24th Annual Workshop on
Secondary Ion Mass Spectrometry
May 14-18, 2012
Philadelphia, PA
www.simsworkshop.org

Tentative Agenda: 4-27-2012
Subject to Change without Notice

24th Annual Workshop on Secondary Ion Mass Spectrometry and Related Techniques

Scientific/Program Committee:

Steven Hues, Micron Technology

Greg Gillen, NIST

Richard Lareau, DHS, Science & Technology

Christopher Szakal, NIST

Chris Anderton, NIST

Jerry Hunter, Virginia Tech University

Bill Lamberti, ExxonMobil

Tim Brewer, NIST

Fred Stevie, North Carolina State University

Karen Bair, Annual Workshop on SIMS Office

Carol Paterick, Conference Webmaster

Special Thanks to Our Corporate Sponsors:

Physical Electronics

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ION TOF

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Monday - May 14, 2012

1:00 - 6:00 PM Vendor Exhibitor Setup

1:00 - 5:00 PM Instrument Users Schools

ION-TOF Users Meeting/School (location TBD)
Cameca Users Meeting (Not yet confirmed)

6:00 - 9:00 PM Welcome Reception / Conference Registration

Tuesday - May 15, 2012

Tutorial Presentations – Fundamentals and Instrumentation for Surface Analysis

7:30 - 8:00 AM **Continental Breakfast/Conference Registration**

8:00 - 8:15 AM Welcome and Introductions

8:15 - 9:00 AM *Fundamental Aspects Of Cluster-SIMS And The Implications For Instrumentation Development***,** Nick Winograd, Penn State University

9:00 - 9:45 AM *Latest Developments in Spatially Resolved Desorption Electrospray Mass Spectrometry,* Livia Eberlin, Purdue University

9:45 - 10:05 AM **Break**

10:05 - 10:50 AM *In Pursuit of Unbiased Atom Probe Dopant Implant Measurements* T.J. Prosa*,* Cameca Instruments

10:50 - 11:35 AM *SIMS Depth Profiling,* Fred Stevie, North Carolina State University

11:35 - 12:20 PM *Interpretation of Static SIMS Data*, Michaleen Pacholski, Dow Chemical Company

12:20 - 1:20 PM **Lunch**

Forensic and Novel Applications of SIMS

1:20 - 1:40 PM *Signature Discovery In Explosives And Biological Agents With Imaging Mass Spectrometry*, Christine Mahoney, PNNL

1:40 - 2:00 PM *Multivariate Analysis of TOF-SIMS Data from Space Flight Hardware Related to Determining Root-Cause of an On-orbit Anomaly*, Robert M. Moision, John A. Chaney, The Aerospace Corporation

2.00 - 2:20 PM *The Crystallization Ages of Detrital Minerals as Proxies for Sediment Provenance*, Jack Hipatis, Syracuse University

2:20 - 2:40 PM *A TOF-SIMS and FIB Examination of Nano- and Micro-structures in 19th Century Daguerreotype Photographs*, E.P. Vicenzi, Smithsonian Institution

2:40 - 3:00 PM *TOF-SIMS of Liquid Surfaces, Zihua Zhu, PNNL*

SIMS ASTM Committee Meeting

3:00 - 3:30 PM *ASTM Meeting/Workshop - (Chair: Tim Brewer)*

*SIMS Submissions to Surface Science Spectra (
Dave Simons, Scott Bryan and Fred Stevie)*

Poster Session

3:30 - 5:00 PM Poster Viewing/Reception

1. *Useful Yields of Cancer Biomarkers using TOF-SIMS*, Shin Muramoto, NIST

2. *Age Dating of Fingerprints using C_{60} SIMS*, Ed Sisco, NIST

3. *3D TOF-SIMS Characterization of Drug-Loaded Hydrogel Contact Lenses in the Frozen-Hydrated State*, Gregory L. Fisher, Physical Electronics

4. *3D Chemical Imaging by FIB-TOF Tomography*, Gregory L. Fisher and Scott R. Bryan Physical Electronics

5. *Measurement of Long (> 10 μm) Mg Self-diffusion Lengths using Secondary Ion Mass Spectrometry*, Andrew Giordani, Virginia Tech

6. *Trehalose Ionization Enhancement: Bombardment-Induced Liberation of Protons from Trehalose Films or Preformed Ions in Solution*, L. Jackson, Pennsylvania State University

7. *Laser Post-Ionization of C_{18} Fatty Acid Molecules with Femtosecond IR Radiation,* J. Lerach, Pennsylvania State University

8. *New Advances in IAEA Safeguards: Particle Analysis for Uranium Isotopes using Cameca IMS 1280*, O. Bildstein, International Atomic Energy Agency

9. *High-Precision Isotope Analysis in the NanoSIMS 50*, W.C. Horn, ExxonMobil Research and Engineering Company

10. *Chemical Speciation of Particles using C60+ SIMS or New Methods for Ambient Ionization of Elemental Species*, Tim Brewer, NIST

11. *New Methods for SIMS Data Analysis*, Andy Konicek, NIST

12. *Multivariate analysis of TOF-SIMS data for applications in tissue engineering and quantifying biomolecules*, Mary L. Kraft, School of Chemical Sciences, University of Illinois

13. *Quantitative Analysis of Polymer Microspheres as SIMS Test Materials,* Tim Brewer, NIST

7:00 - *Open for Vendor User Meetings, Breakout Meetings as Needed*

Wednesday - May 16, 2012

Technical Program

7:30 - 8:00 AM **Continental Breakfast**

Ambient Ionization Mass Spectrometry

8:00- 8:20 AM *Concepts for Molecular Desorption under Ambient Analysis Conditions- Focused liquid drops, Ultrasonics, Low Temperature Plasmas and Exploding Silicon, Greg Gillen, NIST.*

8:20 - 8:40 AM *Ion Suppression and Partitioning Effects of Electrospray Ionization Mass Spectrometry (ESI-MS) Compared to Laser Electrospray Mass Spectrometry (LEMS)*, Robert Levis, Temple University

8:40 - 9:00 AM *Combining Laser Ablation and Liquid Phase Collection For New Analytical Opportunities In Ambient Surface Sampling/Ionization Mass Spectrometry*, Gary Van Berkel, Oak Ridge National Laboratory

9:00 - 9:20 AM *Development of Differential Ion Mobility for the Separation of Ions Created by Atmospheric Pressure Surface Ionization Techniques. Thomas Covey, Ph.D. Principal Scientist AB/Sciex*

9:20 - 9:40 AM *The Determination of Inorganic Improvised Explosive Device Signatures using Laser Electrospray Mass Spectrometry Detection with Offline Classification*, Paul M. Flanigan IV, Temple University.

9:40 - 10:00 AM *Atmospheric Pressure Ionization Mass Spectrometry of Vapors at Sub ppq Concentrations,* Juan Fernandez de la Mora, Department of Mechanical Engineering, Yale University

10:00 - 10:30 AM **Break**

Depth Profiling/Surface Analysis

10:30-10:50 AM *Effect of Annealing on Secondary Ion Yields in Niobium,* Prateek Maheshwari, North Carolina State University

10:50-11:10 AM *Optimized Analysis of Imaging TOF-SIMS Data,* Amy Walker, University of Texas at Dallas

11:10 -11:30 AM *Chemical Imaging of Aluminosilicate Oligomeric Anions and Speciation from Chinese Outcrop Coals Using TOF-SIMS,* Brett Yatzor, State University of New York at Buffalo

11:30-11:50 AM *Topography Effects on the Characterization of Indium Gallium Nitride Quantum Well Structures by Secondary Ion Mass Spectrometry",* Xue-feng Lin, Micron Technology

11:50- 1:00 PM **Lunch**

Biological and Medical Applications of Dynamic and ToF- SIMS (Chris Anderton, Chair)

1:00 - 1:20 PM *Identification of Cuticular Waxes on Arabidopsis Thaliana Organs and Cells by TOF-SIMS Imaging,* Gregory L. Fisher, *PHI*

1:20 - 1:40 PM *TOF-SIMS Analysis of Self-Assembled Extracellular Matrix Fibril Films*, Chris Anderton, NIST

1:40 - 2:00 PM *Characterization of Biodegradable Amino Acid-based Poly(Ester Amide) (AA-PEA) Hydrogels as Biomaterials for Tissue Engineering,* Robert L. Best, State University of New York at Buffalo

2:00 - 2:20 PM *Strong-field Ionization of C_{60} Sputtered Neutral Biomolecules using 10^{15} W/cm^2 of fs IR Radiation,* A. Kucher, Pennsylvania State University

2:20 – 2:40 PM *ToF-SIMS Analysis of Mouse Muscle Cross-Sections*, Dan Graham, University of Washington

2:40 – 3:00 PM *Imaging sphingolipid and cholesterol distribution in the cellular plasma membrane using high-resolution SIMS*, Mary L. Kraft, School of Chemical Sciences, University of Illinois

3:00 - 3:20 PM *MIMS of Biological Tissues*, Claude Lechene, Harvard University

3:20 - 3:40 PM **Break**

NanoSIMS (Bill Lamberti, Exxon)

3:40 - 4:00 PM *Isotopic Imaging by NanoSIMS: Technical Considerations and Potential Pitfalls,* L. R. Nittler**,** Dept. of Terrestrial Magnetism, Carnegie Institution of Washington

4:00 - 4:20 PM *In-situ Combination of Secondary Ion Mass Spectrometry (SIMS) and Scanning Probe Microscopy (SPM) in the Cameca NanoSIMS*

50: Instrument Design, Performances and Applications, T. Wirtz, Department “Science and Analysis of Materials” (SAM), Centre de Recherche Public, Luxembourg

4:20 - 4:40 PM *The NanoSIMS Lab in Rostock, Germany: Experiences from the Starting Phase and First Results,* A. Vogtsa, Leibniz Institute for Baltic Sea Research, Rostock-Warnemünde,

4:40 - 5:00 PM *Microanalysis Applications in the Petroleum Industry Using SIMS, NanoSIMS, & FE-EPMA*, W. A. Lamberti, ExxonMobil Research and Engineering Company.

Conference Dinner

7:00 - 10:00 PM Conference Dinner

Thursday - May 17, 2012

Technical Program

7:30 - 8:00 AM **Continental Breakfast**

Workshop Sponsor Session

8:00 - 8:20 AM *Recent Developments in TOF-SIMS at PHI, Scott Bryan,* Physical Electronics

8:20 - 8:40 AM *CAMECA IMS 7f: Improved Automation and New Developments*, P. Peres, Cameca Instruments

8:40 - 9:00 AM *Recent Developments in TOF SIMS at IonTOF*, Ewald Niehuis, IonTOF

Cluster Ion Sources and Instrumentation

9:00-9:20 AM *A New SIMS Imaging System with a Focused Ar Cluster Beam for Molecular Imaging*, Jiro Matsuo, Kyoto University, Japan

9:20 - 9:40 AM *Feasibility Study of Vacuum-type Electrospray Droplet Beam Sources,* S. Ninomiyaa, University of Yamanashi, Japan

9:40 - 10:00 AM *Submicrometer SIMS Imaging by C_{60} Cluster Ion Projectiles,* Jung-Hwan Kim, Pennsylvania State University,

10:00-10:30 AM **Break**

Isotopic Ratio Measurements by SIMS

10:30 – 11:15 AM **Invited Tutorial:** *Practical Isotope Ratio Analyses using SIMS*, John Cliff, University of Western Australia

11:15 - 11:35 AM *High Sensitivity Measurements of Uranium Isotopes by SIMS,* Dave Simons, NIST

11:35 - 11:55 AM *Nuclear Safeguards Applications using LG-SIMS with Automated Screening Capabilities*, P. Peres, Cameca Instruments.

11:55 – 12:15 PM *Isotopic Mapping of Meteorites with the NanoSIMS*, Maitrayee Bose, Arizona State University

12:15 - 1:15 PM **Lunch**

Depth Profiling/Organic Surface Analysis/Cluster Bombardment

1:15 - 1:35 PM *Spectrometry of Molecular Surfaces by Using a Pulsed Beam of Large Argon Clusters*, Derk Rading, IonTOF

1:35 - 1:55 PM *Steady-State Statistical Sputtering Model for Extracting Depth Profiles from Molecular Dynamics Simulations of Dynamic SIMS*, Barbara J. Garrison, Pennsylvania State University

1:55 - 2:15 PM *Elucidating Nanoparticle Aggregate Surface Chemistry with Secondary Ion Mass Spectrometry*, Christopher Szakal, NIST

2:15 - 2:35 PM *C_{60}^{+}-SIMS Imaging: The in-situ Structural Characterization of Phosphatidylcholines*, A.Durairaj, Pennsylvania State University

2:35 - 3:00 PM **Break**

3:00 - 3:20 PM *Nanoscale Confinement Effects on the Surface Degradation Profile of Poly(L-lactic acid) Ultra Thin Films,* Michelle D. Marchany, State University of New York at Buffalo

3:20 - 3:40PM *TOF-SIMS Method Development for Identification of Acid Dyes in Nylon Fibers,* Chuanzhen Zhou, North Carolina State University

3:40 - 4:00 PM *Recent Progress in the Accurate 3D Reconstruction of Complex Organic Samples*, M, Robinson, University of Washington

4:00 – 6:00 PM **Free Time**

Conference Dinner and Vendor Presentations

6:00 - 8:00 PM **Dinner provided with short presentations on latest developments**

Friday – May 18, 2012

Technical Program

7:30 - 8:30 AM **Continental Breakfast**

Depth Profiling for SIMS and Surface Analysis

8:30 - 8:50 AM *Studying the Effects of C_{60} Bombardment on a Model OLED Interfaces Using Molecular Dynamics Simulations,* P. E. Kennedy, Pennsylvania State University

8:50 - 9:10 AM *Time Dependence of Molecular Depth Profiling,* Dan Mao, Pennsylvania State University

9:10 - 9:30 AM *Improvement of the Dynamic Range in TOF-SIMS Dual Beam Depth Profiling*, Ewald Niehuis, IonTOF

9:30 - 9:50 AM *Depth Profiling of Organic Light Emitting Diodes,* S.R. Bryan, PHI

9:50 - 10:10 AM *Towards Secondary Ion Mass Spectrometry on the Helium Ion Microscope*, T. Wirtz, Department "Science and Analysis of Materials" (SAM), Centre de Recherche Public, Luxembourg

10:10 - 10:40 AM **Break**

10:40 - 11:00 AM *Secondary Ion Mass Spectrometry for Mg Tracer Diffusion: Issues and Solutions*, Jay Tuggle, Virginia Tech

11:00 – 11:20 AM *An Overview of Neutral Cesium Deposition in Combination with SIMS, B. Bendler*, Department "Science and Analysis of Materials" (SAM), Centre de Recherche Public, Luxembourg

11:20 – 11:40 AM **Closing Remarks**