phenomena affecting the properties of high temperature alloys.



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 2010 - 2011 year.

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