

# XRM2010 Daily Program

## Monday, August 16

Tuesday Poster Session setup (all day)

08:15 – 08:30		<b>Opening and Welcome</b> Eric Isaacs, Director, Argonne National Laboratory	
<b>Session Mo1: X-ray Facilities, Instruments, and Optics I</b>		<b>Chicago Ballrooms IX and X</b>	
08:30 – 09:05	Mo1-Facil-1 <i>invited</i>	<b>Sub-10-nm Focusing of Hard X-rays Using Mirror Optics</b> Kazuto Yamauchi, <i>Osaka University</i>	Chair: David Attwood
09:05 – 09:40	Mo1-Facil-2 <i>invited</i>	<b>Towards 10-nm Zone-Plate Fabrication</b> Anders Holmberg, <i>Royal Institute of Technology</i>	
09:40 – 10:00	Mo1-Facil-3	<b>Development of Multilayer Laue Lenses; (1) Linear Type</b> Takahisa Koyama, <i>University of Hyogo</i>	
10:00 – 10:20	Mo1-Facil-4	<b>Toward One-Nanometer Hard X-Ray Microscopy Using Multilayer Laue Lenses</b> Hanfei Yan, <i>Brookhaven National Laboratory</i>	
10:20 – 10:45		<b>Break</b>	
10:45 – 11:20	Mo1-Facil-5 <i>invited</i>	<b>Instruments for Soft X-ray Tomography and Correlated Light Microscopy of Biological Specimens at the National Center for X-ray Tomography</b> Christian Knoechel, <i>U. California at San Francisco &amp; Advanced Light Source</i>	Chair: Albert Macrander
11:20 – 11:40	Mo1-Facil-6	<b>Fabrication of Diffractive Optics for Present and Future X-ray Sources</b> Christian David, <i>Paul Scherrer Institut</i>	
11:40 – 12:00	Mo1-Facil-7	<b>X-ray Talbot Interferometry at ESRF: Applications and Recent Technical Developments</b> Timm Weitkamp, <i>ESRF</i>	
12:00 – 13:30		<b>Lunch</b>	
<b>Session Mo2: X-ray Facilities, Instruments, and Optics II</b>		<b>Chicago Ballrooms IX and X</b>	
13:30 – 14:05	Mo2-Facil-1 <i>invited</i>	<b>Zone Plate Development at the Helmholtz-Zentrum Berlin: Current Status and Future Possibilities with the New 100-keV e-Beam Writer</b> Stefan Rehbein, <i>BESSY</i>	Chair: Hans Hertz
14:05 – 14:25	Mo2-Facil-2	<b>Following Dynamic Processes by X-ray Tomographic Microscopy with Sub-second Temporal Resolution</b> Rajmund Mokso, <i>Swiss Light Source, Paul Scherrer Institut</i>	
14:25 – 14:45	Mo2-Facil-3	<b>Coherence Measurements and Coherent Diffractive Imaging Experiments at FLASH</b> Ivan Vartaniants, <i>DESY</i>	
15:00 – 15:30		<b>Exhibits &amp; Refreshments</b>	
15:30 – 16:05	Mo2-Facil-4 <i>invited</i>	<b>Multilayer-Based Optics for High-Brightness X-ray Sources</b> Saša Bajt, <i>CFEL-DESY</i>	Chair: Tim Saldivit
16:05 – 16:25	Mo2-Facil-5	<b>Full-Field Microscope for EUVL Mask Characterization</b> Fernando Brizuela, <i>Colorado State University</i>	
16:25 – 16:45	Mo2-Facil-6	<b>Laboratory Soft X-ray Tomography of Cryo-Fixated Cells</b> Michael Bertilson, <i>Royal Institute of Technology/Albanova</i>	

# Tuesday, August 17

Tuesday Poster Session setup (until 17:30)

		Chicago Ballrooms IX and X	
<b>Session Tu1: X-ray Microscopy Methods I</b>			
Chair: Janos Kirz	08:30 – 09:05	Tu1-Methods-1 <i>invited</i>	<b>The Application of Electron Microscopy to Nanomaterials</b> Amanda Petford-Long, <i>Argonne National Laboratory</i>
	09:05 – 09:25	Tu1-Methods-2	<b>3D Chemical and Elemental Imaging by STXM Spectro-tomography</b> Jian Wang, <i>Canadian Light Source</i>
	09:25 – 09:45	Tu1-Methods-3	<b>Ultrafast X-ray Fluorescence Microscopy: What Does It Enable?</b> David Paterson, <i>Australian Synchrotron</i>
	09:45 – 10:05	Tu1-Methods-4	<b>MAD Holography</b> Andreas Scherz, <i>SLAC National Accelerator Laboratory</i>
10:05 – 10:45		<b>Break</b>	
Chair: Murray Gibson	10:45 – 11:20	Tu1-Methods-5 <i>invited</i>	<b>Coherent X-ray Diffraction Microscopy of Frozen-Hydrated Yeast Cells</b> Johanna Nelson, <i>Stony Brook University</i>
	11:20 – 11:40	Tu1-Methods-6	<b>Lensless Biological Imaging with Waveguides: Holographic, Iterative and Ptychographic Reconstruction</b> Klaus Giewekemeyer, <i>Institut für Röntgenphysik, Georg-August-Universität</i>
	11:40 – 12:00	Tu1-Methods-7	<b>Wavefront Modulation Coherent Diffractive Imaging</b> F. Zhang, <i>University of Sheffield</i>
12:00 – 13:30		<b>Lunch</b>	
		<b>Session Tu2: X-ray Microscopy Methods II</b>	
		Chicago Ballrooms IX and X	
Chair: Keith Nugent	13:30 – 14:05	Tu2-Methods-1 <i>invited</i>	<b>Scanning Small-Angle X-ray Scattering Microscopy of Biological Tissues</b> Andreas Menzel, <i>Paul Scherrer Institut</i>
	14:05 – 14:25	Tu2-Methods-2	<b>Hard X-ray Scanning Microscopy with Coherent Diffraction Contrast</b> Christian Schroer, <i>Technische Universität Dresden</i>
	14:25 – 14:45	Tu2-Methods-3	<b>Scanning Hard X-ray Phase Contrast X-ray Microscopy: Zernike Quantitation and Applications</b> Christian Holzner, <i>Stony Brook University</i>
15:00 – 15:30		<b>Exhibits &amp; Refreshments</b>	
Chair: Alan Michette	15:30 – 16:05	Tu2-Methods-4 <i>invited</i>	<b>Fresnel Coherent Diffractive Imaging</b> Andrew Peele, <i>La Trobe University, Australia</i>
	16:05 – 16:25	Tu2-Methods-5	<b>Development and Application of High-Resolution Diffraction Microscopy Using Focused Hard X-ray Beam</b> Yukio Takahashi, <i>Osaka University</i>
	16:25 – 16:45	Tu2-Methods-6	<b>Bragg Coherent Diffraction Imaging Using &lt;100 nm Focused Hard X-rays</b> Stephan Hruszkewycz, <i>Argonne National Laboratory</i>
17:30 – 19:30		<b>Exhibits &amp; Poster Session I</b>	

# Wednesday, August 18

Thursday Poster Session setup (all day)

## Session We1: X-ray Facilities, Instruments, and Optics III Chicago Ballrooms IX and X

08:30 – 09:05	We1-Facil-1 <i>invited</i>	<b>Latest Development of Ultra-High-Resolution Soft X-ray Zone Plate Microscopy</b> Weilun Chao, <i>Lawrence Berkeley National Laboratory</i>
09:05 – 09:40	We1-Facil-2 <i>invited</i>	<b>X-ray Microscopy Beamlines at the SSRF: Present Status and Future Plan</b> Hongjie Xu, <i>Shanghai Synchrotron Radiation Facility</i>
09:40 – 10:00	We1-Facil-3	<b>The Nanoscopium Scanning Nanoprobe Beamline at Synchrotron Soleil</b> Andrea Somogyi, <i>Synchrotron Soleil</i>
10:00 – 10:20	We1-Facil-4	<b>Nano and Life Sciences with the TwinMic Soft X-ray Transmission and Emission X-ray Spectromicroscope at Elettra</b> Burkhard Kaulich, <i>ELETTRA - Sincrotrone Trieste</i>
10:20 – 10:45		<b>Break</b>

Chair: Peiping Zhu

## Session We2: X-ray Microscopy Methods III Chicago Ballrooms IX and X

10:45 – 11:20	We2-Methods-1 <i>invited</i>	<b>Pushing the Resolution Limit of Visible Light Microscopy</b> Bo Huang, <i>University of California at San Francisco</i>
11:20 – 11:40	We2-Methods-2	<b>Combined Holographic and Fluorescence Laminography for Three-Dimensional Imaging of Flat Nanostructures</b> Lukas Helfen, <i>Karlsruhe Institute of Technology</i>
11:40 – 13:00		<b>Lunch</b>

Chair: G. Schmahl

## Session We3a: X-ray Microscopy Methods IV Chicago Ballroom VIII

13:00 – 13:20	We3a-Methods-1	<b>Chemical Imaging of Nanodevices with Zone Plate-Based SPEM</b> Luca Gregoratti, <i>Sincrotrone Trieste</i>
13:20 – 13:40	We3a-Methods-2	<b>Polarized X-ray Excited Optical Luminescence Imaging of Nano-LEDs</b> Gema Martinez-Criado, <i>ESRF</i>
13:40 – 14:00	We3a-Methods-3	<b>Imaging Interfacial Topography and Reactivity with X-ray Reflection Interface Microscopy (XRIM)</b> Paul Fenter, <i>Argonne National Laboratory</i>
14:00 – 14:20	We3a-Methods-4	<b>Hard X-ray Phase-Contrast Tomographic Nanoimaging</b> Marco Stampanoni, <i>Paul Scherrer Institut</i>
14:20 – 14:40	We3a-Methods-5	<b>The Maia X-ray Detector Array at the Australian Synchrotron: High-Definition SXRF Trace Element Imaging</b> Chris Ryan, <i>CSIRO</i>
15:00 – 15:30		<b>Exhibits &amp; Refreshments</b>

Chair: Hun-Joon Shin

## Session We4a: Emerging Fields Chicago Ballroom VIII

15:30 – 16:05	We4a-Emerging-1 <i>invited</i>	<b>An Innovative Low-Dose Single-Step Method for Grating-Based X-ray Phase-Contrast Imaging</b> Ziyu Wu, <i>NSRL, University of Science &amp; Technology of China</i>
16:05 – 16:40	We4a-Emerging-2 <i>invited</i>	<b>Femtosecond X-ray Imaging Using Free Electron Lasers</b> Anton Barty, <i>CFEL-DESY</i>
16:40 – 17:00	We4a-Emerging-3	<b>Cultural Heritage Science at the ESRF</b> Marine Cotte, <i>ESRF</i>
17:00 – 17:20	We4a-Emerging-4	<b>One-Nanometer-Scale Elemental Analysis by SR-Based Scanning Tunneling Microscopy</b> Akira Saito, <i>Osaka University and RIKEN and JST</i>

Chair: Graeme Morrison

# Wednesday, August 18 (continued)

Thursday Poster Session setup (all day)

<b>Session We3b: Magnetism and Magnetic Materials</b>		<b>Chicago Ballroom X</b>
<b>Chair: Christoph Quitmann</b>	13:00 – 13:35	We3b-Magnet-1 <i>invited</i> <b>Imaging of Spin Phenomena in Magnetic Nanostructures Using Magnetic Soft X-ray Microscopy</b> <i>Mi-Young Im, Lawrence Berkeley National Laboratory</i>
	13:35 – 14:10	We3b-Magnet-2 <i>invited</i> <b>Probing Magnetic Domain Structure via Coherent X-ray Diffractive Imaging</b> <i>Oleg Shpyrko, University of California at San Diego</i>
	14:10 – 14:30	We3b-Magnet-3 <b>Spins and Twins: Correlation Between Crystallographic and Magnetic Domains at Co/NiO(001) Interfaces</b> <i>Hendrik Ohldag, Stanford Synchrotron Radiation Lightsource</i>
	14:30 – 14:50	We3b-Magnet-4 <b>Vortex and Vortex Core Dynamics Imaged by Time-Resolved X-ray Microscopy</b> <i>Bartel Van Waeyenberge, Ghent University</i>
15:00 – 15:30	<b>Exhibits &amp; Refreshments</b>	
<b>Session We4b: Environmental, Earth, and Space Science</b>		<b>Chicago Ballroom X</b>
<b>Chair: Adam Hitchcock</b>	15:30 – 16:05	We4b-Environ-1 <i>invited</i> <b>STXM Analysis of Impact Tracks in the Stardust Interstellar Dust Collector Aerogel</b> <i>Anna Butterworth, University of California at Berkeley</i>
	16:05 – 16:40	We4b-Environ-2 <i>invited</i> <b>Nanostructure of Geopolymers</b> <i>Paulo Monteiro, University of California at Berkeley</i>
	16:40 – 17:00	We4b-Environ-3 <b>Hard X-ray Imaging of Mercury Accumulation in Plants</b> <i>Joy Andrews, SLAC National Accelerator Laboratory and California State University</i>
	17:00 – 17:20	We4b-Environ-4 <b>Synchrotron X-ray Fluorescence Microtomography in Geo-, Cosmo-, and Biochemistry</b> <i>Antonio Lanzirotti, The University of Chicago</i>
18:30 – 22:00	<b>Banquet</b> aboard the <i>Spirit of Chicago</i> (map on page	

# Thursday, August 19

Thursday Poster Session setup (until 17:30)

<b>Session Th1: Biological and Biomedical Science I</b>		<b>Chicago Ballrooms IX and X</b>
08:30 – 09:05	Th1-Biological-1 <i>invited</i>	<b>Tomographic Analysis by X-ray and Electron Microscopy of Vaccinia Virus Structure and Assembly: A.</b> <i>José Carrascosa, Centro Nacional de Biotecnología, CSIC</i>
09:05 – 09:40	Th1-Biological-2 <i>invited</i>	<b>Use of X-ray Fluorescence Microscopy for Elemental Mapping of Samples Treated with Contrast Agents for Medical Imaging</b> <i>Tanja Paunescu, Northwestern University</i>
09:40 – 10:00	Th1-Biological-3	<b>Investigating the Subcellular 3D Structures of the Oldest Found Embryo Fossils Using Synchrotron Hard X-ray Phase Contrast Microtomography</b> <i>Gang Li, Beijing Synchrotron Radiation Facility, IHEP</i>
10:00 – 10:20	Th1-Biological-4	<b>High-Resolution Phase-Contrast Imaging of Sub-micron Particles in Unstained Lung Parenchyma</b> <i>Johannes Schittny, University of Bern</i>
10:20 – 10:45		<b>Break</b>
10:45 – 12:00		<b>Presentations for XRM 2012</b> <b>Vote for XRM 2012 Location</b>
12:00 – 13:30		<b>Lunch</b>
<b>Session Th2a: Biological and Biomedical Science II</b>		<b>Chicago Ballroom VIII</b>
13:30 – 14:05	Th2a-Biological-1 <i>invited</i>	<b>3-D Cellular Fine Structure Resolved by a Partially Coherent X-ray Microscope</b> <i>Jim McNally, NIH National Cancer Institute</i>
14:05 – 14:25	Th2a-Biological-2	<b>Cryo Transmission X-ray Imaging of the Malaria Parasite <i>P. falciparum</i></b> <i>Keith Nugent, ARC Centre of Excellence for Coherent X-ray Science</i>
14:25 – 14:45	Th2a-Biological-3	<b>Cryogenic X-ray Diffraction Microscopy for Biological Samples</b> <i>Enju Lima, Brookhaven National Laboratory</i>
15:00 – 15:30		<b>Exhibits &amp; Refreshments</b>
15:30 – 16:05	Th2a-Biological-4 <i>invited</i>	<b>Application of XRM to Human Disease and Therapies</b> <i>Peter Lay, University of Sydney</i>
16:05 – 16:25	Th2a-Biological-5	<b>Subcellular X-ray Fluorescence Imaging as a Tool to Better Understand Metal-Induced Pathologies</b> <i>Martina Ralle, Argonne National Laboratory</i>
16:25 – 16:45	Th2a-Biological-6	<b>Visualizing a Role for Zinc in Stem Cell Differentiation through X-ray Fluorescence Mapping</b> <i>Lydia Finney, Argonne National Laboratory</i>
17:30 – 19:30		<b>Exhibits &amp; Poster Session II</b>

Chair: Chris Jacobsen

Chair: Sadao Aoki

Chair: Gerd Schneider

# Thursday, August 19 (continued)

Thursday Poster Session setup (until 17:30)

<b>Session Th2b: Materials and Condensed Matter</b>		<b>Chicago Ballroom X</b>
<b>Chair: Maya Kiskinova</b>	13:30 – 14:05	Th2b-Materials-1 <i>invited</i> <b><i>In situ</i> Nanoscale Chemical Imaging of Catalysts</b> Emiel de Smit, <i>Utrecht University</i>
	14:05 – 14:25	Th2b-Materials-2 <b>Elemental Mapping and Analysis of Solid Oxide Fuel Cells by Transmission X-ray Microscopy</b> Wilson Chiu, <i>University of Connecticut</i>
	14:25 – 14:45	Th2b-Materials-3 <b>Time-Dependent Dealloying and Coarsening Studies of Nanoporous Gold Using Transmission X-ray Microscopy</b> Yu-chen Chen, <i>Northwestern University</i>
15:00 – 15:30		<b>Exhibits &amp; Refreshments</b>
<b>Chair: Michael Feser</b>	15:30 – 16:05	Th2b-Materials-4 <i>invited</i> <b>Coherent X-ray Diffraction Imaging of Strain on the Nanoscale</b> Ross Harder, <i>Argonne National laboratory</i>
	16:05 – 16:25	Th2b-Materials-5 <b>Submicron-Resolution Three-Dimensional Polychromatic X-ray Microdiffraction</b> Jon Tischler, <i>Oak Ridge National Laboratory</i>
	16:25 – 16:45	Th2b-Materials-6 <b>Imaging and Structural Analysis of Ferroelectric Domains Written by Piezoresponse Force Microscopy</b> Pice Chen, <i>University of Wisconsin at Madison</i>
17:30 – 19:30		<b>Exhibits &amp; Poster Session II</b>

# Friday, August 20

<b>Session Fr1: Panel Discussion</b>	<b>Chicago Ballrooms IX and X</b>
08:30 – 10:15	<p><b>Panel Discussion:</b> <b>Nanometer Resolution in X-ray Microscopy</b></p> <p><b>Chair:</b> Qun Shen, <i>Brookhaven National Laboratory</i> <b>Panelists:</b> Christian David, <i>Paul Scherrer Institut</i> Chris Jacobsen, <i>Argonne/Northwestern University</i> Jörg Maser, <i>Argonne National Laboratory</i> Hidekazu Mimura, <i>Osaka University</i> Keith Nugent, <i>University of Melbourne</i> Ian Robinson, <i>University College London</i> Christian Schroer, <i>Technical University Dresden</i> Gayle Woloschak, <i>Northwestern University</i></p>
	<hr/> <p><b>Refreshments</b></p> <hr/>
10:45 – 12:00	<p><b>Werner Meyer-Ilse Award and Student Award Presentations</b> <b>Chair:</b> Alan Michette, <i>Kings College London</i></p> <p><b>XRM2012 Location Winner</b> <b>XRM2010 Closeout</b></p> <hr/> <hr/>

<b>For APS Tour Participants:</b>	
12:00 – 12:30	<b>Pick up box lunch and board bus</b>
12:30	<b>Buses depart for APS Tour</b>
17:30	<b>Buses depart for return to Chicago</b>
18:30	<b>Buses return to Sheraton Hotel</b>