



Electron Microscopy for Biological, Environmental, and Energy Research (EMBEER) Symposium

Working agenda 6/1/15

July 29-30, 2015

Hosted by the **Environmental Molecular Sciences Laboratory (EMSL)** and the **Chemical Imaging Initiative (CII)** at PNNL, Richland, WA

Meeting Chairs: A. Scott Lea and Nigel D. Browning

Wednesday July 29th

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| 8:00-8:15am | Welcome – Allison Campbell |
| 8:15-8:30am | Introduction – Scott Lea and Nigel Browning |
| Session 1: Advances in Instrumentation and Methods, Ilke Arslan and Dan Edwards | |
| 8:30-9:00am | Steve Pennycook, University of Singapore – “Atom by atom imaging – today and tomorrow” |
| 9:00-9:30am | Quentin Ramasse, SuperSTEM – Daresbury - "Bond inversion dynamics and spectroscopy of single atoms" |
| 9:30-10:00am | Christian Kisielowski, Lawrence Berkeley National Laboratory – “Capturing the time evolution of materials: atoms at work” |
| 10:00-10:30am | Break |
| 10:30-11:00am | Rafal Dunin-Borkowski, Ernst Ruska Centre - “New approaches for tackling inverse problems in electron microscopy of electromagnetic fields for materials research” |
| 11:00-11:30am | Peter Van Aken, Max Planck Institute – Germany - “Probing interferences of optical modes in three-dimensional gold tapers with relativistic electrons” |

11:30-12:00pm Paul Voyles, University of Wisconsin-Madison

12:00-1:00pm **Lunch Provided compliments of our Sponsors:**

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Session 2: Energy Storage and Conversion Materials, Chongmin Wang and Libor Kovarik

1:00-1:30pm Nobuo Tanaka, Nagoya University - "Prospects of high-voltage ETEM by using blanking or pulsed beams"

1:30-2:00pm Robert Sinclair, Stanford University

2:00-2:30pm Peter Crozier, Arizona State - "Probing Local Atomic and Electronic Structure at Oxide Surfaces and Interfaces"

2:30-3:00pm Renu Sharma, National Institute of Standards & Technology (NIST) – "Correlative microscopy for *in situ* characterization of catalyst nanoparticles under reactive environments"

3:00-3.30pm Break

3:30-4:00pm Eric Stach, Brookhaven National Laboratory - "Using operando approaches to link electron and photon probes in heterogeneous catalysis"

4:00-4:30pm Chris Regan, University of California-Los Angeles - "Nanoscale thermometry with TEM".

4:30-5:00pm Robert Klie, University of Illinois-Chicago – "Atomic-resolution XEDS imaging studies of energy conversion and storage materials"

5:00-8:00pm **Poster session and Q-wing Open House:**

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Thursday July 30th

Session 3: Biological and Environmental Research, James Evans and Alice Dohnalkova

- 8:00-8:30am Michael Knoblauch, Washington State University – “Distribution of photoassimilates in plants: New insights on a century old mystery”
- 8:30-9:00am Grant Jensen, California Institute of Technology – “How electron cryotomography is opening a new window into microbial cell biology”
- 9:00-9:30am Richard Leapman, National Institutes of Health (NIH) - “Nanoscale 3D Imaging of Cells and Tissues with Scanned Electron Probes”
- 9:30-10:00am Michelle Digman, University of California-Irvine – “Quantitative Image Correlation Microscopy Tools to Map Spatiotemporal Protein Dynamics in Living Cells”
- 10:00-10.30am Break
- 10:30-11:00am Cindi Schwartz, National Institutes of Health (NIH) – “The Use of the Flacon II Direct Electron Detector and the Volta Phase Plate to Image Biological Samples in Cryo-TEM”
- 11:00-11:30am Elia Beniash, University of Pittsburg – “Cryo-TEM Studies of Biomineralization: Hierarchical Arrangement of Mineral Particles by Protein Assemblies”
- 11:30-12:00pm Lee Penn, University of Minnesota – “Cryo-TEM studies of nanocrystal growth and aggregation”
- 12:00-1:00pm **Lunch Provided:**

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Session 4: Materials Properties and Processes, Matt Olzsta and Edgar Buck

- 1:00-1:30pm Barry Carter, University of Connecticut – “Challenging TEM”
- 1:30-2:00pm Assel Aitkaliyeva, Idaho National Laboratory – “The role of the state of the art equipment in advancement of nuclear energy research”
- 2:00-2:30pm Blythe Clark, Sandia National Laboratory - “Enabling Development of Predictive Simulations through Advanced Microscopy-Based Analysis”
- 2:30-3.00pm Break
- 3:00-3:30pm Michael Kaufman, Colorado School of Mines – “Examination of Short and Long-Range Order Effects in Ni-Cr Base Alloys”
- 3:30-4:00pm Mike Mills, Ohio State University; Melissa Teague, Idaho National Laboratory

On behalf of the Environmental Molecular Sciences Laboratory (EMSL)
and the Chemical Imaging Initiative
at the Pacific Northwest National Laboratory



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