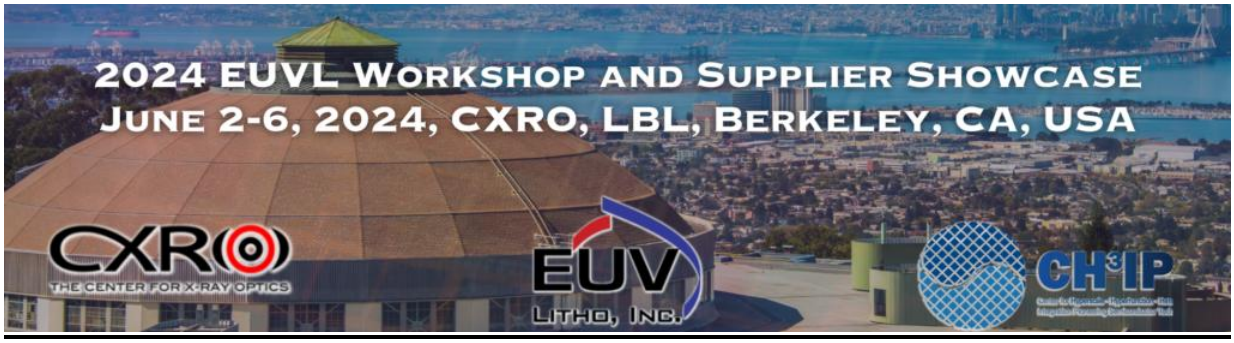

Workshop Proceedings

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Bruno La Fontaine and Ricardo Ruiz

Workshop Proceedings

2024 EUVL Workshop & Supplier Showcase

Jun 4th – 6th, 2023

LBNL, Berkeley, CA, USA

2024 EUVL Workshop & Supplier Showcase

Day One: Tuesday, June 4th, 2024

10:30 AM: Session 1: LBNL Program Showcase

Co-Chairs: Ricardo Ruiz (LBNL) and Bruno La Fontaine (LBNL)

Computing Beyond the End of Moore's Law (P7)
John Shalf
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

A Holistic Approach to Patterning Science at Berkeley Lab (P106)
Ricardo Ruiz
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Nanoscale Photon Sensing (P102)
Maurice Garcia-Sciveres
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Spatially Resolved EUV Resist Dissolution (P105)
Paul Ashby
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Characterization of Chemical/structural Information of Latent Image via Critical-dimension Resonant Soft X-ray Scattering (P103)
Cheng Wang
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

12:25 PM - 1:30 PM: Lunch

1:30PM: Session 3: Supplier Program Showcase 1

Session Chair: Take Watanabe (University of Hyogo)

Synchrotron-based EUV metrology at PTB (P81)
Richard Ciesielski
Physikalisch-Technische Bundesanstalt (PTB), Abbestr. 2-12, 10587 Berlin, Germany

TNO EUV Materials Research for EUV Infrastructure (P85)
J. Van Veldhoven, J. K. Stortelder, M. H. van Es, and H. H. P. Th. Bekman
TNO, Stieltjesweg 1, 2628 CK Delft, The Netherlands

EUVL Capabilities at CXRO (P88)
Arnaud Allezy, Markus Benk, Eric Buice, Weilun Chao, Jeff Gamsby, Eric Gullikson, Warren Holcomb, Chris Huschke, Hong Im, Mi-Young Im, Martin Izquierdo, Oleg Kostko, Bruno La Fontaine, Bernhard Luttgenau, Jeremy Mentz, Ryan Miyakawa, Alex Orimoloye, Chris Orman, Seno Rekawa, Farhad Salmassi, Sarath Samudrala, Brandon Vollmer, Jinyuan Yan, Dima Zaytsev, Cheng Wang, Qi Zhang, and Farid Zuberi
The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

2:15 PM - 2:35 PM: Coffee Break

2:35 PM: Session 4: Supplier Showcase 2

Co-Chairs: Meng Lee (Veeco) and Matt Hettermann (EUV Tech)

Veeco Ion Beam Deposition Advancement and Diamond Like Carbon as Novel Material for EUV Mask Blanks (P86)
Meng H. Lee, Katrina Rook, Mohammad Saghayezhian, Antonio Checco, and Marjorie Chee
Veeco Instruments Inc., 1 Terminal Drive, Plainview, NY 11803, USA

Yield Relevant Patterning Control For Next Generation Device Technology (P87)
JeongHo Yeo
Applied Materials (AMAT), 3050 Bowers Avenue, Santa Clara, CA 95054, USA

Preparing the Availability of EUV Light Sources for High Volume Manufacturing (P83)
Henry Chou
Energetiq Technology, Inc., Wilmington, MA 01887, USA

Applications of EUV Metrology Tools (P82)
Matt Hettermann
EUV Tech, 2830 Howe Rd. Suite A, Martinez, CA 94553, USA

Nanoscale chemical analysis of EUV resists (P84)
Sung Park, Derek Nowak, and Tom Albrecht
Molecular Vista, 6840 Vía del Oro #110, San Jose, CA 95119, USA

3:50 PM - 5:05 PM: Coffee Break and CXRO Facility Tour

DAY ONE ADJOURNED

2024 EUVL Workshop & Supplier Showcase

Day Two: Wednesday, June 5th, 2024

9:00 AM: Session 5: Keynote 1

Chairs: Patrick Naulleau (EUV Tech)

Welcome to Berkeley Lab
Dimitrios Argyriou
Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

High-NA EUV: an update on introduction (P4)
Steven Carson
Intel Foundry, Portland, OR, USA

Full Lifetime EUV Cost vs Performance for DRAM (P5)
Steve Snyder
Micron Semiconductor Inc., 8000 S Federal Way; Boise, ID 83707, USA

New development of EUV materials and MI solutions for High NA mask (P1)
In-Yong Kang, Sukjong Bae, Sanguk Park, Hyonseok Song, and Jin Choi
Semiconductor R&D Center, Samsung, 56 Seongchon-gil, Seocho District, Seoul, Republic of Korea

10:50 AM - 11:10 AM: Coffee Break

11:10 AM: Session 6: EUV Sources 1

Co-Chairs: Henry Kapteyn (K&M Lab) and Dong Gun Lee (ESOL)

Modeling a Discharge-Produced Plasma (DPP) EUV Source (P32)
D. Reisman[1], D. Arcaro[1], N. Lubinsky[1], and F. Niell[2]
1. *Energetiq Technology, Inc., Wilmington, MA 01887, USA*
2. *Nielltronix Inc., Tampa, FL 33609, USA*

Nanoscale Coherent Imaging and Functional Characterization using Tabletop-Scale Coherent EUV Sources (P37)
Henry C. Kapteyn and Margaret M. Murnane
1. *Kapteyn-Murnane Laboratories, 4775 Walnut St #102, Boulder, CO 80301, USA*

2. *Department of Physics, University of Colorado Boulder, Libby Dr, Boulder, CO 80302, USA*
3. *JILA, 440 UCB Boulder, CO 80309, USA*
4. *NSF STROBE Science and Technology Center, 440 UCB, Boulder, CO 80309, USA*

EUV and Soft-X-Ray Photonic Integrated Circuits (XPICs): Overview and first results at 13.5 nm (P40)

Robert Riedel[1], Philipp Merkl[1], Jan Heye Buss[1], Bastian Manschwetus[1], Valentina Shumakova[1], Rebeca Martinez Vazquez[2], Caterina Vozzi[2], Anna G. Ciriolo[2], Monica Bollani[2], Aldo Frezzotti[3], Salvatore Stagira[3], and Valer Tosa[4]

1. *Class 5 Photonics GmbH, Luruper Hauptstraße 1, 22547 Hamburg, Germany*
2. *Istituto di Fotonica e Nanotecnologie-CNR, Piazza Leonardo da Vinci 32, 20133 Milano, Italy*
3. *Politecnico di Milano, Piazza Leonardo da Vinci, 32, 20133 Milano MI, Italy*
4. *National Institute for R&D of Isotopic and Molecular Technologies, 67-103 Donat Str., 400293 Cluj-Napoca, Romania*

Development Of High-Brightness Xe LPP Source And Its Applications (P31)

Dong Gun Lee
ESOL (EUV Solution), Inc., 45, Dongtansandan 10-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea

12:10 PM - 1:15 PM: Lunch

1:15PM: Session 7: Resist and Patterning 1

Co-Chairs: Anuja De Silva (LAM) and Alex Robinson (IM)

Dry Resist Patterning Readiness Towards High NA EUV Lithography (P51)

Anuja De Silva[1], Ali Haider[1], Ching-Chung Huana[1], Mohand Brouri[1], Francesco Gullo[1], Shruti Jambaldinni[1], Zhengtao Chen[1], Benjamin Kam[1], Saumya Gulati[2], Phil Friddle[2], Linh Hoang[3], and Rich Wise[3]

1. *Lam Research Belgium BV, Steengroevenlaan 1, 3001 Leuven, Belgium*
2. *Lam Research at Albany Nanotech, 257, Fuller Road, Albany, NY 12203, USA*
3. *Lam Research Corp., 4650 Cushing Parkway, Fremont CA 94538, USA*

Advanced Processes for High-NA EUV Lithography (P53)
Cong Que Dinh[1], Seiji Nagahara[2], Kayoko Cho[1], Hikari Tomori[1], Yuhei Kuwahara[1], Satoru Shimura[1], Makoto Muramatsu[1], Kanzo Kato[3], and Lior Huli[3]

1. *Tokyo Electron Kyushu Ltd., 1-1 Fukuhara, Koshi City, Kumamoto 861-1116, Japan*
2. *Tokyo Electron Ltd., 5-3-1 Akasaka Minato-Ku, 107-6325, Japan*
3. *TEL Technology Center, America, LLC, 255 Fuller Rd #214 Albany, NY 12203, USA*

Multi-Trigger Resist patterning towards high–NA EUV lithography (P55)
C. Popescu[1], G. O'Callaghan[1], A. McClelland[1], C. Storey[1], J. Roth[2], E. Jackson[2], and A.P.G. Robinson[1,3]

1. *Irresistible Materials Ltd, Wolverhampton Science Park, Coxwell Ave, Wolverhampton, WV109RU, United Kingdom*
2. *Nano-C, 33 Southwest Park, Westwood, MA 02090, USA*
3. *University of Birmingham, Edgbaston, Birmingham, B15 2TT, United Kingdom*

Enhancement of photosensitivity and stability of Sn-12 EUV resist by integrating photoactive nitrate anion (P56)
Myung-Gil Kim[1], Yeo Kyung Kang[1], and Chan-Cuk Hwang[2]

1. *Sungkyunkwan University, 2066, Seobu-ro, Jangan-gu, Suwon-si, Gyeonggi-do, Republic of Korea*
2. *Pohang Accelerator Laboratory, POSTECH, 80 Jigok-ro 127 beon-gil, Nam-gu, Pohang-si, Gyeongsangbuk-do 37673, Republic of Korea*

EUV Lithography Using Zeolitic Imidazolate Frameworks (P57)
Michael Tsapatsis
Johns Hopkins University, 3400 North Charles St., Baltimore MD 21218, USA

DOE Accelerate Initiative Project for Accelerating Next-Generation EUV Photoresist Development (P59)
Chang-Yong Nam
Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY 11973, USA

Hybrid Multilayer EUV Dry Resist for 1.5 nm Technology Node (P58)
Ji-Hoo Seok
Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul, Republic of Korea

3:00 PM - 3:20 PM: Coffee Break

3:20PM: Session 8: Resist and Patterning 2

Session Co-Chairs: Oleg Kostko (LBNL) and Ryan Miyakawa (LBNL)

Sequence Control in Polypeptoid Photoresists and Its Effects on Patterning Performance (P60)

Chenyun Yuan[1], Cameron P. Adams[2], Rika Marui[1], Brett A. Helms[3], Rachel A. Segalman[2], and Christopher K. Ober[1]

1. *Cornell University, MS&E, Bard Hall, Ithaca, NY 14853, USA*
2. *University of California, Santa Barbara, CA 93106, USA*
3. *Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA*

EUV CAR-NTD with New Developer for Chemical Stochastic Defect Reduction (P67)

Nishiki Fujimaki and Toru Fujimori

FUJIFILM Corporation, 4000 Kawashiri, Yoshida-Cho, Haibara-Gun, Shizuoka, 421-0396, Japan

Probing chemical transformations in EUV resists (P52)

Oleg Kostko

The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

EUV Interference Lithography towards the Ultimate Resolution of Photon-based Nanopatterning (P54)

Iason Giannopoulos

Paul Scherrer Institute (PSI), Forschungsstr. 111 5232 Villigen PSI, Switzerland

Non-Alkyl Tin Oxo Cluster of CNU-TOC-01(4C-C) as Inorganic Resist for EUV Lithography (P62)

Hyeok Yun[1], Jiyoung Bang[1], Minyeob Kim[1], Hyung-Bae Moon[2], Siwoo Noh[3], Hee-Seon Lee[4], Kyuyoung Heo[4], Ki-Jeong Kim[3], Cheol-Min Kim[2], and Hyun-Dam Jeong[1]

1. *Department of Chemistry, Chonnam National University, 77, Yongbong-ro, Buk-gu, Gwangju, 61186, Republic of Korea*
2. *4Chem Laboratory, Suwon 16229, Republic of Korea*
3. *Pohang Accelerator Laboratory, POSTECH, 80 Jigokro-127-beongil, Nam-gu, Pohang, Gyeongbuk 37673, Republic of Korea*
4. *Korea Research Institute of Chemical Technology, 141, Gajeong-ro, Yuseong-gu, Daejeon, 34114, Republic of Korea*

Evaluation of C-beam generated EUV lightning source using mirror and filter technique (P69)
Umesh Balaso Apugade and Kyu Chang Park
Department of Information Display, Kyung Hee University, Seoul, Republic of Korea

Performance of the Berkeley MET5 Using a Stand-Alone Plasma Source (P13)
Ryan Miyakawa, Arnaud Allézy, Dima Zaytsev, Warren Holcomb, Brandon Vollmer, Martin Izquierdo, Jeff Gamsby, Jeremy Mentz, Jinyuan Yan, Farid Zuberi, Seno Rekawa, Chris Anderson, Patrick Naulleau, and Bruno La Fontaine
The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

5:05PM – 5:45PM: Break/Move to Poster Session Location

5:45PM: Session 9: Poster Session and Reception

Chair: Vivek Bakshi (EUV Litho, Inc.)

Study of enhancing etching performance of Pt-based absorber material for EUV mask (P20)
Seungho Lee[1,2], Dongmin Jeong[1,2], Yunsoo Kim[1,2] and Jinho Ahn[1,2]

1. *Division of Materials Science and Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea*
2. *CH3IPS (Center of Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology), Seoul 04763, Republic of Korea*

Experimental investigation of the mask diffraction obstructed by the critical-sized Sn particles on EUV pellicle (P21)
Seungchan Moon[1,3], Dong Gi Lee[2,3], Junho Hong[2,3], and Jinho Ahn[1,2,3]

1. *Division of Nanoscale Semiconductor Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea*
2. *Division of Materials Science and Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea*
3. *CH3IPS (Center of Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology), Seoul 04763, Republic of Korea*

Energetiq Source Update: Plasma Shape Modified for High NA Inspection (P39)

Kosuke Saito[1], David Reisman[2], Daniel Arcaro[2], and Michael Roderick[2]

1. *Hamamatsu Photonics K.K., Japan*
2. *Energetiq Technology, Inc., Wilmington, MA 01887, USA*

Tetrahydroxy-tetramethyl-cyclotetrasiloxane as an Inorganic EUV Resist: Exploring Cross-Linking Mechanisms and Lithography Performance (P61)

Jiyoung Bang[1], Hyeok Yun[1], Wonchul Kee[1], Sunyoung Lee[2], Siwoo Noh[3], Ki-Jeong Kim[3], and Hyun-Dam Jeong[1]

1. *Department of Chemistry, Chonnam National University, Gwangju, Gwangju 61186, Republic of Korea*
2. *Sungkyunkwan University, Suwon, Gyeonggi-do 16419, Republic of Korea*
3. *Pohang Accelerator Laboratory, POSTECH, 80 Jigokro-127-beongil, Nam-gu, Pohang, Gyeongbuk 37673, Republic of Korea*

The Investigation of the Effect of Electron Beam and Extreme Ultraviolet Irradiation on Dibenzyltin Diacetate Thin Film Using Local Analysis and Quantum Chemical Calculations (P63)

Hyeok Yun and Hyun-Dam Jeong

Chonnam National University, 77, Yongbong-ro, Buk-gu, Gwangju, 61186, Republic of Korea

Synthesis and Characterization of Novel Two-in-One Type Siloxane Molecule Photoresist for EUV Lithography (P64)

Hyeok Yun[1], Seung-Yong Baek[1], Wonchul Kee[1], Sehyeon Kim[1], Siwoo Noh[2], Seungcheol Kwon[3], Ki-Jeong Kim[2], and Hyun-Dam Jeong[1]

1. *Chonnam National University, 77, Yongbong-ro, Buk-gu, Gwangju, 61186, Republic of Korea*
2. *Pohang Accelerator Laboratory, POSTECH, 80 Jigokro-127-beongil, Nam-gu, Pohang, Gyeongbuk 37673, Republic of Korea*
3. *Samsung Electronics, Hwaseong, Gyeonggi-do, 18448, Republic of Korea*

Enabling high-throughput characterization of outgassing and total electron yield for model EUV resist materials (P65)

Bernhard Lüttgenau, Meng Zhang, Qi Zhang, Cheng Wang, Ricardo Ruiz, Michael Connolly, Oleg Kostko

The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Investigating influence of electron affinity on electron emission in EUV photoresists (P66)

Honggu Im and Oleg Kostko
The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Dry development process for vertically tailored hybrid multilayer EUV photoresist (P68)

Ji-Hoo Seok[1,4], Jiwon Kim[1,4], Hyeonsesk Ji[2,4], Jaehyuk Lee[2,4], In-Sung Park[4], Kwangsub Yoon[1,3], Myung Mo Sung[2,4], and Jinho Ahn[1,4]

1. *Division of Materials Science and Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea*
2. *Department of Chemistry, Chonnam National University, Gwangju, Gwangju 61186, Republic of Korea*
3. Samsung Electronics Co., Ltd.
4. *CH3IPS (Center of Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology), Seoul 04763, Republic of Korea*

Plasma Modeling at FS Dynamics (P91)

Alessandro Ruocco
FS Dynamics Finland, Polaris Business Park, Espoo 02600, Finland

Blazed, variable-line-space reflection gratings for 13.5-nm optics fabricated at Inprentus (P92)

Samuel Gleason, Samuel Cieszynski, Subha Kumar, Nick Toombs, Cody Jensen, Peter Abbamonte
Inprentus, Inc., 51 E. Kenyon Rd., Champaign, IL, 61820, USA

DAY TWO ADJOURNED

2024 EUVL Workshop & Supplier Showcase

Day Three: Thursday, June 6th, 2024

9:00 AM: Session 10: Keynote

Chair: Harry Levinson (HJL Lithography)

The next step in Moore's Law: High NA EUV first imaging results (P3)
Jan van Schoot[1], Luc van Kessel[1], Ruben Maas[1], Sjoerd Lok[1], Rob van Ballegoij[1], Eelco van Setten[1], Hilbert van der Loo[1], Jo Finders[1], Jara Garcia de Santa Clara[1], Rudy Peeters[1], Peter Vanoppe[1], Paul Graeupner[2], Peter Kuerz[2], and Thomas Stammler[2]

1. *ASML Netherlands B.V., De Run 6501, 5504 DR Veldhoven, The Netherlands*
2. *Carl Zeiss SMT GmbH, Rudolf-Eber-Straße 2, 73447 Oberkochen, Germany*

Improving multilayers for maximum reflectivity (P2)
M. D. Ackermann, D. IJpes, A. Valpreda, A. Yakshin, and M. Sturm
XUV Group, MESA+ institute, University Twente, Carre building, Hallenweg 23, 7522 NH Enschede, The Netherlands

Current Status and Technical Issues of the EUVL and Prospect for the Next Generation EUVL (P6)
Takeo Watanabe
University of Hyogo, 2167 Shosha, Himeji, Hyogo 671-2201, Japan

10:40 AM - 11:00 AM: Coffee Break

11:00 AM: Session 11: EUV Sources 2

Co-Chairs: Felicie Albert (LLNL) and Jeroen van Tilborg (LBNL)

Laser-plasma Acceleration: Next Generation X-ray Light Sources for Industrial Applications (P34)
Félicie Albert
Lawrence Livermore National Laboratory (LLNL), 7000 East Ave., Livermore, CA 94550, USA

Compact Radiation Sources from Laser-Plasma Accelerators at LBNL's BELLA Center (P33)
Jeroen van Tilborg
BELLA Center, Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd., Berkeley, CA 94720, USA

Commercializing Laser-Wakefield Accelerator Systems and Their Applications (P36)
Stephen V. Milton
TAU Systems Inc., 201 W 5th St Suite 1100, Austin, TX 78701, USA

Tm:YLF lasers for driving EUV Sources (P35)
Zbynek Hubka, Issa Tamer, Leily Kiani, Jason Owens, Andrew Church, Frantisek Batysta, Thomas Galvin, Drew Willard, Andrew Yandow, Justin Galbraith, David Alessi, Colin Harthcock, Brad Hickman, Candis Jackson, James Nissen, Sean Tardif, Hoang Nguyen, Emily Sistrunk, Thomas M. Spinka, and Brendan A. Reagan
Advanced Photon Technologies, Lawrence Livermore National Laboratory (LLNL), 7000 East Ave., Livermore, CA 94550, USA

High-average-power ERL FEL for EUV Lithography (P43)
Dinh Nguyen
xLight, 380 Portage Ave, Palo Alto, CA 94306, USA

12:30 PM - 2:00 PM: Lunch and Workshop Steering Committee Meeting

2:00 PM: Session 12: EUV Mask/Optics/Metrology 1

Co-Chairs: Katrina Rook (Veeco) and Michael Lam (Synopsys)

Status and outlook of EUV optics at ZEISS (P22)
Martin Kaumanns, Jens Timo Neumann, Olaf Conradi, Paul Graeupner
Carl Zeiss SMT GmbH, Rudolf-Eber-Str. 2, 73447 Oberkochen, Germany

Thickness-dependent optical constants of silicon thin films within the EUV spectrum: insights and implications for EUVL systems (P24)
Richard Ciesielski and Samira Naghdi
Physikalisch-Technische Bundesanstalt Braunschweig und Berlin (PTB), Abbestraße 12, 10587 Berlin, Germany

Ion Beam Deposition over Larger Form-Factor EUV Mask Blanks (P15)
Katrina Rook, Kenji Yamamoto, Mario Roque, Antonio Checco, Marjorie Chee, and Meng H. Lee
Veeco Instruments Inc., 1 Terminal Drive, Plainview, NY 11803, USA

Efforts in the Development of EUV Masks within the Context of a Merchant Mask Shop (P19)
Hiroki Deguchi
Dai Nippon Printing Co., Ltd. (DNP), 1-1-1, Ichigaya-Kagacho, Shinjuku-ku, Tokyo, 162-8001, Japan

Computational Lithography Solutions for High NA EUV with Mask Stitching (P23)
Michael Lam, Kevin Lucas, Zac Levinson, Linghui Wu, Yunqiang Zhang, Xiangyu Zhou, and Kevin Hooker
Synopsys Inc., 1301 S MoPac Expy Bldg. 4 #200, Austin, TX 78746, USA

3:15 PM - 3:35 PM: Coffee Break

3:35 PM: Session 13: EUV Mask/Optics/Metrology 2
Co-Chairs: Marcus Benk (LBNL) and Sangsul Lee (POSTECH)

EUV Tech ENK Tool: Actinic metrology for n/k, phase, and 3D geometry (P11)
Stuart Sherwin
EUV Tech, 2830 Howe Rd. Suite A, Martinez, CA 94553, USA

Effects of EUV multilayer roughness in high NA EUV Lithography (P12)
Luke Long, Stuart Sherwin, Matt Hettermann, and Patrick Naulleau
EUV Tech, 2830 Howe Rd. Suite A, Martinez, CA 94553, USA

Mask-side Hyper-NA imaging on the SHARP EUV mask microscope (P14)
Markus Benk, Ryan Miyakawa, Weilun Chao, and Bruno La Fontaine
The Center for X-Ray Optics (CXRO), Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd, Berkeley, CA 94720, USA

Integrating Actinic EUV Research with Advanced Analytical Technologies (P18)

Sangsul Lee
Pohang Accelerator Laboratory and Department of Semiconductor Engineering, POSTECH, 77 Cheongam-ro, Nam-gu, Pohang-si, Gyeongsangbuk-do, 37673, Republic of Korea

Workshop Adjourned


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