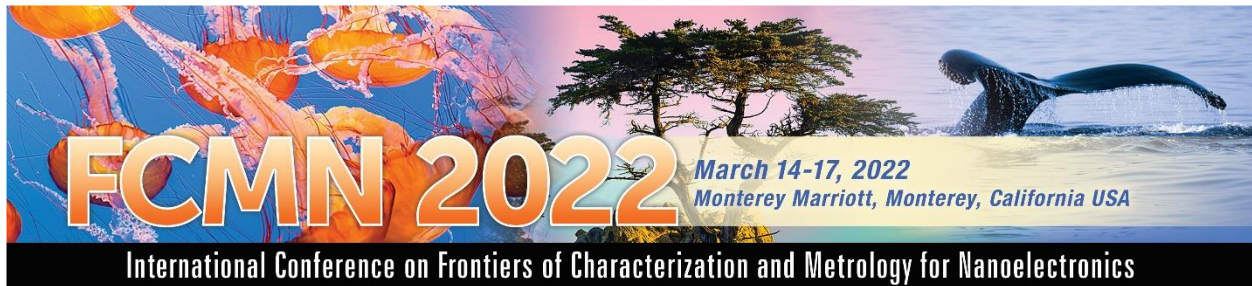

2022 FCMN Program (draft 12-13-2021)

Monday, March 14

Tutorials

2:00 PM – 4:00 PM
Machine Learning
Instructors: Bryan Barnes (NIST) and Ali Mesbah (UC Berkeley)

4:00 PM – 6:00 PM
Metrology Techniques
Instructors: Paul van der Heide (Imec) and Alain Diebold (CNSE, SUNY Polytechnic Institute)

Reception and Registration

7:00 – 9:00 PM
Monterey Marriott

Tuesday, March 15

Registration

7:00 AM – 8:30 AM

Conference Opening

9:00 AM
Conference Opening
J. Alexander Liddle, NIST, Conference Co-Chair

Plenary

Session Chairs: J. Alexander Liddle (NIST) and Alain Diebold (CNSE, SUNY Polytechnic Institute)

9:15 AM
Dan Hutcheson, *VLSI Research*, Heterogeneous Globalization: How the Structural Challenges with Integration, Geopolitics, Markets, and Business Will Affect Metrology in the Coming Years

10:00 AM
Coffee Break and Poster Viewing

10:30 AM
Rajiv Joshi, *IBM*, From Deep Scaling to Deep Learning

11:15 AM
Iuliana Radu, *Imec*, "The Many Flavors of Quantum Computing"

12:00 PM – 1:30 PM
Lunch and Poster Viewing

Industry Trends

Session Chairs: Paul van der Heide (Imec) and Markus Kuhn (Intel)

1:30 PM
Sang Hyun Han, *Nova*, "A New Paradigm of Process Control Solutions for Advanced Semiconductor Devices"

2:00 PM
Jon Madsen, *KLA Corporation*, "CD-SAXS Technology and Other Disruptive Inline Metrologies"

2:30 PM
David Fried, *Lam Research*, "SEMulator3D and Introduction of Virtual Metrology"

3:00 PM
Coffee Break and Poster Viewing

Microscopies I: New Developments in Chemical/Property Characterization

Session Chairs: Markus Kuhn (Intel) and Songhee Han (Samsung)

3:30 PM
Juliette van der Meer, *Bruker*, "Latest Developments in X-ray Metrology for Semiconductor Structures"

4:00 PM
Thomas Hantschel, *Imec*, "The Reverse-Sample-Tip SPM approach: A Paradigm Shift in Data Collection"

4:30 PM
Amanda Petford-Long, Argonne National Lab, Advanced Electron Microscopy Characterization of Nanoscale Spintronic Systems

5:00 – 6:30 PM
Poster Session (with Wine and Cheese)

6:45 PM
Banquet at Hotel

Wednesday, March 16

Registration

7:45 AM – 8:30 AM

Tomographies: New Developments in 3D Analysis

Session Chairs: Frank de Jong (Thermo Fisher) and Ehrenfried Zschech (deepXscan)

8:30 AM
David Larson, *Cameca Instruments, Inc.*, New Developments in Atom Probe Tomography

9:00 AM
Zineb Saghi, *CEA-Leti*, "New Developments in Analytical 3D TEM/STEM Tomography"

9:30 AM
David Tien, *ThermoFisher*, "High Volume 3D SEM Metrology on Advanced Memory and Logic Devices"

10:00 AM
Coffee Break and Poster Viewing

New Developments in Chemical/Electrical Characterization

Session Chairs: Paul van der Heide (Imec) and Baohua Niu (TSMC)

10:30 AM
Andre Budrevich, *Intel*, "Nanoscale Chemical Analysis through Design for Metrology"

11:00 AM
Paweł Piotr Michałowski, *Łukasiewicz - IMiF*, "Ultra Low Energy SIMS Depth Profiling of 2D Materials"

11:30 AM
Olivier Renault, CEA-*Leti*, "Photoelectron Spectroscopy in Device Technology: from XPS to HAXPES"

12:00 – 1:30 PM
Lunch and Poster Viewing

Microscopies II: New Developments in Dimensional Characterization

Session Chair: Ofer Adan (AMAT)

1:30 PM
Yu-Tsun Shao, *Cornell Univ.*, "Advanced Electron Microscopy Techniques to Investigate New Semiconductor-Related Materials and Devices"

2:00 PM
Joseph Kline, *NIST,* "Xray Metrology Challenges for the Semiconductor Industry"

2:30 PM
Coffee Break and Poster Viewing

New Techniques for Emerging Devices / Beyond CMOS
Session Chair: Ye Feng (Lam Research)

3:00 PM
Jeehwan Kim, *Massachusetts Institute of Technology*, "Characterization of Two-Dimensional Nanomaterials"

3:30 PM
Vimal Kamineni, PSIQuantum, "Characterization and Metrology for Silicon Photonic Quantum Computing"

Advanced Manufacturing Metrology
Session Chair: Tuyen Tran (Intel)

4:00 PM
Yalin Xiong, *KLA-Tencor*, "Using Deep-wavelength Brightfield Inspection on EUV Printcheck and High NA EUV Development"

4:30 PM
Tomek Brozek and Marcin Strojwas, *PDF Solutions*, "Observing Invisible Electrical Fails with eBeam DirectScan"

5:00 PM
Arosha Goonesekera, *LaserTec Inc.*, "The Status of Actinic Patterned Mask Inspection for EUV Lithography"

5:30 – 7:00 PM
Poster Session (with Wine and Cheese)

Thursday, March 17

Registration

8:00 AM – 8:30 AM

EUV and Advanced Patterning
Session Chair: Alain Diebold (CNSE, SUNY Polytechnic Institute)

8:30 AM
Christina Porter, *ASML*, "Characterization and Metrology for EUV Implementation"

9:00 AM
Andy Antonelli, ONTO, "Extending Optical Critical Dimension Metrology into the Mid-Infrared Range"

9:30 AM
Ofer Adan, *AMAT*, "CD-SEM and e-Beam Overlay"

10:00 AM
Coffee Break and Poster Viewing

Advanced Packaging

Session Chairs: Ehrenfried Zschech (deepXscan)

10:30 PM
Bjoern Hansson, *Excillum*, “Fast and High-resolution Micro-XCT and Nano-XCT Imaging of Advanced Packaging Structures Using New X-ray Sources”

11:00 AM
Kristina Kutukova, *Fraunhofer IKTS*, “In-situ Micro-DCB / Nano-XCT Test to Ensure the Robustness of Leading-edge Cu/ULK BEOL Stacks”

11:30 AM
WenBing Yun, *Sigray*, “High Throughput X-ray Imaging Systems for Wafer Level Packaging Applications”

12:00 – 1:30 PM
Lunch and Poster Viewing

Emerging Materials and Devices

Session Chair: Jean-Paul Barnes

1:30 PM
Thomas Nuytten, *Imec*, “Raman and PL for Nanoscale Materials Characterization and Metrology”

2:00 PM
Peter Hopkins, *National Institute of Standards and Technology*, “Measurement Challenges for Scaling Superconductor-based Quantum Computers”

2:30 PM
Paul van der Heide, *Imec*, “Characterization of 2D Materials by ARPES”

3:00 PM
Coffee Break and Poster Viewing

Spintronics-Based Devices

Session Chair: Ajey Jacob (University of Southern California)

3:30 PM
Mathieu Munsch, *Qnami*, “*Development of NV Magnetometry for Spin Mapping at the Atomic Scale*”

4:00 PM
David Cooper, *CEA-Leti*, “TEM Imaging of Magnetic Domains, Memory Devices, etc.”