



Workshop: Advanced Materials / Mesoscale Engineering
Early experiments and unique opportunities with the APS MBA Upgrade
May 21 – May 22, 2015

Day 1, May 21, 2015

APS Building 401, Conference Room A1100

Chairs: Robert Suter, Dillon Fong, Peter Chupas

9:00 am	<i>Welcome and introduction to APS-U</i>	Stephen Streiffer Associate Laboratory Director for Photon Sciences, Argonne National Laboratory
9:30 am	<i>New capabilities – X-ray source and optical considerations for the APS-U</i>	Dean Haeffner X-ray Science Division, Argonne National Laboratory
10:00 am	<i>Opportunities in Coherent Diffraction X-ray Imaging</i>	Ross Harder X-ray Science Division, Argonne National Laboratory
10:30 am	Group photo / Coffee break	
11:00 am	<i>Nanoscale Hard X-ray Microscopy and the APS Upgrade</i>	Martin Holt Nanoscale Science & Technology Division, Argonne National Laboratory
11:30 am	<i>Opportunities in X-ray Photon Correlation Spectroscopy</i>	Eric Dufresne X-ray Science Division, Argonne National Laboratory
12:00 pm	<i>Working lunch: Capabilities of Modern Electron Microscopy, or How not to propose a billion-dollar machine to solve million-dollar problems</i>	Paul Voyles Department of Materials Science & Engineering, University of Wisconsin-Madison
1:10 pm	<i>Discussion of workshop report and introduction to themes 1, 2, and 3</i>	Peter Chupas X-ray Science Division, Argonne National Laboratory

Theme 1: Understanding the effect of heterogeneity on structural deformation

1:15 pm	<i>Combining HEDM and CDI in polycrystal studies</i>	Robert Suter Department of Physics, Carnegie Mellon University
1:30 pm	<i>Multi-scale HEDM: bracketing critical events in polycrystalline materials</i>	Joel Bernier Physics Division, Lawrence Livermore National Laboratory

1:45 pm	<i>Opportunities for in situ phase contrast imaging studies of dynamic failure processes in metals and geomaterials</i>	Todd Hufnagel Department of Materials Science & Engineering, Johns Hopkins University
2:00 pm	<i>Open discussion on Theme 1 Slides from the floor are welcome</i>	Discussion Leader: Robert Suter (CMU)
Theme 2: Understanding defect behavior in materials under operation		
2:15 pm	<i>Spectro-Microscopy for Energy Materials</i>	William Chueh Department of Materials Science & Engineering, Stanford University
2:30 pm	<i>Investigating future nanoelectronics using x-rays</i>	Conal Murray IBM T.J. Watson Research Center
2:45 pm	<i>Characterization of Irradiation-Induced Defects</i>	Meimei Li Nuclear Engineering Division, Argonne National Laboratory
3:00 pm	<i>Open discussion on Theme 2 Slides from the floor are welcome</i>	Discussion Leader: Dillon Fong Materials Science Division, Argonne National Laboratory
3:15 pm	Coffee break	
Theme 3: Understanding structure & dynamics at condensed matter interfaces		
3:45 pm	<i>XPCS Studies of Thin Film Growth Dynamics</i>	Karl Ludwig Department of Physics, Boston University
4:00 pm	<i>Spatially-resolved liquid dynamics near interfaces and leading to nucleation</i>	Paul Voyles Department of Materials Science & Engineering, University of Wisconsin-Madison
4:15 pm	<i>Characterization Needs for the Design of Functional Materials at Interfaces</i>	Paul Salvador Department of Materials Science & Engineering, Carnegie Mellon University
4:30 pm	<i>Focusing High Energy X-rays</i>	Xianbo Shi X-ray Science Division, Argonne National Laboratory
4:45 pm	<i>Open discussion on Theme 3 Slides from the floor are welcome</i>	Discussion Leader: Peter Chupas X-ray Science Division, Argonne National Laboratory
5:00 pm	<i>General discussion on all themes Slides from the floor are welcome</i>	Robert Suter, Dillon Fong, Peter Chupas
5:30 pm	<i>Adjourn</i>	

Dinner (self-organized)

Day 2, May 22, 2015
APS Building 401, Conference Room A1100

9:00 am	<i>Discussion on the workshop report</i> <i>Slides from the floor are welcome</i>	Robert Suter, Dillon Fong, Peter Chupas
9:30 am	<i>Report writing, preparation of summary</i> Theme 1: <i>Understanding the effect of heterogeneity on structural deformation</i> Theme 2: <i>Understanding defect behavior in materials under operation</i> Theme 3: <i>Understanding structure & dynamics at condensed matter interfaces</i>	Meet in A1100 Meet in A5000 (5 th Floor) Meet in B5100 (5 th Floor)
10:30 am	Coffee break	
11:00 am	<i>Summary Breakout 1 (Theme 1)</i>	Robert Suter et al.
11:20 am	<i>Summary Breakout 2 (Theme 2)</i>	Dillon Fong et al.
11:40 am	<i>Summary Breakout 3 (Theme 3)</i>	Peter Chupas et al.
12:00 pm	Overall summary, conclusions	Organizers