AINS Arizona Imaging and Microanalysis Society

Using light, electrons, ions, electromagnetism and x-rays

AIMS Newsletter Spring 2017

# **PRESIDENT'S NOTE**

Page Baluch, AIMS 2016-2017 President

Welcome back to another great year of microscopy! I would like to extend a big thank you to Brooke Massani, Tom Zega, Patty Jansma, Doug Cromey, and David Elliott who did a great job planning and hosting the 2016 AIMS conference at the University of Arizona. We also wish to congratulate last year's poster award winners: James (Bo) Faust,



Wayne Christenson, Maria Love and Magnum Pina and travel awardees: Wayne Christenson, Barry Carter and Shangji Zhang.

Each year we trade off and host the event at one of the university campuses and this year the 2017 conference is scheduled for Friday March 2-3, 2017 at Arizona State University in the Carson Ballroom at Old Main. In collaboration with our colleagues at the University of Arizona, we are happy to announce that once again that we will be hosting a half day **Digital Images and Their Ethical Use** in Science Workshop on Thursday March 2nd from 12:00-5:00pm the day before the conference. The Workshop and Conference are two separate events and must be registered for individually. The workshop is open to anyone but you must sign up as a member to attend the AIMS Conference on March 3rd. We have one more surprise, on Thursday morning one of our guest speakers, Teng-Leong Chew, Director of the Janelia Research Center, will be giving a special presentation about the HHMI Advanced Imaging Center and how to prepare a competitive proposal to be accepted as a visiting scientist.

We are looking forward to a great meeting and hope you will join us at these 2017 AIMS conference events!



## **ATTENTION STUDENTS:**

The Arizona Imaging and Microanalysis Society annual meeting is scheduled for **Friday March 3rd at ASU's Old Main (Carson Ballroom)**. We would like to invite any undergraduate, graduate or postdoctoral student who uses microscopy to visualize their research to present a poster at the conference. There will be **6 poster awards (\$100 each) for the best light and EM based posters in both undergraduate, graduate and postdoc categories**. You can register and submit your abstract online at http://azmicroscopy.org. Your student membership, only \$5, will pay for your admission to the conference and meals at the event. You can pay the membership fee at the check in table on the day of the conference, submit your payment online or mail a check in advance to the address listed on the website. You must <u>register in advance</u> to enter the poster competition and to have admission to the conference and luncheon. Your **poster abstract must be submitted by February 24**<sup>th</sup> to be included in the conference program. Below I have listed the poster guidelines and evaluation criteria for the competition. Please feel free to contact me if you have any questions: <u>page.baluch@asu.edu</u>.

#### **Student Poster Guidelines:**

1. Applicants must be or have been an undergraduate, graduate or postdoctoral student during the academic year of the meeting.

2. The work must consist of original research authored by the participant and be coauthored by his/her advisor.

3. The poster must be formatted to fit within an area of 48 inches wide by 36 inches high.

4. The poster should contain: title, author and affiliation, abstract, introduction, methods and materials, results, discussion, figures and legends, and references.

#### Award Evaluation Criteria:

The AIMS judges will use the following criteria to evaluate the student's poster and oral presentation:

- 1. Scientific merit
- 2. Soundness of the research proposal
- 3. Experimental design and thoroughness of investigation
- 4. Validation of conclusions
- 5. Application of microscopy/microanalysis in answering the experimental question
- 6. Quality of micrographs/images/data
- 7. Presentation
- 8. Response to questions



9. Diversity of instrumentation and technique10. Clarity and quality of writing11.Grammatical correctness

# **2017 AIMS SPONSORS**

Platinum Sponsors Bruker AXS Microanalysis FEI Company Photometrics/QImaging Hitachi High Technologies America, Inc.

Electron Microscopy Sciences IBIDI USA, Inc. Carl Zeiss Microscopy

### **Gold Sponsors**

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#### Silver Sponsor

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\*\*Don't see your name? It's not too late to become a sponsor for the meeting. Go to <u>http://azmicroscopy.org</u> to register!

### Traveling to the 2017 Conference?

For anyone traveling to the Tempe Arizona area and are looking for hotel accommodations, we have a special ASU rate with Moxy by Marriott [Phone: 480-968-3451] at \$159/night. If you need to book a hotel, you should do so soon because the special rate is only good for a few more weeks. It will soon be spring training and spring break in Tempe and most of the local hotels will book up. Make sure you mention the <u>AIMS conference</u> and <u>ASU rate</u> to receive this discount.

### AIMS 2017 Conference | Arizona State University Advanced Imaging Center, HHMI/Janelia Research Campus

Biodesign Institute March 2, 2017, 9:30-11:00am <u>Speaker</u>: **Teng-Leong Chew**, AIC Director, HHMI/Janelia, Ashburn, VA

The AIC at the Janelia Research Campus has advanced microscope systems such as the lattice light sheet, iPALM and SIM. With support from HHMI, Janelia offers opportunities for researchers to submit proposals requesting to come on campus and use these



instruments. Dr. Chew will provide information about the program and give suggestions on how to prepare a competitive proposal.

### AIMS 2017 Conference | Arizona State University Digital Images and their Ethical Use in Science Workshop

Old Main, Basha Library March 2, 2017

Overview: Images are a form of scientific data that must be obtained, processed and analyzed without compromising integrity. This workshop will review what is required to obtain good images as well as the terminology and concepts associated with digital imagery. Topics include pixels, resolution, over-saturation, color space, bit depth, image processing filters and common formats used in presentations. While the use of digital images is common in a wide variety of scientific disciplines, this workshop will focus on image data that is acquired through microscopy. A particular focus of this workshop will address the accepted limitations of image manipulation and the ethical responsibility of presenting and publishing image data. It should be noted that this is not a workshop on image analysis, microscope techniques or a Photoshop/ImageJ tutorial. This presentation provides four hours of training that can be applied to the ethics training required by NSF and NIH funded grants.

- | 12:00 12:30p.m. | Check-In & Lunch
- | 12:25 12:30p.m. | Opening remarks Page Baluch AIMS President

|12:30 - 1:15p.m.| **What is a Digital Image,** Brooke Beam, W.M. Keck Center for Imaging, Univ. of Arizona, Tucson, Az.

1:15 - 2:00p.m. | **Presenting and Viewing Digital Images,** Doug Cromey, SWEHSC, Univ. of Arizona, Tucson, Az.

| 2:00 - 2:15p.m. | Break

2:15 - 3:05p.m. | Ethics & Scientific Digital Imaging, Doug Cromey

|3:05 – 3:45p.m. | **Demonstrations: Manipulating Digital Images (I),** David Elliott, Cellular and Molecular Medicine, Univ. of Arizona, Tucson, Az.

| 3:45 - 4:00p.m. | Break

|4:00 – 5:00p.m. | **Demonstrations: Manipulating Digital Images (II),** David Elliott



### **2017 AIMS CONFERENCE PROGRAM**

ASU Old Main – Carson Ballroom March 3, 2017

> **Check-In** | 8:00 - 8:45a.m. |

**Opening remarks Page Baluch** - AIMS President | 8:45 - 9:00a.m. |

LeRoy-Eyring Center for Solid State Science Thomas Sharp, Director CSSS and NASA Space Grant Program, School of Earth and Space Exploration, Arizona State University, Tempe, AZ | 9:00 - 10:00a.m. |

Morning Break – Vendor Demonstrations/Student Poster Session | 10:00 - 11:20a.m. |

Advanced Imaging & Microscopy Resource at NIH Harshad Vishwasrao, NIH/NIBIB AIMR Director, Bethesda, MA | 11:30 - 12:30p.m. |

Buffet Lunch – Old Main, Carson Ballroom | 12:30 - 1:15p.m. |

Jeopardy – Interactive Event | 1:20 - 1:55p.m. |

Advanced Imaging Center at the HHMI Janelia Research Campus Teng-Leong Chew, AIC Director, HHMI/Janelia, Ashburn, VA | 2:00 - 3:00p.m. |

**Bio-Imaging Resource Center at Rockefeller University Alison North**, BRC Senior Director, Rockefeller University, New York, NY 3:00 - 4:00p.m. |

Afternoon Break/Vendor Exhibits/Student Awards | 4:00 - 4:30p.m. |

University of South Carolina School of Medicine Instrument Resource Facility Robert Price, IRC Director, Professor of Cell Biology & Anatomy, University of South Carolina, SC. Microscopy Society of America Tour Speaker | 4:30 - 5:30p.m. |



# **SPEAKERS**

**Tom Sharp**, Director LeRoy Eyring Center for Solid State Science, School of Earth and Space Exploration, Arizona State Univ., Tempe, AZ.



As the director of Arizona State University's (ASU) LeRoy Eyring Center for Solid State Science, Sharp oversees a world class environment for advanced materials research and training that has defined the LeRoy Eyring Center for almost five decades. Formed in 1974, the center houses one of the country's most comprehensive collections of high-end tools for the characterization of solid materials. It supports materials research

activities across a broad range of disciplines, including solid-state physics and chemistry; Earth and planetary science; materials science and engineering; life sciences; electrical engineering. The center's instruments and expertise are available to researchers not just within ASU but across an expanding industrial community.

Harshad Vishwasrao, NIH/NIBIB Advanced Imaging and Microscopy Resource Center Director, Bethesda, MA



and Bioengineering

National Institute of Harshad Vishwasrao did his Ph.D. in Biomedical Imaging physics with Watt Webb at Cornell University his where research utilized multi-photon imaging and ultrafast

spectroscopy of intrinsic NADH fluorescence to study energy metabolism in the brain. He then moved to Columbia University to pursue post-doctoral research in neuroscience with Eric Kandel - developing novel fluorescence based approaches to study actin dynamics and the actin interaction network.

Harshad joined the National Institutes of Health as the inaugural director of the Advanced Imaging and Microscopy (AIM) Resource. AIM is a trans-NIH initiative to make next generation microscopes available to the entire NIH research community. This facility will house, operate, develop, and improve prototype, non-



commercial microscopes that are of demonstrated interest to the biological research community.

Teng-Leong Chew, AIC Director, HHMI/Janelia, Ashburn, VA



After obtaining a BS in Biochemistry at the University of Wisconsin-Madison, Chew went to St. Louis University to pursue his PhD, where he worked to understand the role of myosin II regulation in endothelial cells. Realizing that conventional biochemical methods could not address the spatial and temporal regulation of signaling pathways inside the cell, Chew embarked on his postdoctoral research in the laboratory of Rex Chisholm by developing fluorescent biosensor to simultaneously monitor the enzymatic activity

and localization pattern of myosin light chain kinase in vivo.

In 2002, Chew became the director of the Center for Advanced Microscopy at Feinberg School of Medicine, Northwestern University in 2002, and led the facility to be recognized as one of the few selected Nikon Imaging Centers of Excellence in the world. At the same time, his lab began devising methods to engineer threedimensional, lumenized vascular network capable of dynamic signaling read-out. In 2009, Chew was further appointed to the position of Director for University Imaging Resources at Northwestern, overseeing the overarching strategy in building integrated imaging infrastructure across all seven imaging centers and cores within the university.

Chew joined Janelia in 2014 to serve as the Director for the Advanced Imaging Center. Here, he leads the effort in building the unique collaborative imaging center that serves as the gateway through which the wider scientific world can access Janelia's cutting-edge microscopy capabilities.

Alison North, BRC Senior Director, Rockefeller University, New York, NY



Dr. North joined The Rockefeller University in 2000 to establish and direct its Bio-Imaging Resource Center, one of the world's most comprehensive facilities for state-of-the-art microscopy and scientific imaging. Dr. North, a cell biologist whose research has included using immunoelectron microscopy to

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study muscle defects caused by Duchenne muscular dystrophy and ultrastructural studies of the cellular organization of epidermal cell-cell junctions, advises and trains hundreds of researchers from Rockefeller and other institutions in a wide variety of optical microscopy techniques.

A native of Yorkshire, UK, she was an undergraduate at the University of Cambridge and received her doctorate from Oxford University. She undertook postdoctoral research in Salzburg and then Manchester, where she was later awarded a Wellcome Trust Career Development fellowship. Dr. North's images and movies have been exhibited worldwide, including in science exhibits at the International Center of Photography in New York and on the public television science series Nova. She has also acted as judge for both the Olympus BioScapes and Nikon Small World photomicrography competitions.

**Robert Price**, IRC Director, Professor of Cell Biology & Anatomy, University of South Carolina, SC. Microscopy Society of America Tour Speaker



Dr. Price is the Director of the University of South Carolina Facility (IRF) which is a Instrumentation Resource biotechnology core that houses a wide range of confocal instrumentation including electron and microscopes, cell sorters, and small animal imaging systems. Dr. Price's primary expertise is in confocal and electron microscopy. He has received several awards from local and national microscopy societies including the Southeast Microscopy Society Distinguished Scientist Award and the Microscopy Society of America Distinguished Service Award. He is currently the Editor-in-Chief of

*Microscopy and Microanalysis* which is the journal of the Microscopy Society of America and is President Elect 2017. He has also organized and taught numerous national and international confocal microscopy workshops and Springer recently published a book by Dr. Price and Dr. Jay Jerome of Vanderbilt University entitled "Basic Confocal Microscopy" based on these workshops.

The Instrumentation Resource Facility (IRF) is an integral component of the research and teaching mission of the University of South Carolina School of Medicine (USC SOM). Located within the facility are several major pieces of state-of-the-art biomedical research equipment that provide techniques ranging from whole animal through single cell imaging to analysis at the molecular level. The IRF also houses a full range of ancillary equipment that is available for sample preparation. In addition to serving as a resource for acquisition of primary data, the IRF also has the capacity for image enhancement and related data analysis.



# **MICROSCOPY & MICROANALYSIS 2017 CONFERENCE**



We invite you to join us on August 6-10, 2017 at the America's Center Convention Complex in St. Louis, Missouri. for Microscopy & Microanalysis 2017 Conference. Microscopy and Microanalysis 2017 provides scientific diversity, spanning disciplines from life to the physical sciences, all unified by the tools of our trade. The program committee has developed a strong program

highlighting the latest microscopic and microanalytical advances in the three primary fields of Biological sciences, Materials science, and Analytical sciences. Many interdisciplinary symposia have been organized, reflecting the current environment of collaboration between scientists in different disciplines. The exhibits will demonstrate state-of-the-art equipment, and the vendor tutorials will continue to be a significant part of the meeting. The meeting will also feature tutorials and workshops to be held during the meeting in addition to the traditional short courses. For more information, go to: http://www.microscopy.org/MandM/2017.

# **CURRENT ARIOZNA MICROSCOPY NEWS**

### 'Method of the Year' Cryo-Electron Microscopy, coming soon to ASU

The coolest new way to take a near atomic-resolution snapshot of life at work is cryo-electron microscopy (Cryo-EM). recently touted by *Nature* as its 2015 'Method of the Year'. Arizona State University will take delivery of an advanced cyro-electron microscope in 2017.

For the complete story please go to: http://tinyurl.com/ASU-CryoEM

#### Cold Spring Harbor Labs, Woods Hole Marine Biological Inst., & Mount Desert Island Biological Labs - Light Microscopy courses (March & May 2017)

These courses will focus on advanced quantitative fluorescence microscopy techniques used for imaging a range of biological specimens, from tissues to cells to single molecules. The course is designed for quantitative cell and molecular biologists, biophysicists and bioengineers.

For more information please go to: <u>http://microscopy.arizona.edu/event/march-may-2017-light-microscopy-courses</u>



Imaging and Histology Core at NAU obtain a Zeiss Supra 40VP variable pressure field emission scanning electron microscope

For more information go to: <u>http://nau.edu/CEFNS/Centers-Institutes/Imaging-Histology-Core-Facility/New-equipment/</u>