

6th FIB SEM Workshop

March 1, 2013

Sheraton Commander Hotel & Harvard University
Cambridge, MA

Friday, March 1st, 2013

7:30 AM Breakfast & Coffee

8:30 AM Welcome

Morning

8:45 AM **Yu Zhu***, Nicholas Antoniou**, Jemima Gonsalves* & David Mitzi*
*IBM TJ Watson Research Center, **Harvard University
Cryo-FIB TEM Sample Preparation for Cu₂ZnSn(S,Se)₄ Solar Cell

9:00 AM **Cheryl Hartfield*** & Nicholas Antoniou**
*Oxford Instruments, **Harvard University
Progress towards Cryo FIB Lift-Out

9:15 AM **Solomon Boakye-Yiadom** & Nabil Bassim
University of Manitoba
Use of FIB to Study the Impact Properties of Materials

9:30 AM **Matthew I. Hartshorne***, Dieter Isheim**, David N. Seidman** & Mitra L. Taheri*
*Drexel University, **Northwestern University
Atom Probe Tomography: A Novel Double-Liftout Method for Site-Specific Preparation of Specimens for Correlating TEM and APT in Fine Grained Materials

9:45 AM **A.J. Smith***, G. Renka*, K. Schock*, A. Lieb**, M. Dadras*** & S. Kleindiek*
*Kleindiek Nanotechnik GmbH, ** Nanosurf AG, ***Centre Suisse d'Electronique et de
Microtechnique
Adding 3D Surface Imaging to Your FIB/SEM

10:00 AM COFFEE BREAK

10:30 AM **Aaron Kuan**
Harvard University
FIB-SEM Techniques for Solid-State Nanopore Characterization

- 10:45 AM **J. Klingfus***, A. Nadzeyka**, S. Bauerdick**, T. Albrecht*** & J.B. Edel***
 *Raith USA, **Raith GmbH, ***Imperial College London
Wafer-scale Ion Beam Lithography of Nanopore Devices
- 11:00 AM **H. Wu***, L.A. Stern*, K. Klein*, D. Xia*, D. Ferranti*, B. Thompson*, P.D. Rack** & C.M. Gonzalez**
 *Carl Zeiss NTS, **University of Tennessee
Fabrication of 10 nm Metal Lines with Low Resistivity by Helium Ion Beam Induced Deposition
- 11:15 AM **Michael W. Phaneuf**
 Fibics Inc.
Enabling Next-Generation Focused Ion Beam Applications Through Advanced Beam Control
- 11:30 AM **Brandon Van Leer & Laurent Roussel**
 FEI Company
Fast Prototyping of Functional Devices Using a DualBeam

Lunch & Harvard-CNS Lab Tour

- 12:00 PM Lunch
- 12:45 PM Optional Harvard-CNS Lab Tour (~ 1 hr)

Poster Session

- 1:00 PM **Soeren Eyhusen & Roland Salzer**, Carl Zeiss Microscopy
Expanding the range of the FIB: From rapid material removal to ultra-thin TEM lamella preparation
- Lucille A. Giannuzzi**, L.A. Giannuzzi & Associates LLC
ExpressLO™ for High Throughput Lift-Out
- Zachary D. Harms, Daniel G. Haywood & Stephen C. Jacobson**, Indiana University
Fabrication of In-Plane Nanofluidic Devices in Glass Substrates by Flood Gun Assisted FIB Milling
- Gavin Murphy**, Indiana University
Indiana University's state-of-the-art FIB-SEM
- Konrad Rykaczewski**, NIST
Seeing Below the Drop: Cryo-FIB/SEM Imaging of Complex Nanoscale Interfaces involving Solid, Liquid, and Gas Phases
- S.D. Sitzman & C.T. Chou**, Oxford Instruments America
Method for Grain Boundary Triple Junction Analysis by 3D EBSD
- Anna Weber, Rahul Thakar, Celeste Morris, Kirstin Morton, Chiao-Chen Chen & Lane A. Baker**, Indiana University
Focused Ion Beam Milling of Nano Scale Probes for Scanned Probe Microscopy
- Richard G. White, Tim S. Nunney, Paul Mack & Brian R. Strohmeier**, Thermo Fisher Scientific
Advanced Depth Profiling Characterization of Mixed Organic/Inorganic Multipayer Devices Using X-Ray Photoelectron Spectroscopy (XPS) and a Combined Monatomic and Gas Cluster Argon Ion Source

Efrat Moyal & Janet Teshima, Lattice Gear LLC.

New, Innovative Method for Accurate Cleaving of Samples with Single Crystal Substrate

George Wetzel* & Jamil Clarke**, *Clemson University, ** Hitachi High Technologies America

Three-Dimensional Microanalysis of Advanced Materials Using FIB-SEM Instrumentation

Afternoon

2:30 PM **Leonidas E. Ocola**

Argonne National Laboratory

Advances in Ion Beam Micromachining for Complex 3D Microfluidics

2:45 PM **Carl Kamp**, Alexander Sappok & Victor Wong

Massachusetts Institute of Technology

Investigations of Automotive Aftertreatment Component Aging by Focused Ion Beam (FIB) Milling: the Catalyst-Substrate Interface and Intra-and Inter-Layer Interactions

3:00 PM **William J. Rice**

New York Structural Biology Center

Overview of projects collected on the Helios FIB/SEM at the NYSBC

3:15 PM **Kedar Narayan**

National Institutes of Health

Simultaneous Correlative 3D Imaging of Nanoscale Targets and Entire Cells by Focused Ion Beam Scanning Electron Microscopy

3:30 PM *COFFEE BREAK*

3:50 PM **Luiz F.G. Morales** & Richard Wirth

German Research Centre for Geosciences Potsdam

Applications of FIB Coupled with SEM and TEM in Geological Materials

4:05 PM **Shawn Zhang**

Visualization Sciences Group

Advanced Processing and Modeling Methods for Porous Material FIB-SEM Data

4:20 PM **E.L. Principe**

Tescan

FERA Plasma Ion Source Workstation: Applications and Possibilities

4:35 PM **John Notte**

Carl Zeiss

The Gas Field Ion Source: Extension to Species Beyond Helium

4:50 PM Wrap-up & Optional Harvard-CNS Lab Tour

5:30 PM **Happy Hour at the [John Harvard's Brewery & Ale House](#)**

Organizers

Nicholas Antoniou, Harvard University
Nabil Bassim, U.S. Naval Research Laboratory
Ken Livi, Johns Hopkins University
Konrad Rykaczewski, Massachusetts Institute of Technology
Keana Scott, National Institute of Standards and Technology

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