#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					All Times are local time in Leuven, Belgium.			
					From June 5-7, 2023 workshop is in-person only. On June 3-4, 2023 Short Courses will be held on-line only.			
					Version: June 3, 2023. For questions or comments please contact info@euvlitho.com			

Short Course

1:00 PM, Saturday, June 3, 2023, Leuven, Belgium (Course is held online Only)

Times are for Leuven, Belgium Please estimate times for your own time zones. It is a live event.

Please note revised times for this short course!

Short Course: EUV and Soft X-Ray Sources

Instructor: David Attwood (UC Berkeley) and Gerry O'Sullivan (UCD)

EUVL Short Courses and EUVL Workshop require separate registrations. *Please visit www.euvlitho.com for information.*

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					AV Test and Speaker Check-in	0:15	1:00 PM	1:15 PM
			Gerry O'Sullivan	UCD	Lecture (Includes 15 minute break)	3:15	1:15 PM	4:30 PM
					Break	0:30	4:30 PM	5:00 PM
			David Attwood	UC Berkeley	Lecture (Includes 15 minute break)	3:15	5:00 PM	8:15 PM

Short Course Adjourned

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					Short Course			
					9:00 AM, Sunday, June 4, 2023, Leuven, Belgium (Course is held online Only)			
					***Short Course:* EUV Lithography**			
					Instructors: Vivek Bakshi (EUV Litho, Inc.), Patrick Naulleau (CXRO), Jinho Ahn (Hanyang University), and Jan van Shoot (ASML)			
					EUVL Short Courses and EUVL Workshop require separate registrations. Please visit www.euvlitho.com for information.			
					AV Test and Speaker Check-in	0:15	8:45 AM	9:00 AM
			Vivek Bakshi	EUV Litho Inc.	Lecture	1:30	9:00 AM	10:30 AM
					Break	0:15	10:30 AM	10:45 AM
			Patrick Naulleau	CXRO	Lecture	1:30	10:45 AM	12:15 PM
					Break	0:15	12:15 PM	12:30 PM
			Jinho Ahn	Hanyang University	Lecture	1:30	12:30 PM	2:00 PM
					Break	0:15	2:00 PM	2:15 PM
			Jan van Schoot	ASML	Lecture	1:30	2:15 PM	3:45 PM
					Short Course Adjourned			

2023 EUVL Workshop and Supplier Showcase

Please see Abstract Book on website www.euvlitho.com for abstracts and co-author(s) information by paper #.

1:30 PM, Monday, June 5, 2023, IMEC, Leuven, Belgium (Workshop held in-person only)

Session 1: IMEC EUVL Program Showcase

Session 1: IMEC EUVL Program Showcase; Session Chair: Kurt Ronse (imec)

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					AV Test, Speaker Check-in and Registration	0:30	1:30 PM	2:00 PM
1		Introduction	Kurt Ronse	imec	Welcome and Announcements	0:10	2:00 PM	2:10 PM
1	P74	Supplier Showcase - imec	Philippe Leray	imec	Metrology for scaling towards 2030	0:30	2:10 PM	2:40 PM
1	P75	Supplier Showcase - imec	Roel Gronheid	KLA+	Modeling stochastic effects in EUV lithography with a rigorous physical simulator	0:15	2:40 PM	2:55 PM
1	P73	Supplier Showcase - imec	Masaki Sugie	Hitachi HT	High repeatability and low shrinkage solution using CD-SEM for EUV resist	0:15	2:55 PM	3:10 PM
1	P72	Supplier Showcase - imec	Abdalmohsen Elmalk	ASML-HMI	Resolution and High Throughput e-beam System	0:15	3:10 PM	3:25 PM
1	P71	Supplier Showcase - imec	Ran Alkoken	AMAT	Patterning control solutions for EUV challenges and readiness towards High NA EUV transition	0:15	3:25 PM	3:40 PM

Workshop Adjourned for the Day

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
8:30 AM, Tuesday, June 6, 2023, Leuven, Belgium (Workshop held in-person only)								
Session 2: Keynote Presentations; Session 3: EUV Resist Patterning 1 & 2								
Session 4: EUV Sources; Session 5: Poster Session and Reception								
Session 2: Keynote - 1; Session Chair: Kurt Ronse (IMEC)								
2					AV Test, Speaker Check-in and Registration	0:30	8:30 AM	9:00 AM
2		Introduction	Steven Sheer	IMEC	Welcome to imec	0:20	9:00 AM	9:20 AM
2		Introduction	Vivek Bakshi	EUV Litho, Inc.	Welcome and Announcements	0:10	9:20 AM	9:30 AM
2	P1	Keynote	Jan van Schoot	ASML	2023 EUVL Workshop Keynote Presentation (tentative title)	0:30	9:30 AM	10:00 AM
2	P2	Keynote	Andreas Erdman	FhG IISB	Mask3D effects in EUV lithography and their impact on resolution enhancements	0:30	10:00 AM	10:30 AM
					Break	0:20	10:30 AM	10:50 AM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
Session 3A: Resist and Patterning- 1; Session Co-Chairs: Alex Robinson (IM) and Sonia Castellanos (Inpria)								
3	P33	Resist and Patterning	Patrick Naulleau	CXRO	Gaining insights into EUV radiation chemistry	0:15	10:50 AM	11:05 AM
3	P35	Resist and Patterning	Alex Robinson	IM	EUV lithography patterning targeting Low dose and high resolution using Multi-Trigger Resist	0:15	11:05 AM	11:20 AM
3	P39	Resist and Patterning	Danilo De Simone	imec	EUV lithography patterning towards device nano scaling	0:15	11:20 AM	11:35 AM
3	P40	Resist and Patterning	Philippe Bezard	imec	High NA era: Interfaces are the new litho and etch	0:15	11:35 AM	11:50 AM
3	P41	Resist and Patterning	Sonia Castellanos	Inpria	Metal Oxide Resist Formulation and Process Chemistry for High-NA EUV Lithography	0:15	11:50 AM	12:05 PM
3	P42	Resist and Patterning	Anuja De Silva	LAM	Dry Resist Patterning Progress and Readiness Towards High NA EUV Lithography	0:15	12:05 PM	12:20 PM
3	P43	Resist and Patterning	Ulrich Welling	Synopsys	Challenges for stochastic EUV lithography simulation	0:15	12:20 PM	12:35 PM
					Lunch	1:25	12:35 PM	2:00 PM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
Session 3B: Resist and Patterning- 2; Session Co-Chairs: Takeo Watanabe (University of Hyogo) and Seiji Nagahara (TEL)								
3	P45	Resist and Patterning	Takeo Watanabe	University of Hyogo	Fundamental research of EUV resist evaluation at NewSUBARU	0:15	2:00 PM	2:15 PM
3	P44	Resist and Patterning	Seiji Nagahara	TEL	Advanced Resist Patterning Processes for High NA EUV Lithography	0:15	2:15 PM	2:30 PM
3	P31	Resist and Patterning	Luc van Kessel	ASML	LWR offset: identifying root causes by simulation	0:15	2:30 PM	2:45 PM
3	P32	Resist and Patterning	Chang-Yong Nam	Brookhaven National Lab	Organic-Inorganic Hybrid EUV Photoresists Derived from Atomic Layer Deposition	0:15	2:45 PM	3:00 PM
3	P36	Resist and Patterning	Kevin Dorney	imec	Disruptive EUV Material Characterization in imec's AttoLab	0:15	3:00 PM	3:15 PM
3	P37	Resist and Patterning	Michiel van Setten	imec	Development of computational spectroscopies to unravel atomistic mechanisms in EUVL	0:15	3:15 PM	3:30 PM
3	P38	Resist and Patterning	Hyo Seon Suh	imec	DSA-assisted EUV Patterning	0:15	3:30 PM	3:45 PM
					Break	0:20	3:45 PM	4:05 PM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
			Session 4: EUV Sources; Session Co-Chairs: David Reisman (Energetiq) and Yusuke Teramoto (Ushio)					
4	P53	Source	Hakaru Mizoguchi	Gigaphoton	Plasma Dynamics and Future of LPP-EUV Source for Semiconductor Manufacturing	0:15	4:05 PM	4:20 PM
4	P55	Source	Yusuke Teramoto	Ushio	High-brightness EUV source for inspection and exposure applications	0:15	4:20 PM	4:35 PM
4	P52	Source	David Reisman	Energetiq	Source driven by a solid-state pulsed-power system	0:15	4:35 PM	4:50 PM
					Break	0:20	4:50 PM	5:10 PM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					Session 5: Poster Session and Reception Session Co-Chairs: Vivek Bakshi and Kurt Ronse			
						1:30	**5:10 PM**	**6:40 PM**
					Poster Session and Reception			
5	P20	Mask	Young Woo Kang	Hanyang University	Investigating the impact of multi-emission layers on the Emissivity of EUV Pellicles			
5	P54	Source	Bishwa Chandra	Kyung Hee University	EUV lighting technique by the irradiation of C-beam and its characteristics			
5	P79	Supplier Showcase	Marcel Demmler	Scia Systems	Deposition, Etching and Cleaning for EUVL Optics with UHV Processing Equipment			
5	P80	Supplier Showcase	David Reisman	Energetiq	Performance of a DPP EUV Source driven by a solid-state pulsed-power system			
5	P46	Resist and Patterning	Kevin Dorney	imec	Advanced Lab-scale Spectro-microscopies for Characterization and Enhancement of EUV Materials			
5	P47	Resist and Patterning	Vitaly Krasnov	imec	EUV Reflectometry and Ptychography for the Characterization of Thin Films, Stacks, Photoresists, and In-depth Imaging of Nano-sized structures			
5	P48	Resist and Patterning	Roberto Fallica	imec	Mean free path of electrons in EUV photoresists in the range 20-450 Ev			
5	P50	Resist and Patterning	Jiho Kim	POSTECH	Near-field Infrared Nanoscopic Study of EUV- and e-beam-exposed Hydrogen Silsesquioxane Photoresist			
5	P91	Resist and Patterning	Christiane Jehoula	imec	Intrafield overlay and reproducibility on thin resist towards High NA			

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
5	P49	Resist and Patterning	Cheng Wang	LBL	CHiPPS EFRC at ALS: EUV Photoresist Fundamentals and Soft X-ray Metrology			
5	P83	Supplier Showcase	Luca Peverini	Thales Group	Reflective Optics at Thales SESO: Opportunities for EUV Lithography			
				Workshop Adjourned for the Day				

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
8:30 AM, Wednesday, June 7, 2023, Leuven, Belgium (Workshop held in-person only)								
Session 6: EUV Masks ; Session 7, 8: Supplier Showcase 1 & 2								
Session 9: Optics and Metrology								
Session 6: EUV Masks; Session Chair: Jinho Ahn (Hanyang University) and Katrina Rook (Veeco)								
					AV Test, Speaker Check-in and Registration	0:30	8:30 AM	9:00 AM
6		Introduction	Vivek Bakshi	EUV Litho, Inc.	Welcome and Announcements	0:10	9:00 AM	9:10 AM
6	P13	Mask	Jinho Ahn	Hanyang University	Metal silicide EUV pellicle and the effect of wrinkles on mask 3D effects	0:15	9:10 AM	9:25 AM
6	P11	Mask	Claire van Lare	ASML	Masks for optimized imaging with high-NA EUV lithography	0:15	9:25 AM	9:40 AM
6	P12	Mask	Dong Gun Lee	E-Sol	Developing Cost-Effective Actinic Solutions for EUV Lithography	0:15	9:40 AM	9:55 AM
6	P14	Mask	Dongmin Jeong	Hanyang University	High-k based near $n \approx 1$ EUV mask for M3D effects and focus control in high-NA lithography	0:15	9:55 AM	10:10 AM
6	P15	Mask	Joost Bekaert	IMEC	CNT pellicles: Recent optimization and exposure results	0:15	10:10 AM	10:25 AM
6	P16	Mask	Andreas Frommhold	IMEC	Mask challenges towards high NA EUV lithography	0:15	10:25 AM	10:40 AM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
6	P17	Mask	Roel Gronheid	KLA+	Lithography: Challenges and Solutions	0:15	10:40 AM	10:55 AM
6	P19	Mask	Katrina Rook	Veeco	Probing the Layer and Interlayer Quality of Mo/Si and Ru/Si Multilayers for EUV Mask Blanks	0:15	10:55 AM	11:10 AM
					Break	0:20	11:10 AM	11:30 AM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
					Session 7: EUV Supplier Showcase, Session Co-Chairs: Meng Lee (Veeco) and Ibrahim Burki (Hoya)			
7	P62	Supplier Showcase	Raymond Maas	ASML	Industrialization of EUVL and future roadmap	0:15	11:30 AM	11:45 AM
7	P70	Supplier Showcase	Meng Lee	Veeco	Accelerating the Journey to Future Technology Nodes with Veeco’s Advanced Technologies in Deposition and Etch	0:15	11:45 AM	12:00 PM
7	P61	Supplier Showcase	Ibrahim Burki	Hoya	High NA EUV mask blank development with smart factory (I4.0) advanced analytics and AI process control	0:15	12:00 PM	12:15 PM
7	P64	Supplier Showcase	Patrick Naulleau	CXRO	An overview of EUVL activities at Berkeley Lab	0:15	12:15 PM	12:30 PM
					Lunch **Steering Committee Working Lunch Meeting (Closed Meeting)**	1:30	12:30 PM	2:00 PM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
Session 8: EUV Supplier Showcase, Session Co-Chairs: Jochen Vieker (Fraunhofer) and Patrick Naulleau (EUV Tech)								
8	P67	Supplier Showcase	Jochen Vieker	Fraunhofer	Irradiation system for testing of EUVL components – Status of incorporation	0:15	2:00 PM	2:15 PM
8	P63	Supplier Showcase	Robert Riedel	Class 5 Photonics GmbH	Design Approaches for High-Flux High-Harmonic Generation Sources Using Advanced Nonlinear Laser Technologies	0:15	2:15 PM	2:30 PM
8	P66	Supplier Showcase	Henry Chou	Energetiq	Providing powerful and stabile Extreme Ultraviolet (EUV) light to support the EUV lithography metrology ecosystem	0:15	2:30 PM	2:45 PM
8	P76	Supplier Showcase	Marcel Demmler	Scia Systems	Extreme Cleanliness by Dry UHV Processing	0:15	2:45 PM	3:00 PM
8	P69	Supplier Showcase	Michael Kolbe	PTB	Synchrotron-radiation based EUV metrology at PTB	0:15	3:00 PM	3:15 PM
8	P68	Supplier Showcase	Sung Park	Molecular Vista	Nanoscale Chemical Analysis of EUV Resists	0:15	3:15 PM	3:30 PM
8	P81	Supplier Showcase	Patrick Naulleau	EUV Tech	An introduction to EUV Tech	0:15	3:30 PM	3:45 PM
8	P82	Supplier Showcase	Edward Hagley	NIST	Extreme-ultraviolet metrology at the Synchrotron Ultraviolet Radiation Facility	0:15	3:45 PM	4:00 PM
					Break	0:20	4:00 PM	4:20 PM

#	Paper #	Area	Presenter	Company	Title	Duration	Start	Finish
Session 9: Optics and Metrology, Session Co-chairs: Gian Lorusso (IMEC) and Iacopo Mochi (PSI)								
9	P21	Optics and Metrology	Alexandre Lopes	Carl Zeiss	High-NA EUV Optics: Preparing the Next Major Lithography Step	0:15	4:20 PM	4:35 PM
9	P23	Optics and Metrology	Klara Stallhofer	Optixfab	Transparent conductive backside coatings for EUV mask tuning	0:15	4:35 PM	4:50 PM
9	P18	Optics and Metrology	Iacopo Mochi	PSI	Grazing incidence wafer metrology with REGINE	0:15	4:50 PM	5:05 PM
9	P22	Optics and Metrology	Gian Lorusso	imec	Trends in e-beam Metrology and Inspection	0:15	5:05 PM	5:20 PM
9	P24	Optics and Metrology	Richard Ciesielski	PTB	Optical materials constants in the EUV and their impact on scatterometry measurements	0:15	5:20 PM	5:35 PM
9	P25	Optics and Metrology	Sasca Brose	RWTH- Aachen	EUV spectrometry as a versatile characterization technique for thin film layer systems	0:15	5:35 PM	5:50 PM
			Vivek Bakshi	EUV Litho, Inc.	Announcements	0:10	5:50 PM	6:00 PM

Workshop Adjourned. Leave for Off-Site Workshop Dinner