8th Annual FIB SEM Workshop

Wednesday, February 25, 2015

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Wednesday, February 25th, 2015

8:00 AM Breakfast & Sign-in

9:00 AM Welcome

Morning

9:15 AM **Andrew J. Smith**, Andreas Rummel, Matthias Kemmler & Stephan Kleindiek

Kleindiek Nanotechnik

Circuit Edit Applications using FIB

9:30 AM **Edward Principe**

Tescan

A FIB-SEM Platform Integrated with Confocal Hyperspectral Raman: Introduction to the TESCAN RISE Configuration

9:45 AM **Kevin A. Twedt**,[1,2] Jie Zou,[1,2] Marcelo Davanco,[1] Kartik Srinivasan,[1] Jabez J. McClelland[1] & Vladimir A. Aksyuk[1]

1. Center for Nanoscale Science and Technology, NIST, 2. Maryland NanoCenter, University of Maryland

Probing Optical Microresonators with a Lithium FIB

10:00 AM **Elias Garratt** & Babak Nikoobakht

Material Measurement Laboratory, NIST

Impact of nanosecond pulse Ga ion beams on single crystal surfaces and growth of nanostructures

10:15 AM **William J. Rice**, [1] Cheri M. Hampton[2] & Zachary Freyberg[3]

1. New York Structural Biology Center, 2. Department of Pediatrics, Emory University, 3. Department of Psychiatry, Columbia University

Cryo FIB/SEM of Cultured Cells

10:30 AM ***COFFEE BREAK***

11:00 AM **Brandon Van Leer**

FEI Company

Challenging Materials For S/TEM Sample Preparation: Strategies for High Quality Results

11:15 AM **L.M. Gignac**, C.M. Breslin, J. Gonsalves, F. Stellari & C.-C. Lin

IBM T. J. Watson Research Center

FIB-SEM 3D reconstruction to characterize features seen in 400 keV BSE, SE, and STEM images of 9-level semiconductor interconnects

11:30 AM Toshiaki Fujii[1] & **Jamil J. Clarke**[2]

1. Hitachi High-Tech Science Corporation, 2. Hitachi High Technologies America, Inc.

A New Development to Eliminate Artifacts during TEM Sample Preparation in the FIB

11:45 AM **Doug Wei** & Chuong Huynh

IMIC, Carl Zeiss Microscopy, LLC

Advance in Applications of He/Ne Ion Microscopy

Lunch

12:00 PM Lunch

Poster Session

1:00 PM **Ronald J. Tonucci**[1] & Zachary A. Sechrist[2]

1. Materials Sciences Division, Naval Research Laboratory, 2. Naval Air Warfare Center Weapons Division, China Lake, CA

The Potential for Reconfigurable Optical/NIR Metamaterials

Danielle Elswick, Anahita Pakzad & Michael Hassel-Shearer

Gatan, Inc.

Post FIB Clean Up of TEM Lamellas using Broad Argon Beam Polishing (PIPS II)

Lucille Giannuzzi

EXpressLO, LLC.

Theory and New Applications of ex situ Lift Out

Jonathan P. Ligda, Stephanie Slaughter, Nicholas J. Lorenzo, Tomoko Sano & **Brian Schuster**

ARL

Femtosecond Laser Based Micromachining and 3D Characterization of Materials

Vipin N. Tondare & András E. Vladár

Physical Measurement Laboratory, NIST

Three-Dimensional SEM Imaging and Metrology of Nanoparticles

D.P. Olson, M.S. Van Dyke, R.M. Ulfig & I. Martin

CAMECA Instruments Inc.

Sample Preparation Fixtures for Fabricating Atom Probe Samples in FIB

Poster Session Continued

1:00 PM **Kedar Narayan**

NIH

Multi-resolution correlative focused ion beam scanning electron microscopy: Applications to cell biology

Rosalinda M. Ring,[1] Esther Chen,[1] Dr. Jeremy Russell,[1] Andreas Rummel[2] & Ed Carper[3]

1. GLOBALFOUNDRIES, 2. Kleindiek, 3. FEI Company

Electron Beam Absorbed Current (EBAC) Defect Localization Technique on Advanced Semiconductor Technology Devices

J. Fridmann,[1] N. Garraud,[2] Brent P. Gila,[3] P. Mazarov[4] & D.P. Arnold[2]

1. Raith America, Inc., 2. Dept. of Electrical and Computer Engineering, University of Florida, Gainesville, 3. Nanoscale Research Facility, University of Florida, Gainesville, 4. Raith GmbH

Processing with Non-gallium Focused Ion Beam

David Eastman,[1] **Gi-Dong Sim**,[1] Steven Lavenstein,[1] Nicholas Lorenzo,[2] Jonathan Ligda,[2] Brian Schuster,[2] Paul A. Shade,[3] Michael D. Uchic,[3] Jaafar A. El-Awady[1] & Kevin J. Hemker[1]

1. Department of Mechanical Engineering, Johns Hopkins University, 2. Army Research Laboratory, Aberdeen Proving Ground, 3. Metals, Ceramics & NDE Division, Air Force Research Laboratory, Wright-Patterson AFB

Combined laser and focused ion beam milling for fabricating micromechanical testing samples

Doug Wei,[1] Tsengming Chou[2] & Massimo Bersani[3]

1. IMIC, Carl Zeiss Microscopy, LLC, 2. Stevens Institute of Technology, 3. Bruno Kessler Foundation

Characterization of Porous Ge Film Using Ga+ and Ne+ Based FIB

Minhua Zhao,[1,2] & J. Alexander Liddle[2]

1. Center for Nanoscale Science and Technology, NIST, 2. Department of Materials Science and Engineering, University of Maryland

3D imaging of carbon nanostructures under focused ion beam: challenges and opportunities

Afternoon

2:30 PM **L. Lechner**, J. Gelb, W. Harris, M. Marsh & A. Merkle

Carl Zeiss X-ray Microscopy, Inc.

Automated correlative tomography workflows between X-ray microscopy and FIB-SEM spanning length scales and modalities

2:45 PM **Diana L. Ortiz-Montalvo** & Joseph M. Conny

Material Measurement Laboratory, NIST

3D Representation of Typical Ambient Particles Using FIB-SEM-EDS

3:00 PM **Trevor Lancon**

FEI Company

Measurement-Driven Background Correction for DualBeam Image Stacks

3:15 PM **J. Taillon**, C. Pellegrinelli, Y. Huang, E. Wachsman, & L. Salamanca-Riba

University of Maryland, College Park

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs using FIB/SEM

3:30 PM ***COFFEE BREAK***

4:00 PM **Frederick Meisenkothen**,[1] **Michael Dawson**[2] & Cheryl Hartfield[2]

1. Material Measurement Laboratory, NIST, 2. Oxford Instruments, Omniprobe Products

Preparation of Nanowire Specimens for Atom Probe Tomography

4:15 PM **Tara Nylese** & Jens Rafaelsen

EDAX

Transmission EBSD for FIB Preparation of Atom Probe Tips

4:30 PM Gediminas Seniutinas,[1] Gediminas Gervinskas,[1] Saulius Juodkazis,[1] **Joseph Klingfus**,[2] Sven Bauerdick[3] & Keith Moulding[4]

1. Centre for Micro Photonics, Swinburne University of Technology, 2. Raith America, Inc., 3. Raith GmbH, 4. Raith Asia, Ltd.

Advanced Optoelectronic Research Enabled by Nano-scale FIB Fabrication

4:45 PM **V. Ray**, E. Chang, S.C. Liou, K. Toula & W.A. Chiou

University of Maryland

FIB GAE on nanoscale studied by TEM and numerical modeling

5:00 PM Wrap-up