7th Annual FIB SEM Workshop

Thursday, February 27, 2014

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Thursday, February 27th, 2014

8:00 AM Breakfast & Coffee

8:55 AM Welcome

Morning

9:00 AM **Nicholas Antoniou**

Harvard University

Practical Considerations in Atom Probe Sample Making

9:15 AM **Jeff Ditto**

CAMCOR/University of Oregon

FIB-SEM Preparation of S/TEM Samples - Universal Methods for Application of the Wedge Technique and Suggestions for Optimization

9:30 AM **Lucille Giannuzzi**

EXpressLO

Specimen Preparation Flexibility with ex situ Lift Out

9:45 AM **Lynne Gignac**, C. Breslin, J. Gonsalves, B. Harrison, K. Reuter

IBM T.J. Watson Research Center

FIB Cross-section TEM Sample Preparation of Functionalized Nanopores in Thin Membranes

10:00 AM **Jeff Marshman**, Soeren Eyhusen, Roland Salzer

Carl Zeiss Microscopy

Ultra-Thin TEM Lamella Preparation on Challenging Specimens Using the "X2" Auto-tilting Sample Holder and Live BSE Thickness Monitoring

10:15 AM *COFFEE BREAK*

10:45 AM **David MacMahon**

Micron Technology

In-die STEM Method

11:00 AM **Neal Magdefrau**, Julie Wittensellner

United Technologies Research Center

FIB Applications for Industrial Research

11:15 AM **Travis Rampton**

EDAX

Grain Boundary Study of Sintered Nd-Fe-B Magnetic Materials

11:30 AM **Sina Shahbazmohamadi**, Navid Asadi Zanjani, Eric H. Jordan

University of Connecticut

Quantitative Four Dimensional Non-destructive Imaging Using FIB and SEM: Application to Thin Film Coatings

11:45 AM F. Bauer, **Scott Sitzman**, Cheryl Hartfield

Oxford Instruments NanoAnalysis

Site-specific EDS/EBSD/TKD Analysis Performed on FIB Lift-out Samples

12:00 PM **Michelle Husain**

FEI Company

Image Processing & Advanced Characterization of 3D FIB-SEM Reconstructions with Avizo & Amira

Lunch

12:15 PM Lunch

Poster Session

1:00 PM **Andrew J. Smith**, Andreas Rummel, Klaus Schock, Stephan Kleindiek

Kleindiek Nanotechnik

Atom Probe Sample Preparation - A New Approach to Fabricating Ultra-sharp Atom Probe Samples

Daniel F. Lawrence, David P. Olson, Hugues Francois Saint Cyr, David J. Larson

Cameca

FIB-SEM Sample Preparation for Atom Probe Tomography

Valery Ray[1], O. Zhao[2], W.A. Chiou[2], K. Zaitsev[3], A. Zaitsev[3]

[1]Particle Beam Systems & Technology, [2]University of Maryland, [3]City University of New York

Glancing Angle of Incidence Method for Bulk Material Removal in Cross-sectioning and TEM Sample Preparation by Ion Beam

Lynne M. Gignac, Chris Breslin, C.-K. Hu

IBM T.J. Watson Research Center

Use of EXpressLO™ Grids to Convert Ex-situ Liftout to In-Situ Liftout TEM Samples

Nabil Bassim[1], Joshua Caldwell[1], Alexander Giles[1], Leonidas Ocola[2]

[1]Naval Research Laboratory, [2]Argonne National Laboratory

FIB Direct-Write Patterning of Metamaterial SiC Structures

Andrew Herzing

National Institute of Standards and Technology

Visualizing Phase Evolution in Organic Photovoltaic Material Systems via Cross-sectional FIB and Energy-Filtered Transmission Electron Microscopy

Poster Session Continued

Bradley T. De Gregorio[1,2], Rhonda M. Stroud[2]

[1]Nova Research, [2]Naval Research Laboratory

Application of FIB for the Study of Shell Structure and Growth in the Barnacle Balanus Amphitrite

Anahita Pakzad[1], Stephen Mick[1], **Danielle Elswick**[1], Catherine Vartuli[2], Jayhoon Chung[3], Guoda Lian[2]

[1]Gatan Inc., [2]Kilby Imaging Lab/Texas Instruments, [3]ATD/Texas Instruments

Application of Low Energy Broad Ion Beam Milling to Improve the Quality of FIB Prepared TEM Samples

Robert Keyse

Lehigh University

Gallium Isotope Effect Made Visible in FIB

Yaofang Zhang, Jaafar A. El-Awady

Johns Hopkins University

Micro-Mechanical Characterization of Ultra-High Strength Dendritic Tungsten Coatings for High Temperature Applications

Kedar Narayan[1], Cindy M. Danielson[2], Ken Lagarec[3], Bradley C. Lowekamp[4], Phil Coffman[1], Alexandre Laquerre[3], Michael W. Phaneuf[3], Thomas J. Hope[2], Sriram Subramaniam

[1]National Cancer Institute/NIH, [2]Northwestern University, [3]Fibics, [4]National Library of Medicine/NIH

Multi-resolution Correlative Focused Ion Beam Scanning Electron Microscopy: Applications to Cell Biology

Carl Justin Kamp

Massachusetts Institute of Technology

Application of the FIB/SEM/EDX System to the Field of Heterogeneous Catalysis for Automotive Aftertreatment Applications: An Up-and-coming Industry-wide Workhorse

Joseph Klingfus[1], Achim Nadzeyka[2], Björn Wittmann[2], Sven Bauerdick[2], Brent Gila[3]

[1]Raith America, [2]Raith GmBH, [3]University of Florida

Large-Area FIB Patterning by Continuously Moving Stage

Adam V. Steele[1], Brenton Knuffman[1], Jabez J. McClelland[2]

[1]zeroK NanoTech, [2]CNST/National Institute of Standards and Technology

Low Temperature Ion Source for Foused Ion Beam Applications

Afternoon

2:30 PM **Brandon Van Leer**, Rick Passey

FEI Company

Automated Large Area Image Acquisition for DualBeam FIB-SEM Characterization and Sample Preparation

2:45 PM **Heayoung P. Yoon**[1,2], Paul M. Haney[1], Joshua Schumacher[1], Kerry Siebein[1], Yohan Yoon[1,2], Nikolai B. Zhitnev[1]

[1]CNST/National Institute of Standards and Technology, [2]University of Maryland

Effects of Focused-Ion-Beam Processing on Local Measurements of Semiconductor Solar Cells

3:00 PM **Marco Sebastiani**[1], E Bemporad[1], C. Eberl[2], A. Korsunsky[3]

[1]University of Rome, [2]Fraunhofer IWM, [3]University of Oxford

Focused Ion Beam Techniques for Residual Stress Analysis at the Micron-scale

3:15 PM Tony Moor[1], **Matt Weschler**[2]

[1]Datel Design and Development, [2]Technical Sales Solutions

Backside ROM Edit on 90nm CPU

3:30 PM **Joel Fridmann**[1], Brent Gila[2], Paul Mazarov[3], Achim Nadzeyka[3], Sven Bauerdick[3]

[1]Raith America, [2]University of Florida, [3]Raith GmBH

Non-Gallium FIB Alternatives for Nanofabrication

3:45 PM *COFFEE BREAK*

4:15 PM **Toshiaki Fujii**, Jamil J. Clarke, Mike Hernandez

Hitachi High Technologies

Redefining the FIB: Advancing Sequential Segmentation to the Next Level

4:30 PM **Hamed Parvaneh**, Robert Hull

Rensselaer Polytechnic Institute

Chemical Analysis Using Focused Ion Beam-Induced Auger Electron Spectroscopy

4:45 PM F.A. Stevie[1], L. Sedlacek[2], P. Babor[3], J. Jiruse[2], **E. Principe**[4], K. Klosova[2]

[1]North Carolina State University, [2]TESCAN, [3]Central European Institute of Technology, [4]TESCAN-USA

Quantitative TOF-SIMS on a FERA Platform Using Ar and Xe Plasma Sources

5:00 PM **Kevin A. Twedt**[1,2], Thomas Lam[1], Lei Chen[1], Jabez J. McClelland[1]

[1]CNST/National Institute of Standards and Technology, [2]University of Maryland

Scanning Ion Microscopy with Low Energy Lithium Ions

5:15 PM **Huimeng Wu**[1], David Ferranti[1], Lewis Stern[1], John Treadgold[1], Chuong Huynh[1], Joseph Myers[2], Erik McCullen[2]

[1]Carl Zeiss Microscopy, [2]IBM Essex Junction

Nanofabrication with a Neon Ion Beam

5:30 PM Wrap-up

5:30 PM **Happy Hour at the Kossiakoff Center, APL**