FCMN 2026 Poster Presentations (*subject to change*)

001, Metrology and Inspection for Advanced DRAM Production Using Second-Harmonic Generation

David L. Adler, Ph.D.[1] and Jae-Hyun Kim, Ph.D.[2]
[1]CTO, Femtometrix. and [2]Team Lead, DRAM Metrology, SK Hynix

002, Exploring Integrated Differential Phase Contrast for Enhanced 3D Imaging of Semiconductor Devices

Ioannis Alexandrou[a] and Peter Westenberger[a] and Paola Favia[b] and Thomas Altantzis[b] and Eric G.T. Bosch[a] and Eva Grieten[b] and Paul van der Heide[b]
a. Thermo Fisher Scientific, Achtseweg Noord 5, 5651 GG Eindhoven, The Netherlands
b. IMEC, Kapeldreef 75, 3001 Leuven, Belgium

003, StrataPHI for Thin Film Surface & Interface Engineering: Depth-Resolved, Non-Destructive Analysis of Layered Materials

Kateryna Artyushkova and Norbert J. Biderman
Physical Electronics Inc 18725 Lake Drive East, Chanhassen, MN 55317

004, Enhancement of Passive Voltage Contrast Using a Newly Designed Electron Energy Filter in a Scanning Electron Microscope

Tatsuro Nagoshi[1], Yasuyuki Okano[1], Natsuko Asano[1] and Shunsuke Asahina[1.2]*
1. *JEOL ltd., 3-1-2 Musashino, Akishima, Tokyo, JAPAN*
2. *Advanced Material Analysis Co-creation Research Centre, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, 980-8577 Japan*

005, Denoising of multispectral images by PCA-assisted self-supervised deep learning

Claire Seydoux[1,2], Matthew Bryan[3], Pierre-Henri Jouneau[1] Jean-Paul Barnes*[3]
[1]Université Grenoble Alpes, CEA, IRIG – Laboratoire Modélisation et Exploration des Matériaux, Grenoble 38000 France,
[2]Current address : ESRF, the European Synchrotron, 38000 Grenoble, France,
[3]Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France

006, Workflow Automation For High Volume TEM Data Production

Jeff Blackwood, Jay Jordan, Sanjay Yedur, Anne Kenslea, Jason Arjavac, Brett Avedisian
Materials and Structural Analysis, Thermo Fisher Scientific, 5350 NE Dawson Creek Dr, Hillsboro, OR, USA 98124

007, Balancing Speed, Damage, and Fidelity: A Four-Method TEM Prep Study on GaN Devices

Valerie Brogden1, Yi Zhang1, Esaul Garza1, Patrick Darmawi-Iskandar2, Clare Smith3
1. Covalent Metrology, Sunnyvale Ca
2. Massachusetts Institute of Technology
3. University of Oregon

008, Interlaboratory Evaluation of Optical Homogeneity in Two-Dimensional Semiconductors

Yameng Cao*[1], Isaiah Thomas[1], Sebastian Wood[1] and Fernando A. Castro[1] Leticia Illdefonso[2], Benjamin Fragneaud[2], Indhira Maciel[2]
[1]National Physical Laboratory, Hampton Road, Teddington, TW11 0LW United Kingdom
[2]Departamento de Física, Universidade Federal de Juiz de Fora, Juiz de Fora, Brasil

009, Scanning X-ray Diffraction Microscopy for Strain Mappingand Defect Characterization in Semiconductor Microdevices

Agnieszka A. Corley-Wiciak[1], Cedric Corley-Wiciak[1], E. Zatterin[2], Steven J. Leake[1], Ennio T. Capria[1], Tobias U. Schulli[1]
[1]European Synchrotron Radiation Facility - ESRF, 71, avenue des Martyrs, CS 40220, 38043 Grenoble Cedex 9, France
[2]Momentum Transfer GmbH, Luruper Hauptstraße 1, 22547 Hamburg, Germany

010, Moiré Atomic Force Sensors for Robust Nanoscale Sensing

Nan Deng[1*], Valeriya Cherkasova[1], Eberhard Manske[1] and Iwo W. Ranglow[2]
[*] Institute of Process Measurement and Sensor Technology, Technische Universität Ilmenau, Gustav-KirchhoffStraße 1, Ilmenau 98693, Thuringia, Germany, nan.deng@tu-ilmenau.de
[1] Institute of Process Measurement and Sensor Technology, Technische Universität Ilmenau, Gustav-KirchhoffStraße 1, Ilmenau 98693, Thuringia, Germany
[2] Nano analytik GmbH, Ehrenbergstraße 3, Ilmenau 98693, Thuringia, Germany

011, Non-Destructive Depth Profiling By Variable Energy Parallel Angle Resolved XPS (VE-PARXPS)

Paul M. Dietrich and Andreas Thißen
SPECS Surface Nano Analysis GmbH, Voltastrasse 5, 13355 Berlin / Germany

012, Quantification of Carbon Concentration in GAA Inner Spacer Gapfill by TEM/EELS

Qinyi Fu, Siyao Wang, Xinwu Liu, Keith T Wong, David Miller, Danny Nguyen, Hongwen Zhou, Man-Ping Cai
Applied Materials Inc., 3050 Bowers Ave, Santa Clara, CA 95054

013, Advanced X-ray Techniques for Multi-Scale Semiconductor Characterization and Device alternation

Jeff Gelb, Sheraz Gul, Chuyuan Zheng, Vikaram Singh, Anasuya Adibhatla, SH Lau, Sylvia Lewis, and Wenbing Yun
Sigray Inc, 5500 E 2nd st, Benicia, CA 94510

014, High resolution SIMS Nanoanalytics for Semiconductor Process Control

Peter Gnauck, Alexander Ost, Torsten Richter
Raith GmbH, Konrad Adenauer Allee8, 44263 Dortmund, Germany

015, Advances in Nanoscale Dopant Metrology of Silicon-Based Materials using Atom Probe Tomography

Bavley Guerguis[1], Brian Langelier[1,2], and Nabil Bassim[1,2]

[1]*Department of Materials Science and Engineering, McMaster University, Hamilton, Ontario L8S 4L7, Canada*
[2]*Canadian Centre for Electron Microscopy, McMaster University, Hamilton, Ontario L8S 4M1, Canada*

016, Widefield quantum diamond magnetic microscope for semiconductor failure analysis

Marvin Holten[1], Samuel Möller[1], Alexander Huck[2], Ulrick L. Andersen[2], Christian D. Nielsen*[1]
[1]*Diasense ApS, Fysikvej 307, 2800 Kongens Lyngby, Denmark*
[2] *Department of Physics, Technical University of Denmark, 2800 Kgs, Lyngby, Denmark*

017, Critical Review of Electron-beam-based Junction ExaminationTechniques in Power Semiconductors

Greg Johnson[1], Andreas Rummel[2], Pietro Paolo Barbarino[3], Heiko Stegmann[1], Hyunhwa Kim[1], Thomas Rodgers[1], Roberta Ricciari[3], Massimiliano Astuto[3], Cristiano Poltronieri[1]
1: ZEISS Microscopy, Oberkochen, Germany, 2: Kleindiek Nanotechnik, Reutlingen Germany, 3: STMicroelectronics, Catania, Italy

018, Comprehensive Failure Analysis Workflow for Wafer to Wafer Bonding Vias

Greg Johnson[1], Heiko Stegmann[1], Hyunhwa Kim[1], Allen Gu[1], Masako Terada[1], Thomas Rodgers[1], Soon Aik Chew[2], Kristof J. P. Jacobs[2], Boyao Zhang[2], Eric Beyne[2], Zsolt Tokei[2], Andreas Rummel[3]
1: ZEISS Microscopy, Oberkochen, Germany, 2: imec, Leuven, Belgium 3: Kleindiek Nanotechnik, Reutlingen Germany.

019, TEM/STEM observation and Analysis for Advanced Characterization of 2 nm process and below

Shuji Kawai[1], Koichiro Nagata[1], Takeshi Kaneko[2], Kevin McIlwrath[2], Masahide Shima[1], Kazuya Yamazaki[1]
[1]*JEOL Ltd. 3-1-2 Musashino, Akishima, Tokyo 196-8558 Japan*
[2]*JEOL USA, Inc., 11 Dearborn Road, Peabody, MA 01960*

020, Probing Defects in Commercial Power Devices Using Laser-Based Photoemission Electron Microscopy

M. W. Khaliq[1,2], A. J. Winchester[1], V. Hoang[1,3], T. Gervasio[4], M. Lloyd[5], G. Comanescu[5], P. Shrestha[1], T. P. Ginley[4], A. Davydov[5], B. Hamadani[4], and S. Pookpanratana[1]

021, Scale calibration of AFM and characterization of AFM tip properties using a nano-structured certified reference material

Kyung Joong Kim, Young Su Park, Sang-Hyun Hong, and Dae Kon Oh
Kims Reference Corp., Gaon Biz Tower RM#1214, 120, Daehwa-ro, Daedeok-gu, Daejeon, Korea

022, Dispersion compensation in Multiwavelength dark-field Digital Holographic Microscopy for Overlay Metrology

J. Kim[1,2*], T. van Gardingen-Cromwijk[2,3], A. den Boef[1,2,3]
[1]*Department of Physics and Astronomy, and LaserLaB, Vrije Universiteit, The Netherlands*
[2]*Advanced Research Center for Nanolithography (ARCNL), The Netherlands*
[3]*ASML Netherlands B.V., The Netherlands*

023, New perspectives to Thin Film Metrology using Ultra-High Aspect Ratio test structures

Jenni Backholm, Mikko Utriainen, Feng Gao and Jussi Kinnunen
Chipmetrics Ltd, Yliopistokatu 7, 80130, Joensuu, Finland

024, Failure Analysis and Fault Isolation Sample Preparation Technology for Integrated Circuits on Advanced Technology Nodes

Megan Knapp, Srinivas Subramaniam, Mitchell J. Senger, Mary Edmonds, Christopher Morgan, Baohua Niu
Intel Foundry Logic Technology Development, Intel Gordon Moore Park at Ronler Acres 2501 NE Century Blvd, Hillsboro, OR 97124

025, Mineral Interface Doping: a safer alternative to doping silicon substrates with phosphorus/arsenic without hazardous chemicals

Roman Konoplev-Esgenburg
Institute of Concrete Structures and Building Materials, 76131 Karlsruhe, Germany

026, Effect of Strain on Morphology in CVD-grown Janus MoSeS Monolayers

Andrey Krayev[1], A. Edward Robinson[1], Tianyi Zhang[2], Jing Kong[2] and Andrey Turchanin[3]
1. *HORIBA Scientific, Bel Marin Blvd, Novato, USA*
2. *Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, USA*
3. *Institute of Physical Chemistry, Friedrich Schiller University Jena, Germany*

027, Inline XPS and Raman Metrology for Evaluating Graphene Integrity During Thin Film Deposition

Dominic Esan[1*], Kitty Kumar[1], Ahmad Al-Kukhun[1], Wing-Shun Lam[1], Sisi Cao[1], Ganesh Vanamu[2], Yinon Katz[3], Haim Prigozin[3], Lior Neeman[3],
Tamar Hess[3], Sumegha Godara[2] and Roland Barbosa[2]
[1*]*Logic Technology Development, Intel Corporation, Hillsboro, OR 97124, USA*
[2]*Nova Measuring Instruments, Fremont CA, 94538, USA*
[3]*Nova Measuring Instruments, Rehovot 7632805, Israel.*

028, Advancements In XPS Depth Profiling Using Femtosecond Laser Ablation (fs-LA) For Thin Film And Oxide Surfaces

James Lallo[1], Tim Nunney[2], Robin Simpson[2], Paul Mack[2], Mark Baker[3], Charlie Chandler[3]
[1]*Thermo Fisher Scientific, Hillsboro Oregon USA;* [2]*Thermo Fisher Scientific, East Grinstead UK;* [3]*University of Surrey, Surrey UK*

029, Advances in Atom Probe Tomography Analysis

D. J. Larson[1], J. H. Bunton[1], D. Lenz[1], D. A. Reinhard[1],
K. P. Rice[1] and R. M. Ulfig[1]
[1]*CAMECA Instrument Inc. 5470 Nobel Drive, Madison WI USA*

030, Advanced Packaging Process Control With Micro X-ray Fluorescence

Basel Shamieh, Tslil Bialystocki, Alexander Tokar and Lior Levin

Bruker Technologies Ltd, Migdal Ha'Emek, Israel

031, Analytical X-Ray Solutions For Thin Film And Wafer Analysis

D. Lopez[1*], A. Zameshin[2], A. Pustovarenko[2], A. Bharti[2]
1. Malvern Panalytical, 2400 Computer Drive, Westborough MA, USA, 01581,
2. Malvern Panalytical B.V., 1 Lelyweg, Amelo, the Netherlands, 7602 EA

032, A Modular, Open-Source In Situ Ellipsometer for ALD: Low-Cost Instrumentation and a Complete Educational Build Guide

D. A. Castillo Lozada[†a], K. N. Gotecha[†b], M. Ezzy[a], A. Minnich[a]
[a]Division of Engineering and Applied Science, California Institute of Technology, Pasadena, CA, USA
[b]Indian Institute of Technology Gandhinagar, Gandhinagar 382355, India

033, DeepCore-X: Enabling Non-Destructive, High-Throughput Characterization of Buried Interfaces in Semiconductor Devices

M. Lundwall,[1] E. Cartwright,[1] X. Zhang,[2] D. Beaton,[2] S. Eriksson[1]
1 Scienta Omicron AB, Danmarksgatan 22, 75323 Uppsala, Sweden
2 Scienta Omicron Inc, 8355 E. 32nd Ave., Apt#126, Denver, CO 80238, USA

034, Improving Efficiency of Predictive Models Using Mixed Machine Learning Techniques on OCD Spectra

Aritra Mandal*, Ayan Das, and Navnit T. Agarwal
Intel Corporation, 2501 NE Century

035, Multi-wavelength atom probe tomography

Luis Miaja-Avila[1], Benjamin W. Caplins[1], May L. Martin[1], Joe Bunton[2], Norman A. Sanford[1], and Ann N. Chiaramonti[1]
[1]National Institute of Standards and Technology, Boulder, CO, USA
[2]CAMECA Instruments Inc., Madison, WI, 53711, USA

036, The Role of Ion Species in FIB-Induced Curtaining Artifacts

Gavin Mitchson
Thermo Fisher Scientific, 5350 NE Dawson Creek Drive, Hillsboro, OR 97124, USA

037, Advanced automation of both acquisition and analytical processing in routine surface chemical analysis measurements with XPS.

Chris Moffitt[1] and Jonathan Counsell[2]
[1]Kratos Analytical, Inc., 404 East Route 59, Nanuet, NY 10954 USA
[2]Kratos Analytical, Ltd., Wharfside, Trafford Wharf Road, Manchester M171GP UK

038, Quantum Enhanced Josephson Junction Field-Effect Transistors for Low-Energy Power-Efficient Microelectronics Applications

W. Pan[1], A.J. Muhowski[2], W.M. Martinez[2], C.L.H. Sovinec[2], J.P. Mendez[2], and D. Mamaluy[2]
[1] Sandia National Labs, Livermore, CA 94550, USA

[2] *Sandia National Labs, Albuquerque, NM 87123, USA*

039, Using Computational Suppression of Diffraction Artifacts to Enhance OV Metrology Precision

G. Patil[1], T. van Gardingen-Cromwijk[2], A. den Boef [1,2]
[1]*Advanced Research Center for Nanolithography (ARCNL), The Netherlands*
[2]*ASML Netherlands B.V., The Netherlands*

040, Multiscale Strain Characterization using Moiré Sampling in Aberrations Corrected Scanning Transmission Electron Microscopy

Alexandre Pofelski[1], Caleb Whittier[1] and Nabil Bassim[1]
[1]*Canadian Center for Electron Microscopy, Department of Materials Science and Engineering, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada*

041, X-ray Scattering Metrology Solutions for Semiconductor Materials: A Comprehensive Overview

Lixia Rong, Aykut Aydin, Yi Ding, Ludovico Megalini, Ruinan Zhou, Kimying Chan, Michael Chudzik, Baorui Cheng, Michel Khoury, Rui Cheng, Ryan Ley
Applied Materials, Inc., 974 E. Arques Avenue, Santa Clara, 94085

042, Nanoscale Measurement of Semiconductor Interface Electric-Fields

Alexana Roshko, Edwin Supple, Kris Bertness, Kevin Silverman
National Institute of Standards and Technology
Boulder, Colorado 80305

043, OBF-STEM: Enhancing Critical Dimension Measurements of Low-Contrast Beam Sensitive Semiconductor Structures

Masahide Shima[1], Masayasu Yoneda[1], Yuhiro Segawa[1], Kyoichiro Asayama[1], Takeshi Kaneko[2], Kevin McIlwrath[2], Shuji Kawai[1], Kazuya Yamazaki[1]
1JEOL Ltd. 3-1-2 Musashino, Akishima, Tokyo 196-8558 Japan
[2] *JEOL USA, Inc., 11 Dearborn Road, Peabody, MA 01960*

044, Advanced Synchrotron X-ray Characterization for Overcoming Manufacturing and Performance Challenges in the Semiconductor Industry

Nicholas Strange and Anna Wanhala on behalf of Stanford Synchrotron Radiation Lightsource (SSRL) at SLAC National Accelerator Laboratory
Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, 2575 Sand Hill Rd. Menlo
Park, CA 94025

045, Quantification of P-doped Si in Advanced and confined Semiconductor Structures Using TOF-SIMS, Orbitrap™-SIMS, and Self-Focusing SIMS

Rita Tilmann[1]*, Alexis Franquet[1], Alexander Pirkl[2]
1 imec, Kapeldreef 75, 3001 Leuven, Belgium
2 IONTOF, Heisenbergstr.15, 48149 Münster, Germany

046, Surface Enhanced Particle Sizing (SEPS) and Surface Enhanced Raman Speciation (SERS) for on-wafer contamination identification and characterization

Marie Tripp and Ali Altun
UNISERS AG, Baslerstrasse 60, Zurich Switzerland 8048

047, Towards Direct Measurement Of Chemical Noise In EUV Resists: Dose Dependent IR-AFM Measurements

Benjamin Verlhac[1], Komal Pandey[1], Kota Furuichi[2], Ken Maruyama[3], Joost van Bree[4], Gijsbert Rispens[4], Maarten van Es[1], Jo Finders[4], Diederik Maas[1]
[1] TNO, Stieltjesweg 1, 2628CK, Delft, The Netherlands
[2] JSR Micro N.V., Technologielaan 8, B-3001 Leuven, Belgium
[3]JSR Corporation, 100 Kawajiri-cho, Yokkaichi, Mie, 510-8552, Japan
[4]ASML, Veldhoven, The Netherlands

048, High-resolution Scanning Thermal Microscopy for Nanoscale Temperature Mapping of Operating Microelectronic Devices

Wan Xiong[1,2], Yunxuan Zhu[1], and Longji Cui[1,3]
[1]Paul M. Rady Department of Mechanical Engineering, University of Colorado Boulder, Boulder, Colorado 80309, USA
[2]Department of Physics, University of Colorado Boulder, Boulder, Colorado 80309, USA
[3]Materials Science and Engineering Program and Center for Experiments on Quantum Materials (CEQM), University of Colorado Boulder, Boulder, Colorado 80309, USA

049, A Conformal PEALD-SiN_x Coating for Suppressing Mesa-Induced Leakage in GaN Vertical SBDs

Zhenghao Xu[1,3], Hang Su[1,2], Li Zheng[1,2,*] and Xinhong Cheng[1,2,4,*]
[1]State Key Laboratory of Materials for Integrated Circuits, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, 865 Changning Road, Shanghai, 200050, China
[2]Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing, 101408, China
[3]School of Physical Science and Technology, ShanghaiTech University, Shanghai, 201210, China
[4]Shanghai Key Laboratory of Advanced Silicon-based Materials, National Silicon Industry Group, Shanghai, 200050, China

050, Laser scanning optical photothermal infrared (O-PTIR) microscopy for localization and identification of contaminants with sub-micron spatial resolution and breakthrough chemical imaging speed

Ting Yan, Eoghan Dillon, and Michael K. F. Lo
Photothermal Spectroscopy Corp. 325 Chapala Street, Santa Barbara, CA, 93101.

051, Multi-technique Analysis of Semiconductor Materials

Kent Zhuang, Dan Markowitz, Eric Kron, and David Palsulich
Corporate Labs, Micron Technology, Inc.
8000 S. Federal Way, ID 83706, USA

052, X-ray Metrology and Inspection for Advanced CFET Logic and 3D-DRAM

Jeremiah McCallister[a], Tamzin Lafford[a], Juliette van der Meer[b], Matteo Beggiato[c], Janusz Bogdanowicz[c], Roger Looc,[d] and Matthew Wormington[e]

[a] *Bruker UK Ltd., Bede House, Durham DH1 1TW, United Kingdom*

[c] *Bruker Nano GmbH, Am Studio 2D, 12489 Berlin, Germany*

c *Imec, Kapeldreef 75, 3001 Leuven, Belgium*

[d] *Defects in Semiconductors, Dep. of Solid State Sciences, Ghent University, Krijgslaan 251, 9000 Ghent, Belgium*

[e] *Bruker Corp., 112 Robin Hill Rd, Goleta, CA 93117, United States*

053, Advanced Packaging Process Control With Micro X-ray Fluorescence

Basel Shamieh[a], Tslil Bialystocki[a], Alexander Tokar[a], Lior Levin[a], Paul Ryan[b] and Matthew Wormington[c]

[a]*Bruker Technologies Ltd, 6 Hamechkar, Migdal Ha'Emek 2306990, Israel* [b]*Bruker UK Ltd., Bede House, Durham DH1 1TW, United Kingdom* [c]*Bruker Corp., 112 Robin Hill Rd, Goleta, CA 93117, United States*