EVENT OVERVIEW
EXHIBIT GUIDE

# SPIE. ADVANCED LITHOGRAPHY+ PATTERNING

**22–26 February 2026 | San Jose McEnery Convention Center**
**San Jose, California, USA**

# SPIE. ADVANCED LITHOGRAPHY+ PATTERNING

Cutting-edge research

Exhibition

Industry

Courses

## THE EVENT FOR EMERGING TECHNOLOGY IN THE SEMICONDUCTOR INDUSTRY

**Conferences and Courses: 22–26 February 2026**

**Exhibition: 24–25 February 2026**

San Jose McEnery Convention Center
San Jose, California, United States

## Download the SPIE Conference and Exhibition App

### Enhance your SPIE conference experience

Download the free mobile app to enrich your meeting experience. View events, exhibitors, and connect with participants all in the palm of your hand. The app is free, easy to use, and loaded with features designed for planning and connecting on the go.

Make the most of your time with these app features:

» Real-time program updates
» Customize your schedule
» Organize your meeting notes
» Add new connections to your contacts
» Plan exhibitor visits
» Navigate the venue
» Bookmark specific research
» Create meeting reports
» And a whole lot more.

## My Schedule

### Create and manage your personalized event schedule

**WHAT IS MY SCHEDULE?**

My Schedule allows you to create a custom, personalized schedule to help keep you from missing the events you want to attend. Paper presentations, poster presentations, courses, and special events can be added to My Schedule. Once you're done customizing My Schedule, it directly links to the SPIE Conference App for onsite use, or it can be printed or exported to your personal calendar.

**USING MY SCHEDULE**

» Sign in to your account
» Browse or search the conference program
» Click the "Add To My Schedule" to add items to your custom, printable schedule
» Your My Schedule will automatically save to your account
» Retrieve My Schedule
» Sign in to your account
» Retrieve your My Schedule by clicking on the "My Schedule" icon in the header.

Get the App

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**SPIE APP**

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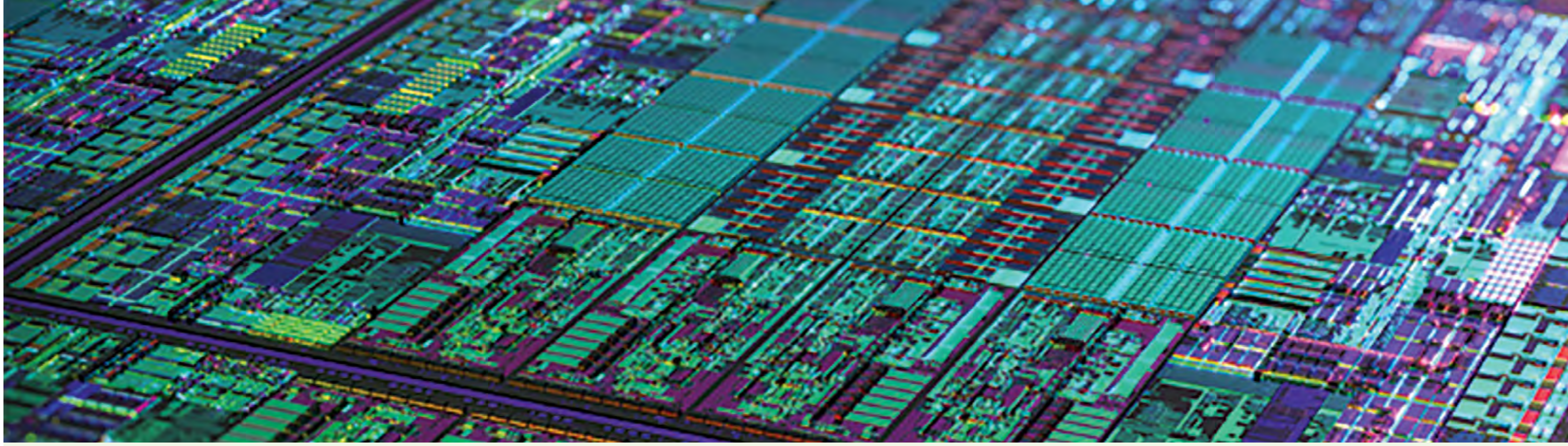

## Experience the energy of Advanced Lithography + Patterning

### CELEBRATING DECADES OF INNOVATION

Celebrate 50 years of SPIE Advanced Lithography + Patterning—a cornerstone event for the semiconductor industry. For half a century, this conference has brought together leading experts and innovators to advance the science and technology of semiconductor lithography.


SYMPOSIUM CHAIR

**John Robinson**
Diverdy Technologies, LLC (USA)

SYMPOSIUM CO-CHAIR

**Eric Panning**
SiClarity (USA)


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**SPIE.**

SPIE is the international society for optics and photonics. We bring engineers, scientists, students, and business professionals together to advance light-based science and technology. Over the past five years, we have invested more than $26 million in the international optics community through our advocacy and support, including scholarships, educational resources, travel grants, endowed gifts, and public-policy development.


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# SAN JOSE CONVENTION CENTER

SAN JOSE CONVENTION CENTER
CONCOURSE LEVEL
MARKET STREET
EAST TERRACE
212
210D
210C
210B
210A
211D 211B
211C 211A
EXHIBITION
HALL 1
Bookstore
POSTERS
HALL 2
Course Materials Desk
Cashier/ Chair Services
UPPER LEVEL CONCOURSE
MARKET TERRACE
114 113 112 111
LOWER LEVEL ROOMS 111–114
STAIRS DOWN TO ROOMS 111–114
SPIE Member Lounge
Speaker Check-In
Registration
THINK TANK
STREET LEVEL LOBBY
ESCALATORS DOWN TO WELCOME RECEPTION
MAIN ENTRANCE PLAZA
STREET LEVEL
CONCOURSE
GRAND BALLROOM 220C
GRAND BALLROOM 220B
GRAND BALLROOM 220A
PLAZA TERRACE
SAN CARLOS STREET
WEST LOBBY
ALMADEN TERRACE
HILTON SAN JOSE
GUADALUPE
SALON I
SALON II
SALON III
SALON IV
SALON V
SALON VI
WILLOW GLEN
I
II
III
SAN JOSE MARRIOTT
LEVEL 2
ALMADEN
BLOSSOM HILL
III
II
I
SAN JOSE MARRIOTT
LEVEL 3

SPIE.
See full details and updates at **spie.org/alp** or on the **SPIE App**

# GENERAL INFORMATION

## Badge pick up and registration hours

**San Jose McEnery Convention Center, Upper Level Concourse**

| Day | Hours |
|---|---|
| Sunday 22 February | 7:15 AM–5:00 PM |
| Monday 23 February | 7:15 AM–4:00 PM |
| Tuesday 24 February | 7:30 AM–5:00 PM |
| Wednesday 25 February | 7:45 AM–4:00 PM |
| Thursday 26 February* | 7:45 AM–11:00 AM |

*Thursday is conference registration only

## SPIE Cashier

**San Jose McEnery Convention Center, Upper Level Concourse**
**Open during registration hours**

### Registration payments

If you are planning to register onsite, your credit card payment will be processed during registration. If you wish to pay with cash or check, register at the "Need to Register" stations; you will be directed to the Cashier once you have completed registration except for final payment.

If you have already registered and wish to add a course, workshop, or special event, you may do this online by signing into your SPIE account.

### Receipt and Certificate of Participation

Preregistered attendees who need an SPIE-stamped receipt or attendees who need a Certificate of Participation may obtain those at the Cashier.

### Badge Corrections

Badge corrections can be made at the Cashier. Please have your badge removed from the badge holder and marked with your changes before approaching the counter.

## Speaker Check-In and Preview Station

**Convention Center, Ballroom Concourse**

| Day | Hours |
|---|---|
| Sunday 22 February | 12:00 PM–5:00 PM |
| Monday 23 February | 7:30 AM–5:00 PM |
| Tuesday 24 February | 7:30 AM–5:00 PM |
| Wednesday 25 February | 7:30 AM–5:00 PM |
| Thursday 26 February | 7:30 AM–4:00 PM |

All speakers must stop at Speaker Check-In to upload their slide presentation files at least two hours before their scheduled session or the day before if they present in the first morning session. Speakers are not able to present using their own devices. All conference rooms are equipped with a laptop, projector, screen, lapel microphone, and laser pointer.

SPIE will record the audio plus screen content of all presentations. Recordings will be published on the SPIE Digital Library.

## Wi-Fi Internet Access

**Locations: Convention Center, Upper Level Concourse Lobbies, Exhibition Hall, and Registration area**

Complimentary wireless Internet access provided in lobbies on the conference room level and in the exhibition hall. Instructions will be posted onsite.

WI-FI HAS BEEN SPONSORED BY:

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## Phone Charging Stations

**Convention Center, Upper Level Concourse**
**Open during registration hours**

CHARGING STATIONS SPONSORED BY:

## SPIE Conference and Exhibition App

This useful tool allows you to search and browse the program, special events, participants, exhibitors, courses, and more. It is free and available for iPhone and Android phones

If you don't already have it, download the SPIE App.

THE APP HAS BEEN SPONSORED BY:

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# GENERAL INFORMATION

## SPIE Bookstore

**Convention Center, Exhibition Hall**

**Tuesday 24 February . . . . . . . . . . . . . . . . . . . 10:00 AM–5:00 PM**
**Wednesday 25 February . . . . . . . . . . . . . . . . 10:00 AM–4:00 PM**

Stop by the bookstore to browse the latest SPIE Press books. While there, get a t-shirt or educational toy to bring home to the family.

Credit and debit cards only will be accepted; no cash.

## SPIE Course Materials

**Convention Center, Upper Level Concourse**
**Open during registration hours**

Browse course offerings that will be available onsite or learn more about SPIE courses available in portable formats such as online and customizable group training.

## Childcare services

Bay Area Sitters Unlimited—lets you hand pick your childcare provider online

**408-452-0225**

**Rachael Osorio**

**rfosorio15@gmail.com**

SPIE does not imply an endorsement nor recommendation of these services. They are provided on an “information only” basis for your further analysis and decision. Other services may be available.

## Mothers’ Lounge

**Convention Center, Grand Ballroom Concourse**
**Open during registration hours**

The Mothers’ Lounge is a lockable room intended for nursing mothers. There is no storage, running water, or refrigeration available in this space.

## Quiet Room

**Convention Center, Room 112**
**Open Monday - Thursday during registration hours**

The Quiet Room is intended for silent meditation, reflection, and prayer. No mobile devices or computer use is allowed, and no food or beverages are allowed.

## Gender Inclusive Restroom

**Executive Ballroom restroom across from 211A/211C**
**Open during registration hours**

## Lost and Found

**SPIE Cashier**
**Open during registration hours**

Found items will be kept at SPIE Cashier in the Registration area during the meeting and available only during registration hours. At the end of the meeting, all found items will be turned over to the San Jose Convention Center Security, 408-277-3500.

## Food and beverage services

**Coffee breaks:** Please check the conference schedule for specific break times.

| Day | Location | Time |
|---|---|---|
| Monday | Hall 2 Concourse | 7:30 AM-4:00 PM |
| Tuesday | Hall 2 Concourse | 7:30 AM-9:30 AM |
| | Exhibition Hall 1 | 10:00 AM-4:00 PM |
| Wednesday | Hall 2 Concourse | 7:30 AM-9:30 AM |
| | Exhibition Hall 1 | 10:00 AM-4:00 PM |
| Thursday | Hall 2 Concourse | 7:30 AM-4:00 PM |

COFFEE BREAKS HAVE BEEN SPONSORED BY:

## SPIE Hosted Breakfast Breads

**Convention Center, Hall 2 Concourse**

**Monday–Thursday . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7:30 AM**

Served with morning coffee.

BREAKFAST ITEMS HAVE BEEN SPONSORED BY:

## SPIE Hosted Lunches

**Convention Center, Exhibition Hall 1**

**Tuesday–Wednesday. . . . . . . . . . . . . . . . . . . . 12:00 PM–1:00 PM**

Check individual conference listings for exact times. Lunches are included with full conference registrations.

LUNCHES SPONSORED BY:

## Food and Refreshments for Purchase

**Starbucks**

**San Jose Marriott Lobby**
**Open daily. . . . . . . . . . . . . . . . . . . . . . . . . . . 7:00 AM–10:00 PM**

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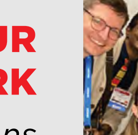

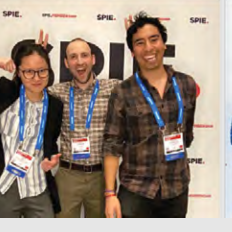

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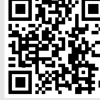


**Start your Membership journey today:**
spie.org/membership

Come hear presentations from leading speakers across the globe. Plenary sessions include world-class speakers, and the poster session brings together new and innovative ideas.

## Welcome and Plenary Session

**23 February 2026 • 8:00 AM - 9:50 AM**
**Conv. Ctr., Room 220A**

**8:00 AM - 8:15 AM:**

### Welcome and opening remarks

**John C. Robinson,** Diverdy Technologies, LLC (USA);
**Eric Panning,** SiClarity Inc. (USA)

**8:15 AM - 8:20 AM:**

### SPIE Frits Zernike Award for Microlithography

Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

**8:20 AM - 8:25 AM:**

### Presentation of the Nick Cobb Memorial Scholarship

The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

**8:25 AM - 8:30 AM:**

### Presentation of New SPIE Fellows

**8:30 AM - 9:10 AM**

### HBM technology evolution for memory-centric computing in the AI era

**Unoh Kwon**
SK hynix (Republic of Korea)

The explosive growth of AI is redefining memory as a performance-critical system pillar. As models scale to trillions of parameters and data movement surges, architectures are shifting toward memory-centric designs, with HBM enabling unmatched bandwidth. The industry faces complex challenges: higher bandwidth, lower power, greater capacity, and advanced heterogeneous integration. This plenary talk presents a multi-layered solution framework for AI memory trends and explores the patterning innovations essential for next generation HBM in the AI era.

**9:10 AM - 9:50 AM**

### Innovating at scale: Toward diversified manufacturing for purpose-built chips

**Hui Peng Koh**
GlobalFoundaries (USA)

GlobalFoundries evolved from AMD's CPU manufacturing, Chartered Semiconductor's foundry expertise, and IBM's technology leadership into a global high-mix manufacturing powerhouse. This presentation explores how GF addresses the toughest fab challenges—yield variability, tool diversity, and automotive-grade reliability—by applying machine learning for advanced process control across multiple sites. We highlight GF's strategic expansion into purpose-built platforms for automotive, RF, and emerging applications, turning complexity into opportunity through innovation and scale. Finally, we discuss GF's pivotal role in the AI-driven economy, focusing on innovation and industrializing silicon photonics that will shape next-generation connectivity and computing.

## All-Symposium Panel

**23 February 2026 • 5:15 PM - 7:00 PM**
**Conv. Ctr., Room 220A**

**5:15 PM - 5:20 PM:**

### Tribute to Andrew R. Neureuther

Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

**5:20 PM - 7:00 PM:**

### Making the Impossible Possible: 50 Years of SPIE ALP

"Making the Impossible Possible: 50 Years of SPIE ALP" is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

MODERATOR:
**Dan Hutcheson,** VLSI Research Inc (USA)

PANELISTS:
**Burn Lin,** National Tsing Hua Univ. (Taiwan)
**Martin van den Brink,** ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson,** The Univ. of Texas at Austin (USA)
**Janice Golda,** Intel Corp. (USA)
**Chris Mack,** Fractilia, LLC (USA)

## Poster Session

**25 February 2026 • 5:30 PM - 7:00 PM PST | Conv. Ctr., Hall B**

Conference attendees are invited to attend the poster session on Wednesday evening with all SPIE Advanced Lithography + Patterning conferences. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup: Wednesday 10:00 AM - 4:30 PM**

Poster authors, view poster presentation guidelines and set-up instructions at https://spie.org/ALPosterGuidelines.

See full details and updates at **spie.org/alp** or on the **SPIE App**

▶ 2026 | MARK YOUR CALENDAR

**8–11 September 2026**
Monterey Conference Center
Monterey, California, USA

**EXHIBITION**
**9–10 September 2026**

## SOCIAL AND NETWORKING EVENTS

These interactive sessions give you the opportunity to network, learn, and discuss your work with lithography professionals from around the world.

### First-Timers Reception

**22 February 2026 • 5:30 PM - 6:30 PM**
**Marriott, Marketstreet (Street Level)**

First-time attendees are invited to join this reception for an opportunity to network with other first-timers and learn about what SPIE and Advanced Lithography + Patterning offers to enrich your conference experience.

### SPIE Members Lounge

**Conv. Ctr., Concourse**

**23 February 2026** .......... **9:00 AM - 5:00 PM**
**24 February 2026** .......... **9:00 AM - 5:00 PM**
**25 February 2026** .......... **9:00 AM - 5:00 PM**
**26 February 2026** .......... **9:00 AM - 12:00 PM**

SPIE Members are welcome to enjoy the membership benefit of a dedicated lounge.

### Student-Mentor Luncheon

**23 February 2026 • 12:00 PM - 1:30 PM**
**Marriott, Marketstreet (Street Level)**

Student conference attendees are invited to this engaging networking lunch with top members in the field. This event gives students an opportunity to meet mentors who will share their insights into career paths in lithography.

### Welcome Reception

**23 February 2026 • 7:00 PM - 8:00 PM**
**Conv. Ctr., Lower Level Foyer**

Celebrate ALP's 50th Anniversary at the Welcome Reception. Relax, socialize, and enjoy beverages and hors-d'oeuvres on the first night of the conference. All paid conference attendees and exhibitor representatives welcome.

SPONSORED BY:

EMD Electronics

### Women's Networking Lunch

**24 February 2026 • 12:00 PM - 1:00 PM**
**Marriott, Marketstreet (Street Level)**

Join other women in the field for informal discussions and networking.

SPONSORED BY:

### Author Meet 'n' Greet

**25 February 2026 • 11:30 AM - 12:00 PM**
**SPIE Bookstore: Conv. Ctr., Hall 1**

Come meet Dr. Andreas Erdmann, the author of *Optical and EUV Lithography: A Modeling Perspective* and the 2026 Frits Zernike Award winner.

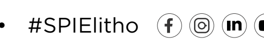
### Networking and Social Hour

**25 February 2026 • 3:00 PM - 4:00 PM**
**Conv. Ctr., Hall 1**

Join your colleagues, make new connections, and meet with exhibitors! Open to all attendees.

See full details and updates at **spie.org/alp** or on the **SPIE App**





# Advanced Lithography + Patterning Courses

**Elevate your expertise. Learn from leaders in the field.**

Take your skills to the next level with courses that are designed for engineers who want results. Gain practical, actionable insights, and apply innovative techniques directly to your work.

### Chemistry and Lithography

Instructor: **Christoph K. Hohle,** Fraunhofer-Institut für Photonische Mikrosysteme IPMS (Germany)

**SC1099 | Level: Advanced**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $947.75 | Non-member: $1,115.00**
**Student member: $724.75**

This course, based on the book *Chemistry and Lithography, 2nd ed., Vol. 2: Chemistry in Lithography* (SPIE Press 2023, PM353), explores the chemical basis of advanced lithography, which in all its essential aspects is about chemical transformations that are designed to print a relief image of an object on a flat surface. The object may be a mask containing patterns of integrated circuit devices; the flat surface may be a silicon wafer coated with either radiation-sensitive resist, or imprint resist, or block copolymer resist. Exposing the radiation sensitive resist film to actinic radiation, followed by baking induces differential solubility in the exposed areas of the resist relative to the unexposed area, such that upon development, the resist film is transformed into a three-dimensional relief image of the mask. Pressing the mask down with sufficient force onto a heat-melted imprint resist film forces the resist to flow into and fill topographical cavities on the mask, such that upon cooling and solidification of the resist, followed by release of the mask, a negative replica of the mask is realized on the resist film. Thermal and/or solvent annealing of the block copolymer resist film on a wafer with appropriate guide patterns induces phase separation and self-assembly of the block copolymer into domains that replicate the shape of the guide patterns on the mask. Underlying most of the above transformations are distinct chemical reactions that are mediated by electrons. By drawing on fundamental, theoretical, and experimental studies of molecular processes in advanced lithography, we will deconstruct lithography into its essential chemical principles.

### EUV Lithography

Instructors: **Vivek Bakshi,** EUV Litho, Inc. (USA); **Patrick P. Naulleau,** EUV Technology (USA); **Sangsul Lee,** Pohang Accelerator Lab. (Republic of Korea)

**SC888 | Level: Intermediate**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $977.50 | Non-member: $1,150.00**
**Student member: $747.50**

This course provides attendees with a full overview of the fundamentals, current status, and technical challenges of EUV Lithography. Topics covered include EUV Sources, EUV Source Metrology, EUV Optics, EUV systems and patterning, and EUV Mask. We will begin with an overview of the history of EUVL and cover EUV sources, EUV source metrology and EUV optics. Next is a discussion of EUVL systems and patterning. We cover the fundamental components of EUV systems and address similarities and differences to optical lithography systems. This section also covers patterning issues including flare, LER, and resist performance. We continue with an exploration of EUVL Mask technology issues such as design, materials including reflective multilayers, process and metrology. Finally we conclude with a Status Review of EUVL. Course material will be drawn from the accompanying texts EUV Sources for Lithography and EUV Lithography.

### Digital Certificates

SPIE awards digital certificates to participants who attend courses and submit a completed evaluation form. Digital credentials are always accessible, easily shareable, printable at any time, and verified.

SPIE reserves the right to cancel a course due to insufficient advance registration.

**Onsite courses**
View course descriptions and register online.

**SPIE Members receive 15% discount**
**SPIE Student Members receive 35% discount**

## EUV Mask Inspection and Repair: Technology and Practice New

Instructor: **Ted Liang,** Lasertec U.S.A., Inc. (USA)

**SC1368 | Level: Intermediate**
**Sunday, 22 February 2026 • 8:30 AM - 12:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

Inspection and repair are two critical modules in the manufacturing of EUV masks to ensure the delivery of defect-free reticles to wafer fabs for exposures in EUV scanners. Due to the complexity of materials such as multilayer stack used in mask blanks and the stringent defect requirements for final masks, high-sensitivity inspections are required during blank preparation at blank suppliers, patterning processes in mask shops, and mask usage and requalification in wafer fabs. This raises several critical questions: What are the available inspection technologies and tools? How do you select and deploy them to meet specific needs, for example, EUV actinic or DUV optical? When defects are detected, how do you classify and review them to determine which ones must be repaired based on physical and aerial image measurement? Why is e-beam mask repair the best choice? How can we leverage machine-learning and AI in noise and defect management? To address these questions in practice, it is important for scientists, engineers, and managers to gain comprehensive knowledge of the requirement, the principle, and practice of each technology in EUV mask inspection and repair. This course will teach you the various technologies with practical examples. Descriptions will also be given to the specifics and challenges in inspection and repair of high-NA and curvilinear EUV masks.

## High NA Lithography Systems: What's in the Box?

Instructors: **Jara Garcia-Santaclara,** ASML Netherlands B.V. (Netherlands); **Jan van Schoot,** ASML Netherlands B.V. (Netherlands)

**SC1321 | Level: Intermediate**
**Sunday, 22 February 2026 • 8:30 AM - 12:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

This course provides attendees with an overview of the advances in lithography systems for High NA and an understanding of their inner workings, the technology and basic principles. The primary goal of the course is to discuss the main components of a High NA scanner, understand their function and link them to critical performance metrics. The commonalities and main differences between DUV and EUV scanners will be discussed, and the insights into High NA, next generation of EUV lithography systems will be given.

## Introduction to Microlithography: Theory, Materials, and Processing

Instructors: **Murrae J. Bowden,** EMP Consultants (USA); **Ralph R. Dammel,** EMD Electronics (USA)

**SC101 | Level: Introductory**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $875.50 | Non-member: $1,030.00**
**Student member: $669.50**

The course covers the physics of aerial image generation, the chemistry that is responsible for generation of differential solubility in resists, and the effects of processing variables on the final relief image. While optical exposure is the major focus of this course, electron beam and x-ray exposure are also addressed, as is nanoimprint lithography. The physics section provides an explanation for interference effects and their influence on the aerial image together with a look at aspects of wave front engineering techniques such as phase shift mask design. The chemistry section provides an overview description of the chemical basis for various resist designs, including chemically amplified resists. There will also be a discussion of methods for pitch multiplication such as Self Aligned Double Patterning, DSA, etc. The course also includes a discussion of the influence of material and process variables on the tradeoffs between resolution, line edge roughness and throughput.

## Introduction to Scanning Electron Microscope (SEM) Applications of Defect Inspection and Review in IC Manufacturing

Instructor: **Hong Xiao,** ASML (USA)

**SC1009 | Level: Introductory**
**Sunday, 22 February 2026 • 8:30 AM - 12:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

This course explains basic principles and applications of defect electron beam inspection (EBI) and defect e-beam review (EBR). The primary goals of the course are to describe the basic of SEM imaging, defect behavior in the SEM image, case studies of EBI and EBR applications in semiconductor process development and high-volume manufacturing (HVM). Basics principles of design for inspection (DFI) and some case studies of EBI test circuit design are also covered.

## Lithography Integration for Semiconductor FEOL & BEOL Fabrication

Instructors: **Qinghuang Lin,** Canon Nanotechnologies, Inc. (USA); **Thorsten B. Lill,** Lam Research Corp. (USA)

**SC992 | Level: Introductory**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $875.50 | Non-member: $1,030.00**
**Student member: $669.50**

The goal of this course is to provide materials, process, integration and lithography engineers with a fundamental basis to develop materials and processes for FEOL, MOL and BEOL patterning and to trouble shoot fabrication problems. This course will also introduce new materials (such as high mobility channel materials, high-K/metal gate or HKMG, III-V materials, non-copper BEOL metals), new device and interconnect structures (such as, gate-all-around transistor, FinFET/ Trigate, nanowires, self-aligned via integration, Cu/air-gap interconnects, buried power rails, PowerVia) and new integrations (such as 3D IC, Through-Silicon Via or TSV, 3D heterogeneous integration, hybrid bonding) as well as recent advances in lithography technology (such as double patterning, EUV lithography, high-NA EUV and directed self-assembly, DSA). Implications of these FEOL, MOL and BEOL technologies for lithography will be discussed.

## Lithography Process Control

Instructor: **Harry J. Levinson,** HJL Lithography (USA)

**SC111 | Level: Intermediate**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $905.25 | Non-member: $1,065.00**
**Student member: $692.25**

The class connects lithographic science to process control. Specific topics include:

- Statistical process control, focusing on aspects particular to lithography
- Efficient measurement sampling plans for achieving desired accuracy
- Control issues specific to critical dimensions
- Characterization and measurement of line-edge roughness (LER)
- Control issues specific to overlay
- Control issues specific to EUV lithography
- Yield issues specific to lithography
- Metrology for lithographic applications
- Automatic process control
- Control of operations

***Material level is intermediate. Some advanced topics are introduced.***

## Machine Learning for Lithography

Instructor: **James P. Shiely,** Siemens EDA (USA)

**SC1264 | Level: Advanced**
**Sunday, 22 February 2026 • 8:30 AM - 5:30 PM**

**Member: $1,020.00 | Non-member: $1,200.00**
**Student member: $780.00**

This course provides background on supervised learning applied to microlithography. A primary goal of the course is to illustrate supervised learning, inference, and validation workflow to practitioners of microlithography, using datasets and problems with which they are familiar. Example applications will include photoresist models and inverse lithography models. Example model types include linear classifiers, multilayer perceptrons and deep neural networks.

***This is an interactive course and participants will need to bring their own laptops.***

## Advanced Concepts in Metrology Toolset Stability and Matching

Instructor: **Ofer Adan,** Applied Materials Israel, Ltd. (Israel)

**SC1133 | Level: Intermediate**
**Sunday, 22 February 2026 • 1:30 PM - 5:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

The course covers advanced concepts for metrology toolset stability and matching. It will cover many critical topics that together maximize fleet performance. This is especially important given the shift to new device architectures (finfet, 3D Flash, DRAM and advanced memory) that are challenging metrology toolsets in ways not seen before. A number of advanced concepts will be covered. Review best known methods for gauge study analysis and metrics. Appropriately setting up tool control chart limits for long term stability fleet matching based on requirements not historical data. Leveraging real time normalized product data to decrease Mean Time To Detect (MTTD) tool drifts. Recipe portability matching and monitoring to catch other issues that will affect lot cycletime. The concepts discussed are applicable to any metrology toolset such as CD-SEM, overlay, thin film, AFM, etc. and most of these concepts are also applicable to defect toolsets.

## Overlay Control: Error Budget and Metrology

Instructors: **Nadav Gutman,** KLA Israel (Israel); **Clemens S. Utzny,** KLA GmbH (Germany)

**SC1350 | Level: Introductory**
**Sunday, 22 February 2026 • 1:30 PM - 5:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

This course focuses on overlay (OVL) control for product devices detailing the distinct factors affecting on-product overlay (OPO) performance. We delve into key characteristics relevant to OPO, including OVL residuals and non-zero offset (NZO). By exploring the complex, critical inter-relationships among scanner alignment schemes, after-development inspection measurements, and in-die overlay metrology, we build a foundation for better understanding and controlling OPO. Our goal is to enlighten and educate you to better optimize the OPO process for a single and multiple lithographic layers and products in your fab. The course clarifies the fundamental aspects of each metrology technique. This course will benefit those keen on comprehending the factors that shape the landscape of image-based or scatterometry-based overlay, the ongoing challenges of recipe optimization and self-referencing, the measurement and utilization of device overlay, and, most importantly, how all these elements interact and converge.

## Scatterometry in Profile, Overlay and Focus Process Control

Instructors: **Hugo Cramer,** ASML Netherlands B.V. (Netherlands); **Igor Turovets,** Nova Ltd. (Israel)

**SC1100 | Level: Introductory**
**Sunday, 22 February 2026 • 1:30 PM - 5:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

This course explains the basic principles of all scatterometry systems used today, including HW (SA and integrated systems), various measurement methodologies, and algorithms. A primary goal of the course is to fully demonstrate the capabilities of scatterometry through multiple examples of its application in process monitoring and control. Recent developments and trends of scatterometry HW and algorithms are presented, together with the usage of holistic metrology, to demonstrate how scatterometry overcomes current limitations, broadens the application space, and is ready for the future challenges.

## Atomic Layer Etching for Patterning of Advanced Semiconductor Devices

Instructors: **Thorsten B. Lill,** Lam Research Corp. (USA); **Andreas Fischer,** Lam Research Corp. (USA)

**SC1339 | Level: Intermediate**
**Monday, 23 February 2026 • 1:30 PM - 5:30 PM**

**Member: $535.50 | Non-member: $630.00**
**Student member: $409.50**

Patterning of advanced logic and memory devices requires atomic level fidelity. Atomic Layer Etching (ALE) emerged at the right time as the solution for these advanced patterning needs. ALE is a critical tool for integration and process engineers for realizing the roadmaps of logic and memory devices. In this course, we will introduce the fundamentals of atomic layer etching. We will compare ALE with conventional reactive ion etching (RIE) and isotropic etching technologies such as radical and thermal etching and analyze if and why ALE provides superior performance. We will cover a wide range of implementations of plasma driven directional atomic layer etching and thermal isotropic atomic layer etching. The performance benefits for these ALE techniques will be introduced and limitations will be discussed. In the second half of the course, we will review the use of ALE in EUV patterning, multipatterning, logic gate etching, contact etching, spacer etching, high k dielectric thinning, formation of advanced 3D NAND, 3D DRAM and emerging memory devices. Preferred chemistries and processing conditions will be introduced. The course will discuss use cases and requirements for plasma application in ALE.

## Interaction of Physical Design and Lithography

Instructor: **Chi-Min (Chi) Yuan,** NXP Semiconductors (USA)

**SC1030 | Level: Introductory**
**Monday, 23 February 2026 • 1:30 PM - 5:30 PM**

**Member: $535.50| Non-member: $630.00**
**Student member: $409.50**

This course introduces attendees to the fundamentals of physical design and its interaction with lithography processes and Optical Proximity Correction (OPC). Physical design encompasses a sequence of steps—including circuit routing and timing closure—that directly influence circuit layout and lithographic patterning. These interactions became especially critical with the adoption of multiple patterning technologies at the 20nm node and below. By understanding how physical design impacts lithography, attendees will gain insight into prioritizing process tuning and OPC recipe development, rather than treating all aspects of the circuit layout with equal weight. Drawing on feedback from previous participants, the course focuses on four key topics most relevant to lithographers: standard cells, placement, routing, and timing closure. Approximately half of the course will be devoted to introducing the principles of physical design, with the remaining half exploring its interaction with lithography. In addition, the instructor will highlight physical design aspects connected to DPTCO papers scheduled for presentation during the conference week.

## Practical Photoresist Processing

Instructor: **Ralph R. Dammel,** EMD Electronics (USA)

**SC616 | Level: Introductory**
**Thursday, 26 February 2026 • 8:30 AM - 12:30 PM**

**Member: $535.50| Non-member: $630.00**
**Student member: $409.50**

Photolithography is the technique underlying all integrated circuit manufacture. To a large extent, the minimum feature size and the performance of ICs is determined by the resolution achievable in this step. Also, the process yield has a strong impact on a Fab's economy. The troubleshooting of photoresist performance is therefore a key concern to every microlithography engineer. However, this requires a highly interdisciplinary understanding of many areas, from photochemistry to polymer science to optics, that are usually not taught in a unified way in most educational curricula. In this course, photoresist processing is examined by walking a wafer through the lithographic sequence, beginning with the wafer preparation and ending when the resist feature has been prepared for dry etching. Both classic near-UV DNQ/novolak resists as well as chemically amplified systems (248 and 193 nm as well as EUV) will be covered. The chemical changes occurring in photoresists during the different process steps will be discussed. Pitfalls and failure modes will be pointed out at every step and correlated to the underlying properties of the photoresist materials. The aim of the course is to give microlithography engineers a practical basis from which to begin the detective work involved in identifying the root cause of a processing problem.

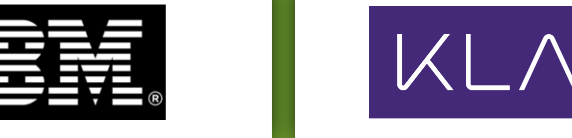
# Congratulations to our 2026 student grant recipients

| | | |
|---|---|---|
| **Cody Allen**<br>The University of Texas at Dallas | **Nina Bernard**<br>Université Grenoble Alpes | **Adithya Chimalakonda**<br>Georgia Institute of Technology |
| **Avik Das**<br>Indian Institute of Technology Mandi | **Maria Teresa Elenes Cervantes**<br>Barcelona Microelectronics Institute (IMB-CNM) | **Emilie Eustache**<br>Université Grenoble Alpes |
| **Po-Hsun Fang**<br>National Yang Ming Chiao Tung University | **Shotaro Fuku**<br>The University of Osaka | **Jack Gerrity**<br>University of Illinois Urbana-Champaign |
| **Iksu Kim**<br>Kyung Hee University | **Sunjin Lee**<br>Gachon University | **Pei-Hsuan Lin**<br>National Tsing Hua University |
| **Shilma Mangira**<br>Texas State University | **Takehiro Masuda**<br>The University of Osaka | **Annabelle Narsama**<br>Université Grenoble Alpes |
| **Justin Nhan**<br>University at Albany | **Emma Penny**<br>University at Albany | **Ryan Raad**<br>Technical University of Vienna |
| **Ji-Hoo Seok**<br>Hanyang University | **Owen Taylor**<br>California Polytechnic State University, San Luis Obispo | **Chien-Hsun Yu**<br>KU Leuven, imec |

## Thank you to our sponsors for supporting student engagement

EMD Electronics

FRACTILIA



## EVENT SCHEDULE

| TIME | CONFERENCE 13979<br>**Optical and EUV Nanolithography XXXIX**<br>Chair: Claire van Lare<br>Co-chair: Iacopo Mochi<br>23 - 26 February 2026<br>**Grand Ballroom 220A** | CONFERENCE 13980<br>**DTCO and Computational Patterning V**<br>Chair: Harsha Grunes<br>Co-chair: Kevin Lucas<br>24 - 26 February 2026<br>**Grand Ballroom 220B** | CONFERENCE 13981<br>**Metrology, Inspection, and Process Control XL**<br>Chair: Nivea G. Schuch<br>Co-chair: Hugo Cramer<br>23 - 26 February 2026<br>**Convention Center, Room 210A** | | CONFERENCE 13982<br>**Novel Patterning Technologies 2026**<br>Chair: Ricardo Ruiz<br>Co-chair: Richard A. Farrell<br>23 - 26 February 2026<br>**Convention Center, Room 211B** | CONFERENCE 13983<br>**Advances in Patterning Materials and Processes XLIII**<br>Chair: Ryan Callahan<br>Co-chair: Anuja De Silva<br>23 - 26 February 2026<br>**Convention Center, Room 210C** | CONFERENCE 13984<br>**Advanced Etch Technology and Process Integration for Nanopatterning XV**<br>Chair: Efrain Altamirano-Sánchez<br>Co-chair: John Hoang<br>24 - 26 February 2026<br>**Grand Ballroom 220C** |
|---|---|---|---|---|---|---|---|

### MORNING — MONDAY 23 FEBRUARY

8:00 AM - 9:50 AM PST | Convention Center, Grand Ballroom 220A

**Welcome and Monday Plenary Session**

SPONSORED BY: Canon

**Welcome and Opening Remarks**
**Qinghuang Lin,** Canon Nanotechnologies, Inc. (USA); **John C. Robinson,** KLA Corp. (USA)

**SPIE Frits Zernike Award for Microlithography**

**Presentation of the Nick Cobb Memorial Scholarship**
TJointly funded by **Siemens EDA** and **SPIE**.

**Presentation of New SPIE Fellows**

**HBM technology evolution for memory-centric computing in the AI era** *(Plenary Presentation)*
**Unoh Kwon,** SK hynix (Republic of Korea)

**Innovating at scale: Toward diversified manufacturing for purpose-built chips** *(Plenary Presentation)*
**Hui Peng Koh,** GlobalFoundaries (USA)

| TIME | 13979 | 13980 | 13981 | | 13982 | 13983 | 13984 |
|---|---|---|---|---|---|---|---|
| MORNING | 9:50 AM - 10:20 AM<br>**Coffee Break** | | 9:40 AM - 10:10 AM<br>**Coffee Break** | | 9:40 AM - 10:00 AM<br>**Coffee Break** | 9:50 AM - 10:20 AM<br>**Coffee Break** | |
| | 10:20 AM - 10:20 AM<br>Grand Ballroom 220A<br>**Conference Introduction** | | 10:10 AM - 12:10 PM<br>Convention Center, Room 210A<br>**Opening Remarks, Best Paper Awards, and Keynotes** | | 10:10 AM - 12:00 PM<br>Convention Center, Room 211B<br>**SESSION 1:**<br>**Scanning Probe/Tip-based Lithography** | 10:20 AM - 10:40 AM<br>Convention Center, Room 210C<br>**Welcome and Awards** | |
| | 10:40 AM - 12:00 PM<br>**SESSION 1:**<br>**Imaging I** | | | | | 10:40 AM - 11:40 AM<br>Convention Center, Room 210C<br>**Keynote Session** | |
| | | | | | | 11:40 AM - 12:20 PM<br>Convention Center, Room 210C<br>**SESSION 1:**<br>**Design for or Simulation of New Processes and Applications** | |
| AFTERNOON | 12:00 PM - 1:30 PM<br>**Lunch Break** | | 12:10 PM - 1:30 PM<br>**Lunch Break** | | 12:00 PM - 2:00 PM<br>**Lunch Break** | 12:20 PM - 1:50 PM<br>**Lunch Break** | |
| | 1:30 PM - 2:50 PM<br>Grand Ballroom 220A<br>**Keynote Session** | | 1:30 PM - 3:00 PM<br>Convention Center, Room 210A<br>**SESSION 1:**<br>**Hybrid and Virtual Metrology** | | 2:00 PM - 3:00 PM<br>Convention Center, Room 211B<br>**SESSION 2:**<br>**Novel Patterning** | 1:50 PM - 3:30 PM<br>Convention Center, Room 210C<br>**SESSION 2:**<br>**Novel Development Techniques** | |
| | 2:50 PM - 3:50 PM<br>**SESSION 2:**<br>**Packaging** | | | | | | |
| | 3:50 PM - 4:10 PM<br>**Coffee Break** | | 3:00 PM - 3:30 PM<br>**Coffee Break** | | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:30 PM - 4:00 PM<br>**Coffee Break** | |
| | 4:10 PM - 4:50 PM<br>Grand Ballroom 220A<br>**SESSION 3:**<br>**Materials and Patterning** | | 3:30 PM - 5:00 PM<br>Convention Center, Room 210A<br>**SESSION 2:**<br>**Metrology and Inspection for Advanced Logic Devices** | | 3:30 PM - 4:50 PM<br>Convention Center, Room 211B<br>**SESSION 3:**<br>**Keynote Session** | 4:00 PM - 5:20 PM<br>Convention Center, Room 210C<br>**SESSION 3:**<br>**New Processing Techniques and Applications** | |

See full details and updates at **spie.org/alp** or on the **SPIE App**

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| EVENING<br>5:15 - 7:00 PM | **ALL-SYMPOSIUM PANEL** • Convention Center, Grand Ballroom 220A |
| 7:00 - 8:00 PM | **Welcome Reception** • Convention Center, Lower Level Foyer |

**Event Schedule continued on next page**

# EVENT SCHEDULE

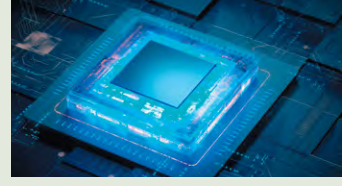
Event Schedule continued on next page

| TIME | CONFERENCE 13979<br>Optical and EUV Nanolithography XXXIX<br>Chair: Claire van Lare<br>Co-chair: Iacopo Mochi<br>23 - 26 February 2026<br>**Grand Ballroom 220A** | CONFERENCE 13980<br>DTCO and Computational Patterning V<br>Chair: Harsha Grunes<br>Co-chair: Kevin Lucas<br>24 - 26 February 2026<br>**Grand Ballroom 220B** | CONFERENCE 13981<br>Metrology, Inspection, and Process Control XL<br>Chair: Nivea G. Schuch<br>Co-chair: Hugo Cramer<br>23 - 26 February 2026<br>**Convention Center, Room 210A** | CONFERENCE 13982<br>Novel Patterning Technologies 2026<br>Chair: Ricardo Ruiz<br>Co-chair: Richard A. Farrell<br>23 - 26 February 2026<br>**Convention Center, Room 211B** | CONFERENCE 13983<br>Advances in Patterning Materials and Processes XLIII<br>Chair: Ryan Callahan<br>Co-chair: Anuja De Silva<br>23 - 26 February 2026<br>**Convention Center, Room 210C** | CONFERENCE 13984<br>Advanced Etch Technology and Process Integration for Nanopatterning XV<br>Chair: Efrain Altamirano-Sánchez<br>Co-chair: John Hoang<br>24 - 26 February 2026<br>**Grand Ballroom 220C** |
|---|---|---|---|---|---|---|
| MORNING | **TUESDAY 24 FEBRUARY** | | | | | |
| | 8:00 AM - 10:00 AM<br>Grand Ballroom 220A<br>**SESSION 4:**<br>**Imaging II** | 8:40 AM - 9:20 AM<br>Grand Ballroom 220B<br>**WELCOME**<br>**Honoring Ya-Chieh Lai and Andrew R. Neureuther**<br><br>9:20 AM - 10:00 AM<br>Grand Ballroom 220B<br>**Keynote Session I** | 8:00 AM - 10:10 AM<br>Convention Center, Room 210A<br>**SESSION 3:**<br>**Modeling and Data Analysis** | 8:00 AM - 10:00 AM<br>Convention Center, Room 211B<br>**SESSION 4:**<br>**Directed Self-Assembly I** | 8:00 AM - 10:00 AM<br>Convention Center, Room 210C<br>**SESSION 4:**<br>**Photoresists for EUV and 193nm (immersion) Lithography I** | 8:00 AM - 10:10 AM<br>Grand Ballroom 220C<br>**SESSION 1:**<br>**Advanced Materials and Etch Patterning Integration I** |
| | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:10 AM - 10:30 AM<br>**Coffee Break** | 10:10 AM - 10:30 AM<br>**Coffee Break** | 8:00 AM - 8:30 AM<br>**Coffee Break** | 10:10 AM - 10:40 AM<br>**Coffee Break** |
| | 10:30 AM - 12:10 PM<br>Grand Ballroom 220A<br>**SESSION 5:**<br>**Source and Sustainability** | 10:30 AM - 11:50 AM<br>Grand Ballroom 220B<br>**Keynote Session II** | 10:30 AM - 12:10 PM<br>Convention Center, Room 210A<br>**SESSION 4:**<br>**Heterogeneous Integration and Advanced Packaging** | 10:30 AM - 12:10 PM<br>Convention Center, Room 211B<br>**SESSION 5:**<br>**Electron Multibeam Mask Writer** | 10:30 AM - 12:10 PM<br>Convention Center, Room 210C<br>**SESSION 5:**<br>**Photoresists for EUV and 193nm (immersion) Lithography II** | 10:40 AM - 12:10 PM<br>Grand Ballroom 220C<br>**SESSION 2:**<br>**Advanced Materials and Etch Patterning Integration II** |
| AFTERNOON | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 11:50 AM - 1:00 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:30 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** |
| | 1:40 PM - 3:00 PM<br>Grand Ballroom 220A<br>**SESSION 6:**<br>**Future of EUV** | 1:00 PM - 3:00 PM<br>Grand Ballroom 220B<br>**SESSION 1:**<br>**Design for Manufacturability and Design for Yield I** | 1:30 PM - 3:10 PM<br>Convention Center, Room 210A<br>**SESSION 5:**<br>**Artificial Intelligence and Machine Learning** | 1:40 PM - 3:10 PM<br>Convention Center, Room 211B<br>**SESSION 6:**<br>**Nanoimprint Lithography I** | 1:40 PM - 3:00 PM<br>Convention Center, Room 210C<br>**SESSION 6:**<br>**Multi-layer Patterning Materials** | 1:40 PM - 3:10 PM<br>Grand Ballroom 220C<br>**SESSION 3:**<br>**Heterogeneous/3D Integration** |
| | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:10 PM - 3:40 PM<br>**Coffee Break** | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:10 PM - 3:40 PM<br>**Coffee Break** |
| | 3:30 PM - 5:30 PM<br>Grand Ballroom 220A<br>**SESSION 7:**<br>**Special Session: Future of EUV**<br><br>5:30 PM - 6:10 PM<br>Grand Ballroom 220A<br>**SPECIAL SESSION:**<br>**Future of EUV Q&A** | 3:30 PM - 5:10 PM<br>Grand Ballroom 220B<br>**SESSION 2:**<br>**High-NA and Computational Patterning** | 3:40 PM - 5:40 PM<br>Convention Center, Room 210A<br>**SESSION 6:**<br>**Novel Methods** | 3:30 PM - 5:40 PM<br>Convention Center, Room 211B<br>**SESSION 7:**<br>**Directed Self-Assembly II** | 3:30 PM - 6:30 PM<br>Convention Center, Room 210C<br>**SESSION 7:**<br>**Photoresists for EUV and 193nm (immersion) Lithography III** | 3:40 PM - 5:50 PM<br>Grand Ballroom 220C<br>**SESSION 4:**<br>**Computational Patterning and Process Control** |

## Application tracks

Application tracks enable attendees to group and explore presentations in the conference programs to more easily plan their event schedule around the topic of interest. Application track filters span across all conferences at an SPIE event. The ability to group presentations has the reciprocal benefit of helping authors' presentations be more easily found.

See website for a full listing of presentations in each of these tracks: **spie.org/alp**

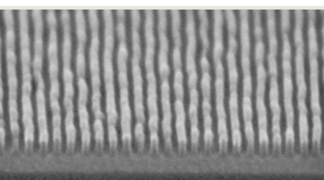


### AI/ML

Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications.

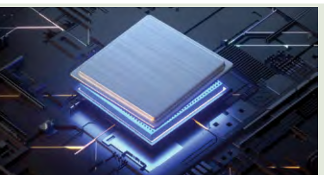
### Sustainability

Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals.



### Stochastics

Papers related to Line Edge Roughness (LER), Line Width Roughness (LWR), photon and secondary electron stochastics, and chemical and process nonuniformity.



### Advanced Packaging

The interconnection of multiple integrated devices including electronic, photonic, and/or MEMS, to be packaged as a single component. Advanced packaging achieves performance gains through the integration of several devices in one package, driving heterogenous integration and chiplet architectures.

### EPE/Overlay

Papers related to overlay, CD, and Edge Placement Error (EPE); characterization and metrology, root cause analysis, and process improvements.

# EVENT SCHEDULE

| TIME | CONFERENCE 13979<br>**Optical and EUV Nanolithography XXXIX**<br>Chair: Claire van Lare<br>Co-chair: Iacopo Mochi<br>23 - 26 February 2026<br>**Grand Ballroom 220A** | CONFERENCE 13980<br>**DTCO and Computational Patterning V**<br>Chair: Harsha Grunes<br>Co-chair: Kevin Lucas<br>24 - 26 February 2026<br>**Grand Ballroom 220B** | CONFERENCE 13981<br>**Metrology, Inspection, and Process Control XL**<br>Chair: Nivea G. Schuch<br>Co-chair: Hugo Cramer<br>23 - 26 February 2026<br>**Convention Center, Room 210A** | CONFERENCE 13982<br>**Novel Patterning Technologies 2026**<br>Chair: Ricardo Ruiz<br>Co-chair: Richard A. Farrell<br>23 - 26 February 2026<br>**Convention Center, Room 211B** | CONFERENCE 13983<br>**Advances in Patterning Materials and Processes XLIII**<br>Chair: Ryan Callahan<br>Co-chair: Anuja De Silva<br>23 - 26 February 2026<br>**Convention Center, Room 210C** | CONFERENCE 13984<br>**Advanced Etch Technology and Process Integration for Nanopatterning XV**<br>Chair: Efrain Altamirano-Sánchez<br>Co-chair: John Hoang<br>24 - 26 February 2026<br>**Grand Ballroom 220C** |
|---|---|---|---|---|---|---|
| MORNING | **WEDNESDAY 25 FEBRUARY** | | | | | |
| | 8:00 AM - 10:00 AM<br>Grand Ballroom 220A<br>**SESSION 8:**<br>**Joint Session with 13979 and 13980** | 8:00 AM - 10:00 AM<br>NOTE ROOM CHANGE<br>Grand Ballroom 220A<br>**SESSION 3:**<br>**Joint Session with 13979 and 13980** | 8:00 AM - 10:10 AM<br>Convention Center, Room 210A<br>**SESSION 7:**<br>**X-Ray Metrology and Inspection** | 8:10 AM - 10:00 AM<br>Convention Center, Room 211B<br>**SESSION 8:**<br>**Heterogeneous Integration and Advanced Packaging I** | 8:00 AM - 10:00 AM<br>Convention Center, Room 210C<br>**SESSION 8:**<br>**Resist Fundamentals and Assessment of Patterning and Materials Scaling Limits I** | 8:20 AM - 10:10 AM<br>Grand Ballroom 220C<br>**SESSION 5:**<br>**Novel Patterning processes: Directional Patterning, ALE/ALD, Isotropic and Beyond I** |
| | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:10 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:20 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:10 AM - 10:40 AM<br>**Coffee Break** |
| | 10:30 AM - 12:10 PM<br>Grand Ballroom 220A<br>**SESSION 9:**<br>**Equipment** | 10:30 AM - 12:10 PM<br>NOTE ROOM CHANGE<br>Grand Ballroom 220B<br>**SESSION 4:**<br>**DTCO and SCTO I** | 10:30 AM - 12:10 PM<br>Convention Center, Room 210A<br>**SESSION 8:**<br>**3D Profile and High Aspect Ratio Metrology** | 10:20 AM - 11:50 AM<br>Convention Center, Room 211B<br>**SESSION 9:**<br>**Augmented Reality and Optical Metamaterials**<br><br>11:50 AM - 12:10 PM<br>Convention Center, Room 211B<br>**SESSION 10:**<br>**Student Speed Talks** | 10:30 AM - 12:10 PM<br>Convention Center, Room 210C<br>**SESSION 9:**<br>**PFAS/PFOS Alternative Materials, Roadmap for Dealing With Regulatory Legislation I** | 10:40 AM - 12:10 PM<br>Grand Ballroom 220C<br>**SESSION 6:**<br>**Novel Patterning processes: Directional Patterning, ALE/ALD, Isotropic and Beyond II** |
| AFTERNOON | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:30 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** | 12:10 PM - 1:40 PM<br>**Lunch/Exhibition Break** |
| | 1:40 PM - 2:00 PM<br>Grand Ballroom 220A<br>**STUDENT SESSION:**<br>**Introduction**<br><br>2:00 PM - 3:00 PM<br>Grand Ballroom 220A<br>**SESSION 10:**<br>**Student Session** | 1:40 PM - 3:00 PM<br>Grand Ballroom 220B<br>**SESSION 5:**<br>**Computational Patterning I** | 1:40 PM - 2:40 PM<br>Convention Center, Room 210A<br>**SESSION 9:**<br>**Overlay** | 1:30 PM - 3:00 PM<br>Convention Center, Room 211B<br>**SESSION 11:**<br>**Nanoimprint Lithography II** | 1:40 PM - 3:00 PM<br>Convention Center, Room 210C<br>**SESSION 10:**<br>**Resist Fundamentals and Assessment of Patterning and Materials Scaling Limits II** | 1:40 PM - 3:00 PM<br>Grand Ballroom 220C<br>**SESSION 7:**<br>**Novel Patterning processes: Directional Patterning, ALE/ALD, Isotropic and Beyond III** |
| | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** | 3:00 PM - 4:00 PM<br>**Exhibit Social Hour and 50th Celebration** |
| | 4:00 PM - 5:20 PM<br>Grand Ballroom 220A<br>**SESSION 12:**<br>**Stochastics** | 4:00 PM - 5:20 PM<br>Grand Ballroom 220B<br>**SESSION 6:**<br>**Integration** | 4:00 PM - 5:40 PM<br>Convention Center, Room 210A<br>**SESSION 10:**<br>**Metrology and Inspection for Advanced Memory Devices** | 3:50 PM - 5:30 PM<br>Convention Center, Room 211B<br>**SESSION 12:**<br>**Heterogeneous Integration and Advanced Packaging II** | 4:00 PM - 4:40 PM<br>Convention Center, Room 210C<br>**SESSION 11:**<br>**PFAS/PFOS Alternative Materials, Roadmap for Dealing With Regulatory Legislation II**<br><br>4:40 PM - 5:20 PM<br>Convention Center, Room 210C<br>**SESSION 12:**<br>**Single and Multiple Patterning** | |
| EVENING<br>5:30 PM - 7:00 PM | **POSTER SESSION** \| Convention Center, Hall 2 | | | | | |

**Event Schedule continued on next page**

# EVENT SCHEDULE

| TIME | **CONFERENCE 13979**<br>**Optical and EUV Nanolithography XXXIX**<br>Chair: Claire van Lare<br>Co-chair: Iacopo Mochi<br>23 - 26 February 2026<br>**Grand Ballroom 220A** | **CONFERENCE 13980**<br>**DTCO and Computational Patterning V**<br>Chair: Harsha Grunes<br>Co-chair: Kevin Lucas<br>24 - 26 February 2026<br>**Grand Ballroom 220B** | **CONFERENCE 13981**<br>**Metrology, Inspection, and Process Control XL**<br>Chair: Nivea G. Schuch<br>Co-chair: Hugo Cramer<br>23 - 26 February 2026<br>**Convention Center, Room 210A** | **CONFERENCE 13982**<br>**Novel Patterning Technologies 2026**<br>Chair: Ricardo Ruiz<br>Co-chair: Richard A. Farrell<br>23 - 26 February 2026<br>**Convention Center, Room 211B** | **CONFERENCE 13983**<br>**Advances in Patterning Materials and Processes XLIII**<br>Chair: Ryan Callahan<br>Co-chair: Anuja De Silva<br>23 - 26 February 2026<br>**Convention Center, Room 210C** | **CONFERENCE 13984**<br>**Advanced Etch Technology and Process Integration for Nanopatterning XV**<br>Chair: Efrain Altamirano-Sánchez<br>Co-chair: John Hoang<br>24 - 26 February 2026<br>**Grand Ballroom 220C** |
|---|---|---|---|---|---|---|
| MORNING | **THURSDAY 26 FEBRUARY** | | | | | |
| | 8:00 AM - 10:00 AM<br>Grand Ballroom 220A<br>**SESSION 13:**<br>**Mask and Pellicles** | 8:00 AM - 10:00 AM<br>Grand Ballroom 220B<br>**SESSION 7:**<br>**Computational Patterning II** | 8:00 AM - 10:00 AM<br>Convention Center, Room 210A<br>**SESSION 11:**<br>**Electron Beam Metrology** | 8:20 AM - 10:00 AM<br>Convention Center, Room 211B<br>**SESSION 13:**<br>**Two-Photon, Multicolor and Direct Write Lithography** | 8:00 AM - 9:20 AM<br>Convention Center, Room 210C<br>**SESSION 13:**<br>**Variability, Stochastics, and Defectivity** | 8:00 AM - 9:40 AM<br>Grand Ballroom 220C<br>**SESSION 8:**<br>**Sustainable Patterning** |
| | | | | 10:00 AM - 10:10 AM<br>**Poster Award Ceremony** | 9:20 AM - 10:00 AM<br>Convention Center, Room 210C<br>**SESSION 14:**<br>**Materials and Processes Used in Vertical Integration of Devices, Stacked Structures, etc.** | |
| | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 10:10 AM - 10:30 AM<br>**Coffee Break** | 10:00 AM - 10:30 AM<br>**Coffee Break** | 9:40 AM - 10:10 AM<br>**Coffee Break** |
| | 10:30 AM - 11:50 AM<br>Grand Ballroom 220A<br>**SESSION 14:**<br>**High-NA I** | 10:30 AM - 11:50 AM<br>Grand Ballroom 220B<br>**SESSION 8:**<br>**Curvilinear Data for Computational Patterning** | 10:30 AM - 12:00 PM<br>Convention Center, Room 210A<br>**SESSION 12:**<br>**Optical Metrology** | 10:30 AM - 12:00 PM<br>Convention Center, Room 211B<br>**SESSION 14:**<br>**Electron, Ion and Atom Beam Lithography** | 10:30 AM - 11:50 AM<br>Convention Center, Room 210C<br>**SESSION 15:**<br>**New Processing Techniques and Applications** | 10:10 AM - 12:00 PM<br>Grand Ballroom 220C<br>**SESSION 9:**<br>**EUV Patterning and Etch** |
| AFTERNOON | 11:50 AM - 1:20 PM<br>**Lunch Break** | 11:50 AM - 1:20 PM<br>**Lunch Break** | 12:00 PM - 1:30 PM<br>**Lunch Break** | | | |
| | 1:20 PM - 2:40 PM<br>Grand Ballroom 220A<br>**SESSION 15:**<br>**High-NA II** | 1:20 PM - 3:00 PM<br>Grand Ballroom 220B<br>**SESSION 9:**<br>**DTCO and SCTO II** | 1:30 PM - 3:10 PM<br>Convention Center, Room 210A<br>**SESSION 13:**<br>**Inspection** | | | |
| | | 3:00 PM - 3:30 PM<br>**Coffee Break** | 3:10 PM - 3:40 PM<br>**Coffee Break** | | | |
| | | 3:30 PM - 5:10 PM<br>Grand Ballroom 220B<br>**SESSION 10:**<br>**Deep Learning, Machine Learning and AI** | 3:40 PM - 5:30 PM<br>Convention Center, Room 210A<br>**SESSION 14:**<br>**Metrology and Inspection for EUV and High-NA EUV** | | | |

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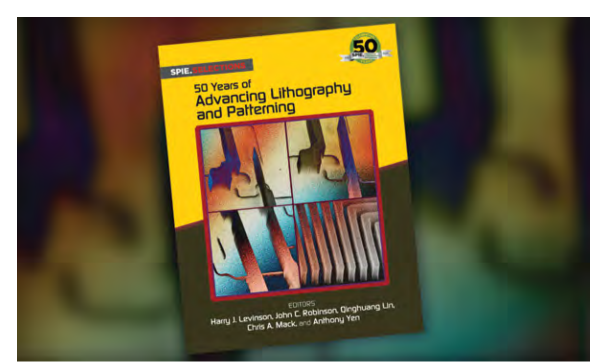



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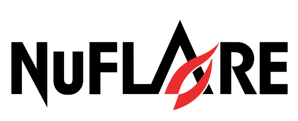

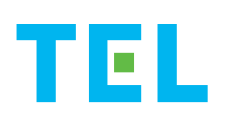


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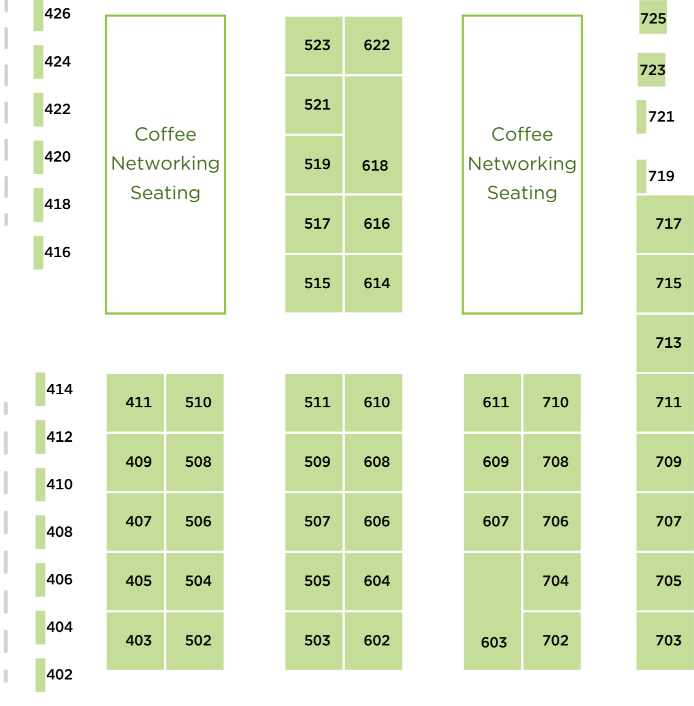


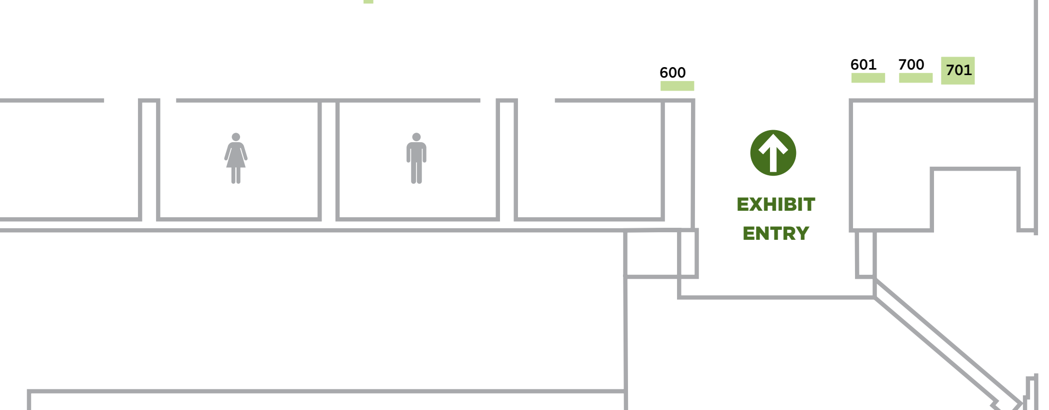


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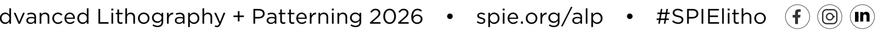

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# SPIE EVENT POLICIES

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### Affiliate events/meetings

For SPIE events, all meeting and event spaces, as well as sponsorship opportunities within the convention center and contracted nearby hotels, are are approved at the discretion of SPIE with preference given to exhibiting companies.

### Agreement to hold harmless

Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

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It is SPIE policy that all employees, volunteers, and participants are entitled to respectful treatment. Any form of bullying, discrimination, harassment, sexual or otherwise, is unacceptable and will not be tolerated. This policy applies to all locations and situations where SPIE business is conducted and to all SPIE-sponsored activities and events.

*Read complete policy:*
*https://spie.org/about-spie/the-society/policies-and-reporting*

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### Badge scanning

Exhibitors or co-sponsors may request to scan your registration badge to collect your contact information. When you allow your badge to be scanned, you are agreeing to receive communications from them. You will be subject to those entities' communications and privacy policies and must opt-out with them directly if you no longer wish to receive information from them. SPIE is not responsible for their use of your contact information obtained when you volunteer your badge to be scanned.

### Capture and use of a person's image

SPIE reserves the right to take photographs and capture video at our events. By attending an SPIE event, you grant full permission to SPIE to capture, store, use, and/or reproduce your image or likeness and create derivative works of these images and recordings in any SPIE media now known or later developed for any legitimate SPIE purpose, including but not limited to promotional use. You hereby release, hold harmless, and forever discharge SPIE and their officers, directors, employees, and representatives from all damages, claims, demands, causes of action and liability related to said use.

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SPIE is committed to providing a harassment- and discrimination-free experience for everyone at our events, an experience that embraces the richness of diversity where participants may exchange ideas, learn, network, and socialize in the company of colleagues in an environment of mutual respect.

*Read complete code:*
*https://spie.org/about-spie/the-society/policies-and-reporting*

### Event and course cancellation by SPIE

If for some unforeseen reason, SPIE should have to cancel a course or an entire event, processed registration fees for the canceled activity will be refunded to registrants. Registrants will be responsible for the cancellation of travel arrangements or housing reservations and the applicable fees.

### Event policies for children 17 years of age or younger

**Conferences and Exhibition Hall:** Registered attendees may bring a child 17 years of age or younger for free. All events require a badge to enter, which can be obtained onsite at the SPIE registration desk. Children 17 years of age or younger must be accompanied to the event by an adult. Guardians are asked to help maintain a professional, disturbance-free environment for event attendees. Children under 18 are not allowed in the exhibition area during exhibition move-in and move-out.

Presenters aged 17 or younger who are presenting an accepted paper at an SPIE conference: A Parental/Guardian Consent Form giving permission for the child to attend and participate in the conference must be submitted by the Parent or Guardian within one month of the acceptance notification (form link located on the Abstract Submission Guidelines page of the event). The child must register for the event, pay the student registration fee, and be accompanied to the event by a faculty advisor, parent, or guardian. Faculty advisors must also register for the full meeting. Parents/guardians may inquire about a chaperone badge onsite at the registration desk.

### Identification requirement

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued photo identification at registration to collect registration materials. Individuals are not allowed to pick up badges for other attendees. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

For online events, SPIE requires individuals to register with their legal identity.

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SPIE events are subject to the applicable laser safety rules and regulations of the host location. SPIE supplies industry-standard Class 2 presentation laser pointers for all conference and other meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers. The use of a personal laser pointer represents the user's acceptance of liability for any damage or injuries to the presenter or others.

### Lena Image Usage

The use of the Lena image is prohibited in all SPIE events, including but not limited to presentations, workshops, exhibitor displays, and promotional materials. Any event materials containing the Lena image must be revised to comply with this policy before presentation or distribution.

### No smoking policy

Attendees will observe all non-smoking regulations that are publicly posted by the facilities used by the event.

### Online commenting policy

SPIE moderates all comments posted in an online event. We encourage robust discussion, the exchange of scientific ideas, and the sharing of multiple, diverse perspectives. We expect the discussion to be consistent with the norms of scholarly research community interactions at events. Online event participants should report any comments or content that falls short of those community norms. We will remove comments, content, or people that are considered inappropriate by SPIE standards or that:

- are defamatory, libelous, obscene, indecent, abusive, or threatening to others
- infringe the copyright, trademark, or other rights of a third party
- upload viruses or are a cybersecurity hazard
- are off-topic or inappropriately commercial in nature
- are in violation of any applicable laws or regulations

### Payment policy

Registrations must be fully paid before access to the conference is allowed. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks, and wire transfers. Onsite registrations can also be paid with cash.

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Conferences and poster sessions: audio and video recordings are prohibited without prior written consent of SPIE and the presenter. Consent forms are available at Speaker Check-in, SPIE Registration, or the Chair Services Desk. Individuals not complying with this policy will be asked to surrender their recording media and leave the conference room. Refusal to comply with such requests is grounds for expulsion from the event. Please see the SPIE code of conduct.

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**Exhibition:** attendees may not record interviews on the exhibition floor nor record or photograph exhibitor booth displays and/or products without explicit permission from SPIE and on-site company representatives. Consent forms are available at Exhibitor Assistance. Individuals not complying with this policy will be asked to surrender their recording media and leave the exhibition hall. Refusal to comply with such requests is grounds for expulsion from the event.

### SPIE Conferences app connect feature

The connect feature in the SPIE Conferences app is a personal networking tool that allows individuals to share their contact information with other attendees via their phones while using the SPIE app. This tool should not be used for systematic scanning of badges for managing sales leads. Inappropriate use is a violation of event policy.

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The lead retrieval feature in the SPIE Conferences app is a lead generation tool that allows attendees to share their contact information with SPIE exhibitors. Exhibitor representatives using the lead retrieval app may scan attendee badges in the exhibition or supporting company events after receiving permission from an attendee. It should not be used in the technical conference area. The lead retrieval feature will be disabled for exhibitor representatives who exceed reasonable use or are in violation of other SPIE event policies. Attendees should report inappropriate use by notifying staff or contacting support via the help link in the app.

### SPIE Conferences app messaging policy

The SPIE Conferences app supports attendee-to-attendee messaging to facilitate professional networking among meeting participants. This feature should not be used to push high-volume solicitations, and messaging will be disabled for attendees who exceed reasonable use or are in violation of other SPIE event policies. Attendees should report inappropriate use via the app reporting feature. SPIE will also monitor for high-volume patterns suggesting improper use.

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Unauthorized solicitation in the exhibition hall is prohibited. Any non-exhibiting organization observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

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Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

### Wireless internet service

At most events, SPIE provides wireless access for attendees. Properly secure your computer before accessing the public wireless network. SPIE is not responsible for computer viruses or other kinds of computer damage.

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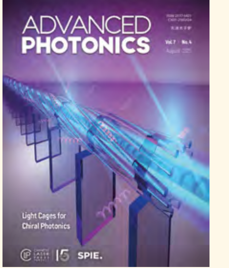

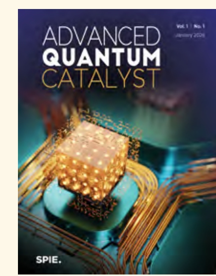

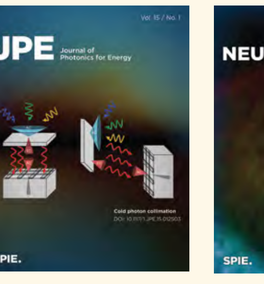

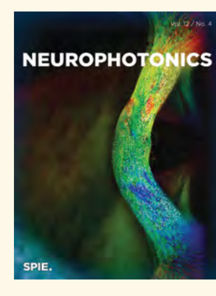

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**spie.org/awards**

# SPIE. AWARDS 2026

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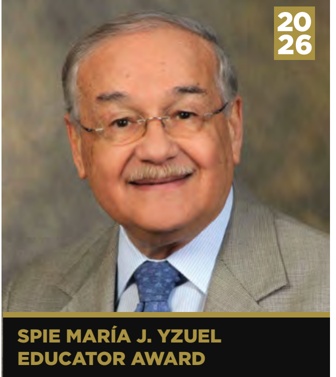

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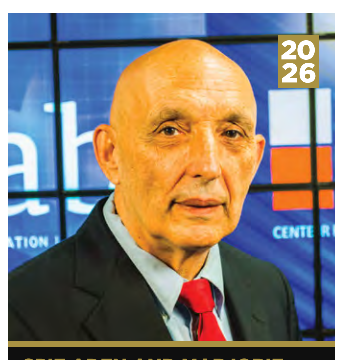

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### SPIE AWARDS COMMITTEE

A special thanks to our committee members who devoted many hours in selecting this year's winners.

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## CONFERENCE 13979

# Optical and EUV Nanolithography XXXIX

CONFERENCE CO-SPONSOR

**23 - 26 February 2026 | Convention Center, Grand Ballroom 220A**


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## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM

**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)

*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

## Coffee Break 9:50 AM - 10:30 AM

## CONFERENCE INTRODUCTION

23 February 2026 • 10:30 AM - 10:40 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Claire Van Lare**, ASML Netherlands B.V. (Netherlands)

Opening remarks for the conference.

## SESSION 1: IMAGING I

23 February 2026 • 10:40 AM - 12:00 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Bruce W. Smith**, Rochester Institute of Technology (United States); **Martin Burkhardt**, IBM Thomas J. Watson Research Ctr. (United States)

13979-1 • 10:40 AM - 11:00 AM

**Benefits of Mask3D effects in high-NA and hyper-NA EUV lithography**

*Author(s):* **Andreas Erdmann**, **Varun Jadhav,** Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Gerardo Bottiglieri,** ASML Netherlands B.V. (Netherlands); **Christian Schwemmer**, **Peter Evanschitzky,** Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Parul Dhagat, Mark van de Kerkhof,** ASML Netherlands B.V. (Netherlands)

13979-2 • 11:00 AM - 11:20 AM

**The polarization of EUVL**

*Author(s):* **Bruce W. Smith,** Rochester Institute of Technology (United States)

13979-3 • 11:20 AM - 11:40 AM

**Contrast improvement and dose reduction for High-NA EUV DRAM patterning with pupil-mask-wavefront optimization**

*Author(s):* **Hyung Jong Bae**, **Yeongchan Cho**, **Kangjae Lee**, **Yeeun Han**, **Moosong Lee**, **Woojin Jung**, **Seongbo Shim,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Yunbo Liu**, **Lang Zhang**, **Gerui Liu**, **Paul Derks**, **Stephen Hsu,** ASML US, LP (United States); **Eelco van Setten**, **Toine van den Boogaard**, **Aysegul Cumurcu Gysen, JungTae Lee,** ASML Netherlands B.V. (Netherlands)

13979-4 • 11:40 AM - 12:00 PM

**Prospect of low-k_1 lithography for EUV using polarization control**

*Author(s):* **Martin Burkhardt,** IBM Thomas J. Watson Research Ctr. (United States); **Rajiv Sejpal, Gopal Kenath,** IBM Research - Albany (United States)

## Lunch Break 12:00 PM - 1:30 PM

## KEYNOTE SESSION

23 February 2026 • 1:30 PM - 2:50 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Claire Van Lare**, ASML Netherlands B.V. (Netherlands); **Iacopo Mochi**, Paul Scherrer Institut (Switzerland)

13979-201 • 1:30 PM - 2:10 PM

**Beyond Moore's Law: The chiplet revolution in semiconductor packaging** (Keynote Presentation)

*Author(s):* **Yasumitsu Orii,** Rapidus, Corp. (Japan)

13979-202 • 2:10 PM - 2:50 PM

**Pushing the limits of X-ray microscopy for 3D semiconductor imaging** (Keynote Presentation)

*Author(s):* **Tomas Aidukas,** PSI Center for Photon Science, Paul Scherrer Institute (Switzerland); **Nicholas Phillips,** Commonwealth Scientific and Industrial Research Organisation (Australia); **Ana Diaz**, **Emiliya Poghosyan**, **Elisabeth Müller,** Paul Scherrer Institut (Switzerland); **Anthony Levi,** The Univ. of Southern California (United States); **Gabriel Aeppli,** Paul Scherrer Institut (Switzerland), ETH Zurich (Switzerland), Institute of Physics, EPFL (Switzerland); **Manuel Guizar-Sicairos,** Paul Scherrer Institut (Switzerland), Institute of Physics, EPFL (Switzerland); **Mirko Holler,** Paul Scherrer Institut (Switzerland)

## SESSION 2: PACKAGING

23 February 2026 • 2:50 PM - 3:50 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Ken-Ichiro Mori**, Canon Inc. (Japan); **Regina Soufli**, Consultant (United States)

13979-5 • 2:50 PM - 3:10 PM

**Lithographic process optimization for next-generation advanced packaging influenced by wafer topography and reticle stitching**

*Author(s):* **Christopher M. Bottoms**, **Sarah Chowdhury**, **Alex R. Hubbard**, **Zheng Chen**, **Shweta Narayan**, **Romain Lallement, Ravi Bonam,** IBM Research - Albany (United States)

13979-6 • 3:10 PM - 3:30 PM

**On-product overlay for advanced packaging**

*Author(s):* **Tom Laidig, Jang Fung Chen,** Applied Materials, Inc. (United States)

13979-7 • 3:30 PM - 3:50 PM

**Lithographic innovations for advanced packaging: Enabling scalable integration across large fields**

*Author(s):* **Alex R. Hubbard**, **Christopher Carr**, **Romain Lallement**, **Sara Metti**, **Sarah Nahar Chowdhury**, **Christopher Bottoms**, **Alejandro Matos Mejia**, **Vinay Pai**, **Bedanga Sapkota**, **Chiao-Wen Yeh,** IBM Thomas J. Watson Research Ctr. (United States); **Anthony Ngai**, **Simon Huisman**, **Alejandro Arrizabalaga**, **Pieter Brandt,** ASML Netherlands B.V. (Netherlands); **Eric Janda,** ASML US, Inc. (United States); **Yiran Zhao,** ASML Netherlands B.V. (Netherlands); **Wisam Kadhim,** ASML US, Inc. (United States); **Zinaida Kostiuchenko**, **Monika Dash**, **Grzegorz Grzela**, **Christian Chandra Darmawan**, **Mark van der Zanden**, **Tonghui Yin, Martin Wassink,** ASML Netherlands B.V. (Netherlands)

## Coffee Break 3:50 PM - 4:10 PM

## SESSION 3: MATERIALS AND PATTERNING

23 February 2026 • 4:10 PM - 4:50 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Andreas Frommhold**, imec (Belgium)

13979-50 • 4:10 PM - 4:30 PM

**Enabling 0.55NA EUV logic patterning with 3-D engineered dry resist films**

*Author(s):* **Shruti Jambaldinni**, **Zhengtao Chen,** Lam Research Belgium BV (Belgium); **Shubhankar Das,** imec (Belgium); **Nizan Kenane,** Lam Research Corp. (United States); **Ali Haider,** Lam Research Belgium BV (Belgium); **Victor Blanco,** imec (Belgium); **Boris Volosskiy,** Lam Research Corp. (United States); **Anuja De Silva,** Lam Research Belgium BV (Belgium); **Rich Wise,** Lam Research Corp. (United States)

13979-51 • 4:30 PM - 4:50 PM

**Overcoming the limits of EUV lithography: 30nm pitch square array contact hole patterning with single exposure technology**

*Author(s):* **Yeongchan Cho**, **Yeongsup Sohn**, **Yeeun Han**, **Hyung Jong Bae**, **Moosong Lee**, **Soon Mok Ha**, **Seongbo Shim, Woojin Jung,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

## ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A

5:15 PM - 5:20 PM:

**Tribute to Andrew R. Neureuther**

Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**

“Making the Impossible Possible: 50 Years of SPIE ALP” is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*

**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*

**Burn Lin**, National Tsing Hua Univ. (Taiwan)

**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)

**Grant Willson**, The Univ. of Texas at Austin (United States)

**Janice Golda**, Intel Corp. (United States)

**Chris Mack**, Fractilia, LLC (United States)

## Tuesday 24 February 2026

### SESSION 4: IMAGING II

24 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Kenji Yamazoe**, TSMC North America (United States)

13979-12 • 8:00 AM - 8:20 AM

**Theoretical limits on pattern corner sharpness in optical lithography**

*Author(s):* **Jason Chou**, **Kenji Yamazoe**, **Christopher Wong**, **Jared Lai,** TSMC Technology Incorporated (United States); **Shuo-Yen Chou,** TSMC (Taiwan)

13979-13 • 8:20 AM - 8:40 AM

**Improvement of lens heating induced non correctable high order through slit overlay errors**

*Author(s):* **Junghwan Kim,** SAMSUNG ELECTRONICS (Korea, Republic of); **Chan Hwang,** SAMSUNG ELECTRONICS, Korea (Korea, Republic of); **Jaeil Lee**, **Jonghyun Hwang,** SAMSUNG ELECTRONICS (Korea, Republic of); **Hyeonjun Ha**, **Youngjin Park**, **Kwangsun Song**, **Juun Park,** SAMSUNG ELECTRONICS, Korea (Korea, Republic of); **Ivo Liebregts**, **Bart Smeets**, **Daan Slotboom**, **Roberto Pagano**, **Francis Fahrni**, **Raaja Ganapathy Subramanian**, **Joris Romme,** ASML Netherlands (Netherlands); **Antonius J. Kaats**, **Chantal Kos - van der Kaa,** ASML Netherlands B.V. (Netherlands); **Tae-Seob Kim**, **Ji-Yoon Hwang, Hyun-Suk Song,** ASML Korea Co. Ltd. (Korea, Republic of)

13979-14 • 8:40 AM - 9:00 AM

**Artifact in image by TCC truncation**

*Author(s):* **Kenji Yamazoe, Kenneth L. Ho,** TSMC North America (United States)

13979-15 • 9:00 AM - 9:20 AM

**STCC formula including polarization and M3D effects in high-NA EUV lithography**

*Author(s):* **Hiroyoshi Tanabe**, **Moe Sugiyama**, **Masayuki Shimoda, Atsushi Takahashi,** Institute of Science Tokyo (Japan)

13979-16 • 9:20 AM - 9:40 AM

**RET synthesis flow for process window enhancement and defect reduction in analog BEOL metal**

*Author(s):* **Benjamin Chung-Peng Ho**, **Howard Huang**, **Paul Gallogly**, **Keeho Kim,** Texas Instruments (United States); **David Daniel,** Texas Instruments Inc. (United States); **Scott Jessen, Bob Murto,** Texas Instruments (United States)

13979-17 • 9:40 AM - 10:00 AM

**Scaling Single Expose EUV Gate LER Through Source-Resist-Mask Co-optimization**

*Author(s):* **Gopal Sankar Kenath,** IBM Research (United States); **Martin Burkhardt,** IBM Thomas J. Watson Research Ctr. (United States); **Rajiv Sejpal**, **Yohan Seepersad**, **Elisa Novelli,** IBM Research - Albany (United States); **Masashi Otaki,** Rapidus, Corp. (United States); **Karen Petrillo**, **Indira Seshadri**, **Eric Miller**, **Stuart Sieg**, **Jed Rankin,** IBM Research - Albany (United States); **Susumu Iida,** Rapidus, Corp. (United States); **Allen H. Gabor,** IBM Thomas J. Watson Research Ctr. (United States); **Luciana Meli,** IBM Research - Albany (United States)

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

### SESSION 5: SOURCE AND SUSTAINABILITY

24 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Will Conley**, Cymer, LLC (United States); **Christopher Neil Anderson**, xLight, Inc. (United States)

13979-18 • 10:30 AM - 10:50 AM

**First 1000 W in-band EUV power demonstration using laser produced plasma technology**

*Author(s):* **Haining Wang**, **Elio G. Champenois**, **Ben Kamerin**, **Kirk Post**, **Jeroen FM Keeris**, **Michael Purvis**, **Jayson Stewart**, **Spencer Rich**, **Klaus Hummler**, **Qiushi Zhu**, **Andrew LaForge**, **Peter Mayer**, **Dustin Urone**, **Yue Ma**, **Bob Rollinger, Alexander A. Schafgans,** ASML (United States)

13979-19 • 10:50 AM - 11:10 AM

**Challenges facing laser produced plasma sources for BEUV nanolithography**

*Author(s):* **Ahmed Hassanein,** Purdue Univ. (United States); **Tatyana Sizyuk,** Argonne National Lab. (United States)

13979-20 • 11:10 AM - 11:30 AM

**Process Optimization of ArFi Lithography Using E95% and Sustainable Operation Enabled by a Gas Recycling System**

*Author(s):* **Takamitsu Komaki,** Gigaphoton Inc (Japan); **Ryouta Kujira**, **Toshinori Kobayashi,** Gigaphoton Inc. (Japan); **Masanori Yashiro**, **hiroyuki nogawa,** Gigaphoton Inc (Japan); **satoshi tanaka,** Gigaphoton Inc. (Japan); **Hiroaki nakarai**, **Toshihiro kobayashi**, **koichi fujii**, **takahito kumazaki,** Gigaphoton Inc (Japan); **kouji kakizaki,** Gigaphoton Inc. (Japan)

13979-21 • 11:30 AM - 11:50 AM

**Emissivity and opacity data of tin plasmas for the investigation of laser-pumped plasma extreme ultra-violet (EUV) sources**

*Author(s):* **Akira Sasaki,** National Institutes for Quantum Science and Technology (Japan)

13979-22 • 11:50 AM - 12:10 PM

**EPE reduction from a new laser bandwidth metric: CBW (convolved bandwidth)**

*Author(s):* **Will Conley**, **Ian Endres**, **Trevor Woodard**, **Abdusame Berish**, **Rajasekhar Rao**, **Slava Rotinski**, **Dhritiman Bhattacharyya,** ASML San Diego (United States); **Guillaume Mernier**, **Edwin de Jong**, **Birgitt Hepp**, **Marieke van Veen**, **Tom van Hemert,** ASML Netherlands B.V. (Netherlands); **John Karpus**, **Megan Harberts,** Intel Corp. (United States); **Jason Lee,** ASML San Diego (United States)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 6: FUTURE OF EUV

24 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Vivek Bakshi**, EUV Litho, Inc. (United States); **Mordechai Rothschild**, MIT Lincoln Lab. (United States)

13979-23 • 1:40 PM - 2:00 PM

**Lithography with nitrogen plasma at sub-3 nm wavelengths: Opportunities and challenges**

*Author(s):* **Mordechai Rothschild**, **Paul Chesler**, **Vladimir Liberman**, **Peter Moulton**, **Nate O'Connor, Tommy Sebastian,** MIT Lincoln Lab. (United States)

13979-24 • 2:00 PM - 2:20 PM

**Hyper-NA EUV mask multilayers: Optimization and evaluation**

*Author(s):* **Bruce W. Smith,** Rochester Institute of Technology (United States)

13979-25 • 2:20 PM - 2:40 PM

**Soft x-ray multilayer mirrors with record reflectance at near-normal incidence in the 3 nm wavelength region**

*Author(s):* **Franck Delmotte**, **Evgueni Meltchakov**, **Sébastien de Rossi**, **Irene Papagiannouli**, **Corentin Nannini,** Lab. Charles Fabry, Institut d'Optique Graduate School, Univ. Paris-Saclay, CNRS (France); **Blandine Capitanio**, **Pascal Mercère,** Synchrotron SOLEIL (France), Univ. Paris-Saclay (France); **Andrey Sokolov,** Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); **Eric M. Gullikson,** The Ctr. for X-Ray Optics, Lawrence Berkeley National Lab. (United States)

13979-26 • 2:40 PM - 3:00 PM

**IBM lithography roadmap: Need for future lithography tools and masks and requirements for resists to avoid stochastic defects**

*Author(s):* **Allen H. Gabor**, **Martin Burkhardt**, **Dario Goldfarb,** IBM Thomas J. Watson Research Ctr. (United States); **Luciana Meli, Jed Rankin,** IBM Research - Albany (United States)

## Coffee Break 3:00 PM - 3:30 PM

## SESSION 7: SPECIAL SESSION: FUTURE OF EUV

24 February 2026 • 3:30 PM - 5:30 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Yasin Ekinci**, Paul Scherrer Institut (Switzerland); **Kurt G. Ronse**, imec (Belgium)

13979-27 • 3:30 PM - 4:00 PM

**Blue-X: Exploring advanced optical projection lithography below 13.5 nm** *(Invited Paper)*

*Author(s):* **Vivek Bakshi,** EUV Litho, Inc. (United States)

13979-28 • 4:00 PM - 4:30 PM

**Hyper-NA: a natural next step to further improve resolution capabilities of optical lithography** *(Invited Paper)*

*Author(s):* **Jos Benschop**, **Jan van Schoot,** ASML Netherlands B.V. (Netherlands); **Thomas Stammler, Heiko Feldmann,** Carl Zeiss SMT GmbH (Germany)

13979-29 • 4:30 PM - 5:00 PM

**High-reflectance short-period multilayers for next-generation lithography and beyond EUV optics** *(Invited Paper)*

*Author(s):* **Marcelo D. Ackermann,** Univ. Twente (Netherlands)

13979-30 • 5:00 PM - 5:30 PM

**On the deployment of free electron lasers for EUV high-volume manufacturing** *(Invited Paper)*

*Author(s):* **Christopher N. Anderson,** xLight, Inc. (United States)

## SPECIAL SESSION: FUTURE OF EUV Q&A

24 February 2026 • 5:30 PM - 6:10 PM | Convention Center, Grand Ballroom 220A

Question and answer period for the Future of EUV special session.

# Wednesday 25 February 2026

## SESSION 8: JOINT SESSION WITH 13979 AND 13980

25 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Fan Jiang**, Siemens EDA (United States); **Lynn T. N. Wang**, GlobalFoundries (United States)

13979-31 • 8:00 AM - 8:20 AM

**Depth of focus enhancement in high-NA curvilinear logic metal designs**

*Author(s):* **Hazem S. Mesilhy**, **Pervaiz Kareem**, **Kenichi Miyaguchi**, **Xuelong Shi**, **Doyun Kim**, **Yasser Sherazi, Ryan Ryoung Han Kim,** imec (Belgium)

13980-11 • 8:20 AM - 8:40 AM

**Development of a pseudo-rigorous wafer data augmentation method to calibrate failure rate model for predicting stochastic defects**

*Author(s):* **Jaeyoung Choi,** SAMSUNG Electronics Co Ltd (Korea, Republic of); **Jungkee Choi**, **Hyung Joon Chu,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Yongfa Fan**, **Xu Xie**, **ChangAn Wang,** ASML (United States); **Chang-Il Choi**, **Hyun-joon Kim,** ASML Korea Co., Ltd. (Korea, Republic of); **Peigen Cao,** ASML US, Inc. (United States)

13979-128 • 8:40 AM - 9:00 AM

**Modeling overlay–induced fading in imaging simulation for robust process control**

*Author(s):* **HyungRok Jang**, **Noyoung Chung,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Sung-Woon Park**, **JuHyun Kim**, **KiSeok Kim**, **James Lee,** ASML Korea Co., Ltd. (Korea, Republic of); **Sam Chen,** ASML Netherlands B.V. (Netherlands); **Xiaowen Hu**, **Honghua Guan**, **Chenxi Lin, Stephen Hsu,** ASML US, Inc. (United States)

13980-109 • 9:00 AM - 9:20 AM

**Rigorous modeling and repair of EUV multilayer defects**

*Author(s):* **Joseph M. Rodriguez**, **Rafaela Brinn**, **Safak Sayan**, **Arvind Sundaramurthy,** Intel Corp. (United States); **Kyoung Min Yoo**, **Andy Dawes**, **Linghui Wu, Guangming Xiao,** Synopsys, Inc. (United States)

13979-33 • 9:20 AM - 9:40 AM

**Computational lithography solutions to enable robust EUV high-NA stitching**

*Author(s):* **Rongkuo Zhao,** ASML (United States)

13980-13 • 9:40 AM - 10:00 AM

**EUV quantum yield of organotin molecular resists: A first principles study**

*Author(s):* **Roberto Longo**, **Shyam Sridhar**, **Peter Ventzek,** Tokyo Electron America, Inc. (United States); **Craig Needham**, **Amy Jystad,** Inpria Corp. (United States); **Kazuki Kasahara,** JSR Micro, Inc. (United States)

### Coffee Break 10:00 AM - 10:30 AM

## SESSION 9: EQUIPMENT

25 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Yoji Watanabe**, Nikon Corp. (Japan); **Jens Timo Neumann**, Carl Zeiss SMT GmbH (Germany)

13979-34 • 10:30 AM - 10:50 AM

**Particle quantification on EUV inner pods using adhesive and light-scattering tool**

*Author(s):* **Chet Steinhagen,** Entegris (United States); **Huaping Wang**, **Russ Raschke, Tyler Monforton,** Entegris, Inc. (United States)

13979-35 • 10:50 AM - 11:10 AM

**0.33 NA EUV systems for high-volume manufacturing**

*Author(s):* **Guido Salmaso**, **Claire van Lare**, **Christophe Smeets**, **Peter Klomp**, **Adam Kielczewski, Ivo de Jong,** ASML Netherlands B.V. (Netherlands)

13979-36 • 11:10 AM - 11:30 AM

**Multi-bias focal (MBF) contrast metrology and applications**

*Author(s):* **Edouard A. M. L. Duriau**, **Jeroen van der Meer**, **Georgios Zikos,** ASML (Netherlands); **Cyrus E. Tabery,** ASML (United States); **Joern-Holger Franke**, **Joost Bekaert,** imec (Belgium); **Jo Finders,** ASML (Netherlands)

13979-37 • 11:30 AM - 11:50 AM

**Large-scale projection nanolithography at sub-50nm half pitch using multiphoton polymerization**

*Author(s):* **Arun Nagpal,** Resona Semiconductor (United States), Caltech (United States); **Md. Ehsanul Karim,** Resona Semiconductor (United States), Bangladesh Univ. of Engineering and Technology (Bangladesh); **Robert Socha,** Resona Semiconductor (United States)

13979-38 • 11:50 AM - 12:10 PM

**EUV exposure for photo-chemical materials and LPP-EUV source research for semiconductor manufacturing I**

*Author(s):* **Hakaru Mizoguchi,** Kyushu Univ. (Japan)

## Lunch Break 12:10 PM - 1:40 PM

## STUDENT SESSION: INTRODUCTION

25 February 2026 • 1:40 PM - 2:00 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Martin Burkhardt**, IBM Thomas J. Watson Research Ctr. (United States); **Patrick P. Naulleau**, EUV Technology (United States)

Introduction to the student session.

## SESSION 10: STUDENT SESSION

25 February 2026 • 2:00 PM - 2:20 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Martin Burkhardt**, IBM Thomas J. Watson Research Ctr. (United States); **Patrick P. Naulleau**, EUV Technology (United States)

13979-39 • 2:00 PM - 2:20 PM

**Printing verification of the improved performance of low-n mask with Sub-Resolution Grating (SRG) in High-NA EUVL**

*Author(s):* **Inhwan Lee,** imec (Belgium), KU Leuven (Belgium); **Joern-Holger Franke**, **Vicky Philipsen**, **Guillaume Libeert**, **Nick Pellens**, **Kurt Ronse,** imec (Belgium); **Stefan De Gendt,** imec (Belgium), KU Leuven (Belgium); **Eric Hendrickx**, **Geert Mannaert, Vincent Truffert,** imec (Belgium)

## SESSION 11: STUDENT SESSION

25 February 2026 • 2:20 PM - 3:00 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Martin Burkhardt**, IBM Thomas J. Watson Research Ctr. (United States); **Patrick P. Naulleau**, EUV Technology (United States)

Student poster speed talks.

## Exhibit Social Hour and 50th Celebration 3:00 PM - 4:00 PM

## SESSION 12: STOCHASTICS

25 February 2026 • 4:00 PM - 5:20 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Luciana Meli**, IBM Research - Albany (United States); **Moshe E. Preil**, Carl Zeiss Semiconductor Manufacturing Technology, Inc. (United States)

13979-40 • 4:00 PM - 4:20 PM

**Experimental study of local placement error and its relation to LCDU in 0.33NA EUV lithography**

*Author(s):* **Wouter M. J. Franssen,** ASML Netherlands B.V. (Netherlands); **Varun D. Kakkar,** ASML Netherlands (Netherlands); **Claire Van Lare**, **Tasja Van Rhee, Frank Horsten,** ASML Netherlands B.V. (Netherlands)

13979-41 • 4:20 PM - 4:40 PM

**Study on the pattern placement error analysis using photo-overlay correction methods**

*Author(s):* **Wongi Park,** Samsung Electronics (Korea, Republic of); **Kwangyong Yu**, **Haecheong Kim**, **Sanghwan Lee**, **Jinseong Gwak**, **Keon Huh**, **Jongsu Kim, Chang-Min Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13979-42 • 4:40 PM - 5:00 PM

**A study of photoresist bake influence on stochastics for DUV immersion lithography**

*Author(s):* **Emilie Eustache,** STMicroelectronics (France), CEA Leti (France); **Bertrand Le Gratiet,** STMicroelectronics S.A. (France); **Nacenta Jorge**, **Jonathan Pradelles,** CEA-LETI (France); **Benoit Pernet,** STMicroelectronics (France); **Raluca Tiron,** CEA-LETI (France)

13979-43 • 5:00 PM - 5:20 PM

**Physics-based digital twins for stochastic lithography**

*Author(s):* **Hiroshi Fukuda,** Hitachi High-Tech Corp. (Japan)

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13979-56 • 5:30 PM - 7:00 PM

**Reduction of LER/LWR through resist optimization and widening of laser spectral width: Process window acquisition**

*Author(s):* **Toshihiro Kobayashi**, **Koichi Fujii**, **Takamitsu Komaki**, **Takahito Kumazaki**, **Kouji Kakizaki,** Gigaphoton Inc. (Japan); **Hsiangya Chiu**, **Risa Yasue**, **Yuichi Mukai, Yuki Suzuki,** Sumitomo Chemical Co., Ltd. (Japan)

13979-57 • 5:30 PM - 7:00 PM

**Tin accumulation in an extreme ultraviolet lithography source during simultaneous deposition and etching**

*Author(s):* **Nathan B. Bartlett**, **David N. Ruzic**, **Andrew C. Herschberg**, **Jameson Crouse**, **Lucia S. Heredero**, **Matias Habib**, **Jack Granat**, **Karl Vu**, **Marisol Velapatino,** Univ. of Illinois (United States); **Niels Braaksma, Sergio Ferraris,** ASML San Diego (United States)

13979-58 • 5:30 PM - 7:00 PM

**Excimer laser gas usage reduction technology for semiconductor manufacturing**

*Author(s):* **Ryouta Kujira**, **Masanori Yashiro**, **Takeru Niinuma**, **Hiroyuki Nogawa**, **Hiroshi Umeda**, **Satoshi Tanaka, Hiroaki Nakarai,** Gigaphoton Inc. (Japan)

13979-59 • 5:30 PM - 7:00 PM

**Reducing power consumption of excimer lasers to cut greenhouse gas emissions in lithography processes**

*Author(s):* **Ogawa Takuya**, **Kouji Kakizaki**, **Tsukasa Hori**, **Makoto Tanaka**, **Youichi Yamanouchi, Youichi Sasaki,** Gigaphoton Inc. (Japan)

13979-60 • 5:30 PM - 7:00 PM

**Enabling spatial frequency doubling for sub-30nm pitch line and space patterning in low-NA EUV lithography**

*Author(s):* **Po-Hsiung Chen, Burn-Jeng Lin,** National Tsing Hua University (Taiwan)

13979-61 • 5:30 PM - 7:00 PM

**Measurement and modelling of Sn-H2 vapor transport in the transition flow regime**

*Author(s):* **Gordon Jameson Crouse**, **Nathan Bartlett,** Univ. of Illinois (United States); **Shiva Rajavelu**, **Sergio Ferraris**, **Niels Braaksma,** ASML San Diego (United States); **Andrew C. Herschberg, David N. Ruzic,** Univ. of Illinois (United States)

13979-62 • 5:30 PM - 7:00 PM

**High-brightness and compact LPP-EUV light source for inspection systems**

*Author(s):* **Chiharu Suzuki**, **Kotaro Miyashita**, **Takashi Suganuma**, **Fumio Iwamoto**, **Shinji Nagai**, **Kenichi Miyao**, **Hideyuki Hayashi**, **Takuya Ishii**, **Yoshifumi Ueno**, **Tamotsu Abe, Hiroaki Nakarai,** Gigaphoton Inc. (Japan)

13979-63 • 5:30 PM - 7:00 PM

**Stannane decomposition behavior under EUV-source-like conditions**

*Author(s):* **Emily Greene**, **Nathan Bartlett**, **Jameson Crouse**, **Eric Mushrush**, **Alex Shapiro,** Univ. of Illinois (United States); **Niels Braaksma,** ASML (United States); **David N. Ruzic,** Univ. of Illinois (United States)

13979-64 • 5:30 PM - 7:00 PM

**Toward next-generation EUV pellicles: evaluating beryllium ultra-thin membranes**

*Author(s):* **Takashi Tanimura**, **Toshikatsu Kashiwaya**, **Shoji Tange**, **Yasuaki Tanaka**, **Hiroki Iida**, **Tokio Kanbe**, **Koei Shimosato**, **Kenta Muneoka**, **Koichi Masuda, Takashi Ryu,** NGK Insulators LTD (Japan)

13979-65 • 5:30 PM - 7:00 PM

**A methodology of emissivity measurement for CNT and porous-structured pellicles based on Kirchhoff's law of radiation**

*Author(s):* **Jiho Kim,** Pohang Accelerator Lab., Pohang Univ. of Science and Technology (Korea, Republic of); **Youngchan Kim**, **Hyundon Kim**, **Hyungjune Lim,** The Univ. of Seoul (Korea, Republic of); **Hyuk Jin Kim**, **Geonhwa Kim**, **Boknam Chae,** Pohang Accelerator Lab., Pohang Univ. of Science and Technology (Korea, Republic of); **Eunjip Choi,** The Univ. of Seoul (Korea, Republic of); **Sangsul Lee,** Pohang Univ. of Science and Technology (Korea, Republic of)

13979-66 • 5:30 PM - 7:00 PM

**Development of a plasma environment analogous to an EUV scanner for the study of EUV mask blistering**

*Author(s):* **Nayeon Kim**, **Min-Seok Kim**, **Seokhyeon Ha**, **Chang Dong Kim**, **Jinho Ahn, Chin-Wook Chung,** Hanyang Univ. (Korea, Republic of)

13979-67 • 5:30 PM - 7:00 PM

**Measurement of EUV light source performance with multilayer mirror adaption using cold electron beam (C-beam)**

*Author(s):* **Iksu Kim**, **Umesh Balaso Apugade**, **Dana Chung, Kyu Chang Park,** Kyung Hee Univ. (Korea, Republic of)

13979-68 • 5:30 PM - 7:00 PM

**Study about EUV multi-layer optimization for the small EUV source system using C-beam**

*Author(s):* **Hokyeom Nam,** Leigh High School (United States); **Dana Chung**, **Iksu Kim, Kyu Chang Park,** Kyung Hee Univ. (Korea, Republic of)

13979-69 • 5:30 PM - 7:00 PM

**Optimized mild-reflectivity EUV mask absorbers for mitigating mask 3D effects**

*Author(s):* **Noyoung Chung**, **Soojung Kim**, **Chaejoon Rheem**, **Hyoung-Rok Jang**, **Hyunjae Cho,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jongwon Yun,** S&S Tech Co., Ltd. (Korea, Republic of); **JinWoo Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13979-70 • 5:30 PM - 7:00 PM

**Inverse design framework for topological quasi phase-only masks in EUV lithography**

*Author(s):* **Po-Hsun Fang**, **Pokai Chang**, **Chaowei Huang, Peichen Yu,** National Yang Ming Chiao Tung Univ (Taiwan)

13979-71 • 5:30 PM - 7:00 PM

**Measurement of Stannane diffusion through molecular hydrogen using two-bulb experiment**

*Author(s):* **Jack Gerrity**, **Jameson Crouse**, **Emily Greene**, **Nathan Bartlett,** University of Illinois Urbana-Champaign (United States); **Shiva Rajavalu,** ASML San Diego (United States); **David N. Ruzic,** University of Illinois Urbana-Champaign (United States)

13979-72 • 5:30 PM - 7:00 PM

**Analyzing the effect of electron range on the net resolution for exposures at wavelengths shorter than EUV**

*Author(s):* **Owen Taylor,** Department of Materials Engineering, California Polytechnic State University, San Luis Obispo (United States); **Kaaviya Kovai Palanivel,** Univ. of Illinois (United States); **Ryan Monty, Gregory Denbeaux,** Univ. at Albany (United States)

13979-73 • 5:30 PM - 7:00 PM

**Design and operation of vacuum plasma torch for contaminant removal**

*Author(s):* **Andrew C. Herschberg**, **Nathan Bartlett**, **Jameson Crouse**, **Emily Greene**, **Jaime Robertson, David N. Ruzic,** Univ. of Illinois (United States)

13979-74 • 5:30 PM - 7:00 PM

**EUV dual pod EIP (EUV inner pod) polymer separation to reduce particle generation**

*Author(s):* **Caleb Elwell,** Entegris (United States); **Huaping Wang**, **Russ Raschke**, **Chet Steinhagen, Tyler Monforton,** Entegris, Inc. (United States)

13979-75 • 5:30 PM - 7:00 PM

**Monotonic machine learning (MML) for curvilinear OPC retargeting in NA0.33 EUV single-patterning 28nm metal pitch curvilinear logic technology**

*Author(s):* **Hongming Zhang,** Siemens EDA (United States); **Renyang Meng,** IMEC (Belgium); **Yuansheng Ma**, **Vincent Yin**, **Jeongmi Lee,** Siemens EDA (United States); **Daekyung Yoo**, **Keetae Kim,** Siemens EDA (Korea, Republic of); **Hawren Fang**, **Xiaoyuan Qi**, **Sagar Saxena**, **Xima Zhang**, **Ching-Hwa Ho,** Siemens EDA (United States); **Ryoung-Han Kim**, **Werner Gillijns**, **Soobin Hwang,** IMEC (Belgium); **Shruti Jambaldinni**, **Anuja De Silva,** Lam Research Corp. (Belgium); **Le Hong,** Siemens EDA (United States)

13979-76 • 5:30 PM - 7:00 PM

**University-scale extreme-ultraviolet lithography source**

*Author(s):* **Jan Uhlig**, **Max Miles**, **Dren Qerimi, David N. Ruzic,** Univ. of Illinois (United States)

13979-77 • 5:30 PM - 7:00 PM

**EUV mask phase retrieval by Fourier ptychography using a standalone zoneplate microscope**

*Author(s):* **Luke T. Long,** EUV Technology (United States); **Markus Benk,** Lawrence Berkeley National Lab. (United States); **Christian Wilson**, **Dave Houser**, **Matt Hettermann, Patrick Naulleau,** EUV Technology (United States)

13979-78 • 5:30 PM - 7:00 PM

**Simulations of FEL-based isomorphic full-field high-NA scanner operating at 12.55nm**

*Author(s):* **Thomas V. Pistor,** Panoramic Technology Inc. (United States)

13979-80 • 5:30 PM - 7:00 PM

**Printing 28nm pitch hexagonal contact arrays with metal oxide resist and high-NA EUV lithography: Process challenges and solutions**

*Author(s):* **Dieter J. M. Van Den Heuvel**, **Sara Paolillo**, **Christophe Beral**, **Philippe Foubert,** imec (Belgium); **Xiang Liu,** Tokyo Electron Ltd. (Japan); **Kathleen Nafus**, **Yannick Feurprier**, **Erik Verduijn,** Tokyo Electron Europe Ltd. (Japan); **Koki Omachi,** Tokyo Electron Ltd. (Japan)

13979-46 • 5:30 PM - 7:00 PM

**Improving lifetime and EUV transmission of CNT based pellicles for EUV lithography**

*Author(s):* **Takumi Furuya,** Lintec of America, Inc. (United States)

13979-119 • 5:30 PM - 7:00 PM

**Exploiting phase-shifting low-n, low-k absorbers for dense contact hole patterning in EUV lithography**

*Author(s):* **Chao-Wei Huang,** National Yang Ming Chiao Tung University (Taiwan); **Pokai Chang, Peichen Yu,** National Yang Ming Chiao Tung Univ. (Taiwan)

13979-120 • 5:30 PM - 7:00 PM

**Mitigate slit position dependent cd variation with source optimization**

*Author(s):* **Po-Kai Chang**, **Chaowei Huang, Peichen Yu,** National Yang Ming Chiao Tung Univ. (Taiwan)

## Thursday 26 February 2026

### SESSION 13: MASK AND PELLICLES

26 February 2026 • 8:20 AM - 10:00 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Bryan S. Kasprowicz**, HOYA Corp. USA (United States); **Ted Liang**, Lasertec U.S.A., Inc. (United States)

13979-44 • 8:20 AM - 8:40 AM

**Progress in development of CNT EUV pellicles for mass production**

*Author(s):* **Yoji Wakayama,** LINTEC Corp. (Japan)

13979-45 • 8:40 AM - 9:00 AM

**Local CD uniformity influence on MURA performance of the MBMW 100 Flex for advanced imager products**

*Author(s):* **Michael Finken**, **André Eilert**, **Nico Noack,** Advanced Mask Technology Ctr. GmbH Co. KG (Germany); **Laurent Alexandre, Ralf Ploss,** Tekscend Photomask Germany GmbH (Germany)

13979-47 • 9:00 AM - 9:20 AM

**Development of cap layer for 1.Xnm node EUV blank**

*Author(s):* **Hibiki Kishida**, **Ayumi Moriya**, **Takuro Ohno**, **Masanori Nakagawa**, **Hirofumi Kozakai**, **Tsutomu Shoki, Takahiro Onoue,** HOYA Corp. (Japan)

13979-48 • 9:20 AM - 9:40 AM

**Modelling the impact of hydrogen plasma on blister formation in reticles**

*Author(s):* **Ruben Betsema**, **Jurjen Emmelkamp**, **Shyama Ramankutty**, **Jetske Stortelder, Leon Arkesteijn,** TNO (Netherlands)

13979-49 • 9:40 AM - 10:00 AM

**Actinic CD measurement with EUV scatterometry**

*Author(s):* **Stuart Sherwin**, **Matt Hettermann**, **Dave Houser, Patrick Naulleau,** EUV Technology (United States)

### BEST STUDENT AWARD PRESENTATION

26 February 2026 • 10:00 AM - 10:10 AM | Convention Center, Grand Ballroom 220A

The ASML-Cymer Leadership for Best Student Paper Award will be presented by Will Conley.

### Coffee Break 10:10 AM - 10:30 AM

### SESSION 14: HIGH-NA I

26 February 2026 • 10:30 AM - 11:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Martin Y. Sohn**, National Institute of Standards and Technology (United States); **Allen H. Gabor**, IBM Thomas J. Watson Research Ctr. (United States)

13979-8 • 10:30 AM - 10:50 AM

**High-NA: Enabling single exposure for metal logic designs**

*Author(s):* **Shubhankar Das**, **Victor Blanco**, **Syamashree Roy,** imec (Belgium); **Arup Saha,** ASML (United States); **Joern-Holger Franke**, **Mahmudul Hasan**, **Mahtab Sangghaleh**, **Viktor Kampitakis**, **Jeroen Van De Kerkhove,** imec (Belgium); **Etienne de de Poortere**, **Martin O'Toole,** ASML Leuven (Belgium); **Pieter Vanelderen**, **Geert Vandenberghe**, **Kurt Ronse**, **Sandip Halder, Philippe Leray,** imec (Belgium)

13979-9 • 10:50 AM - 11:10 AM

**Random 2D metal single patterning capability using 0.55NA EUV lithography**

*Author(s):* **Nicolas Besset**, **Dongbo Xu,** Siemens EDA (Belgium); **Sophie Rissberger,** Siemens EDA (United States); **Fergo Treska**, **Renyang Meng**, **Vicky Philipsen**, **Werner Gillijns,** imec (Belgium); **Shibing Wang,** Siemens EDA (United States)

13979-10 • 11:10 AM - 11:30 AM

**Stitching: High NA results**

*Author(s):* **Natalia V. Davydova,** ASML Netherlands B.V. (Netherlands); **Vincent Wiaux**, **Ataklti Weldeslassie**, **Soobin Hwang**, **Tatiana Kovalevich,** imec (Belgium); **Airat Galiullin**, **Marcel Beckers,** ASML Netherlands B.V. (Netherlands); **Jad Haddad,** imec (Belgium); **Cyrus E. Tabery**, **Adam Lyons,** ASML (United States); **Jeremy Chen,** ASML Leuven (Belgium); **Christoph Hennerkes,** ASML (United States); **Daniel Wilson,** ASML Netherlands B.V. (Netherlands)

13979-11 • 11:30 AM - 11:50 AM

**Towards 10nm DRAM with the single exposure patterning: Optimization of the processes in 0.55NA EUV lithography**

*Author(s):* **Van Tuong Pham**, **Victor Blanco Carballo**, **Jeonghoon Lee**, **Werner Gillijns**, **Annaelle Demaude**, **WonChan Lee,** imec (Belgium); **Yannick Feurprier,** Tokyo Electron Europe Ltd. (Belgium); **Kathleen Nafus,** Tokyo Electron Europe Ltd. (United States); **Omachi Koki**, **Nobuyuki Fukui,** Tokyo Electron Miyagi Ltd. (Japan); **Nayoung Bae,** TEL Technology Ctr., America, LLC (United States); **Jan Doise**, **Peter De Schepper,** Inpria Corp. (Belgium); **Mahtab Sangghaleh**, **Pieter Vanelderen**, **Sandip Halder**, **Kurt Ronse, Philippe Leray,** imec (Belgium)

## Lunch Break 11:50 AM - 1:20 PM

## SESSION 15: HIGH-NA II

26 February 2026 • 1:20 PM - 3:00 PM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **Steven L. Carson**, Intel Corp. (United States); **Bruno La Fontaine**, Lawrence Berkeley National Lab. (United States)

13979-52 • 1:20 PM - 1:40 PM

**Experimental imaging comparison at 0.55 NA of a low-reflectivity low-n mask to a standard Ta-Based EUV mask**

*Author(s):* **Lieve Van Look**, **Guillaume Libeert**, **Nick Pellens**, **Vicky Philipsen,** imec (Belgium); **Hiroshi Hanekawa**, **Taiga Fudetani,** AGC Inc. (Japan); **Itaru Yoshida**, **Ryo Koyano**, **Kenjiro Ichikawa**, **Hitoki Tanaka, Kensuke Hayashi,** Tekscend Photomask Corp. (Japan)

13979-53 • 1:40 PM - 2:00 PM

**Imaging roadmap for high-NA EUV: Paving the way to single-patterning of metal logic for future nodes**

*Author(s):* **Nick Pellens**, **Joern-Holger Franke**, **Inhwan Lee**, **Guillaume Libeert**, **Vicky Philipsen**, **Patrick Wong**, **Mahtab Sangghaleh**, **Eric Hendrickx**, **Kurt Ronse**, **Philippe Leray**, **Pieter Vanelderen**, **Ryoung-Han Kim, Geert Vandenberghe,** imec (Belgium)

13979-54 • 2:00 PM - 2:20 PM

**High-NA EUV for high volume manufacturing**

*Author(s):* **Chris De Ruiter**, **Herman Heijmerikx**, **Stef Hendriks**, **Jara Garcia Santaclara**, **Christian Wagner**, **Gunes Nakiboglu**, **Tim Goossens**, **Joerg Mallmann**, **Roel Boumen, Greet Storms,** ASML (Netherlands)

13979-55 • 2:20 PM - 2:40 PM

**Advancing DRAM patterning: High-NA EUV lithography for 10nm and beyond node technologies**

*Author(s):* **Yeeun Han,** Samsung Electronics (Korea, Republic of); **Yeongchan Cho**, **Kangjae Lee**, **Sudeok Kim**, **Hyungju Ryu**, **Hyung Jong Bae**, **Moosong Lee**, **Woojin Jung, Seongbo Shim,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13979-121 • 2:40 PM - 3:00 PM

**High-NA direct print: Innovations and challenges**

*Author(s):* **Marie E. Krysak**, **James M. Blackwell**, **Kshitij Sharma**, **Lauren Doyle**, **Gurpreet Singh**, **Bharath Bangalore Rajeeva, Florian Gstrein,** Intel Corp. (United States)

# CONFERENCE 13980

# DTCO and Computational Patterning V

**24 - 26 February 2026 | Convention Center, Grand Ballroom 220B**


*Conference Chair(s):* **Harsha Grunes,** Intel Corp. (United States)

*Conference Co-Chair(s):* **Kevin Lucas,** Synopsys, Inc. (United States)

*Program Committee:* **Jason P. Cain,** Advanced Micro Devices, Inc. (United States); **Luigi Capodieci,** Synopsys, Inc. (United States); **Lifu Chang,** MOSIS Integrated Circuit Fabrication Service (United States); **Dan J. Dechene,** IBM Thomas J. Watson Research Ctr. (United States); **David M. Fried,** Lam Research Corp. (United States); **Xinyi Feng,** NXP Semiconductors (United States); **Yuri Granik**, **Srividya Jayaram,** Siemens EDA (United States); **Seongtae Jeong,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Ryoung-Han Kim,** imec (Belgium); **Sachiko Kobayashi,** KIOXIA Corp. (Japan); **Neal V. Lafferty,** Siemens EDA (United States); **Kafai Lai,** The Univ. of Hong Kong (Hong Kong, China); **Lars W. Liebmann,** Intel Corp. (United States); **Lawrence S. Melvin,** Synopsys, Inc. (United States); **Shigeki Nojima,** KIOXIA Corp. (Japan); **David Z. Pan,** The Univ. of Texas at Austin (United States); **Piyush Pathak,** Cadence Design Systems, Inc. (United States); **Vivek K. Singh,** NVIDIA Corp. (United States); **Chun-Ming Wang,** Sun Yat-Sen Univ. (United States); **Lynn T. Wang,** GlobalFoundries (United States); **Yayi Wei,** Institute of Microelectronics, Chinese Academy of Sciences (China)


## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM
**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)
*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

### ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A
5:15 PM - 5:20 PM:
**Tribute to Andrew R. Neureuther**
Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**

“Making the Impossible Possible: 50 Years of SPIE ALP” is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*
**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*
**Burn Lin**, National Tsing Hua Univ. (Taiwan)
**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson**, The Univ. of Texas at Austin (United States)
**Janice Golda**, Intel Corp. (United States)
**Chris Mack**, Fractilia, LLC (United States)

## Tuesday 24 February 2026

### WELCOME, HONORING YA-CHIEH LAI AND ANDREW R. NEUREUTHER

24 February 2026 • 8:40 AM - 9:20 AM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Harsha Grunes**, Intel Corp. (United States); **Kevin Lucas**, Synopsys, Inc. (United States)

8:40 AM - 9:00 AM:
Conference welcome and presentation of the Ya-Chieh Lai Memorial Scholarship.

13980-72 • 9:00 AM - 9:20 AM

**Simulation-driven lithography innovation: honoring the legacy of Prof. Andrew R. Neureuther**

*Author(s):* **Seiji Nagahara,** ASML Japan Co., Ltd. (Japan); **Robert J. Socha,** Bob’s Lithography Service (United States); **Kars Troost**, **Ruben Maas**, **Luc Van Kessel,** ASML Netherlands B.V. (Netherlands); **Terunobu Kurosawa,** Brion Technologies KK (Japan); **Yu Cao,** ASML (United States)

### DTCO AND COMPUTATIONAL PATTERNING KEYNOTE SESSION I

24 February 2026 • 9:20 AM - 10:00 AM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Harsha Grunes**, Intel Corp. (United States); **Kevin Lucas**, Synopsys, Inc. (United States)

13980-46 • 9:20 AM - 10:00 AM

**Pushing the frontiers of design-technology co-optimization in the AI era** (Keynote Presentation)

*Author(s):* **David Z. Pan,** The Univ. of Texas at Austin (United States)

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

### DTCO AND COMPUTATIONAL PATTERNING KEYNOTE SESSION II

24 February 2026 • 10:30 AM - 11:50 AM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Harsha Grunes**, Intel Corp. (United States); **Kevin Lucas**, Synopsys, Inc. (United States)

13980-47 • 10:30 AM - 11:10 AM

**Computational lithography to overcome the challenges in memory devices** (Keynote Presentation)

*Author(s):* **Seung-Hune Yang,** SAMSUNG Electronics Co Ltd (Korea, Republic of)

13980-48 • 11:10 AM - 11:50 AM

**Patterning the singularity: Computational lithography’s history and future within the accelerating software/hardware feedback loop** (Keynote Presentation)

*Author(s):* **James P. Shiely,** Siemens EDA (United States)

**Lunch Break 11:50 AM - 1:20 PM**

## SESSION 1: DESIGN FOR MANUFACTURABILITY AND DESIGN FOR YIELD I

24 February 2026 • 1:20 PM - 3:00 PM | Convention Center, Grand Ballroom 220B
*Session Chair(s):* **David M. Fried**, Lam Research Corp. (United States); **Jason P. Cain**, Advanced Micro Devices, Inc. (United States)

13980-1 • 1:20 PM - 1:40 PM
**Advancements in methodologies for layout analysis and test structure design for sub-nanometer semiconductor process and yield development** *(Invited Paper)*
*Author(s):* **Dipto G. Thakurta,** Intel Corp. (United States)

13980-2 • 1:40 PM - 2:00 PM
**Fuzzy pattern grouping for machine learning-based OPC optimization**
*Author(s):* **Jean Chien, Eric Lee,** National Taiwan Univ (Taiwan)

13980-3 • 2:00 PM - 2:20 PM
**Full-chip high Sigma probabilistic modeling, defect detection and repair in advanced EUV nodes**
*Author(s):* **Parag Ghosh,** Synopsys Inc (United States); **Yunqiang Zhang,** Synopsys, Inc. (United States); **Ulrich Welling,** Synopsys GmbH (Germany); **Hesham Abdelghany**, **Zachary Levinson**, **Elizabeth Grubbs, Kevin Lucas,** Synopsys, Inc. (United States)

13980-4 • 2:20 PM - 2:40 PM
**Machine learning framework for real-time focus and dose drift detection in advanced lithography**
*Author(s):* **Gyan Prakash,** Intel Corporation (United States); **Alexey Polovinkin**, **Vidit Parekh**, **Allison Kennedy**, **Daniel Joonhee**, **Paul A. Nyhus, Brian S. Kinnear,** Intel Corp. (United States)

13980-5 • 2:40 PM - 3:00 PM
**Demonstration of an Efficient, High-Performance Repair Flow for Any-Angle Post-OPC Layouts**
*Author(s):* **Yen-Lung Lu,** Nanya Technology Corp (Taiwan); **Shi-Cheng Yeh,** Cadence Design Systems, Inc. (Taiwan); **Yu-Yao Chang,** Nanya Technology Corp. (Taiwan); **Jason Sweis,** Cadence Design Systems, Inc. (United States); **Teng-Yen Huang**, **Chun-Cheng Liao,** Nanya Technology Corp. (Taiwan); **Hung-Yu Lin,** Cadence Design Systems, Inc. (Taiwan); **Jac Condella,** Cadence Design Systems, Inc. (United States)

### Coffee Break 3:00 PM - 3:30 PM

## SESSION 2: HIGH-NA AND COMPUTATIONAL PATTERNING

24 February 2026 • 3:30 PM - 5:10 PM | Convention Center, Grand Ballroom 220B
*Session Chair(s):* **Daniel J. Dechene**, IBM Research - Albany (United States); **Ryoung-Han Kim**, imec (Belgium)

13980-6 • 3:30 PM - 3:50 PM
**Machine learning enhanced optical proximity correction modeling for high-NA EUV lithography** *(Invited Paper)*
*Author(s):* **Chih-I Wei,** SNPS Belgium B.V. (Belgium); **Tzyy-Shyang Lin,** Synopsys Taiwan Co., Ltd. (Taiwan); **Yan Feng**, **Chao-Heng Chen,** Synopsys, Inc. (United States); **Ming-Yun Chen**, **Philip C. W. Ng,** Synopsys Taiwan Co., Ltd. (Taiwan); **Zachary Levinson,** Synopsys, Inc. (United States); **Ting-Chun Liu,** Synopsys Taiwan Co., Ltd. (Taiwan); **Zhiru Yu,** Synopsys, Inc. (United States); **Wolfgang Demmerle**, **Ulrich Klostermann,** Synopsys GmbH (Germany); **Michael Lam,** Synopsys, Inc. (United States)

13980-7 • 3:50 PM - 4:10 PM
**Analysis of Mask-3D-induced imaging degradation mechanisms in high- and hyper-NA EUV lithography**
*Author(s):* **Markus Schröfl**, **José Diogo Simão, Jan Werschnik,** Photonics Precision Engineering GmbH (Germany)

13980-8 • 4:10 PM - 4:30 PM
**Production high-NA EUV stitch coloring and physical verification for physical design and mask synthesis**
*Author(s):* **wonseok Choi,** Synopsys (Korea, Republic of); **Soohan Choi,** Synopsys (United States); **Kevin Lucas,** Synopsys, Inc. (United States); **Hyeyeon Yoon**, **Shreyas Grama Srinath,** Synopsys Korea Inc. (Korea, Republic of); **Xuerong Ding, Selwyn Gao,** Synopsys, Inc. (China)

13980-9 • 4:30 PM - 4:50 PM
**Advanced OPC modeling and impact on OPC for dry resist by using low-n mask**
*Author(s):* **Dongbo Xu,** Siemens EDA (Belgium); **Werner Gillijns,** imec (Belgium); **Qinglin Zeng,** Siemens EDA (United States); **Shruti Jambaldinni**, **Anuja De Silva,** Lam Research Belgium BV (Belgium); **Germain Fenger,** Siemens EDA (United States)

13980-10 • 4:50 PM - 5:10 PM
**Co-optimized double exposure stitching with ILT to maximize high-NA EUV process window**
*Author(s):* **Thuc Dam**, **Benjamin Painter**, **Ankur taneja**, **Hesham Abdelghany**, **Xiangyu Zhou**, **Amyn Poonawala**, **Zachary Levinson,** Synopsys Inc (United States); **Sukho Lee**, **Werner Gillijns,** IMEC (Belgium); **Petrisor Panaitre, Kevin Lucas,** Synopsys Inc (United States)

## Wednesday 25 February 2026

### SESSION 3: JOINT SESSION WITH 13979 AND 13980

25 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Grand Ballroom 220A
*Session Chair(s):* **Fan Jiang**, Siemens EDA (United States); **Lynn T. N. Wang**, GlobalFoundries (United States)

13979-31 • 8:00 AM - 8:20 AM
**Depth of focus enhancement in high-NA curvilinear logic metal designs**
*Author(s):* **Hazem S. Mesilhy**, **Pervaiz Kareem**, **Kenichi Miyaguchi**, **Xuelong Shi**, **Doyun Kim**, **Yasser Sherazi, Ryan Ryoung Han Kim,** imec (Belgium)

13980-11 • 8:20 AM - 8:40 AM
**Development of a pseudo-rigorous wafer data augmentation method to calibrate failure rate model for predicting stochastic defects**
*Author(s):* **Jaeyoung Choi,** SAMSUNG Electronics Co Ltd (Korea, Republic of); **Jungkee Choi**, **Hyung Joon Chu,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Yongfa Fan**, **Xu Xie**, **ChangAn Wang,** ASML (United States); **Chang-Il Choi**, **Hyun-joon Kim,** ASML Korea Co., Ltd. (Korea, Republic of); **Peigen Cao,** ASML US, Inc. (United States)

13979-128 • 8:40 AM - 9:00 AM
**Modeling overlay–induced fading in imaging simulation for robust process control**
*Author(s):* **HyungRok Jang**, **Noyoung Chung,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Sung-Woon Park**, **JuHyun Kim**, **KiSeok Kim**, **James Lee,** ASML Korea Co., Ltd. (Korea, Republic of); **Sam Chen,** ASML Netherlands B.V. (Netherlands); **Xiaowen Hu**, **Honghua Guan**, **Chenxi Lin, Stephen Hsu,** ASML US, Inc. (United States)

13980-109 • 9:00 AM - 9:20 AM
**Rigorous modeling and repair of EUV multilayer defects**
*Author(s):* **Joseph M. Rodriguez**, **Rafaela Brinn**, **Safak Sayan**, **Arvind Sundaramurthy,** Intel Corp. (United States); **Kyoung Min Yoo**, **Andy Dawes**, **Linghui Wu, Guangming Xiao,** Synopsys, Inc. (United States)

13979-33 • 9:20 AM - 9:40 AM
**Computational lithography solutions to enable robust EUV high-NA stitching**
*Author(s):* **Rongkuo Zhao,** ASML (United States)

13980-13 • 9:40 AM - 10:00 AM
**EUV quantum yield of organotin molecular resists: A first principles study**
*Author(s):* **Roberto Longo**, **Shyam Sridhar**, **Peter Ventzek,** Tokyo Electron America, Inc. (United States); **Craig Needham**, **Amy Jystad,** Inpria Corp. (United States); **Kazuki Kasahara,** JSR Micro, Inc. (United States)

### Coffee Break 10:00 AM - 10:30 AM

### SESSION 4: DTCO AND SCTO I

25 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Grand Ballroom 220B
*Session Chair(s):* **Luigi Capodieci**, Motivo, Inc. (United States); **Piyush Pathak**, Cadence (United States)

13980-14 • 10:30 AM - 10:50 AM
**Yield enhancement through design optimization using deep learning based layout risk feature analysis** *(Invited Paper)*
*Author(s):* **Soojin Jo,** Foundry Business, Samsung Electronics Co., Ltd. (Korea, Republic of); **Namjae Kim**, **Min Chul Park**, **Bogyeong Kang**, **Yeji Kim**, **Taesung Kim**, **SeongRyeol Kim**, **Young-Gu Kim**, **Kiheung Park**, **Jae-Hyun Kang, Joongwon Jeon,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13980-15 • 10:50 AM - 11:10 AM
**The curvy road to silicon photonics manufacturing**
*Author(s):* **Sagar Saxena,** Siemens EDA (United States); **Ujwol Palanchoke**, **Guillaume Chataignier**, **Vincent Berg**, **Cyril Bellegarde,** CEA-LETI (France); **Bilel Saidi, Nacer Zine El Abidinec,** Siemens EDA (France)

13980-16 • 11:10 AM - 11:30 AM
**Pattern matching for inverse silicon photonic devices**
*Author(s):* **Lynn T. N. Wang,** GlobalFoundries (United States); **Klaus-Peter Johnsen,** GlobalFoundries (Germany); **Fadi Batarseh**, **Mohamed Gheith, Mini Ghosal,** GlobalFoundries (United States)

13980-17 • 11:30 AM - 11:50 AM
**Design layout optimization for advanced-node custom design flows**
*Author(s):* **Jonathan Ho,** Advanced Micro Devices Inc. (United States); **Keerthana Bhoopanam**, **Jac Condella**, **Piyush Pathak, Frank Gennari,** Cadence Design Systems, Inc. (United States)

13980-18 • 11:50 AM - 12:10 PM

**Guided dataset enrichment for robust process modeling: from random exploration to intelligent feature-aware pattern generation**

*Author(s):* **waleed osama,** Siemens EDA (Egypt); **Emily Thomas**, **Bennett Smith,** Siemens EDA (United States); **Aliaa Kabeel**, **Mohamed Ismail,** Siemens EDA (Egypt); **Joe Kwan,** Siemens EDA (United States); **Kareem Madkour,** Siemens EDA (Egypt)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 5: COMPUTATIONAL PATTERNING I

25 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Yuri Granik**, Siemens EDA (United States); **Shigeki Nojima**, KIOXIA Corp. (Japan)

13980-19 • 1:40 PM - 2:00 PM

**Inverse lithography in polar coordinates** *(Invited Paper)*

*Author(s):* **Yuri Granik, Sagar Saxena,** Siemens EDA (United States)

13980-73 • 2:00 PM - 2:20 PM

**Overcoming BEOL patterning challenges for the ArF immersion extension**

*Author(s):* **Bongkeun Kim,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13980-21 • 2:20 PM - 2:40 PM

**Determining lithographic parameters of amorphous zeolitic imidazolate resists using machine learning**

*Author(s):* **Kayley E. Waltz,** Johns Hopkins University (United States); **Nikolaos Evangelou**, **Ioannis G. Kevrekidis,** Johns Hopkins Univ. (United States); **Michael Tsapatsis,** Johns Hopkins Univ. (United States), Johns Hopkins Univ. Applied Physics Lab., LLC (United States)

13980-22 • 2:40 PM - 3:00 PM

**Optical proximity correction based on the direct use of rigorous electromagnetic simulation**

*Author(s):* **Michael Yeung,** Fastlitho (United States); **Eytan Barouch,** Boston Univ. (United States)

## Exhibit Social Hour and 50th Celebration 3:00 PM - 4:00 PM

## SESSION 6: INTEGRATION

25 February 2026 • 4:00 PM - 5:20 PM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Vivek K. Singh**, NVIDIA Corp. (United States); **Lawrence S. Melvin**, Synopsys, Inc. (United States)

13980-23 • 4:00 PM - 4:20 PM

**Hybrid machine learning framework for systematic optimization of overlay key positions**

*Author(s):* **Jeng-Hun Suh,** SemiAI, Korea (Korea, Republic of); **Taekwon Jee,** SemiAI (Korea, Republic of)

13980-24 • 4:20 PM - 4:40 PM

**Open collaborative AI platform to support process optimization for semiconductor industry with digital twin**

*Author(s):* **Julien Baderot**, **Marion Grould**, **Ali Hallal, Johann Foucher,** POLLEN Metrology (France)

13980-25 • 4:40 PM - 5:00 PM

**Efficient mathematical modeling for stress analysis in overlapping material interfaces of CMOS circuits**

*Author(s):* **Jumpei Inoue,** Kioxia (Japan)

13980-71 • 5:00 PM - 5:20 PM

**0.33 NA EUV Linear Fading Response Prediction and Measurement Through Dose**

*Author(s):* **Samuel Davis,** Intel (United States); **Shan Siddiqui**, **Dan Fenstermaker**, **Chenxi Lin**, **Jay Kou, Stephen Hsu,** ASML (United States)

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13980-49 • 5:30 PM - 7:00 PM

**Accelerating yield ramp-up on advanced nodes via design-inspection co-optimization**

*Author(s):* **Zongchang Yu,** Dongfang Jingyuan Electron Ltd. (China); **Changlian Yan,** Dongfang Jingyuan Electron Ltd (China); **Shengrui Zhang,** Dongfang Jingyuan Electron Ltd. (China)

13980-50 • 5:30 PM - 7:00 PM
**End-to-end auto tape-out: from cell build-up to mask data**
*Author(s):* **Tsung-Wei Lin**, **Kun-Che Wu,** Winbond Electronics Corporation (Taiwan); **Meng-Shiun Chiang**, **Ching-Chun Huang,** Winbond Electronics Corp. (Taiwan); **Jung-Kuan Huang**, **Hung-Yu Lin,** Cadence Design Systems Inc. (Taiwan); **Jason Sweis**, **Piyush Pathak,** Cadence Design Systems Inc. (United States); **Chun-Sheng Wu**, **Chao-Yi Huang,** Winbond Electronics Corporation (Taiwan); **Jac Condella,** Cadence Design Systems, Inc. (United States)

13980-51 • 5:30 PM - 7:00 PM
**Machine learning-enhanced framework for hotspot detection and path-based analysis in advanced semiconductor nodes**
*Author(s):* **Odie Ou**, **Shawn Hsu,** Intel Corp. (Taiwan); **Jung-Kuan Huang**, **Tien-Ai Ji**, **Hung-Yu Lin,** Cadence Design Systems Inc. (Taiwan); **Jason Sweis**, **Piyush Pathak, Jac Condella,** Cadence Design Systems, Inc. (United States)

13980-52 • 5:30 PM - 7:00 PM
**EUV M3D parameter prediction of curvilinear mask patterns by convolutional neural networks**
*Author(s):* **Moe Sugiyama**, **Masayuki Shimoda**, **Hiroyoshi Tanabe, Atsushi Takahashi,** Institute of Science Tokyo (Japan)

13980-53 • 5:30 PM - 7:00 PM
**Measurement of Sn ejection from solid surfaces**
*Author(s):* **Jaime Robertson,** Univ. of Illinois (United States)

13980-54 • 5:30 PM - 7:00 PM
**Thermal diffusion modeling, simulation, and optimization of non-uniform laser beam shaping for precise semiconductor patterning**
*Author(s):* **Abdullah Alrashdan, Tarek Zohdi,** Univ. of California, Berkeley (United States)

13980-55 • 5:30 PM - 7:00 PM
**Chemical reaction networks and kinetic-modeling of light-induced processes in lithography**
*Author(s):* **Nitesh Kumar**, **Samuel M. Blau, Frances Houle,** Lawrence Berkeley National Lab. (United States)

13980-56 • 5:30 PM - 7:00 PM
**Enhancing lithography process model accuracy using deep learning techniques**
*Author(s):* **Weilun Chiu,** Macronix (Taiwan); **Terry Hsuan**, **Chih-Hao Huang**, **T.H. Yang, K.C. Chen,** Macronix International Co., Ltd. (Taiwan)

13980-202 • 5:30 PM - 7:00 PM
**OPC model optimization by combining scalable trust-region Bayesian optimization and various clustering techniques**
*Author(s):* **Meng-Chen Lo,** National Tsing Hua University (Taiwan); **Shu-Yen Lo**, **Tsai-Sheng Gau**, **Burn J. Lin, Chen-Kung Chen,** National Tsing Hua Univ. (Taiwan)

13980-12 • 5:30 PM - 7:00 PM
**Quantum-chemical insights for the computational design of metal-organic cluster photoresists for EUV lithography**
*Author(s):* **Satinder Kumar Sharma**, **Ashutosh Joshi**, **Meghana Sharma**, **Manvendra Chauhan**, **Neha Sharma**, **Sachin Sharma, Bhaskar Mondal,** Indian Institute of Technology Mandi (India)

## Thursday 26 February 2026

## SESSION 7: COMPUTATIONAL PATTERNING II

26 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Grand Ballroom 220B
*Session Chair(s):* **Srividya Jayaram**, Siemens EDA (United States); **Luigi Capodieci**, Motivo, Inc. (United States)

13980-26 • 8:00 AM - 8:20 AM
**Pushing the limits of inverse lithography with generative reinforcement learning** *(Invited Paper)*
*Author(s):* **Haoyu Yang, Haoxing Ren,** NVIDIA Corp. (United States)

13980-27 • 8:20 AM - 8:40 AM
**Convolutional neural network-based machine learning tool for detecting printed sub resolution assist features (SRAFs)**
*Author(s):* **Mahtab Kokabi**, **Abhishek Asthana**, **Jakin B. Delony**, **Vinod Anumareddy**, **Philip Li, Scott W. Jessen,** Texas Instruments (United States)

13980-28 • 8:40 AM - 9:00 AM
**Toward accurate optical model calibration with a near-perfect resist model**
*Author(s):* **Hyung Joon Chu,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Junjiang Lei,** Siemens EDA (United States); **Seongtae Jeong,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Danping Peng,** Siemens EDA (United States)

13980-29 • 9:00 AM - 9:20 AM
**GPU accelerated Bezier mask rule check for high volume production**
*Author(s):* **Moatsm Eldeeb,** Siemens EDA (Egypt); **William Ethan Maguire,** Rochester Institute of Technology (United States)

13980-30 • 9:20 AM - 9:40 AM

**Flexible and expandable automatic OPC hotspot repairing flow**

*Author(s):* **Yung Ching Mai**, **Shinshing Yeh**, **Yi-Shiang Chang,** Powerchip Semiconductor Manufacturing Corporation (Taiwan); **Hugo Chang**, **Tehsien Hsieh**, **Rissom Lin, Elsley Tan,** Synopsys Taiwan Co., Ltd. (Taiwan)

13980-31 • 9:40 AM - 10:00 AM

**MODiff: layout-guided mask optimization via diffusion model**

*Author(s):* **Jiale Li**, **Silin Chen**, **Yiqing Wang**, **Kangjian Di**, **Li Du,** Nanjing Univ. (China); **Ningmu Zou,** Nanjing University (China)

## Coffee Break 10:00 AM - 10:30 AM

## SESSION 8: CURVILINEAR DATA FOR COMPUTATIONAL PATTERNING

26 February 2026 • 10:30 AM - 11:50 AM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Neal V. Lafferty**, Siemens Digital Industries Software, Inc. (United States); **Kevin Lucas**, Synopsys, Inc. (United States)

13980-32 • 10:30 AM - 10:50 AM

**Vector-based site-anchor decoupling for curvilinear optical proximity correction** *(Invited Paper)*

*Author(s):* **Sagar Saxena, William Ethan Maguire,** Siemens EDA (United States)

13980-33 • 10:50 AM - 11:10 AM

**Etch proximity correction for curvilinear layout: curve sampling with ML etch bias model**

*Author(s):* **Shilong Zhang**, **Dakyeong Seo**, **Seohyun Kim, Youngsoo Shin,** KAIST (Korea, Republic of)

13980-34 • 11:10 AM - 11:30 AM

**Curvilinear data formats and the impact on mask-to-wafer fidelity**

*Author(s):* **Yi-Pei Tsai**, **Kenichi Miyaguchi**, **Xuelong Shi**, **Soobin Hwang**, **Yasser Sherazi**, **Ryan Ryoung han Kim,** imec (Belgium); **Yoshinori Kojima**, **Kenichi Yasui**, **Makoto Kaneko, Hikari Ogawa,** NuFlare (Japan)

13980-35 • 11:30 AM - 11:50 AM

**Beyond Manhattan OPC: Improving Contact Array Fidelity Using Curvilinear OPC**

*Author(s):* **Sheng Tse Chen**, **Yen-Lung Lu**, **Chun Wei Wu**, **Teng Yen Huang**, **Chun Cheng Liao,** Nanya Technology Corp. (Taiwan); **Shou-Yuan Ma**, **Jen-Hsiang Tsai, Ling-Chieh Lin,** Siemens EDA (Taiwan)

## Lunch Break 11:50 AM - 1:20 PM

## SESSION 9: DTCO AND SCTO II

26 February 2026 • 1:20 PM - 3:00 PM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Xinyi Feng**, NXP Semiconductors (United States); **Jason P. Cain**, Advanced Micro Devices, Inc. (United States)

13980-153 • 1:20 PM - 1:40 PM

**Design for manufacturability analysis in dual damascene 28nm-pitch single exposure EUV metal logic designs using voltage contrast**

*Author(s):* **Victor M. Blanco Carballo**, **Dorin Cerbu**, **Vincent Renaud**, **Jeroen van de Kerkhove,** imec (Belgium); **Cyrus Tabery,** ASML (United States); **Etienne P. de Poortere,** ASML Technology Development Ctr. (Belgium)

13980-36 • 1:40 PM - 2:00 PM

**Near-optimal sampling of physical design layout regions based on rigorous pattern coverage** *(Invited Paper)*

*Author(s):* **Vito Dai**, **Ajanta Konar**, **Marshal Miller, Luigi Capodieci,** Synopsys, Inc. (United States)

13980-37 • 2:00 PM - 2:20 PM

**Accelerating DRC closure using AI-powered framework**

*Author(s):* **Piyush Pathak,** Cadence Design Systems Inc (United States); **Hao Ji**, **Jac Condella**, **Jeff Nelson**, **Frank Gennari, Jonathan Fales,** Cadence Design Systems, Inc. (United States)

13980-38 • 2:20 PM - 2:40 PM

**Building systematic defect library with GenAI**

*Author(s):* **Jonathan Ho,** Advanced Micro Devices, Inc. (United States); **Xiaoyuan Qi**, **Yuansheng Ma**, **Joe Kwan, Le Hong,** Siemens EDA (United States)

13980-39 • 2:40 PM - 3:00 PM

**IGNITE: Sparking optimal OPC strategies through ML-guided site selection**

*Author(s):* **Steven Lubin**, **Sagar Saxena**, **Juli Opitz, Ken Jantzen,** Siemens EDA (United States)

**Coffee Break 3:00 PM - 3:30 PM**

## SESSION 10: DEEP LEARNING, MACHINE LEARNING AND AI

26 February 2026 • 3:30 PM - 4:50 PM | Convention Center, Grand Ballroom 220B

*Session Chair(s):* **Kevin Lucas**, Synopsys, Inc. (United States); **Harsha Grunes**, Intel Corp. (United States)

13980-41 • 3:30 PM - 3:50 PM

**Proactive yield maximization in photolithography via human-in-the-loop AI on an on-premise big data platform** *(Invited Paper)*

*Author(s):* **Jeng-Hun Suh**, **Chang Hoon An, Taekwon Jee,** SemiAI (Korea, Republic of)

13980-42 • 3:50 PM - 4:10 PM

**Rethinking DFM Pattern Generation In LLM Era**

*Author(s):* **Haoyu Yang,** NVIDIA Corp (United States); **Haoxing Ren,** NVIDIA Corp. (United States)

13980-43 • 4:10 PM - 4:30 PM

**Manufacturing space optimization: Accelerating mask synthesis with reinforcement learning for ILT and SMO optimization**

*Author(s):* **Kihun Kim,** Synopsys Korea Inc. (Korea, Republic of); **Joachim Siebert,** Synopsys GmbH (Germany); **C. Jay Lee,** Synopsys Taiwan Co., Ltd. (Taiwan); **Kyle Braam,** Synopsys, Inc. (United States); **Jinho Yang,** Synopsys Korea Inc. (Korea, Republic of); **Dietmar Krueger,** Synopsys GmbH (Germany); **Thuc Dam,** Synopsys, Inc. (United States); **WooJoo Sim,** Synopsys Korea Inc. (Korea, Republic of); **Guangming Xiao,** Synopsys, Inc. (United States)

13980-45 • 4:30 PM - 4:50 PM

**Fast and scalable computational lithography using neural operators**

*Author(s):* **Seung-Woo Lee,** Seoul National University (Korea, Republic of); **Do-Nyun Kim,** Seoul National Univ. (Korea, Republic of)

## ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Advanced Lithography + Patterning 2026.

13980-44

**D2CNet: towards end-to-end design to wafer contour prediction for AI computational lithography**

*Author(s):* **Yong Zhao**, **Yao Xiao**, **Tong Liu**, **Ruchen Xu,** Zhejiang Lab (China); **Shengrui Zhang**, **Zongchang Yu,** Dongfang Jingyuan Electron
Co., Ltd. (China); **Jingshan Zhong,** Zhejiang Lab (China)

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# CONFERENCE 13981

# Metrology, Inspection, and Process Control XL

**23 - 26 February 2026 | Convention Center, Room 210A**

*Conference Chair(s):* **Nivea G. Schuch,** Applied Materials (France)

*Conference Co-Chair(s):* **Hugo Cramer,** ASML Netherlands B.V. (Netherlands)

*Program Committee:* **Ofer Adan,** Applied Materials Israel, Ltd. (Israel); **John A. Allgair,** BRIDG (United States); **Masafumi Asano,** Tokyo Electron Ltd. (Japan); **Bryan M. Barnes,** National Institute of Standards and Technology (United States); **Cornel Bozdog,** Micron Technology, Inc. (United States); **Anne-Laure Charley,** imec (Belgium); **Xiaomeng Chen,** Taiwan Semiconductor Manufacturing Co. Ltd. (Taiwan); **Timothy F. Crimmins,** Applied Materials, Inc. (United States); **R. Joseph Kline,** National Institute of Standards and Technology (United States); **Shunsuke Koshihara,** Hitachi High-Tech Corp. (Japan); **Yi-sha Ku,** Industrial Technology Research Institute (Taiwan); **Byoung-Ho Lee,** Hitachi High-Tech Corp. (Japan); **Myungjun Lee,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Philippe Leray,** imec (Belgium); **Narender Rana,** KLA Corp. (United States); **Christopher J. Raymond,** Onto Innovation Inc. (United States); **Daniel Schmidt,** IBM Research - Albany (United States); **Matthew J. Sendelbach,** MJS Metrology Consulting (United States); **Younghoon Sohn,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Alexander Starikov,** I&I Consulting (United States)

## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM
**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)
*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

**Coffee Break 9:50 AM - 10:10 AM**

### OPENING REMARKS, BEST PAPER AWARDS, AND KEYNOTES

23 February 2026 • 10:10 AM - 12:10 PM | Convention Center, Room 210A

*Session Chair(s):* **Nivea G. Schuch**, Applied Materials, Inc. (France); **Hugo Cramer**, ASML Netherlands B.V. (Netherlands)
Metrology conference opening remarks and awards presentation, followed by keynote talks.

13981-201 • 10:50 AM - 11:30 AM
**Connecting the past to the future: 40 Years of metrology for semiconductor** (Keynote Presentation)
*Author(s):* **Anne-Laure Charley**, **Janusz Bogdanowicz, Philippe Leray,** imec (Belgium)

13981-202 • 11:30 AM - 12:10 PM
**Emerging AI/ML opportunities in metrology, inspection and process control** (Keynote Presentation)
*Author(s):* **Steve McCandless,** Micron Technology (United States)

## Lunch Break 12:10 PM - 1:30 PM

## SESSION 1: HYBRID AND VIRTUAL METROLOGY

23 February 2026 • 1:30 PM - 3:00 PM | Convention Center, Room 210A
*Session Chair(s):* **Bryan M. Barnes**, National Institute of Standards and Technology (United States); **Daniel Schmidt**, IBM Research - Albany (United States)

13981-1 • 1:30 PM - 1:50 PM
**The art of holistic metrology (in memory of Alok Vaid)**
*Author(s):* **Igor Turovets,** Nova Ltd. (Israel)

13981-2 • 1:50 PM - 2:20 PM
**Leveraging AI and ML in multimodal combined and hybrid metrology** *(Invited Paper)*
*Author(s):* **Mark-Alexander Henn,** National Institute of Standards and Technology (United States), University of Maryland (United States)

13981-3 • 2:20 PM - 2:40 PM
**Overcoming conventional limit of process variation by using virtual metrology with mass-based monitoring in V-NAND**
*Author(s):* **Ju-Young Cho,** Flash Process Architecture Team, Memory Business, Samsung Electronics (Korea, Republic of); **Joonsung Lim**, **Dong-Hyeon Ko**, **Ikjun Choi**, **Sungyoon Ryu**, **Woongseop Lee**, **Younghoon Sohn**, **Byoungil Lee**, **Kyungyoon Noh**, **Seungwan Hong**, **Sung-Hoi Hur,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jin-Yub Lee,** SAMSUNG Electronics Co., Ltd., Korea (Korea, Republic of)

13981-4 • 2:40 PM - 3:00 PM
**A virtual metrology-driven tool-to-tool matching: toward early anomaly detection and diagnosis**
*Author(s):* **Danah Kim**, **Sol Kwon**, **Seonwoo Lim,** Gauss Labs Inc. (United States); **Inho Park**, **Taejong Lee**, **Byunggu Kang**, **Sangyeop Park**, **Dohhyung Noh,** SK hynix Inc. (Korea, Republic of); **Juhak Lee,** SK hynix Inc., Korea (Korea, Republic of); **Dongwoo Kim**, **Minwoo Jin,** SK hynix Inc. (Korea, Republic of); **Pil Sung Jo,** Gauss Labs Inc. (United States)

## Coffee Break 3:00 PM - 3:30 PM

## SESSION 2: METROLOGY AND INSPECTION FOR ADVANCED LOGIC DEVICES

23 February 2026 • 3:30 PM - 5:00 PM | Convention Center, Room 210A
*Session Chair(s):* **Philippe Leray**, imec (Belgium); **Xiaomeng Chen**, Taiwan Semiconductor Manufacturing Co., Ltd. (Taiwan)

13981-5 • 3:30 PM - 4:00 PM
**AI-driven optical metrology for advanced nodes** *(Invited Paper)*
*Author(s):* **Chien-Hung Coco Tseng,** Taiwan Semiconductor Manufacturing Co., Ltd. (Taiwan)

13981-6 • 4:00 PM - 4:20 PM
**Enabling metrology and inspection for CFET structures using hybrid qualification approaches**
*Author(s):* **Hong-Cheon Yang**, **Janusz Bogdanowicz**, **Mahmudul Hasan**, **Balakumar Baskaran**, **Jeonghyeon Jim**, **Stephanie Melhem**, **Andrea Mingardi**, **Min-Soo Kim**, **Cassie Sheng**, **Christophe Beral, Anne-Laure Charley,** imec (Belgium)

13981-7 • 4:20 PM - 4:40 PM
**In-line XPS for advanced semiconductor manufacturing and metrology on fully integrated targets**
*Author(s):* **Christopher J. Lee**, **Manasa Medikonda**, **Trevor McDonough**, **Will Parkin**, **Ruqiang Bao,** IBM Research - Albany (United States); **Paul Isbester**, **Mark Klare,** Nova Measuring Instruments Inc. (United States); **Daniel Schmidt,** IBM Research - Albany (United States)

13981-8 • 4:40 PM - 5:00 PM

**AI-Based enhanced detection algorithm for optical inspection of critical defects on 2nm and 1.4nm technology nodes**

*Author(s):* **Gilad Reut,** Applied Materials Israel, Ltd. (Israel); **Akhilesh Kumar Pandey,** Applied Materials India Pvt. Ltd. (India); **Lev Koushnir**, **Zohar Shatsberg**, **Agepati Sreenivas**, **Manvendra Singh,** Applied Materials Israel, Ltd. (Israel); **Jaebong Kim**, **HyunJae Chung**, **SeungHwan Moon**, **Gyolim Ryu,** Applied Materials Korea, Ltd. (Korea, Republic of); **Taesu Kim**, **Wonhee Lee**, **Dohyung Cho**, **Chulmoo Kang,** **Hyungseop Kim,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

## ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A

5:15 PM - 5:20 PM:

**Tribute to Andrew R. Neureuther**

Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**

"Making the Impossible Possible: 50 Years of SPIE ALP" is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*

**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*

**Burn Lin**, National Tsing Hua Univ. (Taiwan)
**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson**, The Univ. of Texas at Austin (United States)
**Janice Golda**, Intel Corp. (United States)
**Chris Mack**, Fractilia, LLC (United States)

# Tuesday 24 February 2026

## SESSION 3: MODELING AND DATA ANALYSIS

24 February 2026 • 8:00 AM - 10:10 AM | Convention Center, Room 210A

*Session Chair(s):* **R. Joseph Kline**, National Institute of Standards and Technology (United States); **Timothy Crimmins**, Intel Corp. (United States)

13981-9 • 8:00 AM - 8:30 AM

**Systematic defect risk assessment based on silicon digital twins** *(Invited Paper)*

*Author(s):* **Sunghoon Choi**, **Hyung Keun Yoo**, **Younghoon Sohn**, **Mira Park**, **Yongdeok Jeong**, **Byungseong Ahn**, **Woobok Lee**, **Cheolwoo Bae**, **Min Seok Kim**, **Taeshin Kwak, Jaekyeong Ha,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-13 • 8:30 AM - 8:50 AM

**Nanostructure characterization via RSoXS: Inverse scattering with FEM-based maxwell solvers**

*Author(s):* **Kas Andrle,** Lawrence Berkeley National Lab (United States); **Qi Zhang,** Lawrence Berkeley National Lab. (United States); **Harlan Heilman,** Lawrence Berkeley National Lab. (United States), Washington State Univ. (United States); **Thomas Ferron, Cheng Wang,** Lawrence Berkeley National Lab. (United States)

13981-14 • 8:50 AM - 9:10 AM

**Model-based Raman simulations for optimized metrology in nanosheet transistor devices**

*Author(s):* **Stefan Schoeche,** IBM Research - Albany (United States); **Aron Cepler,** Nova Measuring Instruments Inc. (United States); **Jander Cruz,** IBM Research - Albany (United States); **Roy Koret,** Nova Measuring Instruments Inc. (United States); **Lior Baltiansky**, **Maor Asher**, **Alexander Levy**, **Igor Turovets,** Nova Ltd. (Israel); **Daniel Schmidt,** IBM Research - Albany (United States)

13981-10 • 9:10 AM - 9:30 AM

**Poisson-CDF modeling of in-die optimization for electron beam inspection under random defect distribution**

*Author(s):* **PO-JEN MO,** Micron Technology Taiwan, Inc. (Taiwan); **TSAN-YU HO,** Micron Memory Japan (Japan); **XING JI,** Micron Semiconductor Asia Pte Ltd (Singapore); **CHIA-WEI FAN**, **CHEN-WEI HSU**, **YEN-WEN CHEN**, **MENG-YI CHEN**, **CHUN-CHIEH MO, Ping Kao,** Micron Technology Taiwan, Inc. (Taiwan)

13981-11 • 9:30 AM - 9:50 AM

**Modelling the full process from layout to post-etch imaging using a variational autoencoder**

*Author(s):* **Annabelle Narsama,** CEA (France); **Elie Sezestre,** CEA-LETI (France); **Stéphane Chrétien,** Univ. Lumière Lyon 2 (France); **Raluca Tiron,** CEA-LETI (France)

13981-12 • 9:50 AM - 10:10 AM

**Layout-based CMP modeling for surface topography prediction at advanced node technologies**

*Author(s):* **Junhoi Kim,** Technology Development / Samsung Electronics (Korea, Republic of); **Jiwon Oh**, **Jinkyu Yu**, **Jaehyun Lim**, **Soyoung Kim**, **Chulbum Kim**, **Ji Ho Yu**, **Woosuk Yoo**, **Jaehyun Kang**, **Kiheung Park, Joongwon Jeon,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

## Coffee Break 10:10 AM - 10:30 AM

## SESSION 4: HETEROGENEOUS INTEGRATION AND ADVANCED PACKAGING

24 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Room 210A

*Session Chair(s):* **Ofer Adan**, Applied Materials Israel, Ltd. (Israel); **Anne-Laure Charley**, imec (Belgium)

13981-15 • 10:30 AM - 10:50 AM

**Characterization and prediction of overlay signatures in WxW bonding processes for backside power distribution networks (BS-PDN)**

*Author(s):* **Franz X. Zach,** KLA (United States); **Roel Gronheid,** KLA Corp. (Belgium); **Loemba Bouckou,** KLA Corp. (Belgium); **Nagasundeep Palvadi,** KLA Corp. (United States)

13981-16 • 10:50 AM - 11:10 AM

**Inline monitoring of hybrid bonding Cu recess by combining interpolated reference metrology and OCD machine learning**

*Author(s):* **Padraig R. Timoney**, **Stefan Schoeche**, **Nick Polomoff**, **Joseph Mittelstaedt**, **Matt Malley**, **Tyler Sherwood**, **Daniel Schmidt,** IBM Research - Albany (United States); **Aron Cepler**, **Paul Isbester, Igor Turovets,** Nova Measuring Instruments Inc. (United States)

13981-17 • 11:10 AM - 11:30 AM

**Advanced overlay metrology for wafer-to-wafer hybrid bonding in 3D integration**

*Author(s):* **Pei-Hsuan Lin,** National Tsing Hua University (Taiwan); **Yi-Sha Ku,** Industrial Technology Research Institute (Taiwan)

13981-18 • 11:30 AM - 11:50 AM

**Bonding-induced overlay fingerprint modeling using Zernike polynomials**

*Author(s):* **Benjamin Duclaux,** STMicroelectronics (Crolles II) SAS (France); **Maxime Gatefait**, **Ludovic Berthier**, **Lucie Borget**, **Aline Gouantes**, **Emilie Deloffre**, **Bastien Orlando, Laurent Lecarpentier,** STMicroelectronics S.A. (France)

13981-19 • 11:50 AM - 12:10 PM

**Characterization and mitigation of wafer bonding-induced distortions to enable the post-bonding lithography requirements of advanced nodes**

*Author(s):* **Leon van Dijk,** ASML Netherlands BV (Netherlands); **Andrew Tuchman**, **Christopher Netzband**, **Sheldon Meyers,** Tokyo Electron Technology Center, America, LLC (United States); **Manav Tyagi**, **Mukund Kumar**, **Lieneke Kusters**, **Niyam Haque,** ASML Netherlands BV (Netherlands); **Ilseok Son, Angelique Raley,** Tokyo Electron Technology Center, America, LLC (United States)

## Lunch Break 12:10 PM - 1:30 PM

## SESSION 5: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

24 February 2026 • 1:30 PM - 3:10 PM | Convention Center, Room 210A

*Session Chair(s):* **Narender Rana**, KLA Corp. (United States); **Bryan M. Barnes**, National Institute of Standards and Technology (United States)

13981-20 • 1:30 PM - 1:50 PM

**Generative AI denoising method for photon-efficient actinic EUV mask inspection**

*Author(s):* **Minjung Kim,** NVIDIA Corp. (United States); **Luke Long,** EUV Technology (United States); **Selim Dogru**, **Kumara Sastry**, **John Swanson**, **Aswin Sreedhar,** NVIDIA Corp. (United States); **Patrick Naulleau,** EUV Technology (United States); **Vivek Singh,** NVIDIA Corp. (United States)

13981-22 • 1:50 PM - 2:10 PM

**ML-driven context monitoring for inline CDU error analysis**

*Author(s):* **Sven Boese**, **Gaetan de Liedekerke Beaufort**, **Philip Gröger,** KLA Corp. (Germany); **Christoph Ehrlich,** KLA GmbH (Germany); **Xaver Thrun,** KLA Corp. (Germany); **Ted Taylor**, **Vlad Temchenko, Ranjan Khurana,** Micron Technology, Inc. (United States)

13981-23 • 2:10 PM - 2:30 PM

**Self-supervised multimodal machine learning model for defects retrieval utilizing morphological and chemical signatures**

*Author(s):* **Yitian Zeng,** Lam Research (United States); **Yongliang Dong**, **Alan Jensen**, **Udit Kumar**, **Nupur Jain**, **Nathan Ngo**, **Shambhu K.C.**, **Hechao Li**, **Mike Myers, Emir Gurer,** Lam Research Corp. (United States)

13981-24 • 2:30 PM - 2:50 PM

**Self-supervised brightness and contrast correction for multibeam SEM defect inspection**

*Author(s):* **Yasuhiro Yoshida,** Hitachi High-Tech America, Inc. (United States), Hitachi, Ltd. (Japan); **Kosuke Fukuda,** Hitachi High-Tech America, Inc. (United States); **Lavish Pabbi, Omer G. Memis,** Intel Corp. (United States)

13981-25 • 2:50 PM - 3:10 PM

**Rapid adaptation of SEM image denoising model using conditional normalization**

*Author(s):* **Shumpei Chochi,** Hitachi High-Tech Corp. (Japan); **Aye Chan Myint,** Hitachi High-Tech Corpo. (Japan); **Okuda Tomoyuki**, **Hideaki Sasazawa**, **Yasutaka Toyoda,** Hitachi High-Tech Corp. (Japan); **Sota Komatsu,** Hitachi, Ltd. (Japan)

**Coffee Break 3:10 PM - 3:40 PM**

## SESSION 6: NOVEL METHODS

24 February 2026 • 3:40 PM - 6:00 PM | Convention Center, Room 210A

*Session Chair(s):* **Masafumi Asano**, Tokyo Electron Ltd. (Japan); **R. Joseph Kline**, National Institute of Standards and Technology (United States)

13981-26 • 3:40 PM - 4:00 PM

**Buried void inspection in high bandwidth memory with picosecond laser acoustics**

*Author(s):* **Wooseok Heo**, **Eugene Jeong**, **Sekye Jeon**, **Sunghoon Park**, **Su-Young Lee**, **Yusin Yang**, **Jaeyoon Ko**, **Byeongkyu Cha,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Robin Mair**, **Xavier Tridon**, **Matthew Sartin**, **Tony Gilmore**, **Marco Alves**, **Cheolkyu Kim**, **Yoonseob Jeong**, **Michael Kotelyanskii**, **Aishwarya Hegde**, **Frank Vozzo**, **Julien Michelon**, **Manjusha Mehendale**, **Priya Mukundhan, George A. Antonelli,** Onto Innovation Inc. (United States)

13981-27 • 4:00 PM - 4:20 PM

**Twenty heads are better than one: Scalable microAFM for high-throughput metrology and inspection**

*Author(s):* **Leo Gabriel**, **Zhenle Cao**, **Qianshu Wang,** ICSPI Corp. (Canada); **Alain Moussa**, **Janusz Bogdanowicz,** imec (Belgium); **David Morris,** ICSPI Corp. (Canada)

13981-21 • 4:20 PM - 4:40 PM

**A novel methodology for in-line AI adoption: a cost-efficient and high-reliability approach**

*Author(s):* **Anna Levant,** Applied Materials (Israel); **Noam Teomim**, **Nechama Jacobowitz**, **Shoshana Sternbuch**, **Lior Koren**, **Adi Karol**, **Hadassah Heber**, **Talia Rogov,** Applied Materials Israel, Ltd. (Israel); **Bar Dubovski, Lena Krak,** Applied Materials (Israel)

13981-28 • 4:40 PM - 5:00 PM

**Photocathode SEM with pixel current modulation for improved imaging of charge-sensitive materials and structures**

*Author(s):* **Tomohiro Nishitani,** Photo electron Soul Inc (Japan); **Daiki Sato,** Photo electron Soul Inc. (Japan); **Mitsunobu Yasuda,** Toray Research Ctr., Inc. (Japan); **Yuta Arakawa**, **Kotaro Niimi**, **Atsushi Koizumi**, **Hokuto Iijima,** Photo electron Soul Inc. (Japan); **Yoshio Honda, Hiroshi Amano,** Nagoya Univ. (Japan)

13981-29 • 5:00 PM - 5:20 PM

**Exploration of quantum entanglement technologies for semiconductor inspection: Practical applications and future directions**

*Author(s):* **Yasunori Furukawa,** Tokyo Electron Ltd. (Japan); **Tetsuya Nishimura,** Kyoto Univ. (Japan); **Masafumi Asano**, **Masayoshi Arai,** Tokyo Electron Ltd. (Japan); **Yu Mukai**, **Ryo Okamoto, Shigeki Takeuchi,** Kyoto Univ. (Japan)

13981-30 • 5:20 PM - 5:40 PM

**Enhancing defect detection and yield prediction through metrology and inspection data integration**

*Author(s):* **Chan-gi Jeon**, **Hyeon-bo Shim**, **Won-young Cha**, **Souk Kim**, **Young-hoon Sohn,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jang-sun Sunny Kim,** KLA (Korea, Republic of); **Dong-jin Kim**, **Min-sung Hyun**, **Han-taek Kang**, **Chi-rin Kim**, **Ha-kyu Yoon,** KLA Corp. (Korea, Republic of); **Alan Davila**, **Lip-kong Yap**, **Avinash Puppala**, **Terence Breedijk**, **Woong-jae Chung, Gino Marcuccilli,** KLA Corp. (United States)

13981-222 • 5:40 PM - 6:00 PM

**High-precision inline metrology of Si photonics devices on 300mm wafers using CD-SEM**

*Author(s):* **Yajian Hu,** Hitachi High-Tech Corp. (Japan)

## Wednesday 25 February 2026

### SESSION 7: X-RAY METROLOGY AND INSPECTION

25 February 2026 • 8:00 AM - 10:10 AM | Convention Center, Room 210A
*Session Chair(s):* **Masafumi Asano**, Tokyo Electron Ltd. (Japan)

13981-31 • 8:00 AM - 8:30 AM
**Nanometer-scale SiGe lateral recess metrology in CFET structures using micro-spot X-ray fluorescence** *(Invited Paper)*
*Author(s):* **Jenna Kim**, **Janusz Bogdanowicz**, **Andrea Mingardi**, **Pallavi P. Gowda**, **Karen Stiers,** imec (Belgium); **Satoshi Murakami**, **Markus Kuhn,** Rigaku Corporation (Japan); **Hongcheon Yang**, **Alain Moussa**, **Min-Soo Kim**, **Serge Biesemans**, **Philippe Leray, Anne-Laure Charley,** imec (Belgium)

13981-36 • 8:30 AM - 8:50 AM
**Numerically constructed optical models for sub-nanometer meteorology**
*Author(s):* **Harlan Heilman,** Washington State University (United States), Lawrence Berkeley National Lab (United States); **Victor Murcia,** U.S. Department of Veterans Affairs (United States), National Artificial Intelligence Research Institutes (United States); **Tanner Melody,** Washington State University (United States); **Emily Biegler,** Washington State Univ. (United States); **Kas Andrle**, **Thomas Ferron**, **Cheng Wang,** Lawrence Berkeley National Lab (United States); **Brian Collins,** Washington State University (United States)

13981-32 • 8:50 AM - 9:10 AM
**Characterization of the line edge roughness by small angle X-ray scattering**
*Author(s):* **Nischal Dhungana,** Univ. Grenoble Alpes, CEA-LETI (France); **Matteo Knebel**, **Tristan Dewolf**, **Patrick Quéméré**, **Patrice Gergaud, Guillaume Freychet,** Univ. Grenoble Alpes, CEA-LETI (France)

13981-99 • 9:10 AM - 9:30 AM
**Inspection and metrology of micro-bumps and hybrid copper bonding using high-resolution 3D x-ray imaging**
*Author(s):* **Till Dreier,** Excillum (Sweden); **Daniel Nilsson, Julius Hållstedt,** Excillum AB (Sweden)

13981-34 • 9:30 AM - 9:50 AM
**GUIDE-X: VLM-LLM based AI assistant for artifact detection and operator guidance in X-ray inspection**
*Author(s):* **Md Shah Imran Shovon,** University of Florida (United States); **Shajib Ghosh**, **Istiaq Firoz Shiam**, **Patrick Craig**, **Antika Roy**, **Pratyush Shukla**, **Varun Sai Vemuri**, **Hafez Bahrami, Navid Asadizanjani,** Univ. of Florida (United States)

13981-35 • 9:50 AM - 10:10 AM
**In-line XPS metrology for area selective deposition processes on patterned structures**
*Author(s):* **Manasa Medikonda**, **Linda Wangoh**, **Christopher J. Lee**, **Yasiel Cabrera,** IBM Thomas J. Watson Research Ctr. (United States); **Mark Klare**, **Dmitry Kislitsyn**, **Heath Pois**, **Paul Isbester**, **Wei Ti Lee,** Nova Measuring Instruments Inc. (United States); **Daniel Schmidt,** IBM Thomas J. Watson Research Ctr. (United States)

**Coffee Break 10:10 AM - 10:30 AM**

### SESSION 8: 3D PROFILE AND HIGH ASPECT RATIO METROLOGY

25 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Room 210A
*Session Chair(s):* **Anne-Laure Charley**, imec (Belgium); **Cornel Bozdog**, Micron Technology, Inc. (United States)

13981-37 • 10:30 AM - 10:50 AM
**Beyond top-down CD: E-tilt based pattern profile metrology for multi patterning process control in early stage**
*Author(s):* **Daiyoung Mun**, **GwangSeob Lim**, **Min Woo Kang**, **Doowan Kim**, **Younghyun Choi,** SK hynix Inc. (Korea, Republic of); **Henry Youn**, **Gadi Oron**, **Shachaf Tsafriri**, **Yana Branzburg**, **Yoav Harari**, **Yuval Shelef,** Applied Materials Israel, Ltd. (Israel); **You Jin Kim**, **Jeong-Ho Yeo**, **Woosung Jung**, **Sujin Lim**, **Woosung Jung**, **Sujin Lim**, **Chan Hee Kwak,** Applied Materials Korea, Ltd. (Korea, Republic of); **Nivea G. Schuch,** Applied Materials, Inc. (France)

13981-38 • 10:50 AM - 11:10 AM
**Nondestructive sidewall imaging for 3D profiling of advanced logic and memory devices**
*Author(s):* **Arseniy Kalinin**, **Erik Simons**, **Helda Pahlavani**, **Khalid Elsayed**, **Lucas Rencker**, **Jakob van de Laar**, **Mees van Dijk**, **Ariobarzan Sadeghi**, **Mahya Ganjian**, **Ze Chang**, **Dipankar Mukherjee**, **Niranjan Saikumar, Hamed Sadeghian,** Nearfield Instruments B.V. (Netherlands)

13981-39 • 11:10 AM - 11:30 AM
**Detecting topography changes with combined torsional and flexural resonance mode atomic force microscopy**
*Author(s):* **Jonas Hendrikx,** Eindhoven University of Technology (Netherlands); **Erik Steur,** Technische Univ. Eindhoven (Netherlands); **Robbert Voorhoeve,** TNO (Netherlands); **Henk Nijmeijer, Nathan van de Wouw,** Technische Univ. Eindhoven (Netherlands)

13981-40 • 11:30 AM - 11:50 AM

**Critical dimension metrology with hard X-rays in the reflection geometry**

*Author(s):* **Miaoqi Chu**, **Jin Wang, Zhang Jiang,** Argonne National Lab. (United States)

13981-41 • 11:50 AM - 12:10 PM

**Effective defect detection in 3D V-NAND flash memory using color-based image processing**

*Author(s):* **Jiwon Shin**, **Byung Yong Choi**, **Hoyun Jung**, **Kyungyoon Noh**, **Bong-Tae Park**, **Seungwan Hong, Sung Hoi Hur,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 9: OVERLAY

25 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Room 210A

*Session Chair(s):* **Philippe Leray**, imec (Belgium)

13981-42 • 1:40 PM - 2:00 PM

**Optical overlay metrology challenges in next-gen semiconductor nodes**

*Author(s):* **Shlomit Katz,** KLA Israel (Israel); **Philippe Leray**, **Hongcheon Yang**, **Yongmin Cho**, **Victor Blanco,** IMEC (Belgium); **Roel Gronheid,** KLA Belgium (Belgium); **Efi Megged, Yoav Grauer,** KLA Israel (Israel)

13981-43 • 2:00 PM - 2:20 PM

**Novel scanner corrections for co-optimizing imaging and overlay to enable critical EUV and DUV lithography after wafer-to-wafer bonding**

*Author(s):* **Chung Hsun Li**, **Hakki Ergun Cekli**, **Alan Bigi**, **Hans Kattouw**, **Stephen Hsu**, **Jan Mulkens,** ASML B.V. (Netherlands); **Evert Mos**, **Simon van Gorp,** ASML Netherlands B.V. (Netherlands); **Simon Mathijssen,** ASML B.V. (Netherlands)

13981-45 • 2:20 PM - 2:40 PM

**Edge placement error-aware overlay optimization in an HVM FLASH multilayer product stack**

*Author(s):* **Heon Ju Lee**, **Eun Ho Lee**, **In-beom Yim**, **Do Hun Kim**, **Jeongjin Lee**, **Mi-youn Kim**, **Young-Min Seo**, **Seung-Yoon Lee**, **Chan Hwang**, **Young-Seog Kang,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Bas van den Broek**, **Seul Ki Kim**, **Hyung Won Nam**, **Ki Ho Ko**, **Ki-Youn Lee**, **Hee Young Park,** ASML Korea Co., Ltd. (Korea, Republic of); **Pieter Brandt**, **Erdem Karayer**, **Paulo Marques Flavio**, **Raja Bennabhaktula**, **Ferhad Kamalizadeh**, **Kateryna Lyakhova**, **Chenguang He, Pieter Smorenberg,** ASML Netherlands B.V. (Netherlands)

13981-226 • 2:40 PM - 3:00 PM

**Enhancing overlay accuracy in advanced DRAM: process-compatible targets and for improved NZO stability**

*Author(s):* **Dohun Kim**, **Jinsun Kim**, **Eunho Lee**, **Jeongjin Lee**, **Seongyoon Lee**, **Youngseog Kang,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jaepil Oh**, **Junyeob Kim**, **Moonsoo Kim**, **Cheolmin Yoon**, **Minsung Hyun**, **Nanglyeom Oh**, **Jaeyoung Park**, **Jinseok Heo,** KLA Corp. (Korea, Republic of); **Qian Cheng,** KLA Corp. (China); **Linfei Gao,** KLA Corporation (China); **Hedvi Spielberg**, **Nir Bendavid,** KLA Corp. (Israel); **Yossi Simon,** KLA Israel (Israel); **Nadav Gutman,** KLA Corp. (Israel)

## Exhibit Social Hour and 50th Celebration 3:00 PM - 4:00 PM

## SESSION 10: METROLOGY AND INSPECTION FOR ADVANCED MEMORY DEVICES

25 February 2026 • 4:00 PM - 5:40 PM | Convention Center, Room 210A

*Session Chair(s):* **Cornel Bozdog**, Micron Technology, Inc. (United States); **Byoung-Ho Lee**, Hitachi High-Tech Corp. (Japan)

13981-46 • 4:00 PM - 4:20 PM

**A novel MTD control method for oblique intersecting layers in DRAM products**

*Author(s):* **Tzu-Yu Chou,** Nanya Technology Corp (Taiwan); **Zhichang Pan,** KLA Corporation (China); **Hsiao Lun Chu**, **Chia-Chung Lin,** Nanya Technology Corp. (Taiwan); **Qiqi Zhang,** KLA China (China); **Chao-Jen Tsou,** KLA GmbH (Germany); **Remi Lin**, **Cliff Ma**, **Cheng-Wei Yang, Foster Huang,** Nanya Technology Corp. (Taiwan)

13981-47 • 4:20 PM - 4:40 PM

**Optimization of DRAM process overlay control via time-series feature engineering and machine learning prediction**

*Author(s):* **Wonjun Yang**, **Jungjin Lee**, **Jungmin Lee**, **Gyeyoung Kim**, **Jiyeon Lee**, **Seungsu Lee**, **Hyunseung Ha**, **Nanhyung Kim**, **Dohyung Roh**, **Jinsun Kim**, **Sangho Yun**, **Ji-Eun Lee**, **Woojin Jung, Yeongchan D. R. Cho,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-48 • 4:40 PM - 5:00 PM

**Contour-based metrology for layer-specific variability analysis in advanced DRAM patterning**

*Author(s):* **Jong-Hoi Cho**, **Junho Lee**, **Raseong Ki**, **Jinhee Han**, **Eunhyuck Choi**, **DaeYoung Choi**, **Hyewon Park**, **Jungduck Lee**, **Kyuyoung Kim**, **Kyuchan Shim,** SK hynix Inc. (Korea, Republic of); **Frederic Robert**, **Nivea G. Schuch**, **Bruno Ortega Goes,** Applied Materials France (France); **Yoav Harari**, **Shachaf Tsafriri**, **Yana Branzburg**, **Yuval Shelef,** Applied Materials Israel, Ltd. (Israel); **You Jin Kim,** Applied Materials Korea, Ltd. (Israel); **Jeong-Ho Yeo,** Applied Materials Israel, Ltd. (Israel); **Changwon Seo**, **Sujin Lim**, **Woosung Jung**, **Chan Hee Kwak,** **Hyeon Sang Shin,** Applied Materials Korea, Ltd. (Korea, Republic of)

13981-49 • 5:00 PM - 5:20 PM

**Stochastics metrology and yield in DRAM high volume manufacturing**

*Author(s):* **Chris A. Mack,** Fractilia, LLC (United States); **Yanian Huang**, **Jason Teng**, **Chun Hung Chen**, **Xin-Ru Zhan**, **James Chu**, **Jen-Ho Chen,** Nanya Technology Corp. (Taiwan); **Hsi-Shan Kuo,** Fractilia, LLC (Taiwan); **Robert L. Bristol,** Fractilia, LLC (United States)

13981-50 • 5:20 PM - 5:40 PM

**On device ADI overlay measurement in advanced DRAM nodes using high kV CFE technology**

*Author(s):* **Linmiao Zhang**, **Tze Siong Lim**, **Yu Qian**, **Li Xin,** Micron Semiconductor Asia Pte. Ltd. (Singapore); **Ronnie Porat**, **Michael Shifrin**, **Amit Fatal**, **Amit Zakay**, **Gilad Farber**, **Shiran Maimon,** Applied Materials Israel, Ltd. (Israel); **Ryotaro Tarumoto**, **Satoru Komatsu,** Applied Materials Japan, Inc. (Japan); **LihErl Tang,** Applied Materials South East Asia Pte. Ltd. (Singapore)

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13981-71 • 5:30 PM - 7:00 PM

**Hybrid metrology: nothing if not consistent**

*Author(s):* **Suzanne Thornton,** George Washington University (United States); **Adam Pintar**, **Samuel Stavis**, **John S. Villarrubia**, **Donald Windover**, **Michael Katz, Isvar Cordova,** National Institute of Standards and Technology (United States)

13981-72 • 5:30 PM - 7:00 PM

**Reliable actinic mask evaluation via high-frequency signal enhancement in EUV ptychography**

*Author(s):* **Seungchan Moon**, **Junho Hong, Jinho Ahn,** Hanyang Univ. (Korea, Republic of)

13981-74 • 5:30 PM - 7:00 PM

**Photo e-beam switching and quantitative Vth metrology of nMOS/pMOS transistors**

*Author(s):* **Daiki Sato,** Photo electron soul Inc. (Japan); **Yuta Arakawa**, **Kotaro Niimi**, **Atsushi Koizumi**, **Hokuto Iijima**, **Tomohiro Nishitani,** Photo electron Soul Inc. (Japan); **Yoshio Honda**, **Hiroshi Amano,** Nagoya Univ. (Japan); **Mitsunobu Yasuda,** Toray Research Centre, Inc. (Japan)

13981-75 • 5:30 PM - 7:00 PM

**High-resolution 3D NAND profile measurement using optical metrology and machine learning**

*Author(s):* **Dongjin Choi**, **Yuseong Jang**, **Sangwon Seo**, **Taeseok Seong, Chulgi Song,** Lam Research Corp. (Korea, Republic of)

13981-76 • 5:30 PM - 7:00 PM

**Fast and diverse SEM image synthesis: Leveraging parameter-specific prior distributions in a variational autoencoder**

*Author(s):* **HongChang Lee,** Seoul National Univ (Korea, Republic of), Metrology & Inspection Technology Team, Samsung Electronics (Korea, Republic of); **Seung-Woo Lee,** Seoul National Univ (Korea, Republic of); **Do-Nyun Kim,** Department of Mechanical Engineering, Seoul National University (Korea, Republic of), Institute of Advanced Machines and Design, Seoul National University (Korea, Republic of), Institute of Engineering Research, Seoul National University (Korea, Republic of)

13981-77 • 5:30 PM - 7:00 PM

**Detection of inference errors in deep learning denoising models and reliability analysis system for SEM metrology**

*Author(s):* **Tomoyuki Myojin,** Hitachi, Ltd. (Japan); **Tomoyuki Okuda**, **Xinpei Zhang, Yuhei M. Senuma,** Hitachi High-Tech Corp. (Japan)

13981-78 • 5:30 PM - 7:00 PM

**AFM study on the effect of photoacid generator concentration on photolithography**

*Author(s):* **Masanobu Naito,** National Institute for Materials Science (Japan); **Atsushi Sekiguchi,** Litho Tech Japan Co., Ltd. (Japan), Osaka Metropolitan Univ. (Japan); **Tadayuki Fujiwara, Yoichi Minami,** Litho Tech Japan Co., Ltd. (Japan)

13981-79 • 5:30 PM - 7:00 PM

**Model-guided integrated HR-FESEM/(S)TEM metrology using suspended thin layered nanoscale physical reference structures**

*Author(s):* **Vladimir Oleshko**, **Joshua D. Schumacher**, **Glenn E. Holland**, **Daron A. Westly**, **Antonio R. Montoro Bustos**, **Andras E. Vladar,** **John S. Villarrubia,** National Institute of Standards and Technology (United States)

13981-80 • 5:30 PM - 7:00 PM

**Large vision model for layout guided SEM image contour extraction**

*Author(s):* **Sanghyun Choi**, **Keetae Kim,** Siemens EDA (Korea, Republic of); **Yuansheng Ma, Hawren Fang,** Siemens EDA (United States)

13981-81 • 5:30 PM - 7:00 PM

**Rigorous modeling and machine learning for soft x-ray (RSOXS) characterization of complex nanostructures**

*Author(s):* **Aryan Gupta**, **Kas Andrle**, **Franklin Liou**, **Cheng Wang, Alexander Hexemer,** Lawrence Berkeley National Laboratory (United States)

13981-82 • 5:30 PM - 7:00 PM

**Pushing the limits of spectroscopic reflectometry for film metrology**

*Author(s):* **Zimu Zhou,** Western Digital Corp (United States); **Enrique Lopez-Guerra**, **Iulica Zana**, **Nguyen Quoc Huy Tran**, **Bojun Zhou**, **Gary Qian**, **Michael Kwan**, **Peter Wilkens, Chester Chien,** Western Digital Corp. (United States)

13981-83 • 5:30 PM - 7:00 PM

**Scalable inspections of multiresolution spatially sparse image collections of integrated circuits**

*Author(s):* **Timothee Kheyrkhah**, **Mylene Simon**, **June W. Lau**, **Michael Katz, Peter Bajcsy,** National Institute of Standards and Technology (United States)

13981-84 • 5:30 PM - 7:00 PM

**Unsupervised machine learning approach to uncover hidden silicon hotspots**

*Author(s):* **Daryl Tan,** GlobalFoundries (Singapore); **Sneha Kelkar,** GlobalFoundries (India); **Tamer Desouky,** GlobalFoundries (United States); **Steven Lubin,** Siemens EDA (United States); **Robin Chia**, **Seungri Song,** Siemens EDA (Singapore); **Seow Wei Lai,** GlobalFoundries (Singapore); **Gowtham Vangara**, **Jinyoung Yoon, Harrison Dodge,** GlobalFoundries (United States)

13981-85 • 5:30 PM - 7:00 PM

**TriCSEM: Fast 3D computational SEM simulation for accurate dimensional metrology**

*Author(s):* **Hyeokmin Choe,** Microsystems and Nanotechnology Division, National Institute of Standards and Technology (United States), Whiting School of Engineering, Johns Hopkins University (United States); **Andras E. Vladar,** Microsystems and Nanotechnology Division, National Institute of Standards and Technology (United States)

13981-87 • 5:30 PM - 7:00 PM

**Cu pad metrology using four-directional BSE signal of SEM for hybrid bonding applications**

*Author(s):* **Hiroaki Kasai,** Hitachi High-Tetech Corporation (Japan); **Nobuyuki Mise**, **Maki Tanaka,** Hitachi High-Tech Corp. (Japan); **Mayuka Osaki,** Hitachi, Ltd. (Japan); **Soon Aik Chew**, **Stefaan Van Huylenbroeck**, **Janusz Bogdanowicz**, **Alain Moussa**, **Anne-Laure Charley**, **Gian Lorusso, Yogmin Cho,** imec (Belgium)

13981-89 • 5:30 PM - 7:00 PM

**Adaptive critical dimension parameter evaluation in x-ray metrology with machine learning**

*Author(s):* **Andrei Baranovskiy**, **Yehonatan Amasay**, **Peter Gin,** Bruker Technologies Ltd. (Israel); **Jin Zhang**, **Yongfan Yang**, **Osman Sorkhabi,** Lam Research Corp. (United States); **Matthew Wormington,** Bruker Technologies Ltd. (Israel)

13981-90 • 5:30 PM - 7:00 PM

**Improved conduction model in charging SEM simulation**

*Author(s):* **Shari Klotzkin**, **Douglas Patriarche,** AMAG nanometro (United States); **Vishrut Shenoy**, **David Klotzkin,** Binghamton University (United States); **Yvette Ball,** AMAG nanometro (United States)

13981-91 • 5:30 PM - 7:00 PM

**High-sensitivity, quantitative differential interference contrast measurement verified with nm-scale shallow and smooth-shaped defects**

*Author(s):* **MASATO ISHIZUKA,** Hitachi, LTD. (Japan); **Toshifumi Honda**, **Shogo Iguchi**, **Junya Yoshimizu**, **Takeru Utsugi**, **Yuta Urano**, **Yukinobu Tanaka,** Hitachi, Ltd. (Japan); **Akio Yazaki, Kenshiro Otsubo,** Hitachi High-Tech Corp. (Japan)

13981-92 • 5:30 PM - 7:00 PM

**To cut or not to cut: An EPE analysis approach**

*Author(s):* **Robert L. Bristol,** Fractilia, LLC (United States); **Michael E. Adel,** Intellectual Landscapes (Israel); **Chris A. Mack,** Fractilia, LLC (United States)

13981-93 • 5:30 PM - 7:00 PM

**SEM overlay target optimization and metrology recipe validation via DL simulations**

*Author(s):* **Ran Itay,** Applied Materials (Israel); **Ran Yacoby**, **Boris Levant**, **Bar Dubovski**, **Jenny Perry**, **Tal Itzkovich**, **Michael Shifrin,** Applied Materials Israel, Ltd. (Israel); **Jeong-Ho Yeo**, **You Jin Kim,** Applied Materials Korea, Ltd. (Korea, Republic of); **Noam Oved**, **Uri Smolian**, **Gurudev Singh,** Applied Materials Israel, Ltd. (Israel); **Ikjun Jang**, **Il Hwan Kim**, **Byounghoon Kim**, **Sungbin Jeon**, **Muyoung Lee**, **Hyunju Song**, **Myeongcheol Go**, **Narim Noh**, **Ha-Chul Shin**, **Sangsu Jeong**, **Eunho Choi**, **Jinhong Park, Changmin Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-94 • 5:30 PM - 7:00 PM
**In-line defect inspection and review of micromasking defects within high aspect ratio through-silicon vias**
*Author(s):* **Teresa A. Esposito,** Applied Materials (United States); **Or Navon**, **Michael Guri**, **Eitan Rotem,** Applied Materials Israel, Ltd. (Israel); **Erik Geiss**, **Shih-Hui Jen**, **Levi Brewster**, **Domenico Casanica,** GlobalFoundries (United States); **Felix Levitov,** Applied Materials, Inc. (United States)

13981-95 • 5:30 PM - 7:00 PM
**Automated energy-filtered TEM metrology characterizations of 3D NAND and DRAM memory devices**
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**Active substrate support using piezoelectric thin films**
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**A deployable EUV radiometer with direct SI-traceability**
*Author(s):* **Brian J. Simonds**, **Bradley A. Pelz**, **Jack Tanner**, **Christopher Yung,** National Institute of Standards and Technology (United States); **Eric Gullikson,** Lawrence Berkeley National Lab. (United States); **Steve Grantham**, **Stephanie Moffitt**, **Rob Vest**, **John Lehman, Michelle Stephens,** National Institute of Standards and Technology (United States)

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**Defect reduction by using voltage contrast e-beam inspection on design optimized yield test structures of high-resistance/capacitance**
*Author(s):* **Yih-Yuh Doong,** PDF Solutions Inc (United States)

13981-101 • 5:30 PM - 7:00 PM
**PFIB-SEM wafer DualBeam applications for ground truth in-fab 3D NAND metrology**
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**Beyond focus and dose: Expanding PWQ with overlay sensitivity**
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**Evaluation of in-line SIMS impact on device reliability and performance**
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**Smart Zernike: automated model term selection for enhanced track module matching and CDU control in photolithography**
*Author(s):* **Christoph Ehrlich**, **Ulrich Denker**, **Philip Gröger**, **Gaetan De Liedekerke Beaufort**, **Xaver Thrun,** KLA Corp. (Germany); **Ted Taylor**, **Vlad Temchenko, Ranjan Khurana,** Micron Technology, Inc. (United States)

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**Resolution enhancement in EUV ptychography via optimized probe overlap ratio for diffraction diversity**
*Author(s):* **Junho Hong**, **Jinho Ahn**, **Taeho Lee, Seungchan Moon,** Hanyang Univ. (Korea, Republic of)

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**Development of next-generation EUV pellicle evaluation technology for transmission, reflection, and flare**
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**Nondestructive depth metrology of high-aspect-ratio TSVs using yield controlled e-beaming (YCeB)**

*Author(s):* **Daiki Sato,** Photo electron soul Inc. (Japan); **Yuta Arakawa**, **Kotaro Niimi**, **Atsushi Koizumi**, **Hokuto Iijima**, **Tomohiro Nishitani,** Photo electron Soul Inc. (Japan); **Yoshio Honda**, **Hiroshi Amano,** Institute of Materials and Systems for Sustainability, Nagoya Univ. (Japan); **Yasuda Mitsunobu,** Toray Research Centre, Inc. (Japan)

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**Integrated high-resolution edge metrology for enhanced CMP process control**

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**$LaB_6$ virtual source mode electron guns for advancing brightness and resolution in electron beam inspection**

*Author(s):* **Ha Rim Lee**, **Takashi Ogawa**, **Youngkwon Haam**, **Junhyeok Hwang**, **Jeong-Woong Lee**, **Sang-Woo Kang,** Korea Research Institute of Standards and Science (Korea, Republic of); **In-Yong Park,** KRISS (Korea, Republic of)

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**Analysis of factors affecting pattern fidelity evaluation using sine wave patterns in electron multibeam mask writing**

*Author(s):* **Makoto Kawano**, **Shinichi Sasaki**, **Hikari Ogawa**, **Aki Mukai**, **Tianyue Zhou**, **Takuma Abe**, **Yoshiyuki Negishi**, **Hideki Matsui, Yoshinori Kojima,** NuFlare Technology, Inc. (Japan)

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**Focus sensitivity of CD extreme values demonstrated on a 40 nm pitch DRAM hexagonal contact hole use case printed with 0.33 NA EUV lithography**

*Author(s):* **Andreas Frommhold,** imec (Belgium); **Bram Slachter**, **Jeremy Chen, Gijsbert Rispens,** ASML Netherlands B.V. (Netherlands)

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**Transmittance measurement of extreme ultraviolet (EUV) optical filter using tabletop test platform**

*Author(s):* **Eun-Seok Choe,** Korea Research Institute of Standards and Science, Korea (Korea, Republic of); **Won Chegal,** Korea Research Institute of Standards and Science (Korea, Republic of); **Wooram Kim**, **Do-Yeon Hwang**, **Junghoon Yang**, **Sang-Woo Kang**, **Jung-Hyung Kim, In Yong Park,** Korea Research Institute of Standards and Science, Korea (Korea, Republic of)

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**A robust AEI sampling strategy to address boundary-induced overlay variability**

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**Developing defect analysis and process control technology using inspection-guided metrology (IGM)**

*Author(s):* **Doyoung Yoon**, **Hee-Eun Yang**, **Jaesun Hwang**, **Min-Su Kim**, **Jeongho Ahn**, **Dongchul Ihm,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Hungchun Chen,** ASML Taiwan Ltd (Taiwan); **Bob Boo**, **Cheol-Ho Jeong**, **Hyokman Kwon,** ASML Korea Co., Ltd. (Korea, Republic of); **Yu-Han OuYang**, **Tim Tang**, **Sangyoon Shim**, **Guanchen He, Sudharshanan Raghunathan,** ASML San Jose (United States)

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**Advancements and challenges in large-scale atomic force microscopy image stitching for semiconductor devices**

*Author(s):* **Julien Baderot**, **Ali Hallal,** POLLEN Metrology (France); **Matthew Tedaldi**, **Javier Blasco-Herrera**, **Andrew Humphris,** Infinitesima Ltd. (United Kingdom); **Johann Foucher,** POLLEN Metrology (France)

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**Including prior design intent information to enhance contour extraction robustness for CD-SEM metrology**

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**Analysis of scan fingerprint characteristics in the frequency domain and their impact on scan speeds and DRAM structure properties**

*Author(s):* **Kwangsun Song,** Samsung Electronics Co., Ltd. (Korea, Republic of); **Jaeil Lee**, **Jonghyun Hwang**, **Hyeonjun Ha**, **Junghwan Kim**, **Youngjin Park**, **Juun Park**, **Chan Hwang,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Yongwoo Lee**, **Ilyoung Han**, **Sung-Min Park**, **Sang-Jin Kim,** ASML Korea Co., Ltd. (Korea, Republic of); **Miguel Garcia Granda**, **Junghoon Ok**, **Rogier Gilijamse**, **YeJin Kim**, **Noh-Kyoung Park**, **Momo Lin, Olivier Nijhout,** ASML Netherlands B.V. (Netherlands)

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**GRACE: a gradient-based model-agnostic explainability framework for photolithography overlay virtual metrology**

*Author(s):* **Hoyoung Choi**, **Wonhui Park**, **Jae-Han Lee**, **Yonghyun Kim**, **Gunwoong Kim**, **Junghwan Baek**, **Seungwoo Seo,** Gauss Labs (United States); **Jaegyun Jeong**, **Junhak Lee**, **Dongsuk Lim**, **Gunwoong Cho,** SK hynix Inc. (Korea, Republic of); **Il Koo Kim,** Gauss Labs (United States)

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**Advanced CDSEM and SEM distortion optimization on thick oxide devices**

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**Laboratory-scale quantitative actinic EUV platform for photoresist evaluation**

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**AURA-PIE: an AI-enabled understanding and retrieval-augmented assistant for physical inspection of electronics**

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**Axion® Physics-Augmented AI Solutions for Rapid, Precise and Robust Tilt Measurement in Memory Devices**

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**Charge suppression in SEM imaging using pulsed electron beam modulation from an NEA-InGaN semiconductor photocathode**

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**SEM image quality assessment: from wavelet transform to deep learning methods**

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**Causal AI for real-time process control: From alarms to explanations**

*Author(s):* **Kirk Ruble**, **Srijan Dubey**, **Vivek Vishwakarma,** ThirdAI Automation, Inc. (United States); **Sainyam Galhotra,** Cornell Univ. (United States)

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**High-resolution, high-contrast FIB-SEM 3D tomography for process control in advanced logic manufacturing**

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**High brilliance, metrology x-ray sources for the soft and tender x-ray range**

*Author(s):* **Mariko Yamaguchi**, **Daniel DeCiccio, Christoph Rose-Petruck,** Research Instruments Corporation (United States)

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**In-situ metrology for high aspect ratio channel holes via optimized diagonal milling and one-shot SEM Imaging**

*Author(s):* **Taeseok Seong,** Lam research (Korea, Republic of); **Heebeom Lee,** Lam research, Korea (Korea, Republic of); **Junseok Sim,** Lam Research Corp., Korea (Korea, Republic of); **Dongjin Choi**, **Sangwon Seo,** Lam research, Korea, Korea (Korea, Republic of); **Jeongkeun Song,** Lam research, Korea (Korea, Republic of); **Ahae Cho,** Lam research, Korea, Korea (Korea, Republic of); **Yuseong Jang,** Lam research, Korea (Korea, Republic of); **Chulgi Song,** Lam research, Korea, Korea (Korea, Republic of)

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**Monitoring of Hole-to-Hole Distance Variance in 3D NAND Using Axion® X-ray Critical Dimension Metrology**

*Author(s):* **Jin Zhang**, **Ying Gao**, **Yongfan Yang,** Lam Research Corp. (United States); **Tien-Jung Lee**, **Christopher Liman**, **Maggie Li**, **Nguyet Nguyen,** KLA Corp. (United States); **Tian Lan**, **Junyu Wang**, **Osman Sorkhabi,** Lam Research Corp. (United States); **Hyowon Park**, **Boxue Chen, Zhengquan Tan,** KLA Corp. (United States)

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**Error correction methodology in semiconductor devices utilizing large-area overlay measurement via DBM**

*Author(s):* **Yonghyeon Kim,** SAMSUNG Electronics Co Ltd (Korea, Republic of); **Kunho Lee**, **Jungsu Son**, **Kyounghee Kim**, **Taehyuk Kwon**, **Junhwan Kim**, **Eunji Ko**, **Yuho Bae**, **Kyusun Lee, Taehoon Park,** SAMSUNG Electronics Co Ltd, Korea (Korea, Republic of)

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**Overlay metrology performance specification challenge entering the sub-nanometer overlay era**

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**Domain knowledge-driven fusion machine learning for overlay prediction enhancement**

*Author(s):* **Tae Kwon Jee**, **Jeng-Hun Suh**, **Sungbin Son, Jungsuk Kim,** SemiAI (Korea, Republic of)

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**An ion microscope for semiconductor process control and SIMS nanoanalytics**

*Author(s):* **Peter Gnauck**, **Torsten Richter, Alexander Ost,** Raith GmbH (Germany)

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**Shrinking image-based overlay target for advanced logic device OPO control**

*Author(s):* **Yaniv Abramovitz,** KLA (Israel); **Alexander A Fisher,** Intel (United States); **Victor Lien Lien,** KLA (United States)

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**Comprehensive post-CMP surface metrology using large-area atomic force microscopy with optical-level throughput**

*Author(s):* **Irene Battisti**, **Ali Ahmadi**, **Ali Amoozandeh**, **Tom Bijnagte**, **Kevin Makles**, **Xin Meng**, **Riwaj Byanju**, **Gaurav Mahendru**, **Frank Pasveer**, **Niranjan Saikumar, Hamed Sadeghian,** Nearfield Instruments B.V. (Netherlands)

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**Application of low landing energy e-beam metrology for evaluating ArF immersion photoresist: Insights from EUV PR methodologies**

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**Occlusion-aware pattern measurement for see-through BSE images of HV-SEM via contour- and pixel-based approaches**

*Author(s):* **Shinji Murakami**, **Yoshihiro Midoh,** The Univ. of Osaka (Japan); **Masahiro Oya**, **Yosuke Okamoto**, **Shinichi Nakazawa**, **Kotaro Maruyama**, **Yuichiro Yamazaki,** TASMIT, Inc. (Japan); **Noriyuki Miura,** The Univ. of Osaka (Japan)

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**Generative adversarial autoencoder for denoising in x-ray critical dimension metrology**

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**NZO improvement on DRAM by novel recipe optimization algorithm**

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**Leveraging principal component analysis for overlay variation and root cause discovery in high-volume manufacturing**

*Author(s):* **Syed Naime Mohammad**, **Clemens Utzny**, **Alberto Lopez-Gomez**, **Sven Boese, Philip Gröger,** KLA Corp. (Germany)

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**Nano projectile SIMS: Guiding EUV resists fabrication process with nanoscale compositional insights**

*Author(s):* **Christelle Guillermier**, **Michael J. Eller**, **Richard Rickman**, **Stanislav V. Verkhoturov**, **Serge Della-Negra, Emile A. Schweikert,** Bienne Technology, Inc. (United States)

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**Controlled contaminated image generation for metrology algorithm benchmarking and robustness improvement**

*Author(s):* **Alexandre Moly,** Applied Materials France (France); **Gregoire Caron**, **Bruno Ortega Goes,** Lennatech (France); **Frédéric Robert,** Applied Materials France (France)

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**Multiwavelength overlay metrology at single-wavelength throughput: chromatic overlay metrology (COMET)**

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**Fast and accurate stages design for sub-nanometer accuracy**

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**A systematic tuning methodology for on-product overlay control in advanced 3D NAND nodes**

*Author(s):* **W. H. Wang,** Macronix International Co. Ltd. (Taiwan); **Fu-Ching Chiao,** KLA Corporation (Taiwan); **Yen-Hung Liu,** KLA Taiwan (Taiwan); **Chao-Yu Cheng,** KLA Corporation (Taiwan); **Michael Har-Zvi,** KLA Corporation (Israel); **J. R. Du**, **Chih-Hao Huang**, **T. H. Yang, K. C. Chen,** Macronix International Co. Ltd. (Taiwan)

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**Resist- and underlayer-specific sensitivity of unbiased LER to CD-SEM measurement conditions**

*Author(s):* **Mayank Behl**, **Yi Liu**, **Pulkit Saksena**, **Martin McCallum**, **Charles H. Wallace,** Intel Corp. (United States); **Chris A. Mack, Robert L. Bristol,** Fractilia, LLC (United States)

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**Deep learning-based framework for accurate glass defect detection and classification**

*Author(s):* **Shih-Yu Chen,** National Yunlin Univ. of Science and Technology (Taiwan)

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**High-throughput AFM roughness metrology with sub-1% repeatability for wafer-scale process control**

*Author(s):* **Edward Nelson,** Nanosurf, Inc. (United States); **Christian Bippes**, **Máté Lesták**, **Hans Gunstheimer,** Nanosurf AG (Switzerland); **Dominik Ziegler,** Nanosurf AG (Netherlands); **Eugene Ogorodnik,** Nanosurf AG (Switzerland)

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**MSAD: efficient multiscale attention decoder for semiconductor image segmentation**

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**Atomic force probing and focus–exposure matrix analysis of 20 nm contact holes on EUV-patterned wafers**

*Author(s):* **Gaurav Mahendru**, **Wei Yu Shih**, **Yufan Li**, **Bhartendu Kumar Dwivedi**, **Erik Simons**, **Mees van Dijk**, **Khalid Elsayed**, **Po-Cheng Wu**, **Niranjan Saikumar**, **Frank Pasveer**, **Jeroen Verbiest, Hamed Sadeghian,** Nearfield Instruments B.V. (Netherlands)

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**Impact of mark polarity, crosstalk, and recovery topography on AIMid overlay metrology**

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**Nano-TSV to BPR connection optimization**

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**Development and evaluation of EUV beam splitters for industrial applications**

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**Computational guided dynamic sampling e-beam inspection in high-volume manufacturing (HVM) automation with ASML's virtual computing platform (VCP)**

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**Bridging simulation and reality: few-shot fine-tuning for SEM profile prediction**

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**AI-driven metrology for electrical test via ellipsometry**

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**High-NA EUV patterning of logic feature 20-24 nm: an e-beam defectivity analysis**

*Author(s):* **Mahmudul Hasan,** imec (Belgium); **Ganesha Durbha,** KLA Corp. (Belgium); **Victor Blanco**, **Syamashree Roy**, **Joern-Holger Franke**, **Christophe Beral**, **Sandip Halder**, **Philippe Leray, Shubhankar Das,** imec (Belgium)

13981-171 • 5:30 PM - 7:00 PM

**Role of adequate image processing in defect characterization at scanning actinic EUV mask inspection tool**

*Author(s):* **Roman Chalykh**, **Youngdeok Kim**, **Gihong Kim, Dong Gun Lee,** ESOL, Inc. (Korea, Republic of)

13981-172 • 5:30 PM - 7:00 PM

**A new era of photomask dry cleaning technology for wafer fabs**

*Author(s):* **Gabriel G. Baralia**, **Christof Baur**, **René Kullock**, **Kinga Kornilov**, **Pascal Scheck,** Carl Zeiss SMT GmbH (Germany); **Riley Joinnides,** Carl Zeiss SBE, LLC (United States); **Tilmann Heil,** Carl Zeiss SMT GmbH (Germany)

13981-173 • 5:30 PM - 7:00 PM

**Collaborative AI–driven hardware–software integration for automated wafer surface characterization in bonding applications**

*Author(s):* **Martin Jacob,** POLLEN Metrology (France); **Amanda Aguiar-Alvarez**, **Miguel Jimenez-Gomis,** Wooptix, S.L. (Spain); **Ali Hallal**, **Julien Baderot**, **Johann Foucher,** POLLEN Metrology (France); **Sébastien Pauliac-Vaujou,** Wooptix, S.L. (Spain)

13981-174 • 5:30 PM - 7:00 PM

**SXR development for metrology, inspection, and process control using a discharge-produced plasma source**

*Author(s):* **Henry Chou,** Energetiq Technology (United States); **Nanu Brates**, **David B. Reisman**, **Daniel Arcaro**, **Nick Lubinsky**, **Wolfram A. Neff**, **Michael Roderick**, **Aaron Feldman**, **Don McDaniel**, **Deborah Gustafson,** Energetiq Technology, Inc. (United States); **Kosuke Saito,** Hamamatsu Photonics K.K. (Japan)

13981-175 • 5:30 PM - 7:00 PM

**Diffusion models for defect detection in SEM images of contact hole patterns**

*Author(s):* **Efi-Maria Papia,** Institute of Nanoscience and Nanotechnology, National Ctr. for Scientific Research "Demokritos" (Greece); **Alex Kondi,** Nanometrisis (Greece); **Vassilios Constantoudis, Evangelos Gogolides,** Institute of Nanoscience and Nanotechnology, National Ctr. for Scientific Research "Demokritos" (Greece)

13981-176 • 5:30 PM - 7:00 PM

**Reconstruction of 3D line/space pattern morphologies from top-down SEM images**

*Author(s):* **Alex Kondi,** Nanometrisis (Greece); **Vassilios Constantoudis,** Nanometrisis P.C. (Greece), Institute of Nanoscience and Nanotechnology, National Ctr. for Scientific Research "Demokritos" (Greece); **Efi-Maria Papia,** Institute of Nanoscience and Nanotechnology, National Ctr. for Scientific Research "Demokritos" (Greece); **Antonios Stellas**, **George Papavieros,** Nanometrisis P.C. (Greece); **Gaoliang Dai**, **Johannes Degenhardt**, **Jan Thiesler,** Physikalisch-Technische Bundesanstalt (Germany); **Jean-David Isasa**, **Yasin Ekinci**, **Dimitris Kazazis,** Paul Scherrer Institut (Switzerland); **Benedicte Mortini,** STMicroelectronics S.A. (France); **Evangelos Gogolides,** Nanometrisis P.C. (Greece)

13981-177 • 5:30 PM - 7:00 PM

**A novel deep learning framework for CD-SEM image denoising**

*Author(s):* **Yuhang Liu**, **Haowen Hu**, **Jun Chen**, **Hideaki Sasazawa, Yasutaka Toyoda,** Hitachi High-Tech Corporation (Japan)

13981-179 • 5:30 PM - 7:00 PM

**Quartz resonator-based atomic force microscopy as a stable semiconductor metrology solution**

*Author(s):* **Wonho Jhe,** Multiscale Instruments Inc. (Korea, Republic of), Seoul National University (Korea, Republic of); **Hankyul Koh,** Seoul National University (Korea, Republic of); **Jonghwan Seo**, **Jiwon Yun**, **Hanseong Kang,** Multiscale Instruments Inc. (Korea, Republic of); **Heewon Lee,** Seoul National University (Korea, Republic of), Multiscale Instruments Inc. (Korea, Republic of); **Sangbin Do,** Yonsei University (Korea, Republic of), Multiscale Instruments Inc. (Korea, Republic of); **Hoeyoung Choe,** Multiscale Instruments Inc. (Korea, Republic of); **Joon-hyuk Ko,** Center for AI and Natural Sciences, Korea Institute for Advanced Study (Korea, Republic of)

13981-180 • 5:30 PM - 7:00 PM

**ICON: Automated spectroscopic ellipsometry-based machine learning solutions for critical dimension characterization**

*Author(s):* **Kenneth O'Neal,** KLA (United States); **Yulung Sung**, **Aaron Blattner**, **Herath Piyathilaka,** Intel Corp. (United States); **Houssam Chouiab,** KLA Corp. (United States)

13981-44 • 5:30 PM - 7:00 PM

**3-pitch cDBO a novel overlay mark with process robustness for advanced logic devices**

*Author(s):* **Muyoung Lee,** Samsung Electronics (Korea, Republic of); **EunHo Choi**, **Sangho Jo**, **Ikjun Jang**, **Hachul Shin**, **Jinhong Park**, **Ilhwan Kim**, **Changmin Park, Wongi Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-220 • 5:30 PM - 7:00 PM

**Adaptive design of EUV scatterometry through efficient Bayesian inference**

*Author(s):* **Yunzhe Shao,** Univ of Colorado Boulder (United States); **Nicholas W. Jenkins**, **Clay Klein**, **Margaret M. Murnane, Henry C. Kapteyn,** Univ. of Colorado Boulder (United States)

13981-221 • 5:30 PM - 7:00 PM

**LLM-powered fab operation assistant for CD-SEM recipe creation**

*Author(s):* **Yuhei Senuma,** Hitachi High-Tech Corporation (Japan); **Toshinori Yamauchi,** Hitachi, Ltd (Japan); **Tomoyuki Okuda**, **Hideaki Sasazawa, Yasutaka Toyoda,** Hitachi High-Tech Corporation (Japan)

13981-223 • 5:30 PM - 7:00 PM

**On product scanner focus monitoring and control in leading edge logic foundry with spectroscopic ellipsometry**

*Author(s):* **Samuel Davis**, **Yu-Lung Sung,** Intel Corp. (United States); **Rob Peters**, **Telly Koffas,** KLA Corp. (United States); **Ulrich Denker**, **Philip Gröger**, **Patrick Lomtscher,** KLA Corp. (Germany); **Jordan Pio,** KLA Corp. (United States)

13981-224 • 5:30 PM - 7:00 PM

**Evaluation of 5nm hollow fiber nylon filter media for high-purity photoresist**

*Author(s):* **Majid Entezarian**, **Samy Saar**, **Sandeep Singh,** Thermo Fisher Scientific Inc. (United States)

13981-228 • 5:30 PM - 7:00 PM

**An ultra-high vacuum ellipsometer for EUV Mueller matrix spectroscopic ellipsometry**

*Author(s):* **Purnima Balakrishnan**, **John Burnett**, **Aaron Chew**, **Colton Dudley**, **Thomas A. Germer**, **Steven E. Grantham**, **Stephanie L. Moffitt**, **Bryan M. Barnes**, **Eric L. Shirley**, **Martin Y. Sohn, Daniel F. Sunday,** National Institute of Standards and Technology (United States)

13981-229 • 5:30 PM - 7:00 PM

**AFM-based nanoscale chemical identification and repair of photomask defects using integrated PiFM**

*Author(s):* **Ron R. Bozak,** Park Systems, Inc. (United States); **Gilbert Min,** Park Systems Inc. (United States); **Ki-Young Jung**, **Sang-Joon Cho**, **Byoung-Woon Ahn,** Park Systems Corp. (Korea, Republic of); **A. Edward Robinson,** Park Systems Inc. (United States)

13981-230 • 5:30 PM - 7:00 PM

**Low-frequency line edge roughness foreruns defects in line/space patterns**

*Author(s):* **George Papavieros**, **Vassilios Constantoudis**, **Antonios Stellas**, **Alex Kondi,** Nanometrisis PC (Greece); **Jean-David Isasa**, **Dimitrios Kazazis,** PSI Center for Photon Science (Switzerland); **Evangelos Gogolides,** NCSR Demokritos (Greece)

## Thursday 26 February 2026

### SESSION 11: ELECTRON BEAM METROLOGY

26 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Room 210A

*Session Chair(s):* **Shunsuke Koshihara**, Hitachi High-Tech Corp. (Japan)

13981-51 • 8:00 AM - 8:20 AM

**Metrology technique for gate stack leakage evaluation using SEMs**

*Author(s):* **Yasuhiro Shirasaki**, **Yajian Hu**, **Kazufumi Yachi,** Hitachi High-Tech Corp. (Japan); **Minami Shoji,** Hitachi, Ltd. (Japan); **Hiroaki Arimura**, **Jerome Mitard**, **Gian Lorusso, Naoto Horiguchi,** imec (Belgium)

13981-52 • 8:20 AM - 8:40 AM

**Sensitivity of line edge roughness metrics to line roughness geometry, SEM noise, and contrast**

*Author(s):* **Pushkar Sathe**, **Peter Bajcsy, Andras E. Vladar,** National Institute of Standards and Technology (United States)

13981-53 • 8:40 AM - 9:00 AM

**eBeam process control for yield and reliability in advanced HBM hybrid bonding**

*Author(s):* **Eran Gal**, **Shunit Petachia Halely**, **Shimon Halevi**, **Noam Noam,** Applied Materials Israel Ltd (Israel); **Sang Jun Jo,** Applied Materials Korea LTD, Korea (Korea, Republic of); **Ophir Rosental**, **David Solomon**, **Remi Le-Tiec**, **Masami Himeji**, **Nitin Singh Malik**, **Shreyasi Chakraborty**, **Nitzan Sadot,** Applied Materials Israel Ltd (Israel); **Chongyang Cai**, **Yen Li**, **Liu Jiang**, **Ravi Dasaka**, **El Mehdi Bazizi,** Applied Materials (United States); **Jungmin LEE,** Samsung Electronics (Korea, Republic of); **Kwangsoo Kim,** Samsung Electronics, Korea (Korea, Republic of); **Byeongkyu Cha, Inyoung Choi,** Samsung Electronics (Korea, Republic of)

13981-54 • 9:00 AM - 9:20 AM

**Quantification of SAQP process variation by using hybrid e-beam metrology**

*Author(s):* **Toshimasa Kameda,** Hitachi High-Tech Corp. (Japan); **Sun Kim**, **Satoshi Une,** Hitachi High-Tech Korea Co., Ltd. (Korea, Republic of); **Ayumi Doi,** Hitachi High-Tech Corp. (Japan); **Ilyong Lee, Jong-Hoi Cho,** SK hynix Inc. (Korea, Republic of)

13981-56 • 9:20 AM - 9:40 AM

**LER analysis of noisy SEM images using physics-inspired deep learning**

*Author(s):* **Ryosuke Kizu,** National Institute of Advanced Industrial Science and Technology (Japan); **Tatsuya Yatagawa,** Hitotsubashi Univ. (Japan)

13981-55 • 9:40 AM - 10:00 AM

**Improving EUV low landing energy process monitoring through striation and triangularity - novel CD-SEM metrics**

*Author(s):* **Roman Kris**, **Grigory Klebanov**, **Vadim Vereschagin**, **Anna Levant**, **Schahaf Tsafriri**, **Yana Branzburg,** Applied Materials Israel, Ltd. (Israel); **Sujin Lim**, **Woosung Jung,** Applied Materials Korea, Ltd. (Korea, Republic of); **EunKyeong Jang**, **GwangSeob Lim**, **Sangyun Lee**, **Doowan Kim**, **Daiyoung Mun,** SK hynix Inc. (Korea, Republic of); **Yael Shilo,** Applied Materials Israel, Ltd. (Israel)

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

## 2026 KAREL URBÁNEK BEST STUDENT PAPER AWARD PRESENTATION

26 February 2026 • 10:30 AM - 10:40 AM | Convention Center, Room 210A

The Karel Urbánek Best Student Paper Award recognizes the most promising contribution to the field by a student, based on the technical merit and persuasiveness of the paper presented at the current year's conference.

## SESSION 12: OPTICAL METROLOGY

26 February 2026 • 10:40 AM - 12:10 PM | Convention Center, Room 210A

*Session Chair(s):* **Daniel Schmidt**, IBM Research - Albany (United States); **Myungjun Lee**, SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-57 • 10:40 AM - 11:10 AM

**Optimization of optical metrology simulation domains in solving inverse problems of machine learning based OCD metrology**

*(Invited Paper)*

*Author(s):* **QHwan Kim**, **Seungju Kim**, **Wanju Cho**, **Woorim Lee**, **ChoHwan Oh**, **Donghyeok Im**, **Kyu Baik Chang,** Samsung Electronics (Korea, Republic of); **Jaeshin Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jaehyun Bae**, **Jiseong Doh**, **ByungHyun Hwang**, **Dongchul Ihm, Jaehoon Jeong,** Samsung Electronics (Korea, Republic of)

13981-58 • 11:10 AM - 11:30 AM

**Beyond overlay: Additional structure parameters extracted from optical overlay measurements**

*Author(s):* **Cornel Bozdog,** Micron Technology, Inc (United States); **Jason Reece**, **Gary Wu**, **Dominic Seo**, **Sachie Huang**, **Tanner Raph,** Micron Technology, Inc. (United States); **Jelmer Boter**, **Alok Verma**, **Giulio Bottegal**, **Alexander Regner**, **Carter Johnson**, **Alan Khan**, **Pieter Kapel**, **Arno van Leest**, **Simon Mathijssen**, **Izabela Saj**, **Ewoud van West,** ASML Netherlands B.V. (Netherlands); **Jacob Moxley, Richard Housley,** Micron Technology, Inc. (United States)

13981-59 • 11:30 AM - 11:50 AM

**Effect of thickness on the optical constants determination of TiN thin films in the EUV/VUV range**

*Author(s):* **Najmeh Abbasirad,** Physikalisch-Technische Bundesanstalt (Germany); **Jit Dutta,** Univ. of California, San Diego (United States); **Nathan Jarnagin,** KLA Corp. (United States); **Udo Kroth**, **Hans Kirschner,** Physikalisch-Technische Bundesanstalt (Germany); **Vicky Philipsen,** imec (Belgium); **Alexander Gottwald**, **Frank Scholze,** Physikalisch-Technische Bundesanstalt (Germany); **Andrew Kummel,** Univ. of California, San Diego (United States); **Larissa Juschkin,** KLA Corp. (United States); **Victor Soltwisch,** Physikalisch-Technische Bundesanstalt (Germany)

13981-60 • 11:50 AM - 12:10 PM

**Shielding strategies for alignment marks in multilayer euv stacks: Mitigating reflection and coupling interference**

*Author(s):* **Cyrus E. Tabery**, **Gautam Gunjala**, **Boris Menchtchikov,** ASML (United States); **Gian Lucca**, **Irina Lyulina,** ASML Netherlands B.V. (Netherlands); **Zhe Hou**, **Niels Hesp, Henry Megens,** ASML Netherlands B.V (Netherlands)

**Lunch Break 12:10 PM - 1:40 PM**

## SESSION 13: INSPECTION

26 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Room 210A
*Session Chair(s):* **Byoung-Ho Lee**, Hitachi High-Tech Corp. (Japan); **Shunsuke Koshihara**, Hitachi High-Tech Corp. (Japan)

13981-61 • 1:40 PM - 2:00 PM
**High landing energy e-beam inspection as an in-line blocked nanowire release metric for GAA yield ramp**
*Author(s):* **Oliver D. Patterson,** Intel Corp. (United States); **Ran Alkoken,** Applied Materials Israel, Ltd. (Israel); **Tianyi Yao**, **Navaneeth Krishnan Trippatta Pisharam**, **Sayak Ghosh**, **Mehreen Sultana**, **Sashi Panchamgam**, **Manish Sharma**, **Kale Beckwitt**, **Tuyen K. Tran,** Intel Corp. (United States); **Kelly Yoshinaga,** Applied Materials, Inc. (United States); **Manoj Kumar Yadav**, **Yehuda Cohen**, **Eugene Bullock, Moshe Amzaleg,** Applied Materials Israel, Ltd. (Israel)

13981-62 • 2:00 PM - 2:20 PM
**Electrical defect review and characterization via in-line conductive AFM in advanced logic processes**
*Author(s):* **Kyung Souk Yi,** Samsung Electronics (Korea, Republic of); **Kwangil Shin**, **Youngeun Yoo**, **Daeyoung Yang**, **HyungSeop Kim**, **Il-Suk Park**, **Yusin Yang, Su-Young Lee,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13981-63 • 2:20 PM - 2:40 PM
**AI-enabled cross-domain image analysis for high-NA via defect quantification in random logic via arrays**
*Author(s):* **Dorin Cerbu**, **Victor M. Blanco Carballo**, **Bhavishya Chowrira Poovanna**, **Safae Ben Ayad El Amri,** imec (Belgium); **Jeff Hsia, Etienne de Poortere,** ASML Netherlands B.V. (Netherlands)

13981-64 • 2:40 PM - 3:00 PM
**Step-height defect detection technology based on photolithography leveling data**
*Author(s):* **Minsun Ryu,** Samsung Electronics (Korea, Republic of); **Byung Yong Choi**, **Hoyun Jung**, **Jonghyun Kim**, **Jongik Hong**, **Jiwon Shin**, **Seungyoon Kim**, **Seongwook Choi**, **Eun-suck Choi**, **Kyungyoon Noh**, **Bong-tae Park**, **Seungwan Hong, Sung Hoi Hur,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

**Coffee Break 3:00 PM - 3:30 PM**

## SESSION 14: METROLOGY AND INSPECTION FOR EUV AND HIGH-NA EUV

26 February 2026 • 3:30 PM - 5:40 PM | Convention Center, Room 210A
*Session Chair(s):* **Nivea G. Schuch**, Applied Materials, Inc. (France); **Hugo Cramer**, ASML Netherlands B.V. (Netherlands)

13981-108 • 3:30 PM - 3:50 PM
**High resolution eBeam inspection (EBI) addressing advanced DRAM word line defectivity challenges**
*Author(s):* **Doyoung Yoon,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Ran Alkoken,** Applied Materials Israel, Ltd. (Israel); **Taeyong Jang**, **Ayoung Yuk**, **Jeongho Ahn**, **Dongchul Ihm,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Man Soo Jang**, **Sang Jun Jo**, **Hyeong Jin,** Applied Materials Korea, Ltd. (Korea, Republic of); **Nitin Singh Malik**, **Itamar Rain**, **Ran Badanes**, **Yael Sdechen**, **Prakhar Bhandari, Nitzan Sadot,** Applied Materials Israel, Ltd. (Israel)

13981-67 • 4:00 PM - 4:20 PM
**Stochastic defectivity on via layer in 0.55 NA EUVL**
*Author(s):* **John Biafore,** KLA Corp. (United States); **Mircea Dusa**, **Danilo De Simone,** imec (Belgium); **Mark D. Smith**, **Anatoly Burov, Pradeep Vukkadala,** KLA Corp. (United States)

13981-68 • 4:20 PM - 4:40 PM
**Measuring contact hole distributions for use in predicting missing contact hole rates**
*Author(s):* **Elisa Novelli,** IBM Research (United States); **Chris Mack,** Fractilia Inc (United States); **Genevieve Kane**, **Kebin Gu**, **Anna Lin**, **Dario Goldfarb**, **Johnpeter Ngunjiri, Kolade Oyekan,** IBM Research (United States)

13981-69 • 4:40 PM - 5:00 PM
**Mitigating X-ray–induced damage in CD-SAXS metrology of EUV resists**
*Author(s):* **Philipp A. Wieser**, **Kevin Yager**, **Chang-Yong Nam,** Brookhaven National Lab. (United States); **Dario Goldfarb, Christian Lavoie,** IBM Thomas J. Watson Research Ctr. (United States)

13981-70 • 5:00 PM - 5:20 PM
**BSE grey level-based CD-SEM metrology for scumming quantification in high-NA EUV contact holes**
*Author(s):* **Wei Sun,** Hitachi High-tech Corp (Japan); **Dieter J. M. Van Den Heuvel**, **Hyo Seon Suh, Gian Francesco Lorusso,** imec (Belgium)

13981-231 • 5:20 PM - 5:40 PM

**High-resolution multi-column electron beam inspection for EUV reticle development and production**

*Author(s):* **Shin-An Ku**, **Yu-Liang Hong**, **Chia-Hao Chang**, **Chin-Kun Wang,** Taiwan Semiconductor Manufacturing Company (Taiwan); **Jinhua Chen,** KLA Corp. (United States); **Mark Chien**, **Wei-Chieh Wang**, **Mike Yeh,** KLA Corp. (Taiwan); **Jinggang Zhu**, **Art Martinez**, **David Aupperle**, **Michael Benyishay**, **Manny Wu**, **Amo Chen, Mingwei Li,** KLA Corp. (United States)

# CONFERENCE 13982

# Novel Patterning Technologies 2026

**23 - 26 February 2026 | Convention Center, Room 211B**


***Conference Chair(s):*** **Ricardo Ruiz,** Lawrence Berkeley National Lab. (United States)

***Conference Co-Chair(s):*** **Richard A. Farrell,** Meta (United States)

***Program Committee:*** **Alan D. Brodie,** KLA Corp. (United States); **Tito L. Busani,** The Univ. of New Mexico (United States); **Emine Çagin,** Heidelberg Instruments Nano AG (Switzerland); **Sandip Halder,** SCREEN SPE Germany GmbH (Germany); **Naoya Hayashi,** Dai Nippon Printing Co., Ltd. (Japan); **Morgan Hazelbaker,** Intel Corp. (United States); **Daniel J. C. Herr,** The Univ. of North Carolina at Greensboro (United States); **Takuya Kono,** KIOXIA Corp. (Japan); **Stephen M. Kuebler,** Univ. of Central Florida (United States); **Romain J. Lallement,** IBM (United States); **J. Alexander Liddle,** National Institute of Standards and Technology (United States); **Hans Loeschner,** IMS Nanofabrication GmbH (Austria); **Laurent Pain,** CEA-LETI (France); **Eric M. Panning,** SiClarity Inc. (United States); **Ivo W. Rangelow,** Technische Univ. Ilmenau (Germany); **Douglas J. Resnick,** Canon Nanotechnologies, Inc. (United States); **Martha I. Sanchez,** (United States); **Gurpreet Singh,** Intel Corp. (United States); **Lovejeet Singh,** JSR Micro, Inc. (United States); **Steven E. Steen,** ASML Netherlands B.V. (Netherlands); **Ines A. Stolberg,** Vistec Electron Beam GmbH (Germany); **Ksenija Varga,** EV Group E. Thallner GmbH (Austria); **Marc A. Verschuuren,** SCIL Nanoimprint Solutions (Netherlands); **Niels Wijnaendts vam Resandt,** Lab14 (United States); **Tianyi Zhang,** Syracuse Univ. (United States)


## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM
**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)
*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

**Coffee Break 9:50 AM - 10:30 AM**

### SESSION 1: SCANNING PROBE/TIP-BASED LITHOGRAPHY

23 February 2026 • 10:30 AM - 12:00 PM | Convention Center, Room 211B

*Session Chair(s):* **Tito L. Busani**, The Univ. of New Mexico (United States); **Tianyi Zhang**, Syracuse Univ. (United States); **Ivo W. Rangelow**, Technische Univ. Ilmenau (Germany)

13982-1 • 10:30 AM - 11:00 AM
**Transistors platform for rapid and parallel detection of multiple pathogens by multiplexed biological tSPL activation** *(Invited Paper)*
*Author(s):* **Elisa Riedo,** New York Univ. (United States)

13982-3 • 11:00 AM - 11:30 AM
**Nanoscale engineering of 2D materials based on thermal scanning probe and optical lithographic techniques** *(Invited Paper)*
*Author(s):* **Nicholas J. Borys,** The Univ. of Utah (United States)

13982-4 • 11:30 AM - 12:00 PM
**Scanning probe lithography-based mix-and-match technique as an enabling tool for the pilot production of nanowire-based next-generation electromechanical sensors** *(Invited Paper)*
*Author(s):* **Taner Altinmakas,** Koç University (Turkey); **Mert Ozden,** Eindhoven University of Technology (Netherlands); **Sina Zare Pakzad,** TU Wien (Austria); **Hans-Georg Pietscher**, **Javad Basseri**, **Ivo W. Rangelow,** nano analytik GmbH (Germany); **Arda D. Yalcinkaya,** Boğaziçi University (Turkey); **Umut Kerimzade, B. Erdem Alaca,** Koç University (Turkey)

## Lunch Break 12:00 PM - 1:40 PM

## SESSION 2: NOVEL PATTERNING

23 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Room 211B
*Session Chair(s):* **Martha I. Sanchez**, **Morgan Hazelbaker**, Intel Corp. (United States)

13982-6 • 1:40 PM - 2:00 PM **(CANCELLED)**
**Single-digit nanoscale pattering**
*Author(s):* **Lilac Amirav**, **Pierre Indermuhle, Ju Eun Yim,** Nani Lithography, Inc. (United States)

13982-7 • 2:00 PM - 2:20 PM
**Additive microfabrication using InkLogic multinozzle printing**
*Author(s):* **Patrick Galliker, Patrick Heissler,** Scrona AG (Switzerland)

13982-8 • 2:20 PM - 2:40 PM
**Comparative simulation analysis of displacement Talbot lithography and DUV dry projection lithography for high-resolution periodic patterning**
*Author(s):* **Kelsey Wooley,** Eulitha US, Inc. (United States); **Stefan Rietmann**, **Zhixin Wang**, **Harun Solak,** Eulitha AG (Switzerland); **Lawrence S. Melvin, Andrew Dawes,** Synopsys, Inc. (United States)

13982-100 • 2:40 PM - 3:00 PM
**1D, 1.5D, and 2D high-speed MEMS-based spatial light modulators for direct-write lithography**
*Author(s):* **Alex P. Payne**, **Yoshimi Hashimoto**, **Gregory Jacob**, **H. Mizuno, Lars Eng,** Silicon Light Machines (United States)

## Coffee Break 3:00 PM - 3:30 PM

## SESSION 3: KEYNOTE SESSION

23 February 2026 • 3:30 PM - 4:50 PM | Convention Center, Room 211B
*Session Chair(s):* **Ricardo Ruiz**, Lawrence Berkeley National Lab. (United States); **Richard A. Farrell**, Meta (United States)

13982-201 • 3:30 PM - 4:10 PM
**A novel approach for the planarization of advanced semiconductor devices** (Keynote Presentation)
*Author(s):* **Douglas J. Resnick,** Canon Nanotechnologies, Inc. (United States)

13982-202 • 4:10 PM - 4:50 PM
**Wafer-scale photonic integration and packaging for the quantum era** (Keynote Presentation)
*Author(s):* **Galan Moody,** Univ. of California, Santa Barbara (United States)

## ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A
5:15 PM - 5:20 PM:

**Tribute to Andrew R. Neureuther**
Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**
"Making the Impossible Possible: 50 Years of SPIE ALP" is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*
**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*
**Burn Lin**, National Tsing Hua Univ. (Taiwan)
**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson**, The Univ. of Texas at Austin (United States)
**Janice Golda**, Intel Corp. (United States)
**Chris Mack**, Fractilia, LLC (United States)

## Tuesday 24 February 2026

## SESSION 4: DIRECTED SELF-ASSEMBLY I

24 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Room 211B
*Session Chair(s):* **Ricardo Ruiz**, Lawrence Berkeley National Lab. (United States)

13982-9 • 8:00 AM - 8:30 AM
**Integrated patterning of self-aligned trench contacts using directed self-assembly** *(Invited Paper)*
*Author(s):* **Manish Chandhok**, **Gurpreet Singh**, **Eungnak Han**, **Bharath B. Rajeeva**, **Florian Gstrein, Richard Schenker,** Intel Corp. (United States)

13982-10 • 8:30 AM - 8:50 AM
**Breakthroughs in contact hole patterning enabled by directed self-assembly**
*Author(s):* **Shota Iino**, **Takehiro Seshimo**, **Ryutaro Sugawara**, **Takahiro Dazai, Kazufumi Sato,** Tokyo Ohka Kogyo Co., Ltd. (Japan)

13982-11 • 8:50 AM - 9:10 AM
**Formation of fine-pitch, high-density hole patterns by DSA**
*Author(s):* **Makoto Muramatsu**, **Takanori Nishi,** Tokyo Electron Kyushu Ltd. (Japan); **Yoshihito Takahashi**, **Yasunori Hatamura,** Tokyo Electron Miyagi Ltd. (Japan); **Tomohiko Tsutsumi,** Tokyo Electron Ltd. (Japan); **Takahiro Kitano,** Tokyo Electron Kyushu Ltd. (Japan); **Tomohiro Iwaki,** Micron Memory Japan, Inc. (Japan)

13982-12 • 9:10 AM - 9:30 AM
**High-resolution chemical patterns from negative-tone resists for directed self-assembly: extension to EUV lithography and $Al_2O_3$ sacrificial patterns**
*Author(s):* **Kyunghyeon Lee**, **Ki Hyun Kim,** The Univ. of Chicago (United States); **Emma Vargo,** Lawrence Berkeley National Lab. (United States); **Honggu Im**, **Warren Holcomb**, **Bruno La Fontaine**, **Ricardo Ruiz,** Lawrence Berkeley National Laboratory (United States); **Paul F. Nealey,** The Univ. of Chicago (United States)

13982-13 • 9:30 AM - 10:00 AM
**Fundamental relationships between pattern quality and properties of block copolymers in directed self-assembly** *(Invited Paper)*
*Author(s):* **Paul F. Nealey**, **Kyunghyeon Lee**, **Ki Hyun Kim,** The Univ. of Chicago (United States); **Emma Vargo,** Lawrence Berkeley National Lab. (United States); **Daniel F. Sunday**, **R. Joseph Kline,** National Institute of Standards and Technology (United States); **Cheng Wang, Ricardo Ruiz,** Lawrence Berkeley National Lab. (United States)

### Coffee Break 10:00 AM - 10:20 AM

## SESSION 5: ELECTRON MULTIBEAM MASK WRITER

24 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Room 211B

*Session Chair(s):* **Hans Loeschner**, IMS Nanofabrication GmbH (Austria); **Lovejeet Singh**, JSR Micro, Inc. (United States)

13982-14 • 10:30 AM - 10:50 AM

**Enhancing advanced nodes curvilinear patterning via multi e-beam writer** *(Invited Paper)*

*Author(s):* **Hsin-Yi Yin,**, **Chang-Yi Lyu**, **Chen-Hui Lee**, **P.S. Chen**, **Cheng-Kuang Chen**, **Vincent, C.W. Wen, Frankie, F.G. Tsai,** Taiwan Semiconductor Manufacturing Co Ltd (Taiwan)

13982-15 • 10:50 AM - 11:10 AM

**MBMW technical requirements for enabling high-NA era mask fabrication** *(Invited Paper)*

*Author(s):* **Sungwoo Jang,** Samsung electronics Co. Ltd. (Korea, Republic of); **Sungsil Choo**, **Hanyoung Park**, **Sungyong Hwang**, **Yun-Lim Jung**, **Raewon Yi**, **Kangho Park**, **Sung-Il Lee**, **Byung-Sup Ahn**, **Sukjong Bae**, **Jin Choi, Sang-Hee Lee,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13982-16 • 11:10 AM - 11:30 AM

**EUV mask patterning by using MBMW for memory** *(Invited Paper)*

*Author(s):* **Keun hwan Yeom,** SK Hhnix (Korea, Republic of); **Eui-Sang Park,** SK hynix Inc. (Korea, Republic of); **JAESIK SON,** SK Hynix System IC Inc. (Korea, Republic of); **Chanha Park,** SK hynix Inc. (Korea, Republic of)

13982-17 • 11:30 AM - 11:50 AM

**MBM-4000: Advanced features and applications** *(Invited Paper)*

*Author(s):* **Yuji Fujiwara**, **Hiroshi Matsumoto**, **Jumpei Yasuda**, **Kenichi Yasui**, **Hayato Kimura, Yoshinori Kojima,** NuFlare Technology, Inc. (Japan)

13982-18 • 11:50 AM - 12:10 PM

**Advances in multi-beam mask writing with MBMW-401** *(Invited Paper)*

*Author(s):* **Francesco Massa**, **Johannes Leitner**, **Peter Hudek**, **Hans Loeschner**, **Elmar Platzgummer,** IMS Nanofabrication GmbH (Austria); **Maximilian Reiter,** IMS Nanofabrication GmbH (Taiwan)

**Lunch Break 12:10 PM - 1:40 PM**

## SESSION 6: NANOIMPRINT LITHOGRAPHY I

24 February 2026 • 1:40 PM - 3:10 PM | Convention Center, Room 211B

*Session Chair(s):* **Marc A. Verschuuren**, SCIL Nanoimprint Solutions (Netherlands); **Sandip Halder**, imec (Belgium)

13982-19 • 1:40 PM - 2:10 PM

**Nanoimprint lithography progress in manufacturing and integration** *(Invited Paper)*

*Author(s):* **Ryo Nawata**, **Noriyasu Hasegawa**, **Kenji Yamamoto**, **Kiyohito Yamamoto**, **Masayuki Kagawa**, **Mitsuru Hiura**, **Keita Sakai, Yukio Takabayashi,** Canon Inc. (Japan)

13982-20 • 2:10 PM - 2:30 PM

**NIL process integration toward HP 1X nm generation**

*Author(s):* **Kenta Suzuki**, **Ryosuke Hamamoto**, **Yoko Tanaka**, **Tetsuya Ueda**, **Wataru Mizubayashi**, **Yoshihiro Hayashi,** National Institute of Advanced Industrial Science and Technology (Japan); **Masaki Ishida**, **Tomomi Funayoshi**, **Hiromi Hiura**, **Masayuki Kagawa**, **Noriyasu Hasegawa, Kiyohito Yamamoto,** Canon Inc. (Japan)

13982-21 • 2:30 PM - 2:50 PM

**Patterning technology for nanoimprint templates in the Angstrom era**

*Author(s):* **Takaharu Nagai**, **Kimio Ito**, **Mitsuru Kondo**, **Ryugo Hikichi**, **Masakazu Mori**, **Hisayoshi Watanabe**, **Hideki Cho, Shingo Yoshikawa,** Dai Nippon Printing Co., Ltd. (Japan)

13982-22 • 2:50 PM - 3:10 PM

**Development of spin-coating UV-NIL resist for semiconductor device manufacturing**

*Author(s):* **Akihiro Hakamata,** FUJIFILM Corp (Japan); **Keita Kato, Kazuyuki Usuki,** FUJIFILM Corp. (Japan)

**Coffee Break 3:10 PM - 3:30 PM**

## SESSION 7: DIRECTED SELF-ASSEMBLY II

24 February 2026 • 3:30 PM - 5:40 PM | Convention Center, Room 211B

*Session Chair(s):* **Gurpreet Singh**, Intel Corp. (United States); **Laurent Pain**, CEA-LETI (France)

13982-23 • 3:30 PM - 4:00 PM

**Directed self-assembly for advanced nodes: Material and process innovations for P30CH and P24LS** *(Invited Paper)*

*Author(s):* **Rémi Vallat**, **Lander Verstraete,** imec (Belgium); **Minseong Jeong,** Seoul National Univ. of Science and Technology (Korea, Republic of); **Laurent Souriau, Hyo Seon Suh,** imec (Belgium)

13982-24 • 4:00 PM - 4:30 PM

**Relating materials properties to block copolymer interfacial roughness in thin films with soft X-ray measurements** *(Invited Paper)*

*Author(s):* **Daniel F. Sunday**, **R. Joseph Kline,** National Institute of Standards and Technology (United States); **Emma Vargo,** Lawrence Berkeley National Lab. (United States); **Kyunghyeon Lee,** The Univ. of Chicago (United States); **Ricardo Ruiz,** Lawrence Berkeley National Lab. (United States); **Paul F. Nealey,** The Univ. of Chicago (United States)

13982-25 • 4:30 PM - 4:50 PM

**Resonant soft x-ray reflectivity studies of high-▯, low-N block copolymers for directed self-assembly at EUV-relevant dimensions**

*Author(s):* **Emma Vargo,** Lawrence Berkeley National Laboratory (United States); **Ki Hyun Kim**, **Kyunghyeon Lee,** The Univ. of Chicago (United States), Argonne National Lab. (United States); **Christopher Eom,** Argonne National Lab. (United States); **Daniel F. Sunday,** National Institute of Standards and Technology (United States); **Qi Zhang**, **Kas Andrle,** Lawrence Berkeley National Lab. (United States); **Ricardo Ruiz,** Lawrence Berkeley National Laboratory (United States); **Paul F. Nealey,** The Univ. of Chicago (United States), Argonne National Lab. (United States)

13982-26 • 4:50 PM - 5:10 PM

**Process development and optimization for EUV rectification by directed self-assembly (DSA)**

*Author(s):* **Dustin W. Janes, Jon-L Innocent-Dolor,** TEL Technology Ctr., America, LLC (United States)

13982-27 • 5:10 PM - 5:40 PM

**DNA origami for 3D nanoscale manufacturing** *(Invited Paper)*

*Author(s):* **Gregor Posnjak, Tim Liedl,** Ludwig-Maximilians-Univ. München (Germany)

## Wednesday 25 February 2026

### SESSION 8: HETEROGENEOUS INTEGRATION AND ADVANCED PACKAGING I

25 February 2026 • 8:10 AM - 10:00 AM | Convention Center, Room 211B

*Session Chair(s):* **Niels Wijnaendts van Resandt**, Lab14 Inc. (United States); **Eric M. Panning**, SiClarity Inc. (United States)

13982-28 • 8:10 AM - 8:40 AM

**High aspect ratio copper pillar structures enabled by digital lithography patterning of thick resists for AI and HPC device packages** *(Invited Paper)*

*Author(s):* **Ksenija Varga**, **Lisa Berger**, **Tobias Zenger,** EV Group E. Thallner GmbH (Austria); **Jerome Serrand,** JSR Micro N.V. (Belgium); **Loriana Celeste**, **Jerome Daviot,** Technic France (France); **Lynne Michealson,** Technic Inc. (United States)

13982-29 • 8:40 AM - 9:10 AM

**Addressing advanced packaging challenges with digital lithography technology** *(Invited Paper)*

*Author(s):* **Thomas L. Laidig,** Applied Materials, Inc. (United States)

13982-30 • 9:10 AM - 9:30 AM

**How Texas Instrument's DLP® Technology drives advanced packaging forward**

*Author(s):* **Jeff Marsh,** Texas Instruments Inc. (United States)

13982-31 • 9:30 AM - 10:00 AM

**Advancing process and packaging with maskless lithography** *(Invited Paper)*

*Author(s):* **Clifford Engel**, **Gary Allen**, **Robert Seidel**, **Marta Anguera Antonana**, **Gurpreet Singh, Florian Gstrein,** Intel (United States)

**Coffee Break 10:00 AM - 10:20 AM**

### SESSION 9: AUGMENTED REALITY AND OPTICAL METAMATERIALS

25 February 2026 • 10:20 AM - 11:50 AM | Convention Center, Room 211B

*Session Chair(s):* **Richard A. Farrell**, Meta (United States); **Romain J. Lallement**, IBM Research - Albany (United States)

13982-32 • 10:20 AM - 10:50 AM

**Turning breakthroughs into reality: AI glasses from first etched device to high-volume manufacturing** *(Invited Paper)*

*Author(s):* **Yongan Xu, Ludovic Godet,** Applied Materials, Inc. (United States)

13982-33 • 10:50 AM - 11:20 AM

**Direct wafers scale NIL of inorganic waveguide combiners and metalenses with sub-micron overlay alignment** *(Invited Paper)*

*Author(s):* **Marc A. Verschuuren,** SCIL Nanoimprint Solutions (Netherlands); **Bradley R. Williams,** MOXTEK, Inc. (United States); **Jeroen Visser**, **Gert-Jan Hurxkens,** SCIL Nanoimprint Solutions (Netherlands); **Brid Connolly,** Tekscend Photomask Germany GmbH (Germany); **Erik Peters,** SCIL Nanoimprint Solutions (Netherlands)

13982-34 • 11:20 AM - 11:50 AM

**Nanostructure product development and volume manufacturing utilizing nanoimprint lithography** *(Invited Paper)*

*Author(s):* **Bradley R. Williams**, **Daniel Bacon-Brown**, **Matthew C. George**, **Ricky Edwards**, **Arash Farhang,** MOXTEK, Inc. (United States); **Alex Orozco,** Nippon Kayaku America, Inc. (United States)

## SESSION 10: STUDENT SPEED TALKS

25 February 2026 • 11:50 AM - 12:10 PM | Convention Center, Room 211B

*Session Chair(s):* **Richard A. Farrell**, Meta (United States); **Ricardo Ruiz**, Lawrence Berkeley National Lab. (United States)

Students will give a speed talks about their poster presentations.

## Lunch Break 12:10 PM - 1:30 PM

## SESSION 11: NANOIMPRINT LITHOGRAPHY II

25 February 2026 • 1:30 PM - 3:00 PM | Convention Center, Room 211B

*Session Chair(s):* **Naoya Hayashi**, Dai Nippon Printing Co., Ltd. (Japan); **Douglas J. Resnick**, Canon Nanotechnologies, Inc. (United States)

13982-35 • 1:30 PM - 2:00 PM

**Topography control using inkjet adaptive planarization: Results and challenges** *(Invited Paper)*

*Author(s):* **Deepak Shah**, **Hsan-yin Hsu**, **Joel M. Gregie**, **Diane Walters**, **Matthew Bates**, **Gino Graziano**, **Peter Wagner**, **Karen Williams**, **Ashok Kumar**, **Ajaya Sigdel**, **Thoe Michaelos**, **Yi-chun Chen**, **Paul Nyhus,** Intel Corp. (United States); **Brian Fletcher**, **Ecron Thompson**, **Craig Cone**, **James W. Irving**, **Mehul Patel**, **Sean Sheehan**, **Daniel Ironside**, **Yasmine Jahani**, **Teresa Estrada**, **Grant Ashby**, **Chris Jones**, **Niyaz Khusnatdinov**, **Meliha Rainville**, **Takahiro Nakayama**, **Douglas J. Resnick**, **Xing-Yee Gan,** Canon Nanotechnologies, Inc. (United States); **Igal Deckman,** Canon U.S.A., Inc. (United States)

13982-36 • 2:00 PM - 2:20 PM

**Inkjet-based adaptive planarization tools for the fabrication of advanced semiconductor devices**

*Author(s):* **Hideo Tanaka**, **Osamu Morimoto**, **Keita Sakai,** Canon Inc. (Japan); **Brian Fletcher**, **Ali Aghili**, **Zhengmao Ye,** Canon Nanotechnologies, Inc. (United States); **Deepak Shah**, **Diane Walters**, **Matthew Bates**, **Gino Graziano**, **Peter Wagner**, **Joel M. Gregie**, **Ujwal Thakur, Aritrajit Gupta,** Intel Corp. (United States)

13982-37 • 2:20 PM - 2:40 PM

**Inkjet-based adaptive planarization material development**

*Author(s):* **Takashi Sekito**, **Takafumi Iwata**, **Gregor Larbig**, **Julian Osthoff**, **Adam Ware**, **Youngjun Her,** EMD Electronics (United States); **Tim Stachowiak**, **Weijun Liu,** Canon Nanotechnologies Inc. (United States); **Mansour Moinpour, Jae-Hyun Kim,** EMD Electronics (United States)

13982-38 • 2:40 PM - 3:00 PM

**Large-area nanoimprinting for panel-level packaging**

*Author(s):* **Jan Matthijs ter Meulen, Pim Veldhuizen,** Morphotonics B.V. (Netherlands)

## Exhibit Social Hour and 50th Celebration 3:00 PM - 3:50 PM

## SESSION 12: HETEROGENEOUS INTEGRATION AND ADVANCED PACKAGING II

25 February 2026 • 3:50 PM - 5:30 PM | Convention Center, Room 211B

*Session Chair(s):* **J. Alexander Liddle**, National Institute of Standards and Technology (United States); **Emine Çagin**, Heidelberg Instruments Nano AG (Switzerland)

13982-39 • 3:50 PM - 4:20 PM

**Towards EUV-based processing of 2D semiconductors for advanced logic applications** *(Invited Paper)*

*Author(s):* **Reynolds Dziobek-Garrett,** Advanced Research Center for Nanolithography (Netherlands); **Vina Faramarzi,** ASML Netherlands B.V. (Netherlands); **Pawan Kumar**, **Pierre Morin,** imec (Belgium); **Etienne de Poortere,** ASML Technology Development Ctr. (Belgium); **Mark van de Kerkhof,** ASML Netherlands B.V. (Netherlands); **Jorik van de Groep,** Univ. of Amsterdam (Netherlands); **Roland Bliem,** Advanced Research Ctr. for Nanolithography (Netherlands)

13982-40 • 4:20 PM - 4:50 PM

**Advances in single-layer gate and triple-layer gate EUV patterning for 300mm silicon quantum dot spin qubit devices** *(Invited Paper)*

*Author(s):* **Johan De Backer**, **Yannick Hermans**, **Sofie Beyne**, **Clement Godfrin**, **Stefan Kubicek**, **Shuchi Kaushik**, **Andrea Mingardi**, **Diziana Vangoidsenhoven**, **Danny Wan, Kristiaan de Greve,** imec (Belgium)

13982-41 • 4:50 PM - 5:10 PM

**Hybrid patterning of 3D silicon fin capacitors for quantum circuits**

*Author(s):* **Patrick S. Finnegan,** Sandia National Labs (United States); **Scott E. Weatherred**, **Robert B. Reyna**, **Stephen M. Carr,** Sandia National Labs. (United States); **Sueli Skinner Ramos, Robin Jacobs-Gedrim,** Sandia National Labs (United States)

13982-42 • 5:10 PM - 5:30 PM

**Exploration and mitigation of local wafer deformations resulting from direct wafer-to-wafer bonding**

*Author(s):* **Richard J. F. van Haren,** ASML Netherlands BV (Netherlands); **Suwen Li**, **Blandine Minghetti,** ASML Netherlands B.V. (Netherlands); **Ivanie Mendes**, **Marie-Line Pourteau**, **Michael May**, **Karine Abadie**, **Hadi Hijazi**, **Viorel Balan**, **Frank Fournel**, **Laurent Pain,** Univ. Grenoble Alpes, CEA-LETI (France); **Thomas Plach**, **Laurent Michaud**, **Gernot Probst, Markus Wimplinger,** EV Group E. Thallner GmbH (Austria)

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13982-50 • 5:30 PM - 7:00 PM

**Introducing thermal scanning probe lithography into the nanofabrication of semiconductor quantum devices**

*Author(s):* **Iker Uranga-Granados,** IMB-CNM (CSIC) (Spain); **Robin Erne**, **Jana Chaaban,** Heidelberg Instruments Nano AG (Switzerland); **Marta Fernández-Regúlez**, **Joan Bausells,** Instituto de Microelectrónica de Barcelona, Consejo Superior de Investigaciones Científicas (Spain); **Guido Rademaker,** CEA-LETI (France); **Emine Çagin,** Heidelberg Instruments Nano AG (Switzerland); **Francesc Pérez-Murano,** Instituto de Microelectrónica de Barcelona, Consejo Superior de Investigaciones Científicas (Spain)

13982-51 • 5:30 PM - 7:00 PM

**Seamless line continuation in latent photoresist for customizable micro- and nano-fabrication**

*Author(s):* **Xinchang Zou,** TU Ilmenau (Germany); **Rostyslav Mastylo, Thomas Kissinger,** Technische Univ. Ilmenau (Germany)

13982-52 • 5:30 PM - 7:00 PM

**Dry patterning of positive tone resists via projection-based femtosecond laser ablation**

*Author(s):* **Adithya Chimalakonda, Sourabh K. Saha,** Georgia Institute of Technology (United States)

13982-53 • 5:30 PM - 7:00 PM

**Fabrication of organic field effect transistor using low temperature annealed fluorinated block copolymer**

*Author(s):* **Tangjun Zhang,** Fudan Univ. (China)

13982-54 • 5:30 PM - 7:00 PM

**Geometry-induced effects on infiltration process for line edge roughness mitigation of polymeric nanopatterns**

*Author(s):* **Teresa Elenes-Cervantes**, **Olga Muntada**, **Jordi Antoja-Lleonart**, **Sara Duran**, **Ricard Noy**, **Francesc Perez-Murano, Marta Fernandez-Regulez,** IMB-CNM-CSIC (Spain)

13982-55 • 5:30 PM - 7:00 PM

**Direct patterning of phase change materials (PCMs) using the Raith Picomaster-150 laser beam lithography**

*Author(s):* **Osama Rana,** Univ of Dayton (United States); **Shiqi Luo**, **Imad Agha, Andrew Sarangan,** Univ. of Dayton (United States)

13982-56 • 5:30 PM - 7:00 PM

**Integrated fabrication of GaN nanowires on silicon (111) cantilevers for multifunctional scanning probe metrology, lithography, and optical spectroscopy**

*Author(s):* **Isaac Stricklin,** Univ of New Mexico (United States); **Tito Busani,** The Univ. of New Mexico (United States)

13982-57 • 5:30 PM - 7:00 PM

**Unsupervised neural-network proximity correction (NNPC) for large-area chiral metasurface**

*Author(s):* **Kuan-Hsun Wang,** National Yang Ming Chiao Tung Univ (Taiwan); **Hsuehli Liu**, **Pokai Chang**, **You Chia Chang, Peichen Yu,** National Yang Ming Chiao Tung Univ. (Taiwan)

13982-60 • 5:30 PM - 7:00 PM

**Patterning sub-10nm line directly from cylindrical block copolymer**

*Author(s):* **Desheng Zhan, Hai Deng,** Fudan University (China)

13982-61 • 5:30 PM - 7:00 PM

**Orientation control of 5nm fast self-assembling fluorinated side-chained BCPs**

*Author(s):* **Hongyi Tang,** Fudan University (China); **Xuemiao Li**, **Xiaofei Qian,** Fudan Univ. (China); **Hai Deng,** Fudan University (China)

13982-62 • 5:30 PM - 7:00 PM

**Synthesis and self-assembly behaviour of fluorine-containing polymeric photoacid generator forming sub-10nm micro domains**

*Author(s):* **Tao Liu**, **Wu Guangya**, **Zhenyu Yang**, **Xiaofei Qian, Hai Deng,** Fudan University (China)

13982-64 • 5:30 PM - 7:00 PM

**High aspect ratio processing of high CTE glass using KrF excimer laser**

*Author(s):* **Daisuke Momiyama,** GIGAPHOTON INC. (Japan); **Akira Suwa**, **Tomonari Tanaka**, **Michiaki Nemoto, Yasufumi Kawasuji,** Gigaphoton Inc. (Japan)

13982-66 • 5:30 PM - 7:00 PM

**Next-generation digital lithography technology (DLT) for high-volume manufacturing of advanced packaging**

*Author(s):* **Anindarupa Chunder,** Applied Materials (United States); **Kara Levy**, **Heather Bailey**, **Yi Li**, **Ray Sun, Niranjan Khasgiwale,** Applied Materials, Inc. (United States)

13982-67 • 5:30 PM - 7:00 PM

**Curvilinear OPC with inverse lithography technology eliminates Manhattan OPC non-convergence under MRC rules**

*Author(s):* **Jui-Liang Lan,** Nanya technology corporation (Taiwan); **Yen-Lung Lu**, **Teng-Yen Huang**, **Chun-Cheng Liao, Seng Tse Chen,** Nanya Technology Corp. (Taiwan)

13982-71 • 5:30 PM - 7:00 PM

**Cost-effective sub-wavelength structuring via block copolymer blend self-assembly for optical applications**

*Author(s):* **Raphaël Feougier**, **Noah Lamure**, **Alexis Royer, Christophe Grangier,** CEA-LETI (France)

13982-72 • 5:30 PM - 7:00 PM

**Improving pattern fidelity for DSA line/space structures at 24nm pitch**

*Author(s):* **Jon-L Innocent-Dolor,** TEL Technology Center, America, LLC (United States); **Dustin W. Janes,** TEL Technology Ctr., America, LLC (United States)

13982-73 • 5:30 PM - 7:00 PM

**Cloud-based curvilinear OPC for free-form reticle designs in silicon photonics and metasurfaces**

*Author(s):* **Po-Hsun Fang**, **Po-Kai Chang**, **Hsueh-Li Liu**, **Kuan-Hsun Wang**, **Yu-Hsuan Lo**, **Ming-Lin Tsai**, **Zhi-Sheng Wang**, **Han-Xuan Huang,** National Yang Ming Chiao Tung Univ (Taiwan); **Shie-Yuan Wang,** National Yang Ming Chiao Tung Univ (Taiwan), Research Center for Information Technology Innovation, Academia Sinica, Taiwan (Taiwan); **Peichen Yu,** National Yang Ming Chiao Tung Univ (Taiwan)

13982-74 • 5:30 PM - 7:00 PM

**Optimization of printed tungsten disulfide ($WS_2$) thin films for flexible electronics using inkjet technology**

*Author(s):* **Shilma Mangira,** Texas State University (United States); **Zubair Ahmed**, **Ariful Haque, Yihong Chen,** Texas State Univ. (United States)

13982-75 • 5:30 PM - 7:00 PM

**Defective image detection and analysis for inkjet-printed quantum dot light emitters**

*Author(s):* **Byung Doo Chin,** Dankook Univ. (Korea, Republic of)

13982-101 • 5:30 PM - 7:00 PM

**Fabrication of microchannels in flexible dielectrics using photoimageable degradable polymers**

*Author(s):* **Jose Lopez Ninantay**, **Milette Handley, Paul A. Kohl,** Georgia Institute of Technology (United States)

## Thursday 26 February 2026

### SESSION 13: TWO-PHOTON, MULTICOLOR AND DIRECT WRITE LITHOGRAPHY

26 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Room 211B

*Session Chair(s):* **Lovejeet Singh**, JSR Micro, Inc. (United States)

13982-43 • 8:00 AM - 8:20 AM

**Lithography digitalization in semiconductor technologies through advanced software development of high throughput maskless exposure**

*Author(s):* **Alois Malzer**, **Ksenija Varga**, **Martin Weinhart**, **Andreas Spitzer, Tobias Zenger,** EVGroup (Austria)

13982-44 • 8:20 AM - 8:40 AM

**Gray scale lithography via annealed resin engineering (GLARE)**

*Author(s):* **D. Bruce Burckel**, **Tielyr D. Creason**, **Andrew Leeth Holterhoff, Bryan Kaehr,** Sandia National Labs. (United States)

13982-45 • 8:40 AM - 9:00 AM

**Massive and adaptive parallel 3D nanolithography using a metalens array**

*Author(s):* **Xiaoxing Xia**, **Songyun Gu,** Lawrence Livermore National Lab. (United States); **Chenkai Mao**, **Jonathan Fan,** Stanford Univ. (United States); **Dongping Terrel-Perez**, **Sarvesh Sadana**, **Magi Mettry-Yassa, Thejaswi Tumkur Umanath,** Lawrence Livermore National Lab. (United States)

13982-46 • 9:00 AM - 9:30 AM

**Industrial 3D direct laser writing of complex micro-optics** *(Invited Paper)*

*Author(s):* **Simon Thiele,** Printoptix GmbH (Germany)

13982-47 • 9:30 AM - 10:00 AM

**Multicolor lithography in thin films** *(Invited Paper)*

*Author(s):* **Nicholas Fisher,** Univ. of Maryland, College Park (United States); **Shuhei A. Yamaguchi,** Sony Corp. (Japan); **Jeffrey K. Taylor**, **Anders Dollard**, **Nicholas Simms**, **Docia Atanda**, **Emma Talbott**, **Logan Kallini**, **Sandra Gutierrez Razo**, **Mona Abostate**, **Donald Hong**, **Pierce E. van Mulbregt**, **Amy S. Mullin**, **Daniel J. Falvey,** Univ. of Maryland, College Park (United States); **John S. Petersen,** imec (Belgium), Univ. of Maryland, College Park (United States); **John T. Fourkas,** Univ. of Maryland, College Park (United States)

## POSTER AWARD CEREMONY

26 February 2026 • 10:00 AM - 10:10 AM | Convention Center, Room 211B

Awards presented by conference chairs Ricardo Ruiz and Richard Farrell.

## Coffee Break 10:10 AM - 10:30 AM

## SESSION 14: ELECTRON, ION AND ATOM BEAM LITHOGRAPHY

26 February 2026 • 10:30 AM - 12:00 PM | Convention Center, Room 211B

*Session Chair(s):* **Ines A. Stolberg**, Vistec Electron Beam GmbH (Germany); **Ksenija Varga**, EV Group E. Thallner GmbH (Austria)

13982-48 • 10:30 AM - 11:00 AM

**Fabrication technology and optical properties of ebeam generated effective index metamaterials for UV-applications** *(Invited Paper)*

*Author(s):* **Meik Panitz**, **Michael Thomschke**, **Clemens Schindler**, **Martin Tilke**, **Stefan Schneider,** JENOPTIK Optical Systems GmbH (Germany); **Stefan Fasold,** Vistec Electron Beam GmbH (Germany)

13982-49 • 11:00 AM - 11:30 AM

**Plasma-source FIB fabrication of metasurfaces on trapped-ion quantum computer chips** *(Invited Paper)*

*Author(s):* **Henri J. Lezec**, **Wenqi Zhu,** National Institute of Standards and Technology (United States); **Daniel Ouellette,** Quantinuum LLC (United States); **David M. Gaudiosi,** L3Harris Technologies, Inc. (United States); **Molly Andersen**, **Bob Higashi**, **Todd Klein**, **Kirk Cook,** Quantinuum LLC (United States); **Adam Ollanik,** Quantinuum Ltd. (United States)

13982-76 • 11:30 AM - 12:00 PM

**Advances in metastable atom lithography** *(Invited Paper)*

*Author(s):* **Bodil Holst,** Lace Lithography (Norway); **Adrià Salvador Palau**, **Daniel Fojo Álvarez**, **Francesco Andreoli**, **Eduard Bartrons,** Lace Lithography (Spain); **Toby Bird**, **Giorgio Calandra**, **Simon Coop,** Lace Lithography (Norway); **Antoni Fierro Gonzales**, **Borja Gorriz**, **Daniel J. Hall,** Lace Lithography (Spain); **Owen Thomas Huisman,** Lace Lithography (Norway); **William Huntington**, **Teresa Karanikolaou,** Lace Lithography (Spain); **Meghanad Kayanattil**, **Julien Lecoffre**, **Marc López Vilamajó,** Lace Lithography (Norway); **Juan Jose J. Nieto,** Lace Lithography (Spain); **Andrew Pratt,** Lace Lithography (Norway); **Pietro Rancati,** Lace Lithography (Spain); **Bappaditya Sankari**, **Espen Werdal Selfors,** Lace Lithography (Norway); **Adrian Parveet James Sidhu,** Lace Lithography (Spain); **Lorentz Tvedt Syslak**, **Philip Wulfsberg,** Lace Lithography (Norway); **Danilo De Simone**, **Gian Lorusso, John Petersen,** imec (Belgium)

## ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Advanced Lithography + Patterning 2026.

13982-63

**Wafer-scale maskless process to fabricate sub-20 nm silicon nitride nanopores for ultrafiltration**

*Author(s):* **Ayesha Walikar,** imec (Belgium); **Cian A. Cummins,** IMEC (Belgium); **Bert Du Bois**, **Lander Verstraete**, **Hyo Seon Suh**, **Emma Vecchio**, **Florian De Samblanx,** imec (Belgium); **Tadeo Alcerreca Valdez,** Univ. Medical Ctr. Utrecht (Netherlands); **Christian J. Garcia Abrego**, **Swathi Suran,** imec (Netherlands); **Jeroen Vollenbroek,** Univ. Medical Ctr. Utrecht (Netherlands), imec (Netherlands), Univ. Twente (Netherlands); **Tugrul Irmak,** Univ. Medical Ctr. Utrecht (Netherlands); **Fokko Wieringa,** imec (Netherlands); **Karin Gerritsen,** Univ. Medical Ctr. Utrecht (Netherlands); **Simone Severi, Ashesh Ray Chaudhuri,** imec (Belgium)

# CONFERENCE 13983

# Advances in Patterning Materials and Processes XLIII

**23 - 26 February 2026 | Convention Center, Room 210C**

CONFERENCE CO-SPONSOR

*Conference Chair(s):* **Ryan Callahan,** FUJIFILM Electronic Materials U.S.A., Inc. (United States)

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## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM
**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)
*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

**Coffee Break 9:50 AM - 10:20 AM**

## WELCOME AND AWARDS

23 February 2026 • 10:20 AM - 10:40 AM | Convention Center, Room 210C
*Session Chair(s):* **Ryan Callahan**, FUJIFILM Electronic Materials U.S.A., Inc. (United States); **Anuja De Silva**, Lam Research Corp. (United States)
Conference welcome and awards presentation.

## KEYNOTES

23 February 2026 • 10:40 AM - 11:40 AM | Convention Center, Room 210C
*Session Chair(s):* **Ryan Callahan**, FUJIFILM Electronic Materials U.S.A., Inc. (United States); **Anuja De Silva**, Lam Research Corp. (United States)

13983-200 • 10:40 AM - 11:10 AM
**Beyond scaling: High-NA EUV, EPE and stochastic control for the age of AI** (Keynote Presentation)
*Author(s):* **Luciana Meli**, **Jed Rankin**, **Indira Seshadri**, **Christopher Penny**, **Dario Goldfarb**, **Shravan K. Matham**, **Joe Lee**, **Nicholas Latham**, **Yasiel Cabrera**, **Belle Antonovich**, **Scott Halle**, **Zheng Chen**, **Gopal Kenath, Martin Burkhardt,** IBM Research - Albany (United States)

13983-201 • 11:10 AM - 11:40 AM
**Advanced packaging and interconnects: Key enablers of heterogeneous integration and advancing AI solutions** (Keynote Presentation)
*Author(s):* **Kunal Parekh,** Micron Technology, Inc. (United States)

## SESSION 1: DESIGN FOR OR SIMULATION OF NEW PROCESSES AND APPLICATIONS

23 February 2026 • 11:40 AM - 12:20 PM | Convention Center, Room 210C
*Session Chair(s):* **Douglas J. Guerrero**, Brewer Science, Inc. (Belgium); **Ralph R. Dammel**, EMD Electronics (United States)

13983-1 • 11:40 AM - 12:00 PM
**Fundamental mechanisms during EUV exposure and crosslinking of model organometallic photoresists**
*Author(s):* **Ankur Agarwal,** Tokyo Electron America, Inc. (United States); **Arnaud Dauendorffer,** Tokyo Electron Kyushu Ltd. (Japan); **Ihsan Simms**, **Ryan Burns,** Tokyo Electron America, Inc. (United States); **Takahiro Shiozawa**, **Satoru Shimura**, **Yuichi Terashita,** Tokyo Electron Kyushu Ltd. (Japan); **Michael Carcasi,** Tokyo Electron America, Inc. (United States); **Santu Nandi,** Tokyo Electron Europe Ltd. (Belgium); **Hiro Cheng,** Tokyo Electron Ltd. (Japan); **Tetsunari Furusho,** Tokyo Electron Kyushu Ltd. (Japan)

13983-2 • 12:00 PM - 12:20 PM
**Physics-based dry metal-oxide-resist simulations**
*Author(s):* **Yichi Zhang,** Lam Research (United States); **Monica Mathur, Samantha Tan,** Lam Research Corp. (United States)

**Lunch Break 12:20 PM - 1:50 PM**

## SESSION 2: NOVEL DEVELOPMENT TECHNIQUES

23 February 2026 • 1:50 PM - 3:30 PM | Convention Center, Room 210C
*Session Chair(s):* **Douglas J. Guerrero**, Brewer Science, Inc. (Belgium); **Ralph R. Dammel**, EMD Electronics (United States)

13983-3 • 1:50 PM - 2:10 PM
**Optimized development method and etch co-optimization performance for negative tone metal-oxide resist**
*Author(s):* **Nicholas Latham**, **Belle Antonovich**, **Christopher Penny**, **Joe Lee**, **Dario Goldfarb**, **Luciana Meli,** IBM Thomas J. Watson Research Ctr. (United States); **Lior Huli**, **Alexandra Krawicz**, **Kanzo Kato**, **Steven Gueci**, **Nathan Antonovich, Steven Grzeskowiak,** TEL Technology Ctr., America, LLC (United States)

13983-4 • 2:10 PM - 2:30 PM
**Development methods for metal oxide photoresists: A fundamental investigation using lithography simulations**
*Author(s):* **Craig D. Needham,** Inpria Corp. (United States); **Ulrich Welling,** Synopsys GmbH (Germany); **Amrit K. Narasimhan,** Inpria Corp. (United States); **Joren Wouters**, **Peter De Schepper,** Inpria Corp. (Belgium); **Lawrence S. Melvin,** Synopsys, Inc. (United States); **Jason K. Stowers,** Inpria Corp. (United States)

13983-5 • 2:30 PM - 2:50 PM
**Development of EUV CAR-NTD process with new organic solvent based-developer for scaling**
*Author(s):* **Keiyu Ou,** FUJIFILM Corp (Japan); **Nishiki Fujimaki, Naohiro Tango,** FUJIFILM Corp. (Japan)

13983-6 • 2:50 PM - 3:10 PM

**Dose dependent effects in novel organic-inorganic EUV resists**

*Author(s):* **Gregrey B. Swieca**, **Markus Langner,** University of Mississippi (United States); **Won-Il Lee,** Brookhaven National Laboratory (United States); **Shixian Ha,** Stony Brook University (United States); **Nikhil Tiwale,** Brookhaven National Laboratory (United States); **Emile A. Schweikert,** Texas A&M Univ. (United States); **Chang-Yong Nam,** Brookhaven National Laboratory (United States), Stony Brook University (United States); **Michael J. Eller,** University of Mississippi (United States)

13983-7 • 3:10 PM - 3:30 PM

**Overcoming pattern collapse in metal oxide resists using a new rinse technology for EUV lithography**

*Author(s):* **Elke Caron**, **Seungjoo Baek**, **Wesley Zanders,** SCREEN SPE Germany GmbH (Belgium); **Satoshi Shindo**, **Masahiko Harumoto,** SCREEN Semiconductor Solutions Co., Ltd. (Japan); **Seonggil Heo, Jelle Vandereyken,** imec (Belgium)

## Coffee Break 3:30 PM - 4:00 PM

## SESSION 3: NEW PROCESSING TECHNIQUES AND APPLICATIONS

23 February 2026 • 4:00 PM - 5:20 PM | Convention Center, Room 210C

*Session Chair(s):* **Tomohiro Oikawa**, Tokyo Ohka Kogyo Co., Ltd. (Japan)

13983-8 • 4:00 PM - 4:20 PM

**Discovering new NTD developers via HSP-assisted and AI-copiloted HTE**

*Author(s):* **Huawei Zhou**, **Weibo Gong**, **Xia Lin**, **Haoyang Wang, Ruzhi Zhang,** Suzhou Laboratory (China)

13983-9 • 4:20 PM - 4:40 PM

**Metal-oxide resist material and process advancements for positive- and negative-tone high-NA EUV lithography applications**

*Author(s):* **Alexander C. Marwitz,** Inpria Corp. (United States); **Jan Doise**, **Joren Wouters,** Inpria Corp. (Belgium); **Matthew Voss**, **Bradley J. Ryan,** Inpria Corp. (United States); **Kanta Yanagi,** Inpria Corp. (Belgium); **Amrit Kausik Narasimhan**, **Kevin Woo,** Inpria Corp. (United States); **Peter De Schepper,** Inpria Corp. (Belgium); **Brian J. Cardineau**, **Kai Jiang,** Inpria Corp. (United States); **Kazuki Kasahara,** JSR Micro, Inc. (United States)

13983-10 • 4:40 PM - 5:00 PM

**Automated machine learning interatomic potential-driven reaction discovery for mechanistic elucidation of deprotection and acid loss pathways in chemically amplified resists**

*Author(s):* **Vignesh Sathyaseelan,** Purdue Univ. (United States)

13983-11 • 5:00 PM - 5:20 PM

**N-heterocycles for inducing high-sensitivity to inorganic resist compositions**

*Author(s):* **AVIK DAS**, **Neha Thakur**, **Promit Chakraborty**, **Santu Nandi**, **Manvendra Chauhan,** Indian Institute of Technology Mandi (India); **Gaurav Jayaswal,** Semiconductor Laborotary (India); **Dipanjan Dutta,** Indian Institute of Technology Mandi (India); **Ambar Shukla**, **Nilesh Ladani**, **Prasant Verma,** Space Application Centre-Indian Space Research Organisation (India); **Santosh Kumar,** Semiconductor Laborotary (India); **Satinder K Sharma, Subrata Ghosh,** Indian Institute of Technology Mandi (India)

## ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A
5:15 PM - 5:20 PM:

**Tribute to Andrew R. Neureuther**

Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**

“Making the Impossible Possible: 50 Years of SPIE ALP” is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*
**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*
**Burn Lin**, National Tsing Hua Univ. (Taiwan)
**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson**, The Univ. of Texas at Austin (United States)
**Janice Golda**, Intel Corp. (United States)
**Chris Mack**, Fractilia, LLC (United States)

## Tuesday 24 February 2026

## SESSION 4: PHOTORESISTS FOR EUV AND 193NM (IMMERSION) LITHOGRAPHY I

24 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Room 210C
*Session Chair(s):* **Marie E. Krysak**, Intel Corp. (United States); **Robert L. Brainard**, Univ. at Albany (United States)

13983-12 • 8:00 AM - 8:20 AM
**Optimization of polymer design for CDU improvement in EUV photoresists**
*Author(s):* **Hye Won Lee,** Qnity Electronics, Inc. (Korea, Republic of)

13983-13 • 8:20 AM - 8:40 AM
**Understanding the dissolution of polypeptoid photoresist using critical ionization (CI) theory**
*Author(s):* **Aung Paing,** San José State Univ. (United States), Ctr. for High Precision Patterning Science (United States); **Cameron P. Adams,** Univ. of California, Santa Barbara (United States), Ctr. for High Precision Patterning Science (United States); **Kevin Zhao,** San José State Univ. (United States), Ctr. for High Precision Patterning Science (United States); **Rachel A. Segalman,** Univ. of California, Santa Barbara (United States), Ctr. for High Precision Patterning Science (United States); **Dahyun Oh,** San José State Univ. (United States), Ctr. for High Precision Patterning Science (United States); **Frances Houle,** Lawrence Berkeley National Lab. (United States), Ctr. for High Precision Patterning Science (United States)

13983-14 • 8:40 AM - 9:00 AM
**Advances by multi-trigger resist towards high resolution EUV lithography**
*Author(s):* **Carmen Popescu**, **Alexandra McClelland**, **Greg O'Callaghan**, **Catherine Storey**, **Huy van Nguyen**, **Guy Dawson,** Irresistible Materials Ltd. (United Kingdom); **Alex P. G. Robinson,** Irresistible Materials (United Kingdom)

13983-15 • 9:00 AM - 9:20 AM
**Formulation consideration on PAG design for EUV tight pitch applications**
*Author(s):* **Yinjie Cen**, **Jong Keun Park**, **Suzanne M. Coley**, **Benjamin D. Rafael-Naab**, **Li Cui**, **Emad Aqad**, **Conner Hoelzel**, **Joseph Mancinelli**, **Stefan Alexandrescu**, **Rochelle Rena**, **Sylvie Eckert**, **Jason Behnke,** Qnity Electronics Inc. (United States); **Karen Petrillo,** IBM Research - Albany (United States)

13983-16 • 9:20 AM - 9:40 AM
**Deciphering EUV-induced chemistry in photoresists through in-situ and ex-situ characterization techniques**
*Author(s):* **Oleg Kostko**, **Honggu Im,** Lawrence Berkeley National Lab. (United States); **Samantha Kaplan, Dahyun Oh,** San José State Univ. (United States)

13983-17 • 9:40 AM - 10:00 AM

**Metal oxide dry resist precursor requirement and advantage towards high-NA EUV lithography**

*Author(s):* **Li Yang**, **Christopher Caroff**, **Thao Nguyen**, **John Collins,** Gelest (United States); **Raymond Vrtis**, **Boris Volosskiy**, **Da Li, Jason Coyle,** Lam Research (United States)

## Coffee Break 10:00 AM - 10:30 AM

## SESSION 5: PHOTORESISTS FOR EUV AND 193NM (IMMERSION) LITHOGRAPHY II

24 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Room 210C

*Session Chair(s):* **Amrit Kausik Narasimhan**, Inpria Corp. (United States); **Jara G. Garcia-Santaclara**, ASML Netherlands B.V. (Netherlands)

13983-18 • 10:30 AM - 10:50 AM

**Vapor phase metal-oxide infiltration synthesis of high-sensitivity positive-tone hybrid EUV resists**

*Author(s):* **Nikhil Tiwale,** Brookhaven National Lab. (United States); **Ashwanth Subramanian,** Stony Brook Univ. (United States); **Won-Il Lee**, **Md Istiaque Chowdhury**, **Xinpei Wu**, **Kim Kisslinger**, **Aaron Stein,** Brookhaven National Lab. (United States); **Jiyoung Kim,** The Univ. of Texas at Dallas (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States), Stony Brook Univ. (United States)

13983-19 • 10:50 AM - 11:10 AM

**Improving stochastic performance of EUV lithography with 3D engineered photoresists**

*Author(s):* **Bernardo Oyarzun**, **Herman Nicolai**, **Joost van Bree,** ASML Netherlands B.V. (Netherlands); **Ching-Chung Huang**, **Ali Haider**, **Zhengtao Chen,** Lam Research Belgium BV (Belgium); **Luc Van Kessel**, **Ruben Maas**, **Rik Hoefnagels**, **Gijsbert Rispens,** ASML Netherlands B.V. (Netherlands); **Anuja De Silva,** Lam Research Corp. (Belgium); **Mark van de Kerkhof,** ASML Netherlands B.V. (Netherlands)

13983-20 • 11:10 AM - 11:30 AM

**Progress of PFAS-free materials and resist for ArF immersion photolithography**

*Author(s):* **Yuzuru Kaneko,** Central Glass Co Ltd (Japan); **Takashi Masubuchi**, **Keito Hagiwara**, **Junya Kanda**, **Haowei Feng**, **Yuki Honda**, **Shoto Suzuki**, **Yuji Hagiwara,** Central Glass Co., Ltd. (Japan); **Diziana Vangoidsenhoven**, **Andrea Mingardi, Danilo De Simone,** imec (Belgium)

13983-21 • 11:30 AM - 11:50 AM

**EUV lithographic evaluation of pentacoordinate bismuth complexes**

*Author(s):* **Harry G. Weinstein**, **Munsaf Ali**, **Moira Carmalita Dharsika Niluxsshun**, **Sukil Kang,** Univ. at Albany (United States); **Robert L. Brainard,** Univ. at Albany (United States), SAMSUNG SDI Co., Ltd. (Korea, Republic of)

13983-22 • 11:50 AM - 12:10 PM

**Holistic integration of novel patterning technologies aiming for next-generation high numerical aperture extreme ultraviolet manufacturing**

*Author(s):* **Yuichi Terashita,** Tokyo Electron Kyushu Ltd. (Japan)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 6: MULTI-LAYER PATTERNING MATERIALS

24 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Room 210C

*Session Chair(s):* **Roel Gronheid**, KLA Corp. (Belgium); **Joy Y. Cheng**, Taiwan Semiconductor Manufacturing Co., Ltd. (Taiwan)

13983-23 • 1:40 PM - 2:00 PM

**Examining the composition and uniformity of ALD/MLD-synthesized inorganic-organic hybrid EUV photoresists using NP-SIMS**

*Author(s):* **Markus Langner**, **Gregrey B. Swieca,** University of Mississippi (United States); **Dan N. Le**, **Thi T. Chu,** University of Texas at Dallas (United States); **Emile A. Schweikert,** Texas A&M Univ. (United States); **Kim Jiyoung,** University of Texas at Dallas (United States); **Michael J. Eller,** University of Mississippi (United States)

13983-24 • 2:00 PM - 2:20 PM

**Evaluating three dimensionally engineered dry resist film performance for 0.33NA And High-NA EUV patterning**

*Author(s):* **Saumya Gulati,** Lam Research (United States); **Nizan Kenane**, **Brown Lu**, **Phil Friddle**, **Nayan Chakravarty**, **Boris Volosskiy**, **Anuja De Silva**, **Rich Wise,** Lam Research Corp. (United States); **Yasiel Cabrera**, **Christopher Penny**, **Yann Mignot**, **Gopal Kenath**, **Indira Seshadri**, **Brian Conerney, Luciana Meli,** IBM Research - Albany (United States)

13983-25 • 2:20 PM - 2:40 PM

**Mo-based multilayer for beyond EUV lithography**

*Author(s):* **Naoki Hayase**, **Satoru Suzuki**, **Shinji Yamakawa, Tetsuo Harada,** Univ. of Hyogo (Japan)

13983-26 • 2:40 PM - 3:00 PM

**Development of high thermal spin-on carbon as sacrificial layer**

*Author(s):* **Yuki Kubo**, **Takashi Sekito,** EMD Electronics Ltd. (Japan); **Jae-Hyun Kim,** EMD Electronic Materials Ltd. (Korea, Republic of)

## Coffee Break 3:00 PM - 3:30 PM

## SESSION 7: PHOTORESISTS FOR EUV AND 193NM (IMMERSION) LITHOGRAPHY III

24 February 2026 • 3:30 PM - 6:30 PM | Convention Center, Room 210C

*Session Chair(s):* **Amy Walker**, The Univ. of Texas at Dallas (United States); **Dario L. Goldfarb**, IBM Thomas J. Watson Research Ctr. (United States)

13983-27 • 3:30 PM - 3:50 PM

**Negative-tone EUV photoresist system for bridge technology between positive CAR and MOR**

*Author(s):* **Toshiya Okamura,** EMD Electronics (United States)

13983-28 • 3:50 PM - 4:10 PM

**Technical challenges and material solutions for high-absorbance chemically amplified EUV photoresists**

*Author(s):* **Benjamin D. Rafael-Naab**, **Jong Keun K. Park**, **Emad Aqad**, **Yinjie Cen**, **Suzanne Coley**, **Li Cui**, **Conner Hoelzel**, **Jason Behnke**, **Sylvie Eckert**, **Stefan Alexandrescu**, **Gregory Bassett**, **Vageesha L. Gunawardana**, **Lei Zhang**, **James Marsh**, **Joshua Hazelnis**, **Joseph Mancinelli, Sheng Liu,** Qnity, DuPont Electronics (United States)

13983-29 • 4:10 PM - 4:30 PM

**Sequence-defined polypeptoid resists for molecularly precise stochastic control and mechanistic innovation in EUV lithography**

*Author(s):* **Chenyun Yuan,** Cornell Univ. (United States); **Bernhard Lüttgenau**, **Honggu Im**, **Qi Zhang,** Lawrence Berkeley National Lab. (United States); **Cameron P. Adams**, **Rachel A. Segalman,** Univ. of California, Santa Barbara (United States); **Oleg Kostko,** Lawrence Berkeley National Lab. (United States); **Christopher K. Ober,** Cornell Univ. (United States)

13983-30 • 4:30 PM - 4:50 PM

**Roles of organic components on hybrid dry EUV resist thin films synthesized via atomic layer deposition**

*Author(s):* **Dan N. Le**, **Thi Thu Huong Chu**, **Suyoung Yoo**, **Doo San Kim**, **Minjong Lee**, **Dushyant M. Narayan,** The Univ. of Texas at Dallas (United States); **Won-Il Lee**, **Nikhil Tiwale,** Brookhaven National Lab. (United States); **Jean-Francois Veyan,** The Univ. of Texas at Dallas (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States); **Jiyoung Kim,** The Univ. of Texas at Dallas (United States)

13983-31 • 4:50 PM - 5:10 PM

**Positive-tone photoresists based on tin-oxo nanoclusters for electron-beam and extreme UV lithography**

*Author(s):* **Gayoung Kim**, **Yejin Ku**, **Subin Jeon,** Inha Univ. (Korea, Republic of); **Jin-Kyun Lee,** Inha University (Korea, Republic of); **Sung-Il Lee**, **Yun Lim Jung**, **Sungwoo Jang**, **Sukjong Bae**, **Changyoung Jeong**, **Jin Choi, Sang-Hee Lee,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13983-32 • 5:10 PM - 5:30 PM

**Step-resolved outgassing behavior in EUV lithography: correlation with photoresist composition**

*Author(s):* **Sol Han,** Samsung Electronics (Korea, Republic of); **Taegyun Park**, **Eunkyung Byun**, **Hyunjin Hong**, **Junghoon Lee**, **Samjong Choi, Sukkoo Hong,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13983-33 • 5:30 PM - 5:50 PM

**Reactions at play in the EUV exposure of a model PFAS-free chemically amplified resist**

*Author(s):* **Chien-Hsun Yu**, **Danilo De Simone,** imec (Belgium); **James M. Blackwell,** Intel Corporation (United States); **John S. Petersen**, **Kevin M. Dorney,** imec (Belgium); **Robert S. Jordan,** Intel Corporation (United States); **Pol Van Dorpe,** imec, KU Leuven (Belgium); **Fabian Holzmeier,** imec (Belgium)

13983-34 • 5:50 PM - 6:10 PM

**Effect of processing environment on film morphology and resist characteristics of indium nitrate photoresists**

*Author(s):* **Mohsin Patel**, **Cody Allen**, **Raphael Nam**, **Marisol Valdez**, **Kevin Brenner, Julia WP Hsu,** The University of Texas at Dallas (United States)

13983-35 • 6:10 PM - 6:30 PM

**Estimation of dose requirements for exposures at Blue-X wavelengths**

*Author(s):* **Ralph R. Dammel,** EMD Electronics (United States)

## Wednesday 25 February 2026

### SESSION 8: RESIST FUNDAMENTALS AND ASSESSMENT OF PATTERNING AND MATERIALS SCALING LIMITS I

25 February 2026 • 8:00 AM - 10:00 AM | Convention Center, Room 210C

*Session Chair(s):* **Luisa D. Bozano**, Applied Materials, Inc. (United States); **Anuja De Silva**, Lam Research Corp. (United States)

13983-36 • 8:00 AM - 8:20 AM

**Unraveling a new dose reduction strategy for metal oxide resist by the atmospheric environment of the post exposure bake**

*Author(s):* **Ivan Pollentier**, **Fabian Holzmeier**, **Hyo Seon Suh, Kevin M. Dorney,** imec (Belgium)

13983-37 • 8:20 AM - 8:40 AM

**Characterizing underlayer properties for EUV lithography via resonant soft x-ray reflectivity**

*Author(s):* **Qi Zhang**, **Kas Andrle**, **Eric Gullikson**, **Thomas Ferron**, **Oleg Kostko**, **Bernhard Lüttgenau**, **Bruno La Fontaine**, **Ricardo Ruiz,** Lawrence Berkeley National Lab. (United States); **Veerle Van Driessche**, **Douglas Guerrero,** Brewer Science, Inc. (United States); **Cheng Wang,** Lawrence Berkeley National Lab. (United States)

13983-38 • 8:40 AM - 9:00 AM

**X-ray spectroscopy of EUV exposed SnOx nanocluster thin films yields insights towards radiolytic mechanism**

*Author(s):* **J. Trey Diulus**, **Priyanka Ketkar**, **Matthew A. Wade**, **Conan Weiland**, **Cherno Jaye**, **Daniel Sunday, R. Joseph Kline,** National Institute of Standards and Technology (United States)

13983-39 • 9:00 AM - 9:20 AM

**Direct measurement of the acid generation and mobility in chemically-amplified photoresists through time and temperature dependent dielectric measurements**

*Author(s):* **Jean-David Isasa**, **Dimitrios Kazazis**, **Yasin Ekinci,** Paul Scherrer Institut (Switzerland); **Theodoros Manouras,** Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece), Univ. of Crete (Greece)

13983-40 • 9:20 AM - 9:40 AM

**Unraveling crosslinking effects in EUV metal oxide photoresist performance via large-scale atomistic simulations**

*Author(s):* **Ching-Yu Huang,** Univ of Texas at Austin (United States); **Zhiying Chen**, **Shyam Sridhar,** Tokyo Electron America Inc. (United States); **Peter De Schepper,** Inpria Corporation (United States); **Amy Jystad**, **Craig Needham,** Inpria Corp. (United States); **Peter Ventzek,** Tokyo Electron America Inc. (United States); **Gyeong Hwang,** Univ of Texas at Austin (United States)

13983-41 • 9:40 AM - 10:00 AM

**Acid lifetime measurements in chemically amplified resists**

*Author(s):* **Gregory Denbeaux**, **Mani Veeravalli**, **Ilhan Eser**, **Eshan Dilina Thilakarathna**, **Kevin Reyes, Harrison Schuck,** Univ. at Albany (United States)

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

### SESSION 9: PFAS/PFOS ALTERNATIVE MATERIALS, ROADMAP FOR DEALING WITH REGULATORY LEGISLATION I

25 February 2026 • 10:30 AM - 12:10 PM | Convention Center, Room 210C

*Session Chair(s):* **Mark H. Somervell**, Tokyo Electron America, Inc. (United States); **Nobuyuki N. Matsuzawa**, Panasonic Industry Co., Ltd. (Japan)

13983-42 • 10:30 AM - 10:50 AM

**Progress toward the achievement of a non-fluorine (NF) patterning materials toolbox**

*Author(s):* **Paul LaBeaume**, **Wenxu Zhang**, **Cong Liu**, **Hua Dong**, **Huan He**, **Greg Hostetler**, **Le Zhou**, **Christopher Laurel**, **Luxi Shen**, **Joseph F. Lachowski**, **Gregory Prokopowicz**, **Sabrina Wong**, **Wanyi Huang**, **Mark Hayes**, **Edon Vitaku**, **Thomas Cardolaccia**, **Deyan Wang**, **Nathan Hollesen**, **Preeti Chadha-Mudraboyina**, **Udaykumar Soma**, **Rupert Spence**, **ChangYoung Hong**, **JinHong Park, WonSeok Lee,** Qnity, DuPont Electronics (United States)

13983-43 • 10:50 AM - 11:10 AM

**Continuing the journey: Advancements in the development of fluorine-free photo-acid generators for semiconductor lithography**

*Author(s):* **Ionela-Daniela Carja,** EMD Electronics (Germany); **Go Noya**, **Lei Lu,** EMD Electronics (Japan); **Hung-Yang Chen,** EMD Electronics (United States); **Tomotsugu Yano,** EMD Electronics (Japan); **Linjia Wu**, **Youngjun Her,** EMD Electronics (Belgium); **Kenta Watanabe,** EMD Electronics (Japan); **Chunwei Chen,** EMD Electronics (United States); **Megumi Takahashi**, **Takumi Nakazato,** EMD Electronics (Japan); **Walter Weihong Liu, Ralph Dammel,** EMD Electronics (United States)

13983-44 • 11:10 AM - 11:30 AM

**Separation of PFAS substance contained in lithography waste liquid**

*Author(s):* **Ryo Suemasa**, **Kimitaka Hamasaki,** Tokyo Electron Kyushu Ltd (Japan); **Kunie Ogata, Shinji Kobayashi,** Tokyo Electron Kyushu Ltd. (Japan)

13983-45 • 11:30 AM - 11:50 AM

**Evaluation of a non-fluorine (non-PFAS) ArF-immersion photoresist used in semi-conductor manufacturing**

*Author(s):* **Jérôme RECHE**, **Jeanne Davost**, **Jeanne Aigoin**, **Christophe Grangier**, **Sebastien Guilbaud,** CEA-LETI (France); **Bénédicte Mortini,** STMicroelectronics S.A. (France); **Cong Liu**, **Hua Dong**, **Wanyi Huang**, **Huan He**, **Wenxu Zhang**, **Ed Orr,** Qnity, DuPont Electronics (United States); **Marie Aubry,** Qnity, DuPont Electronics (France); **Enrico Tenaglia,** Specialty Electronic Materials Italy S.r.l (Italy)

13983-46 • 11:50 AM - 12:10 PM

**Development of topcoat-less PFAS-free ArF Immersion resist with novel additive and PAG design**

*Author(s):* **Seina Saito**, **Yu Hayakawa, Takehito Seo,** Tokyo Ohka Kogyo Co., Ltd. (Japan)

### Lunch Break 12:10 PM - 1:40 PM

## SESSION 10: RESIST FUNDAMENTALS AND ASSESSMENT OF PATTERNING AND MATERIALS SCALING LIMITS II

25 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Room 210C

*Session Chair(s):* **Tetsu S.M. K. Kohyama**, Nihon Entegris G.K. (Belgium); **Xisen Hou**, DuPont Electronics & Industrial (United States)

13983-47 • 1:40 PM - 2:00 PM

**Understanding the MOR underlayer effect using lithographic modeling**

*Author(s):* **Seongjeon Choi,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Ulrich Welling**, **Juergen Preuninger,** Synopsys GmbH (Germany); **Eun-Soo Jeong**, **Hyuntae Kwon,** Synopsys Korea Inc. (Korea, Republic of); **Seung-Hune Yang,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13983-48 • 2:00 PM - 2:20 PM

**Line wiggling in EUV patterning from p96 to p28: a challenge for advanced technological nodes?**

*Author(s):* **Roberto Fallica,** imec (Belgium); **Gijsbert Rispens**, **Ruben Maas, Joost van Bree,** ASML (Netherlands)

13983-49 • 2:20 PM - 2:40 PM

**Exploring the limits of contact hole patterning with high-NA EUV lithography**

*Author(s):* **Dario Goldfarb,** IBM Thomas J. Watson Research Ctr. (United States); **Zheng Chen**, **Yasiel Cabrera**, **Karen Petrillo**, **Wayne Meher**, **Kebin Gu**, **Shravan K. Matham**, **Christopher Penny**, **Jed Rankin, Luciana Meli,** IBM Research - Albany (United States)

13983-50 • 2:40 PM - 3:00 PM

**Chemical origins of environmental modifications to the lithographic chemistry of MOR resists**

*Author(s):* **Kevin M. Dorney**, **Ivan Pollentier**, **Roberto Fallica**, **Fabian Holzmeier**, **Hyo Seon Suh**, **Danilo De Simone, John Petersen,** imec (Belgium)

### Exhibit Social Hour and 50th Celebration 3:00 PM - 4:00 PM

## SESSION 11: PFAS/PFOS ALTERNATIVE MATERIALS, ROADMAP FOR DEALING WITH REGULATORY LEGISLATION II

25 February 2026 • 4:00 PM - 4:40 PM | Convention Center, Room 210C

*Session Chair(s):* **Scott W. Jessen**, Texas Instruments Inc. (United States); **Yoshio Kawai**, Shin-Etsu Chemical Co., Ltd. (Japan)

13983-51 • 4:00 PM - 4:20 PM

**Challenges and progress of PFAS alternatives for ArF resist**

*Author(s):* **Naohiro Tango**, **Nishiki Fujimaki**, **Akiyoshi Goto**, **Nishiki Fujimaki**, **Akiyoshi Goto**, **Ryosuke Kato, Hideaki Tsubaki,** FUJIFILM Corp (Japan)

13983-52 • 4:20 PM - 4:40 PM

**PFAS-Free 193 immersion resist for 28 nm node metal-1 Layer: Electrical performance meets POR quality**

*Author(s):* **Bojja Aditya Reddy**, **Jorge Ivan Rossero**, **Nicola Nadia Kissoon,** imec (Belgium); **Keita Kato**, **Satomi Takahashi**, **Hideaki Tsubaki,** FUJIFILM Corp. (Japan); **Danilo De Simone,** imec (Belgium)

## SESSION 12: SINGLE AND MULTIPLE PATTERNING

25 February 2026 • 4:40 PM - 5:20 PM | Convention Center, Room 210C

*Session Chair(s):* **Scott W. Jessen**, Texas Instruments Inc. (United States); **Yoshio Kawai**, Shin-Etsu Chemical Co., Ltd. (Japan)

13983-53 • 4:40 PM - 5:00 PM

**Holistic process strategies for high-resolution lithography of CARs: Electron beam lithography study**

*Author(s):* **Xinpei Wu**, **Nikhil Tiwale**, **Aaron Stein,** Brookhaven National Lab. (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States), Stony Brook Univ. (United States)

13983-54 • 5:00 PM - 5:20 PM

**Optimizing lithography conditions in low-NA EUV SADP towards 14nm metal pitch patterning**

*Author(s):* **Gianluca Martini**, **Stefan Decoster**, **Yannick Hermans,** imec (Belgium); **Nikil Paithankar**, **Luca Barbisan,** KLA Italy Srl (Italy); **Andrea Mingardi**, **Chen Wu**, **Seongho Park, Sandip Halder,** imec (Belgium)

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13983-65 • 5:30 PM - 7:00 PM

**Radiation chemistry of organotin**

*Author(s):* **Shotaro Fuku,** The University of Osaka (Japan); **Yusa Muroya**, **Takahiro Kozawa**, **Yuko Tsutsui Ito,** The Univ. of Osaka (Japan); **Kohei Machida**, **Satoshi Enomoto,** Toyo Gosei Co., Ltd. (Japan); **Shinichi Yamashita,** The Univ. of Tokyo (Japan)

13983-66 • 5:30 PM - 7:00 PM

**Novel EUV photoresists for positive tone development**

*Author(s):* **Hironori Oka,** FUJIFILM Corporation (Japan); **Hiroki Horigome**, **Yohei Ishiji**, **Tomohiro Tsujisaka**, **Keita Kato, Tomotaka Tsuchimura,** FUJIFILM Corp. (Japan)

13983-67 • 5:30 PM - 7:00 PM

**Iodinated alternating copolymer as a chemically amplified resist for extreme UV lithography**

*Author(s):* **Yejin Ku,** Inha Univ (Korea, Republic of); **Gyuchan Wy**, **Gayoung Kim**, **Jinseok Lee**, **Jin-Kyun Lee,** Inha Univ. (Korea, Republic of); **Jeongsik Kim**, **Myounghyun Hur, Jaehyeon Kim,** Dongjin Semichem Co., Ltd. (Korea, Republic of)

13983-68 • 5:30 PM - 7:00 PM

**PFAS free PAG development for chemically amplified photoresist**

*Author(s):* **Takumi Nakazato**, **Kenta Watanabe**, **Go Noya**, **Tomohide Katayama,** EMD Electronics (Germany); **Stefan Michlik**, **Daniela Carja,** EMD Electronics (Germany); **Jaehyun Kim,** EMD Electronics (Germany)

13983-69 • 5:30 PM - 7:00 PM

**Design of molecular photoresists and all-dry processing strategies for EUV lithography**

*Author(s):* **Gayoung Kim,** Inha University (Korea, Republic of); **Seohyeon Lee,** University of Seoul (Korea, Republic of); **Sung-Wook Hwang,** Inha University (Korea, Republic of); **Hyowon Sam,** University of Seoul (Korea, Republic of); **Jiho Kim**, **Geonhwa Kim**, **Sangsul Lee,** POSTECH (Korea, Republic of); **Yejin Ku,** Inha University (Korea, Republic of); **Byung Jun Jung,** University of Seoul (Korea, Republic of); **Jin-Kyun Lee,** Inha University (Korea, Republic of)

13983-70 • 5:30 PM - 7:00 PM

**LEAPing the bounds of optical lithography**

*Author(s):* **Jordan B. Greenough,** Geminatio, Inc. (United States); **May Callahan, Max Klemes,** Geminatio (United States)

13983-71 • 5:30 PM - 7:00 PM

**Single resin co-printing for integrated conductive/dielectric features and patterning**

*Author(s):* **Seungjun Lee**, **Natalya K. Crawford**, **Chiwon Hwang**, **Timothy Yap**, **Kyubin Bae**, **Gavin H. Stafford**, **Zachariah A. Page, Michael Cullinan,** The University of Texas at Austin (United States)

13983-73 • 5:30 PM - 7:00 PM

**A novel purifier for acid-sensitive applications: suppressing dimerization and metal impurities in solvent system**

*Author(s):* **Elmer Lin,** Entegris, Inc. (Taiwan); **Antonio Ramirez,** Entegris, Inc. (United States); **Joey Yang,** Entegris, Inc. (Taiwan); **Tetsu Kohyama,** Nihon Entegris G.K. (Japan); **Aiwen Wu,** Entegris, Inc. (United States)

13983-74 • 5:30 PM - 7:00 PM

**Photolysis mechanism of di(tert-butylphenyl)iodonium salt sensitized by UV/NIR-absorbing dyes**

*Author(s):* **Mayu Masuda**, **Ryoma Amanuma,** Tokyo Univ. of Technology (Japan); **Atsushi Shiraishi,** San-Apro Ltd. (Japan); **Ayumi Kobayashi**, **Kohei Iritani,** Tokyo Univ. of Technology (Japan); **Takashi Yamashita,** Tokyo Univ of Technology (Japan)

13983-75 • 5:30 PM - 7:00 PM

**Comparing the extreme ultraviolet performance of amorphous zeolitic imidazolate resists deposited by atomic/molecular layer deposition and spin coating**

*Author(s):* **Kayley E. Waltz,** Johns Hopkins University (United States); **Yurun Miao,** Johns Hopkins Univ. (United States); **Qi Zhang**, **Honggu Im**, **Bernhard Lüttgenau,** The Ctr. for X-Ray Optics, Lawrence Berkeley National Lab. (United States); **Xinpei Zhou**, **Max Beutner,** Johns Hopkins Univ. (United States); **Matt Hettermann**, **Travis Grodt,** EUV Technology (United States); **Patrick Naulleau,** EUV Technology (United States), The Ctr. for X-Ray Optics, Lawrence Berkeley National Lab. (United States); **Oleg Kostko,** The Ctr. for X-Ray Optics, Lawrence Berkeley National Lab. (United States); **Michael Tsapatsis,** Johns Hopkins Univ. (United States)

13983-76 • 5:30 PM - 7:00 PM

**Impact of metal underlayers on EUV lithography performance with Sn-based metal oxide resists**

*Author(s):* **Takahiro Miyahara,** TEL Technology Ctr., America, LLC (United States); **Daisuke Hamashita,** Tokyo Electron Ltd. (Japan); **Kenichi Imakita**, **Jason Huang**, **Jennifer Oakley,** TEL Technology Ctr., America, LLC (United States); **Noriaki Okabe,** Tokyo Electron Ltd. (Japan); **Kazuki Yamada,** Tokyo Electron Technology Solutions Ltd. (Japan); **Hirokazu Aizawa, Rinus Lee,** TEL Technology Ctr., America, LLC (United States)

13983-77 • 5:30 PM - 7:00 PM

**Ab-initio investigation of fundamental reaction mechanisms, environmental effects and EUV reactivity of Sn-based metal oxide photoresists**

*Author(s):* **Nishat Liza,** Tokyo Electron America, Inc. (United States); **Kazuki Yamada,** Tokyo Electron Technology Solutions Ltd. (Japan); **Ankur Agarwal**, **Ihsan Simms**, **Ryan Burns,** Tokyo Electron America, Inc. (United States); **Tadashi Omatsu,** Tokyo Electron Technology Solutions Ltd. (Japan); **Rinus Lee,** TEL Technology Ctr., America, LLC (United States); **Makoto Muramatsu**, **Hiro Cheng, Richard Yamaguchi,** Tokyo Electron Ltd. (Japan)

13983-130 • 5:30 PM - 7:00 PM

**Bio roll-up: Self-assembly of photoresists**

*Author(s):* **Shaheen Hasan**, **Chase Brisbois**, **Lauren Lydecker**, **Kelly Carufe**, **Abigail R. Johnson**, **Yubing Xie, Robert L. Brainard,** Univ. at Albany (United States)

13983-80 • 5:30 PM - 7:00 PM

**Process and material synergies for high-NA extreme ultraviolet lithography**

*Author(s):* **Koh Shimada**, **Soichiro Okada**, **Yuhei Kuwahara,** Tokyo Electron Kyushu Ltd. (Japan); **Keisuke Yoshida,** Tokyo Electron Yamanashi Ltd. (Japan); **Satoru Shimura,** Tokyo Electron Kyushu Ltd. (Japan)

13983-82 • 5:30 PM - 7:00 PM

**CDSAXS measurement of 3D profiles of EUV-patterned contact hole arrays**

*Author(s):* **Matthew A. Wade,** National Institute of Standards and Technology (United States); **Jingyi Li,** Qnity, DuPont Electronics (United States); **Daniel Sunday**, **Caitlyn Wolf,** National Institute of Standards and Technology (United States); **Amy Kwok**, **Yinjie Cen**, **Jason Behnke**, **MingQi Li,** Qnity, DuPont Electronics (United States); **R. Joesph Kline,** National Institute of Standards and Technology (United States)

13983-83 • 5:30 PM - 7:00 PM

**Dual-component functionalized allylated calix[4]arene-dibutyltin diacrylate blends as organic-inorganic hybrid resist compositions for nanolithography**

*Author(s):* **Promit Chakraborty**, **Neha Thakur**, **Avik Das**, **Santu Nandi**, **Manvendra Chauhan,** Indian Institute of Technology Mandi (India); **Prashant Varma**, **Nilesh Ladani**, **Ambar Shukla,** Space Applications Centre, ISRO (India); **Satinder K Sharma, Subrata Ghosh,** Indian Institute of Technology Mandi (India)

13983-84 • 5:30 PM - 7:00 PM

**Targeted metal contaminant removal in advanced lithography via novel functionalized membrane purifier**

*Author(s):* **Ahmad Shamsabadi,** Pall Corp. (United States); **Yiren Zhang,** Pall Corporation (United States); **Toru Umeda,** Nihon Pall Ltd. (Japan); **Jian Tan**, **James Shull, Yingyu Li,** Pall Corp. (United States)

13983-85 • 5:30 PM - 7:00 PM

**Non fluorine KrF photoresist for 28 nm node application.**

*Author(s):* **Eric Cheng Yu Fang**, **Chan Yuan Hu**, **Ting Chun Lin,** XLMEC Co. (China); **Cooper Ma**, **Zhilei Yuan,** Qnity Electronics (China); **Christopher A. Laurei,** Qnity Electronics (United States); **George Lu,** Qnity Electronics (China); **Joseph F. Lachowski,** Qnity Electronics, Inc. (United States)

13983-86 • 5:30 PM - 7:00 PM

**Next-generation polyethylene membrane with ultra-fine pores beyond sub-1nm for lithography chemical filtration**

*Author(s):* **Robb Fang**, **Mengze Chen,** Hangzhou Cobetter Filtration Equipment Co., Ltd. (China); **Yoshiaki Yamada,** Nippon Cobetter Ltd. (Japan)

13983-87 • 5:30 PM - 7:00 PM

**Dependence of dissolution kinetics of thin resist film on polymer protection ratio in alkyl trimethylammonium hydroxide aqueous developers**

*Author(s):* **Takehiro Masuda,** SANKEN, The University of Osaka (Japan); **Takahiro Kozawa,** SANKEN, The Univ. of Osaka (Japan); **Kayoko Cho**, **Kazuo Sakamoto, Makoto Muramatsu,** Tokyo Electron Kyushu Ltd. (Japan)

13983-88 • 5:30 PM - 7:00 PM

**PGMEA quality improvement throughout solvent manufacturing, handling, and delivery processes**

*Author(s):* **John Casey,** Eastman Chemical Co. (United States); **Chihhung Ko,** Eastman Chemical Company (United States); **Scott Moss**, **James Bruno, Hongbo Zhou,** Eastman Chemical Co. (United States)

13983-89 • 5:30 PM - 7:00 PM

**Probing latent image contrast in metal oxide resists by density-based analysis**

*Author(s):* **Kayoko Cho,** Tokyo Electron Kyushu Ltd. (Japan); **Kodama Teruhiko,** Tokyo Electron Kyushu Ltd (Japan); **Hisashi Genjima,** Tokyo Electron Kyushu Ltd. (Japan); **Hikari Tomori**, **Kazuo Sakamoto**, **Dauendorffer Arnaud,** Tokyo Electron Kyushu Ltd (Japan); **Makoto Muramatsu,** Tokyo Electron Ltd (Japan)

13983-90 • 5:30 PM - 7:00 PM

**Materials development for next-generation liquid enabled advanced pitch**

*Author(s):* **Max J. Klemes**, **May Callahan, Jordan B. Greenough,** Geminatio (United States)

13983-91 • 5:30 PM - 7:00 PM

**A high-flow 2nm nylon membrane filter for next-generation lithography applications**

*Author(s):* **Muguo Chen,** Pall Corp. (United States); **Eric Shiu**, **Junqi Ding**, **James Shull**, **Brian Palermo**, **Joseph Carlin**, **Devesh Shreeram,** Pall Corporation (United States); **Yusuf Ozal**, **Toru Umeda**, **Hirokazu Sakakibara,** Nihon Pall Ltd. (Japan); **Sheikansar Usmanibrahim,** Pall Corporation (Belgium)

13983-92 • 5:30 PM - 7:00 PM

**Examination of ammonia adsorption on the $SiO_2$ surface after HMDS treatment**

*Author(s):* **Keisuke Fugane,** SCREEN Semiconductor Solutions Co., Ltd. (Japan); **Esteban Marques,** SCREEN SPE Germany GmbH (Germany); **Takehiro Wajiki**, **Shigehiro Goto,** SCREEN Semiconductor Solutions Co., Ltd. (Japan); **Karim Huet,** SCREEN SPE Germany GmbH (Germany); **Tsuyoshi Mitsuhashi,** SCREEN Semiconductor Solutions Co., Ltd. (Japan)

13983-93 • 5:30 PM - 7:00 PM

**Post treatment effects on EUV lithography materials**

*Author(s):* **Nanoka Miyahara,** Tokyo Electron Kyushu Ltd (Japan); **Seiji Fujimoto,** Tokyo Electron Kyushu Ltd. (Japan); **Keisuke Yoshida**, **Yasuhiro Hamada**, **Tomohiko Tsutsumi**, **Naoki Shibata,** Tokyo Electron Ltd. (Japan); **Takahiro Kitano,** Tokyo Electron America, Inc. (United States); **Noriaki Okabe,** Tokyo Electron Ltd. (Japan); **Hiroyuki Fujii**, **Yusuke Saito**, **Hiroshi Tariki,** Tokyo Electron Kyushu Ltd. (Japan); **Kohei Yazaki,** Tokyo Electron Ltd. (Japan); **Arnaud Dauendorffer, Satoru Shimura,** Tokyo Electron Kyushu Ltd. (Japan)

13983-94 • 5:30 PM - 7:00 PM

**Sensitivity modulation by benzyl substituents on acetal dissolution inhibitors in chemically amplified three-component novolac resists**

*Author(s):* **Katsuaki Takashima,** Osaka Metropolitan Univ (Japan); **Hideo Horibe,** Osaka Metropolitan Univ. (Japan)

13983-96 • 5:30 PM - 7:00 PM

**Ultra-clean nylon filtration for EUV underlayer defect mitigation at the N2 node**

*Author(s):* **Kozue Miura, Takako Kobayashi,** Nihon Entegris G.K. (Japan)

13983-97 • 5:30 PM - 7:00 PM

**Optimization of resist underlayer and novel development method for extreme ultraviolet**

*Author(s):* **Yuya Okumura**, **Kanzo Kato**, **Samuel Shaw**, **Eshan Thilakarathna**, **Lior Huli**, **Steven Grzeskowiak**, **Eric Liu**, **Akiteru Ko**, **Alexandra Krawicz,** TEL Technology Center, America (United States); **Takashi Saito**, **Tomohiko Tsutsumi,** Tokyo Electron Limited (Japan); **Naoki Shibata,** Tokyo Electron Ltd. (Japan); **Satoru Shimura,** Tokyo Electron Kyushu Ltd. (Japan)

13983-98 • 5:30 PM - 7:00 PM

**Response of indium-tin sol-gel films under UV and electron-beam stimulation**

*Author(s):* **Marisol Valdez**, **Mohsen Moayedi**, **Cody R. Allen**, **Thi Thu Huong Chu, Julia W. P. Hsu,** Univ of Texas at Dallas (United States)

13983-99 • 5:30 PM - 7:00 PM

**Suggestion of functional surface treatment primer (FSTP®) as a new direction of underlayer for advanced EUV patterning**

*Author(s):* **Kodai Kato,** Nissan Chemical Corp (Japan); **Taiki Saijo**, **Yuki Kato**, **Yuki Furukawa**, **Shuhei Shigaki**, **Wataru Shibayama**, **Kiyofumi Wada, Rikimaru Sakamoto,** Nissan Chemical Corp. (Japan)

13983-100 • 5:30 PM - 7:00 PM

**Electron beam lithography validation of a new resist development for ultrafine patterns**

*Author(s):* **Hikari Tomori,** Tokyo Electron Kyushu Ltd (Japan); **Kayoko Cho, Makoto Muramatsu,** Tokyo Electron Kyushu Ltd. (Japan)

13983-101 • 5:30 PM - 7:00 PM

**Evaluation of $H^+$ generation ability of iodine compounds for EUV lithography using chemical analysis**

*Author(s):* **Takeru Koguma,** Mitsubishi Gas Chemical Company Inc (Japan); **Rihaku Ojima**, **Junya Horiuchi**, **Masatoshi Echigo,** Mitsubishi Gas Chemical Co., Inc. (Japan); **Yuki Ishimaru, Takahiro Kozawa,** The Univ. of Osaka (Japan)

13983-102 • 5:30 PM - 7:00 PM

**Development of a compositional analysis method for photoacid generator (PAG) - bound polymer using diffusion ordered spectroscopy (DOSY) method and evaluation of its impact on lithographic performance**

*Author(s):* **Nanami Miyauchi,** Toyo Gosei Co., Ltd (Japan); **Kohei Machida**, **Noriaki Kobayashi, Satoshi Enomoto,** Toyo Gosei Co., Ltd. (Japan)

13983-132 • 5:30 PM - 7:00 PM

**Shelf-life and crystallinity of negative-tone organotin resists**

*Author(s):* **Moira Carmalita Dharsika Niluxsshun**, **Munsaf Ali,** Univ. at Albany (United States); **Ryan Chae,** SAMSUNG SDI Co., Ltd. (Korea, Republic of); **Gregory Denbeaux, Robert L. Brainard,** Univ. at Albany (United States)

13983-104 • 5:30 PM - 7:00 PM

**Impact of dry developing process on patterning performance of inorganic-organic hybrid thin films for all-dry EUV resist application**

*Author(s):* **Thi Thu Huong Chu**, **Dan N. Le**, **Suyoung Yoo**, **Doo San Kim**, **Minjong Lee**, **Dushyant M. Narayan,** The Univ. of Texas at Dallas (United States); **Won-Il Lee**, **Nikhil Tiwale,** Brookhaven National Lab. (United States); **Jean-Francois Veyan,** The Univ. of Texas at Dallas (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States); **Jiyoung Kim,** The Univ. of Texas at Dallas (United States)

13983-105 • 5:30 PM - 7:00 PM

**Optimizing quantum efficiency of photoactive compounds to improve ArF photoresist performance**

*Author(s):* **Sheng Liu**, **Mingqi Li**, **Jingyi Li**, **Adway Zacharias**, **Yiye Lu**, **Amy Kwok**, **Shintaro Yamada, Qiuzhe Xie,** Qnity Electronics, Inc. (United States)

13983-106 • 5:30 PM - 7:00 PM

**Overlay in a bottle for self-aligned backside power delivery**

*Author(s):* **May Callahan**, **Jordan B. Greenough, Max Klemes,** Geminatio (United States)

13983-107 • 5:30 PM - 7:00 PM

**Point-of-use UPE membrane filter optimization for EUV chemically amplified photoresist**

*Author(s):* **Alexander Holmann,** Entegris (United States); **Tetsu Kohyama,** Nihon Entegris G.K. (Japan); **Nadia Vandenbroeck**, **Shreya Basak, Philippe Foubert,** imec (Belgium)

13983-109 • 5:30 PM - 7:00 PM

**Measurements of net electron and reaction range in PMMA: an organometallic resists, and a chemically amplified resist for EUV lithography**

*Author(s):* **Emma Penny,** University at Albany (United States); **Stephen T. Smith,** Univ. at Albany (United States); **Ilhan Eser,** University at Albany (United States); **Robert L. Brainard, Gregory Denbeaux,** Univ. at Albany (United States)

13983-110 • 5:30 PM - 7:00 PM

**Effect of chemical structure on non-PFAS biomass EUV resist**

*Author(s):* **Kazuyo Morita,** Oji Holdings Corp (Japan); **Harumi Sunaga**, **Sotaro Fukumoto**, **Yuki Yoshikura,** Oji Holdings Corp. (Japan); **Yana Medvedeva,** Oji Holdings Corp. (Belgium); **Jelle Vandereyken,** imec (Belgium); **Yuki Yanagisawa,** Oji Holdings Corp. (Japan)

13983-111 • 5:30 PM - 7:00 PM

**Vapor-phase dry development enabling high-resolution and improved CDU in EUV photoresists**

*Author(s):* **Ji-Hoo Seok**, **Jiwon Kim**, **Hyeonseok Ji**, **Jaehyuk Lee**, **Taeho Lee,** Hanyang Univ. (Korea, Republic of); **Kwangsub Yoon,** Hanyang Univ. (Korea, Republic of), SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Myung Mo Sung,** Hanyang Univ. (Korea, Republic of); **Jinho Ahn,** Hanyang Univ, Korea (Korea, Republic of)

13983-112 • 5:30 PM - 7:00 PM

**Evaluation of a positive-tone organometal resist by EB patterning**

*Author(s):* **Kohei Machida**, **Satoshi Enomoto,** Toyo Gosei Co., Ltd. (Japan); **Akihiro Konda**, **Eichi Nomura, Takahiro Kozawa,** The Univ. of Osaka (Japan)

13983-113 • 5:30 PM - 7:00 PM
**Driving PFAS replacement with a resilient supply chain**
*Author(s):* **Christopher Laurel**, **Qiuzhe Xie**, **Cong Liu**, **Paul LaBeaume**, **Joseph F. Lachowski**, **Edon Vitaku**, **MingQi Li**, **Drew Chambers**, **Ed Orr**, **Kenneth Hernandez,** Qnity, DuPont Electronics (United States); **Mitsuru Haga,** Qnity, DuPont Electronics (Japan)

13983-114 • 5:30 PM - 7:00 PM
**Progress toward non-fluorine (non-PFAS) ArF-immersion photoresist**
*Author(s):* **Cong Liu**, **Paul LaBeaume**, **Wenxu Zhang**, **Christopher Laurel**, **Le Zhou**, **Luxi Shen**, **Joseph F. Lachowski**, **Thomas Cardolaccia**, **Hua Dong**, **Huan He**, **Wanyi Huang**, **Deyan Wang**, **Mingqi Li, ChangYoung Hong,** Qnity, DuPont Electronics (United States)

13983-115 • 5:30 PM - 7:00 PM
**Photoresist filtration design advancements for process throughput performance and defect reductions**
*Author(s):* **Vanessa Su,** Entegris, Inc. (Taiwan); **Byron Huang**, **Allen Wu,** Entegris Inc, Taiwan (Taiwan); **Masahiko Kubo, Yasushi Ohyashiki,** Entegris Inc. Japan (Japan)

13983-116 • 5:30 PM - 7:00 PM
**Real-time characterization of EUV-induced transformations in photoresists and underlayer systems**
*Author(s):* **Oleg Kostko**, **Kas Andrle**, **Meng Zhang,** Lawrence Berkeley National Lab. (United States); **Won-Il Lee**, **Md Istiaque Chowdhury**, **Xinpei Wu,** Brookhaven National Lab. (United States); **Melinda Lin,** Stony Brook Univ. (United States); **Qi Zhang**, **Cheng Wang**, **Ricardo Ruiz**, **Michael Connolly,** Lawrence Berkeley National Lab. (United States); **Nikhil Tiwale,** Brookhaven National Lab. (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States), Stony Brook Univ. (United States)

13983-118 • 5:30 PM - 7:00 PM
**Hybrid metal-organic clusters resist for next-generation high-NA EUV lithography**
*Author(s):* **Neha Sharma**, **Manvendra Chauhan**, **Kumar Palit Palit**, **Ashutosh Joshi**, **Ranbir Singh**, **Abhimanew Dhir**, **Robin Khosla**, **Bhaskar Mondal**, **Prof. Satinder Kumar Sharma,** Indian Institute of Technology Mandi (India); **Dr. Ralph Dammel,** EMD Electronics, 70 Meister Ave, Somerville, NJ 08876 (United States)

13983-119 • 5:30 PM - 7:00 PM
**Systematic investigation of tin-based metal-organic cluster resists for high-resolution next generation lithography**
*Author(s):* **Sachin Sharma**, **Manvendra Chauhan Chauhan**, **Neha Sharma**, **Meghana Sharma**, **Kumar Palit Palit**, **Ashutosh Joshi**, **Satinder Kumar Sharma,** Indian Institute of Technology Mandi (India); **Dr. Ralph Dammel,** EMD Electronics, 70 Meister Ave, Somerville, NJ 08876, USA (United States)

13983-120 • 5:30 PM - 7:00 PM
**Development of a new thinner for next-generation EUV using machine learning**
*Author(s):* **Masatoshi Echigo,** Mitsubishi Gas Chemical Co Inc (Japan); **Kakeru Konagaya**, **Yuto Suzuki**, **Takumi Okada**, **Emi Nakano, Tatsuyuki Kumano,** Mitsubishi Gas Chemical Co., Inc. (Japan)

13983-121 • 5:30 PM - 7:00 PM
**Topography-controlled TiN-based spacer engineering via plasma ALD for pitch-walking suppression in EUV SADP-based MP18 integration**
*Author(s):* **Sungdae Woo,** ASM Korea Ltd. (Korea, Republic of); **Miguel De Abreu Neto,** ASM Japan K.K. (Japan); **Vincent Renaud,** imec (Belgium); **Andrey Sokolov,** ASM Korea Ltd. (Korea, Republic of); **Debanjan Jana**, **David De Roest**, **Daniele Piumi,** ASM Belgium N.V. (Belgium); **Gilles Delie**, **Laurent Souriau**, **Chen Wu**, **Seongho Park,** imec (Belgium); **Hyunchul Kim, Hyungjoo Shin,** ASM Korea Ltd. (Korea, Republic of)

13983-122 • 5:30 PM - 7:00 PM
**Stochastic gel model for nanopatterning**
*Author(s):* **Zhimin Zhu, Joyce Lowes,** Brewer Science, Inc. (United States)

13983-123 • 5:30 PM - 7:00 PM
**Optimization of spin-on hardmask bake time to reduce resistive row failures in 10nm DRAM**
*Author(s):* **Jaehyeon Jeon, Byoungdeog Choi,** Sungkyunkwan Univ. (Korea, Republic of)

13983-131 • 5:30 PM - 7:00 PM
**Negative-tone organotin resists with alkenyl and alkynyl ligands**
*Author(s):* **Moira Carmalita Dharsika Niluxsshun**, **Munsaf Ali**, **Stephen T. Smith**, **Ricardo Burke**, **Jordan B. Greenough,** Univ. at Albany (United States); **Ryan Chae,** SAMSUNG SDI Co., Ltd. (Korea, Republic of); **Gregory Denbeaux, Robert L. Brainard,** Univ. at Albany (United States)

13983-125 • 5:30 PM - 7:00 PM
**Fluorine-free and PEB-less i-line chemically amplified resist for panel level packaging (PLP)**
*Author(s):* **Hung-Yang Chen,** EMD Electronics (United States); **Lei Lu**, **Shinya Akechi,** EMD Electronics (Japan); **Chunwei Chen,** EMD Electronics (United States)

13983-126 • 5:30 PM - 7:00 PM

**Design and performance of organic metal resists for next-generation EUV**

*Author(s):* **Amit Jaiswal,** Toyo Gosei Co Ltd (Japan); **Kohei Machida, Satoshi Enomoto,** Toyo Gosei Co., Ltd. (Japan)

13983-127 • 5:30 PM - 7:00 PM

**Progress in molecular resist development for advanced EUV patterning**

*Author(s):* **Li Cui**, **Vageesha Liyana Gunawardana**, **Emad Aqad**, **Jong Park**, **Joseph Mancinelli**, **Conner Hoelzel**, **Suzanne M. Coley**, **Benjamin D. Rafael-Naab**, **Yinjie Cen**, **Adway Zacharias**, **Samuel Nagel**, **Ken Laughlin**, **Kristen Flajslik**, **Rochelle Rena**, **Sylvie Eckert**, **Evan Lipinski, Jason Behnke,** Qnity, DuPont Electronics (United States)

13983-128 • 5:30 PM - 7:00 PM

**Improving plasma etch resistance of EUV resists using selective infiltration**

*Author(s):* **Ciaran Mackenzie**, **Gregory Denbeaux, Christophe Vallee,** Univ. at Albany (United States)

13983-129 • 5:30 PM - 7:00 PM

**An efficient calibration method for physical photoresist models in lithography**

*Author(s):* **Yunyun Hao,** Institute of Microelectronics of the CAS (China); **Lisong Dong, Yayi Wei,** Institute of Microelectronics (China)

13983-165 • 5:30 PM - 7:00 PM

**Effect of component of inorganic-organic hybrid resist materials on resist performance for EB and EUV lithography**

*Author(s):* **Takashi Hamada, Hiroki Yamamoto,** National Institutes for Quantum Science and Technology (Japan)

## Thursday 26 February 2026

### SESSION 13: VARIABILITY, STOCHASTICS, AND DEFECTIVITY

26 February 2026 • 8:00 AM - 9:20 AM | Convention Center, Room 210C

*Session Chair(s):* **Anuja De Silva**, Lam Research Corp. (United States); **Qinghuang Lin**, Canon Nanotechnologies, Inc. (United States)

13983-56 • 8:00 AM - 8:20 AM

**Calibration and verification metrics for EUVL stochastic models: beyond line edge roughness and local CD non-uniformity**

*Author(s):* **Azat M. Latypov**, **Farruh Shahidi,** Siemens EDA (United States); **Stewart Wu,** Siemens EDA (Belgium); **Germain Fenger,** Siemens EDA (United States)

13983-57 • 8:20 AM - 8:40 AM

**0.33NA EUV process co-optimization to improve 28 nm pitch line/space “dose-to-size” and patterning performance**

*Author(s):* **Jennifer Church**, **Kanzo Kato**, **Yen-Tien Lu,** TEL Technology Ctr., America, LLC (United States); **Chimaobi Mbanaso,** TEL Manufacturing and Engineering of America, Inc. (United States); **Nicolas Maldonado**, **Steven Grzeskowiak**, **Nathan Antonovich**, **Lior Huli, Eric Liu,** TEL Technology Ctr., America, LLC (United States)

13983-58 • 8:40 AM - 9:00 AM

**Solvent-assisted transport of PAG in EUV photoresists and underlayers**

*Author(s):* **Justin Nhan**, **Sunwoo Hur**, **Douglas MacLeod,** Univ. at Albany (United States); **Aleksandra Biedron,** Univ. at Albany (United States), NY Creates (United States); **Gregory Denbeaux,** Univ. at Albany (United States); **Kathleen Dunn,** University at Albany - SUNY (United States)

13983-55 • 9:00 AM - 9:20 AM

**Random logic via patterning: materials-process-imaging co-optimization for dose reduction, DoF and defect mitigation**

*Author(s):* **Bhavishya Chowrira Poovanna**, **Peter De Bisschop**, **Victor Blanco**, **Stefan Decoster**, **Mircea Dusa**, **Alain Moussa**, **Joern-Holger Franke**, **Dhruv Tyagi**, **Mahtab Sangghaleh,** imec (Belgium); **Marc Demand**, **Yusuke Wako,** TEL (Belgium); **Ganesha Durbha,** KLA (Belgium)

### SESSION 14: MATERIALS AND PROCESSES USED IN VERTICAL INTEGRATION OF DEVICES, STACKED STRUCTURES, ETC.

26 February 2026 • 9:20 AM - 10:00 AM | Convention Center, Room 210C

*Session Chair(s):* **Masahiko Harumoto**, SCREEN Semiconductor Solutions Co., Ltd. (Japan); **Ramakrishnan Ayothi**, JSR Micro, Inc. (United States)

13983-59 • 9:20 AM - 9:40 AM

**Ultrasonic spray coating combined with maskless lithography for advanced singulation of wafers with complex bump geometry**

*Author(s):* **Johanna Rimböck**, **Jakob Holzapfel**, **Laurent Bouvot**, **Matthias Brunnbauer, Tobias Zenger,** EV Group E. Thallner GmbH (Austria)

13983-60 • 9:40 AM - 10:00 AM

**A preliminary study on chip warpage prediction using lithography distortion for HBM applications**

*Author(s):* **JOONSEOK OH,** SAMSUNG ELECTRONICS (Korea, Republic of); **Youngmin Kim,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Jihyun Lim,** SAMSUNG Electronics Co., Ltd., Korea (Korea, Republic of); **Hyundong Lee,** SAMSUNG Electronics Co., Ltd., Korea, Korea (Korea, Republic of); **Hyo Lee,** SAMSUNG Electronics Co., Ltd., Korea (Korea, Republic of); **Yongjun Yoo**, **Taeho Lim**, **Seonghye Seok**, **Kwan Hong Park, Seongpil Cho,** SAMSUNG ELECTRONICS, Korea (Korea, Republic of)

## Coffee Break 10:00 AM - 10:30 AM

## SESSION 15: NEW PROCESSING TECHNIQUES AND APPLICATIONS

26 February 2026 • 10:30 AM - 11:50 AM | Convention Center, Room 210C

*Session Chair(s):* **Masahiko Harumoto**, SCREEN Semiconductor Solutions Co., Ltd. (Japan); **Ramakrishnan Ayothi**, JSR Micro, Inc. (United States)

13983-61 • 10:30 AM - 10:50 AM

**A simple temperature gradient PEB approach for improved lithographic scaling**

*Author(s):* **Hyungju Ryu,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of), Simon Fraser Univ. (Canada); **Tae-Ho Kim,** Simon Fraser Univ. (Canada); **Ju-Mi Bang**, **Man-Kyu Kang**, **Woojin Jung**, **Sang-Hee Lee**, **Joonsoo Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Edward J. Park,** Simon Fraser University (Canada)

13983-62 • 10:50 AM - 11:10 AM

**Mechanistic study of infiltration synthesis of organic-inorganic hybrid resists for EBL and EUVL resist**

*Author(s):* **Md Istiaque Chowdhury**, **Xinpei Wu**, **Won-Il Lee**, **Peter Sun,** Brookhaven National Lab. (United States); **J. Anibal Boscoboinik,** Brookhaven National Lab. (United States), Stony Brook Univ. (United States); **Kim Kisslinger**, **Aaron Stein**, **Nikhil Tiwale,** Brookhaven National Lab. (United States); **Chang-Yong Nam,** Brookhaven National Lab. (United States), Stony Brook Univ. (United States)

13983-63 • 11:10 AM - 11:30 AM

**Millimeter scale wafer shape control via a spin-on film**

*Author(s):* **Michael Murphy**, **Charlotte Cutler**, **Andrew Weloth**, **Jacob Sitterly, David Conklin,** TEL Technology Ctr., America, LLC (United States)

13983-64 • 11:30 AM - 11:50 AM

**Progress towards a new class of area selective deposition using photoassisted chemical vapor deposition on thermally sensitive substrates**

*Author(s):* **Christopher Brewer,** The Univ. of Texas at Dallas (United States); **Rashmi Singh,** Univ. of Florida (United States); **Dyotana Bhattacharrya,** The Univ. of Texas at Dallas (United States); **James Pugh**, **Anjali Sharma**, **Bishwaprava Das,** Univ. of Florida (United States); **Oluwatamilore Oni**, **Diego Caretti,** The Univ. of Texas at Dallas (United States); **Lisa McElwee-White,** Univ. of Florida (United States); **Amy Walker,** The Univ. of Texas at Dallas (United States)

# CONFERENCE 13984

# Advanced Etch Technology and Process Integration for Nanopatterning XV

**24 - 26 February 2026 | Convention Center, Grand Ballroom 220C**

*Conference Chair(s):* **Efrain Altamirano-Sánchez,** imec (Belgium)

*Conference Co-Chair(s):* **John Hoang,** Lam Research Corp. (United States)

*Program Committee:* **John C. Arnold,** IBM Semiconductors (United States); **Keun Hee Bai,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Robert L. Bruce,** IBM Thomas J. Watson Research Ctr. (United States); **Thierry Chevolleau,** CEA-LETI (France); **Germain L. Fenger,** Synopsys, Inc. (United States); **Siva Kanakasabapathy,** Lam Research Corp. (United States); **Catherine B. Labelle,** Intel Corp. (United States); **Frédéric Lazzarino,** imec (Belgium); **Qinghuang Lin,** Canon Nanotechnologies, Inc. (United States); **Nihar Mohanty,** Meta (United States); **Phong Nguyen,** Air Liquide Electronics (United States); **Jake O'Gorman,** Hitachi High-Tech America, Inc. (United States); **Prem Kumar Panneerchelvam,** KLA Texas (United States); **Angélique Raley,** TEL Technology Ctr., America, LLC (United States); **Kamal Rudra,** IBM (United States); **Ricardo Ruiz,** Lawrence Berkeley National Lab. (United States); **Gurpreet Singh,** Intel Corp. (United States); **Yuyang Sun,** Siemens EDA (United States); **Richard S. Wise,** Lam Research Corp. (United States); **Ying Zhang,** NAURA (United States)

## Monday 23 February 2026

### WELCOME AND PLENARY SESSION

23 February 2026 • 8:00 AM - 9:50 AM | Convention Center, Grand Ballroom 220A

*Session Chair(s):* **John C. Robinson**, Diverdy Technologies, LLC (United States); **Eric M. Panning**, SiClarity Inc. (United States)

8:00 AM - 8:15 AM:
**Welcome and opening remarks**

8:15 AM - 8:20 AM:
**SPIE Frits Zernike Award for Microlithography**
Presented in recognition of outstanding accomplishments in microlithographic technology, especially those furthering the development of semiconductor lithographic imaging solutions.

8:20 AM - 8:25 AM:
**Presentation of the Nick Cobb Memorial Scholarship**
The Nick Cobb Memorial Scholarship is awarded to an outstanding graduate student studying advanced lithography or a related field. The scholarship is jointly funded by Siemens EDA and SPIE.

8:25 AM - 8:30 AM:
**Presentation of New SPIE Fellows**

13982-501 • 8:30 AM - 9:10 AM
**HBM technology evolution for memory-centric computing in the AI era** (Plenary Presentation)
*Author(s):* **Unoh Kwon,** SK hynix Inc. (Korea, Republic of)

13980-502 • 9:10 AM - 9:50 AM
**Innovating at scale: Toward diversified manufacturing for purpose-built chips** (Plenary Presentation)
*Author(s):* **Hui Peng Koh,** GlobalFoundries (United States)

### ALL-SYMPOSIUM PANEL

23 February 2026 • 5:15 PM - 7:00 PM | Convention Center, Grand Ballroom 220A
5:15 PM - 5:20 PM:
**Tribute to Andrew R. Neureuther**

Prof. Andy Neureuther passed away on September 9, 2025. He was a pillar of the lithography community and a mainstay of this conference for its entire existence. We will hold a brief memorial to remember his many and lasting contributions to both our science and our society.

5:20 PM - 7:00 PM:

**Making the Impossible Possible: 50 Years of SPIE ALP**

“Making the Impossible Possible: 50 Years of SPIE ALP” is a plenary panel comprised of some of the top contributors in the field, commemorating the 50th anniversary of SPIE's Advanced Lithography & Patterning (ALP) Symposium. Over the years the industry has heard pundits claim we've hit a wall. Our industry saw these as a call to prove them wrong, and time and time again we have made the impossible possible. Companies, technologies, and people come and go, but the ALP community would figure out how to move forward. This panel will explore how this became possible, what was learned, and how that might inspire the next 50 years as we approach new, unique and diverse challenges.

*Moderator:*
**Dan Hutcheson**, VLSI Research Inc (United States)

*Panelists:*
**Burn Lin**, National Tsing Hua Univ. (Taiwan)
**Martin van den Brink**, ASML Netherlands B.V., Retired (Netherlands)
**Grant Willson**, The Univ. of Texas at Austin (United States)
**Janice Golda**, Intel Corp. (United States)
**Chris Mack**, Fractilia, LLC (United States)

## Tuesday 24 February 2026

### SESSION 1: ADVANCED MATERIALS AND ETCH PATTERNING INTEGRATION I

24 February 2026 • 8:00 AM - 10:10 AM | Convention Center, Grand Ballroom 220C
*Session Chair(s):* **Efrain Altamirano-Sánchez**, imec (Belgium); **John Hoang**, Lam Research Corp. (United States)

13984-1 • 8:00 AM - 8:30 AM
**Overview of etching mechanism in cryogenic HF plasmas for SiO2 and SiN** *(Invited Paper)*
*Author(s):* **Shih-Nan Hsiao**, **Yusuke Imai**, **Makoto Sekine,** Nagoya Univ. (Japan); **Ryutaro Suda**, **Yoshihide Kihara,** Tokyo Electron Miyagi Ltd. (Japan); **Masaru Hori,** Nagoya Univ. (Japan)

13984-2 • 8:30 AM - 9:10 AM
**Extending the patterning roadmap to 2nm and beyond using dry resists and virtual twins** *(Invited Paper)*
*Author(s):* **David M. Fried,** Lam Research Corp. (United States)

13984-3 • 9:10 AM - 9:30 AM
**Plasma etching process tailoring for different polysilicon microstructures used in 10nm FD-SOI metal gate stacks**
*Author(s):* **Mouaad Yassine Aliouat**, **Jérôme Dubois**, **Patricia Pimenta-Barros**, **Aurélien Sarrazin**, **Sylvain Beaurepaire**, **Olivier Dubreuil**, **Ludovic Couture**, **Laurent Brevard**, **Alexandre Magalhaes-Lucas**, **Tadeu MOTA FRUTUOSO**, **Mickael RIBOTTA**, **Claire Fenouillet-Beranger, François Boulard,** Univ. Grenoble Alpes, CEA, LetiF-38000 Grenoble (France)

13984-4 • 9:30 AM - 9:50 AM
**Model assisted process development to enable faster 3D-NAND memory hole profile deposition and etch co-optimization**
*Author(s):* **Hao Chi**, **Calvin Phan**, **Matt Adams**, **Sloan Roberts, John Hoang,** Lam Research Corp. (United States)

13984-5 • 9:50 AM - 10:10 AM
**Optimization of pitch walking for Ti-based spacer integration in semi-damascene double patterning at MP18**
*Author(s):* **Vincent Renaud,** imec (Belgium); **Miguel De Abreu Neto,** ASM Japan K.K. (Japan); **Sungdae Woo,** ASM Korea Ltd. (Korea, Republic of); **Gilles Delie,** imec (Belgium); **Debanjan Jana**, **David De Roest,** ASM Belgium N.V. (Belgium); **Hyungjoo Shin**, **Andrey Sokolov,** ASM Korea Ltd. (Korea, Republic of); **Daniele Piumi,** ASM Belgium N.V. (Belgium); **Laurent Souriau**, **Chen Wu, Seongho Park,** imec (Belgium)

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

### SESSION 2: ADVANCED MATERIALS AND ETCH PATTERNING INTEGRATION II

24 February 2026 • 10:40 AM - 12:10 PM | Convention Center, Grand Ballroom 220C
*Session Chair(s):* **Gurpreet Singh**, Intel Corp. (United States); **Frédéric Lazzarino**, imec (Belgium)

13984-6 • 10:40 AM - 11:10 AM
**Cryogenic etching and halogens** *(Invited Paper)*
*Author(s):* **Mingmei Wang**, **Yuri Barsukov**, **Dongjun Wu**, **Thorsten B. Lill, Tanner Ozel,** Lam Research Corp. (United States)

13984-7 • 11:10 AM - 11:30 AM

**Atomic layer etching pitch splitting (APS) for nanoimprint lithography: Combining simplicity, precision, and sustainability**

*Author(s):* **Reza Jafari Jam**, **Robin Athle**, **Yoana Ilarionova**, **Fabian M. Veid**, **Alfred A. Ahlström**, **Svetlana Ivanova**, **Kishwar Sultana**, **Dmitry Suyatin**, **Jonas Sundqvist**, **Amin Karimi,** AlixLabs AB (Sweden); **Makoto Ogusu, Ken-Ichiro Mori,** Canon Inc. (Japan)

13984-8 • 11:30 AM - 11:50 AM

**Plasma surface treatments of amorphous carbon layer to enhance MOR adhesion**

*Author(s):* **Sunjin Lee**, **Rémi Vallat**, **Laurent Souriau**, **Bhavishya Chowrira Poovanna, Roberto Fallica,** imec (Belgium)

13984-9 • 11:50 AM - 12:10 PM

**Self-aligned quadruple patterning made simple: Extending the applications of atomic layer etch-induced pitch splitting (APSTM)**

*Author(s):* **Robin Athle**, **Reza Jafari Jam**, **Yoana Ilarionova**, **Fabian M. Veid**, **Alfred A. Ahlström,** AlixLabs AB (Sweden); **Hsuan Hsu Chen,** United Microelectronics Corp. (Taiwan); **Svetlana Ivanova**, **Kishwar Sultana**, **Asif Muhammad**, **Mostafa Torbati**, **Intu Sharma**, **Hesamedin Safavi,** AlixLabs AB (Sweden); **Fred Roozeboom,** Univ. Twente (Netherlands); **Dmitry Suyatin**, **Jonas Sundqvist, Amin Karimi,** AlixLabs AB (Sweden)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 3: HETEROGENEOUS/3D INTEGRATION

24 February 2026 • 1:40 PM - 3:10 PM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Angélique Raley**, TEL Technology Ctr., America, LLC (United States); **Keun Hee Bai**, SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13984-10 • 1:40 PM - 2:00 PM

**Etch performance and substrate-dependent selectivity of a polytelluoxane-based EUV photoresist**

*Author(s):* **Ahmad Hassan Siddique,** Tsinghua Univ. (China), Beijing Advance Innovation Ctr. for Integrated Circuits (China); **Ruihao Zhou**, **Huaqiang Wu,** Tsinghua Univ. (China); **Mark Neisser,** Tsinghua Univ. (China), International Innovation Institute (China); **Huaping Xu,** Tsinghua Univ. (China)

13984-11 • 2:00 PM - 2:30 PM

**Integration and process strategies for post-bond lithographic overlay control for advanced node** *(Invited Paper)*

*Author(s):* **Ilseok Son**, **Andrew Tuchman**, **Christopher Netzband,** TEL Technology Center, America, LLC (TTCA) (United States); **Nathan Ip,** Tokyo Electron, America, Inc (United States); **Sheldon Meyers**, **Angelique Raley,** TEL Technology Center, America, LLC (TTCA) (United States); **Leon van Dijk,** ASML Netherlands B.V. (Netherlands); **Angelique Raley,** TEL Technology Center, America, LLC (TTCA) (United States); **Leon van Dijk**, **Niyam Haque**, **Manav Tyagi, Lieneke Kusters,** ASML Netherlands B.V. (Netherlands)

13984-12 • 2:30 PM - 2:50 PM

**Die warpage and overlay control using die stress management (DSM)**

*Author(s):* **Changwoo Sun,** Applied Materials (United States); **Ramkumar Karurshanmugam,** Applied Materials, Inc. (United States); **Pradeep Subrahmanyan,** Applied Materials (United States); **Olga Kucher**, **Wonjae Lee**, **Adaeze Osonkie,** Applied Materials, Inc. (United States); **Intae Whoang**, **Kijun Bang, Sang Un Lee,** SK hynix Inc. (Korea, Republic of)

13984-13 • 2:50 PM - 3:10 PM

**Advanced patterning techniques enhancing 3D circuit architectures**

*Author(s):* **Patrick S. Finnegan,** Sandia National Labs (United States); **Scott E. Weatherred**, **Robert B. Reyna**, **Stephen M. Carr, D. Bruce Burckel,** Sandia National Labs. (United States)

## Coffee Break 3:10 PM - 3:40 PM

## SESSION 4: COMPUTATIONAL PATTERNING AND PROCESS CONTROL

24 February 2026 • 3:40 PM - 5:50 PM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Germain L. Fenger**, Synopsys, Inc. (United States); **Efrain Altamirano-Sánchez**, imec (Belgium)

13984-14 • 3:40 PM - 4:10 PM

**Laying the pipeline for first-shot success** *(Invited Paper)*

*Author(s):* **Meghali J. Chopra**, **Stephen Sirard, Leandro Medina,** SandBox Semiconductor (United States)

13984-15 • 4:10 PM - 4:40 PM

**Ballistic transport of plasma-generated species in nanoscale feature during next-generation plasma processing** *(Invited Paper)*

*Author(s):* **Yeon Ho Im**, **Hae Sung Hae**, **Jae Hyung Park**, **Ju Won Kim, Sung Yun Park,** Jeonbuk National Univ. (Korea, Republic of)

13984-16 • 4:40 PM - 5:10 PM

**Physics-based simulation for etch process optimization and learning** *(Invited Paper)*

*Author(s):* **Prem Panneerchelvam**, **Jin Xie**, **Shuo Huang**, **Chad Huard**, **Dylan Pederson, Mark Smith,** KLA Corp. (United States)

13984-17 • 5:10 PM - 5:30 PM

**Knowledge-enhanced embedding for virtual metrology with uncertainty quantification in the Bosch etching process**

*Author(s):* **Mudassir Ali Sayyed,** Fraunhofer ENAS (Germany), Chemnitz University of Technology (Germany); **Zahra Mehraban,** Fraunhofer-Institut für Elektronische Nanosysteme ENAS (Germany), Technische Univ. Ilmenau (Germany); **Stephan Zieger**, **Tom Seifert**, **Micha Haase,** Fraunhofer-Institut für Elektronische Nanosysteme ENAS (Germany), Technische Univ. Chemnitz (Germany); **Jan Langer,** Fraunhofer-Institut für Elektronische Nanosysteme ENAS (Germany); **Harald Kuhn,** Fraunhofer-Institut für Elektronische Nanosysteme ENAS (Germany), Technische Univ. Chemnitz (Germany)

13984-18 • 5:30 PM - 5:50 PM

**Laser absorption spectroscopy: a breakthrough in plasma etch endpoint detection for EUV and ALE patterning process**

*Author(s):* **Hyung Joo Lee,** Lam Research (United States); **Shishi Jiang**, **Jagadeeshwari Manne**, **Yuanfu Yue**, **Sriharsha Jayanti**, **Prabhakara Gopaladasu**, **Merrett Wong, Jorge Luque,** Lam Research Corp. (United States)

## Wednesday 25 February 2026

## SESSION 5: NOVEL PATTERNING PROCESSES: DIRECTIONAL PATTERNING, ALE/ALD, ISOTROPIC AND BEYOND I

25 February 2026 • 8:20 AM - 10:10 AM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Jake O'Gorman**, Hitachi High-Tech America, Inc. (United States); **Ricardo Ruiz**, Lawrence Berkeley National Lab. (United States)

13984-19 • 8:20 AM - 9:00 AM

**Advancing nanopatterning with ALD and ALE: Selective processing in 2D and 3D** *(Invited Paper)*

*Author(s):* **Erwin W. M. M. Kessels,** Technische Univ. Eindhoven (Netherlands)

13984-20 • 9:00 AM - 9:30 AM

**Low-k fine patterning using ALE to improve the profile and etch damage** *(Invited Paper)*

*Author(s):* **Keun Hee Bai, Sanghyun Lee,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

13984-21 • 9:30 AM - 9:50 AM

**Plasma-enhanced atomic layer etching of ZrO2 with surface fluorination and ligand-exchange using TiCl4 for DRAM capacitor**

*Author(s):* **Hyeongwu Lee, Heeyeop Chae,** Sungkyunkwan Univ. (Korea, Republic of)

13984-22 • 9:50 AM - 10:10 AM

**Highly selective silicon etch for high-NA EUV patterning**

*Author(s):* **Sonam Sherpa**, **Rudy Wotjecki**, **Zihao Ding**, **Alvaro Garcia de Gorordo**, **Zhimin Jiang**, **Shreeram Dash**, **Takumi Yanagawa**, **Nitin Ingle, Daniel Byun,** Applied Materials (United States)

### Coffee Break 10:10 AM - 10:40 AM

## SESSION 6: NOVEL PATTERNING PROCESSES: DIRECTIONAL PATTERNING, ALE/ALD, ISOTROPIC AND BEYOND II

25 February 2026 • 10:40 AM - 12:10 PM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Robert L. Bruce**, IBM Thomas J. Watson Research Ctr. (United States); **Frédéric Lazzarino**, imec (Belgium)

13984-23 • 10:40 AM - 11:10 AM

**Application of selective isotropic etch in the manufacturing of advanced logic and memory technologies** *(Invited Paper)*

*Author(s):* **Thorsten B. Lill, Harmeet Singh,** Lam Research Corp. (United States)

13984-24 • 11:10 AM - 11:30 AM

**AI-native equipment design for atomic precision etching**

*Author(s):* **Richard Yang,** Applied Angstrom TechnologyPte. Ltd. (Singapore); **Henry Huang, Hsiao-Ting Fan,** Applied Angstrom Technology (Singapore)

13984-25 • 11:30 AM - 11:50 AM

**Low-damage gas cluster ion beam polishing of the C-face of 4H-SiC**

*Author(s):* **Ryan Raad,** Technical University of Vienna, Christian Doppler Laboratory for Sustainable Silicon Carbide Technology (Austria); **Georg Pfusterschmied, Ulrich Schmid,** Technische Univ. Wien (Austria)

13984-26 • 11:50 AM - 12:10 PM

**Novel wet process to improve channel hole profile towards 3D-NAND flash memory**

*Author(s):* **LinhDa Ho,** SCREEN Semiconductor Solutions Co Ltd (Japan); **Tomomi Higuchi**, **Atsushi Kuroeda, Yukifumi Yoshida,** SCREEN Semiconductor Solutions Co., Ltd. (Japan)

## Lunch Break 12:10 PM - 1:40 PM

## SESSION 7: NOVEL PATTERNING PROCESSES: DIRECTIONAL PATTERNING, ALE/ALD, ISOTROPIC AND BEYOND III

25 February 2026 • 1:40 PM - 3:00 PM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Qinghuang Lin**, Canon Nanotechnologies, Inc. (United States); **John Hoang**, Lam Research Corp. (United States)

13984-27 • 1:40 PM - 2:10 PM

**Transforming EUV patterned P34nm circular CH structures into oval CHs through directional etch** *(Invited Paper)*

*Author(s):* **Howon Jung,** SAMSUNG (Korea, Republic of); **Hyungju Ryu**, **Sangho Yun**, **Woojin Jung**, **Young-Seog Kang**, **Seunghak Park,** SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Rajendra K. Saroj,** IMEC (Belgium); **Sara Paolillo, Victor Blanco,** imec (Belgium)

13984-28 • 2:10 PM - 2:40 PM

**P20 HNA enablement via pattern shaping technology: T2T engineering, roughness and defectivity improvement** *(Invited Paper)*

*Author(s):* **Annaelle Demaude**, **Alejandro Berdonces Layunta**, **Viktor Kampitakis**, **Sara Paolillo**, **Matteo Beggiato**, **Gian Lorusso,** imec (Belgium); **Blessing Adewumi**, **Chihan Hsu**, **Kevin Anglin**, **Siva Kanakasabapathy**, **Steven Sherman**, **Andrew Cockburn**, **Gaetano Santoro,** Applied Materials, Inc. (United States); **Pieter Vanelderen**, **Laurent Souriau**, **Fred Lazzarino**, **Victor Blanco**, **Geert Vandenberghe**, **Kurt Ronse, Philippe Leray,** imec (Belgium)

13984-29 • 2:40 PM - 3:00 PM

**Transient assisted processing (TAP): a novel plasma approach for precise, sustainable, and scalable patterning**

*Author(s):* **Atefeh Fathzadeh,** IMEC/ KU Leuven (Belgium); **Philippe Bézard,** imec (Belgium); **Stefan De Gendt,** imec (Belgium), KU Leuven (Belgium)

## Exhibit Social Hour and 50th Celebration 3:00 PM - 4:00 PM

## POSTER SESSION

25 February 2026 • 5:30 PM - 7:00 PM | Convention Center, Hall 2

13984-40 • 5:30 PM - 7:00 PM

**Overcoming DRAM BCAT patterning defects by reducing bending and wiggling**

*Author(s):* **DONGGYU HUH,** SungKyunKwan University (Korea, Republic of); **Byoungdeog Choi,** Sungkyunkwan Univ. (Korea, Republic of)

13984-41 • 5:30 PM - 7:00 PM

**Cap film damage suppression during EUV mask process**

*Author(s):* **Ayumi Moriya,** HOYA Corp (Japan); **Hibiki Kishida**, **Kazuhiro Hamamoto**, **Masanori Nakagawa**, **Yohei Ikebe, Takahiro Onoue,** HOYA Corp. (Japan)

13984-42 • 5:30 PM - 7:00 PM

**Integrated lith-to-etch protocols for indigenous resists technology enabling high-fidelity device fabrication**

*Author(s):* **Sumit Choudhary,** Gurugram Univ. (India); **Manvendra Chauhan, Satinder Kumar Sharma,** Indian Institute of Technology Mandi (India)

13984-43 • 5:30 PM - 7:00 PM

**Damage-free plasma processing of EUV metal-oxide resists using a novel plasma source**

*Author(s):* **Yujin Yeo**, **Min-Seok Kim**, **UnJae Jung, Chin-Wook Chung,** Hanyang Univ. (Korea, Republic of)

13984-44 • 5:30 PM - 7:00 PM

**Enhancing DRAM cell block edge bit-line pattern integrity via novel lithography and patterning integration**

*Author(s):* **Jina Kim, Yunseok Kim,** Sungkyunkwan Univ. (Korea, Republic of)

13984-45 • 5:30 PM - 7:00 PM

**A hybrid physics-machine learning framework for fast, predictive low-pressure plasma etching models**

*Author(s):* **Eneri Boniakou,** NTUA (Greece); **Sotiris Mouchtouris,** National Technical Univ. of Athens (Greece); **Katerina Oikonomou,** Institute of Informatics and Telecommunications, National Ctr. for Scientific Research "Demokritos" (Greece); **Tatiana Boura,** Graz University of Technology (Austria); **Alex Kondi,** Nanometrisis p.c. (Greece); **Antonios Stellas,** Nanometrisis P.C. (Greece); **Vassilios Constantoudis,** Institute of Nanoscience and Nanotechnology, National Ctr. for Scientific Research "Demokritos" (Greece); **George Kokkoris,** National Technical Univ. of Athens (Greece)

13984-46 • 5:30 PM - 7:00 PM

**Multi-stage dielectric structure controls ion angular distributions in dual-frequency capacitively coupled plasmas**

*Author(s):* **Yugyeong Suh, Hae June Lee,** Pusan National Univ. (Korea, Republic of)

13984-47 • 5:30 PM - 7:00 PM

**Electron incidence angle distributions during sheath collapse phase in high-frequency capacitively coupled plasmas**

*Author(s):* **Seong Eon Kim, Hae June Lee,** Pusan National Univ. (Korea, Republic of)

## Thursday 26 February 2026

## SESSION 8: SUSTAINABLE PATTERNING

26 February 2026 • 8:00 AM - 9:40 AM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Qinghuang Lin**, Canon Nanotechnologies, Inc. (United States); **Efrain Altamirano-Sánchez**, imec (Belgium)

13984-30 • 8:00 AM - 8:30 AM

**Exploring PFAS destruction and unexpected creation** *(Invited Paper)*

*Author(s):* **Kurtis Fairley,** Edwards Vacuum LLC (United States); **Joe Ambrose**, **Afroza Banu**, **Balamurugan Kandasamy,** Edwards Vacuum (United Kingdom); **Brian Jung,** Edwards Vacuum (Korea, Republic of); **Chris Jones,** Edwards Vacuum (United Kingdom)

13984-31 • 8:30 AM - 9:00 AM

**Advancing sustainable semiconductor manufacturing: synergistic innovations in etch gas development and abatement technologies** *(Invited Paper)*

*Author(s):* **Nathan Stafford,** Air Liquide (United States); **Scott Biltek**, **Phong Nguyen**, **Fan Qin**, **Xiangyu Guo, Pavol Pranda,** Air Liquide Electronics (United States)

13984-32 • 9:00 AM - 9:20 AM

**Sustainable plasma processes for the cleaning of etching reactors**

*Author(s):* **Nina Bernard**, **Christelle Boixaderas**, **Aurélien Sarrazin,** Univ. Grenoble Alpes, CEA, LetiF-38000 Grenoble (France); **Mélissa Brihoum**, **Pascal Gouraud**, **Cécile Jenny,** STMicroelectronics, 850 Rue Jean Monnet, 38920 (France); **Thierry Chevolleau, François Boulard,** Univ. Grenoble Alpes, CEA, LetiF-38000 Grenoble (France)

13984-33 • 9:20 AM - 9:40 AM

**Dry etch patterning, sustainability, performance: How can they all fit together?**

*Author(s):* **Konstantina Filippidou,** imec (Belgium)

### Coffee Break 9:40 AM - 10:10 AM

## SESSION 9: EUV PATTERNING AND ETCH

26 February 2026 • 10:10 AM - 12:00 PM | Convention Center, Grand Ballroom 220C

*Session Chair(s):* **Frédéric Lazzarino**, imec (Belgium); **Qinghuang Lin**, Canon Nanotechnologies, Inc. (United States)

13984-34 • 10:10 AM - 10:40 AM

**Enabling next-generation logic scaling: Advanced patterning strategies for high-NA EUV lithography at the 2nm threshold** *(Invited Paper)*

*Author(s):* **Arame Thiam,** Tokyo Electron Europe Ltd. (Belgium)

13984-35 • 10:40 AM - 11:00 AM

**Local CD uniformity improvements for random logic via thorough dry etch process optimizations**

*Author(s):* **Stefan Decoster**, **Bhavishya Chowrira Poovanna**, **Victor Blanco,** imec (Belgium); **Yusuke Wako, Marc Demand,** Tokyo Electron Europe Ltd. (Belgium)

13984-36 • 11:00 AM - 11:20 AM

**Dry etch patterning properties of organic underlayer used on EUV metal oxide resist platform**

*Author(s):* **Viktor Kampitakis**, **Achintya Kundu**, **Mihir Gupta**, **Rémi Vallat**, **Laurent Souriau**, **Hyo Seon Suh,** imec (Belgium); **David De Roest**, **Kishan Patel**, **Alina Talmantaite, Bruno Galizia,** ASM Belgium N.V. (Belgium)

13984-37 • 11:20 AM - 11:40 AM

**Evaluation of high-NA EUV for subtractive interconnect patterning in advanced nodes**

*Author(s):* **Christopher Penny**, **Joe Lee**, **Scott Halle**, **Zheng Chen**, **Nicholas Latham**, **Yasiel Cabrera**, **Shravan Matham**, **Jed Rankin, Luciana Meli,** IBM Research - Albany (United States)

13984-38 • 11:40 AM - 12:00 PM

**Improvement of both verticality and roughness in sidewall of metal oxide resist patterns etching with BCl3 pulsed plasma**

*Author(s):* **Taiga Kasai**, **Miyako Matsui**, **Minami Shoji**, **Tomoyasu Shojo,** Hitachi, Ltd. (Japan); **Makoto Miura, Kenichi Kuwahara,** Hitachi High-Tech Corp. (Japan)

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