AGENDA - INTERNATIONAL WORKSHOP ON EUV LITHOGRAPHY SOURCE
October 16, 2000

TIME	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
08:00	Introduction / Welcome / Objectives	Glenn Kubiak	Sandia NL
08:05	Overview of Source Requirements	Vadim Banine	ASML
08:30	Hollow Cathode Triggered Pinch Plasma	Rainer Lebert	Fraunhofer Institute Aachen
09:00	Z-Pinch Plasma	Malcolm McGeoch	Plex LLC
09:30	Dense Plasma Focus	Igor Fomenkov	Cymer
10:00	Capillary Discharge PRESENTATION	Glenn Kubiak	Sandia NL
10:50	Laser Produced Plasma	Richard Moyer Martin Schmidt Alan Todd	TRW CEA Advanced Energy Systems
12:30	EUVL Light Source Development in Japan	Hakaru Mizoguchi	Gigaphoton
3:00	Panel Discussion	Neil Wester Hans Meiling Fred Bijkerk Scott Hector Howard Milchberg Katsuhiko Murakami Jorge Rocca Melissa Shell Robert Harned	ISMT AMSL FOM, Rijnhuizen Motorola Univ. of Maryland Nikon Colorado State Univ. Intel SVGL

MEETING & PANEL DISCUSSION NOTES

ATTENDEES

(click in this space to see a listing of the source meeting attendees)

AGENDA - 2nd ANNUAL INTERNATIONAL WORKSHOP ON EUV LITHOGRAPHY
October 17-19, 2000

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The appropriate file will automatically open.

TUESDAY, October 17

MEETING OPENING

TIME	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
08:00	Introduction / Welcome	Neil Wester	ISMT
08:10	Goal of Workshop	Carmelo Romeo	ISMT
08:20	Manufacturing with EUV ?	Peter Silverman	Intel
08:50	ASML Program on EUV Lithography	Hans Meiling (for Jos Benschop)	ASML
09:20	SVGL EUVL Program Update	Noreen Harned	SVGL
09:50	Recent Development Activities on EUVL at ASET	Shinji Okazaki	ASET

SESSION 1: Source **CHAIRS: Banine/Kubiak/Ota**

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
1	Report from Int'l. EUV Source Workshop	Banine, Kubiak, Ota	ASML, Sandia NL, Nikon
2	Flying Circus EUV Source Comparison, Absolute Yield, and Yield Fluctuations	Stuik, et al	FOM Institute, Philips, PLEX LLC, Cymer, Sandia NL, Fraunhofer Institut, ASML
3	Kilohertz Pinch Plasma Radiation Source for EUV Lithography	Bergmann, et al	Fraunhofer Institut
4	High Power LPP for ETS	Rockett, et al	Sandia NL
5	Xenon Liquid-Jet Laser-Plasma Source for EUV Lithography	Hansson, et al	Royal Institute of Technology, Sweden
6	Study of a Cavity-Confined Plasma as a Debris-less and High Conversion Efficiency EUV Source	Tomie, et al	Electrotechnical Laboratory
7	Studies on Extreme Ultraviolet Sources	Lebert, et al	Fraunhofer Institut, Max-Born Institut, Friedrich Schiller Univ., Institut fur Rontgenphysik

SESSION 1: Source (continued)

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
8	The Vacuum Spark as a Source of High Repitition EUV Pulses for Microlithgraphy	Panarella	ALFT, Inc.

SESSION 2: Environment CHAIR: Klebanoff

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
9	Contamination Research for the a-RT	Meiling, et al	ASML
10	RF Oxygen Discharge Cleaning of Carbon from EUV Optics	Graham, Jr., et al	Sandia NL
11	Use of Molecular Oxygen to Mitigate EUV-induced Carbon Contamination of Optics	Malinowski, et al	Sandia NL
12	Experimental Tests of Thermophoretic Mask Protection	Dedrick, et al	Sandia NL
13	First Environmental Data from the Engineering Test Stand	Klebanoff, et al	Sandia NL

WEDNESDAY, October 18

MEETING OPENING

TIME	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
08:00	Introduction and Objectives	Sweeney	

SESSION 3: Masks CHAIRS: Hector/Knapp/Ogawa

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
14	Low-Defect Multilayers for EUVL Mask Blanks	Montcalm, et al	LLNL
15	Simulation of Multilayer Defects in EUV Masks	Ito, et al	ASET, Atsugi Research Center
16	Absorber Material/Patterning Development	Yan	Intel
17	Predictive Model of the Cost of EUVL Masks	Hector, et al	Motorola Digital DNA Labs, LLNL, Intel
18	Deformation of EUVL Mask Due to Multilayer and Absorber-Pattern Stress	Chiba, et al	ASET
19	Optical inspection of EUV Reticles	Pettibone, et al	KLA-Tencor
20	A practical Approach for Modeling EUVL Mask Defects	Gullikson, et al	LBNL

SESSION 3: Mask (continued)

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
21	Development Program of EUV Mask in PREUVE	Robic, et al	CEA-LETI, CNRS-LTM, STM
22	EUV Stepper Characterization Using Lithography Modeling	Toh, et al	Intel

SESSION 4: Multilayer Coatings Chairs: Bijkerk/ Folta/ASET

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
23	A Buffer-Layer Smoothing Strategy for the Mitigation of Mo/Si Reticle Defects Nucleated by Small Substrate Particles	Mirkarimi, et al	LLNL
24	Fabrication of Mo/Si Multilayer for EUVL Mask Blank	Yamanashi, et al	ASET
25	Stress Control of Mo/Se Multilayers	Murakami, et al	Nikon
26	E-Beam Coating Technology for EUVL Optics	Louis, et al	FOM Institute, Carl Zeiss, Physikalisch-Technische Bundesanstalt
27	Empirical Modeling of Deposition for 2D-Graded Coatings on Curved Substrates	Kriese, et al	Osmic, Inc.
28	Multilayer Mirror Coatings for High Numerical Aperture EUVL Systems	Folta, et al	LLNL

SESSION 5: Optics CHAIRS: Bajuk/Kurtz/Taylor

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
29	The Progress in Mirror Fabrication Technology in Japan	Ota, et al	ASET
30	Optics for EUVL	Kuerz, et al	Carl Zeiss
31	Fabrication of the ETS Set II Optics: Results and Future Development	Marchetti	SVG-Tinsley
32	Construction of the PO Box for the ETS	Taylor, et al	LLNL, LBNL
33	At Wavelength Testing of an EUVL Four Mirror Ring Field System	Goldberg, et al	LLBL, UC Berkeley, LLNL
34	Adding Static Printing Capabilities to the EUV Phase Shifting Point Diffraction Interferometer	Naulleau, et al	LLNL, UC Berkeley
35	Internal Stress and Its Effect on Machining of EUV Mirrors after Final Polishing	Roux, et al	SVGL, Sandia NL

THURSDAY, October 19

MEETING OPENING

TIME	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
08:00	Introduction and Objectives	Stulen	

SESSION 6: Resist CHAIRS: Cobb/Domke/Sato

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
36	The Resist Outgassing in the EUV Exposure	Watanabe, et al	Himeji Institute of Technology
37	Evaluation of Resist Performance	Oizumi, et al	Atsugi Research Center

SESSION 7: System CHAIRS: Benschop/Stulen/Kinoshita

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
38	Recent Activities Using EUV Laboratory Tool at HIT	Kinoshita, et al	Laboratory for Advanced Science & Technology, ASET
39	Rigorous EUV Imaging Simulations and Their Assessment on Overall System Performance	Krautschik, et al	ASET, Atsugi Research Center
40	The French R&D Program on EUV Sources, Reflective Optics, Masks, and Relevant Metrologies for EUVL (PREUVE)	Boher, et al	SOPRA and others
41	SAGEM Contribution to PREUVE and Trends in EUVL	Geyl	SAGEM
42	EUV Micro-Exposure Tool (MET) for Near-Term Development	Taylor, et al	LLNL, Sandia NL
43	System Integration and Performance of the EUV Engineering Test Stand	Stulen, et al	Sandia NL, LLNL, LBNL

POSTER LISTING

SOURCE POSTERS:

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
1	The Development and Testing of Z-Pinch EUV Source	McGeoch	PLEX LLC
2	Commercial Compact, Low Cost EUV Source for Laboratory Use	Lebert, et al	AIXUV, Fraunhofer Institut
3	Development of Compact EUV Reflectometer Using a Laser-Plasma Source	Murakami, et al	Nikon
4	X-Ray and EUV Emission Induced by Variable Pulsewidth Irradiation of Ar and Kr Clusters and Dropletse	Parra, et al	Univ. of Maryland, NIST
5	Interaction of Dual Laser Pulses with Krypton Droplets	McNaught, et al	Univ. of Maryland
6	An Improved Laser-Plasma Droplet Source for EUVL	Richardson, et al	Univ. of Central Florida, J-MAR Research, Inc.
7	Laser Plasma EUV source Based on a Supersonic Double-Gas Jet	de Bruijn, et al	FOM Institute
8	Laser Plasma EUV Source Based on a Supersonic Double-Gas Jet	Fomenkov	Cymer
9	The EUVL Source Developed at CEA-Saclay in the Frame of the French National Project PREUVE	Schmidt, et al	CEA-DSM/DRECAM/SPAM
10	EUV Source Gas Target System	Todd	Advanced Energy Systems
11	Development of a High Average Power EUV Electric Capillary Discharge Source	Fornaciari, et al	Sandia NL
12	LPP Scale-Up and Commercialization	Moyer, et al	TRW

ENVIRONMENT (all oral presentations)

MASK POSTERS:

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
13	An Infinitely Selective Repair Buffer for EUVL Reticles	Wasson, et al	Motorola Digital DNA Labs
14	A Recent Look at Internal Inclusions in ULE© Glass	Brewer, et al	Corning, Inc.

MASK POSTERS (continued):

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
15	A Recent Look at CTE in ULE© Glass	Kenney, et al	Corning, Inc.
16	At-Wavelength Mask Inspection System Employing an EUV Mirau Interferometric Microscope	Haga	NTT Telecommun-ications Energy Lab
17	Characterization of EUVL Mask Defects by EUV Far-Field Scattering Effects	Yi, et al	LLBL, LLNL, UC Berkeley
18	EUV Holographic Microscopy and its Application to EUV Mask Blank Defect	S.H. Lee, et al	UC Berkeley, LBNL
19	Characterization of Ru Buffer Layer for EUV Mask Patterning	B.T. Lee, et al	ASET
20	Interactive Requirements of the Proposed EUVL Mask Standards	Bednarek, et al	SVGL
21	The Effects of Reticle Flatness on Lithographic Performance	del Puerto	SVGL
22	Exploring the Origin and Impact of Pattern Dependent Focus Shifts and Asymmetry of Bossung Curves Through Rigorous EUV Mask Simulations	Krautschik, et al	ASET, Atsugi Research center
23	Electromagnetic Simulation for EUV Mask	Schiavone, et al	CEA-LETI
24	Compact Laser Plasma Reflectometer for Process Control of EUVL Mask Blank Multilayer Coating	Underwood, et al	EUV Technology
25	Progress and Challenges in EUVL Mask Repairs	Liang, et al	Intel
26	Asymmetric Properties of Imaging and Simulation Procedure in EUVL	Otaki, et al	ASET
27	A Recent Look into Finishing Results of NZTE Mask Blank Substrates	Schubert, et al	Schott
28	Inspection of EUVL Mask Blanks Using Commercial Wafer Inspection Tools	Walton, et al	LLNL
29	Progress in Fabrication of EUVL Mask Substrates	Hector, et al	EUV LLC

MULTI-LAYER COATINGS (all oral presentations)

OPTICS POSTERS:

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
30	Accurate Figure Correction to Sub-01 nm by Multilayer Surface Milling	Yamamoto	RISM, Tohoku Univ.
31	Initial Data from the Advanced Point Diffraction Interferometer	Fukuda	ASET/EUV Lithography Lab
32	Development of the Large Field EUVL Camera	Kinoshita, et al	Laboratory for Advanced Science & Technology, ASET
33	Reflecting Surface Distortion When Mirrors are Cut to Shape	Meda	Corning, Inc.
34	Alignment of a Ring Field EUV Projection Optics System by Visible Light Interferometry	Chapman, et al	LLNL
35	E-D Characteristics and Abberation Sensitivity of the MET	Hudyma, et al	LLNL
36	High NA Camera for an EUVL Microstepper	Hale, et al	LLNL
37	High Accuracy Reflectometry on the CSRO/ALS Beam-Line: ETS and Beyond	Mrowka, et al	LBNL

RESIST POSTERS:

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
38	Theoretical Calculations of Photoabsorption of Polymers in the EUV Region	Matsuzawa, et al	ASET/EUV Lithography Lab
39	Integration of Ultrathin Resist Processes into MPU IC Manufacturing Flows	Cobb, et al	Motorola Digital DNA Labs

SYSTEM POSTERS:

ITEM	DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
40	Using Off-Axis Illumination to Print 50mm Half-Pitch Features	O'Connell, et al	Sandia NL
41	Extremely Fine-Pitch Printing with a 10-X Schwarzschild Optic at EUV Wavelength	Shumway, et al	UC Berkeley, LBNL

INTERNATIONAL WORKSHOP ON EUV LITHOGRAPHY
October 11-12, 1999

We do not have available a soft copy of very many of the presentations made at the 1999 EUV Lithography Workshop, but those that were submitted are listed below. Clicking on the line will open the file.

DESCRIPTION	PRESENTOR/AUTHOR	COMPANY
Characterization of a 13.5nm Source for EUV Lithography Based on a Dense Plasma Focus and Lithium Emission	Fomenkov, et al	Cymer; Applied Pulse Power Technologies
EUV Generation from Rare Gas Clusters Excited by Ultrashort KrF Laser	Kondo	Univ. of Tsukuba
Repetition Frequency Scaling of a Z-Pinch EUV Source	McGeoch	Plex LLC
EUV Synchrotron Source	Ockwell, et al	Oxford Instruments
EUV Source Gas Target Subsystem	Todd	Advanced Energy Sys.
Progress in Mo/Si Multilayer Coating Technology for EUVL Optics	Louis, et al	FOM – Institute for Plasma Physics; Carl Zeiss; PTB (Germany)
Proposal to Use Longer Wavelength Light for EUV Lithography	Ota, et al	Nikon
Nikon's Approach to EUV Projection Optics	Ota, et al	Nikon
Coherence, Etendue, and the Design of Condenser Optics for EUV Lithography	Sasian	University of Arizona
Increasing the Reflectivity of EUV Multilayer Mirrors	Singh, et al	Optics Research Group, TU Delft
Pattern Transfer of Images Printed with EUVL and its Relevance to Device Fabrication	Cardinale, et al	Sandia NL; Motorola
Production and Properties of ULE® Glass with Regard to EUV Masks	Hrdina	Corning, Inc.
Silicon-Bilayer Resists for EUV Lithography	Kessel, et al	3M; Sandia NL; Motorola; Intel Corp.
Theoretical Estimation of the Correlation between Etching Resistance and the Absorption Coefficient for Various Polymers at 13 nm	Matsuzawa, et al	ASET
Defects in Ultra-Thin Resist Films	Okoroanyanwu, et al	AMD; Motorola; Sandia NL; Intel Corp.; KLA-Tencor
EUV Lithography Throughput Considerations	Benschop, et al	ASML
EUV Substrate and Blank Inspection	Biellak	KLA-Tencor

Any listing shown in red denotes that no soft copy was available of that presentation or poster. Hard copies are available from International SEMATECH if desired. To obtain a hard copy of any presentation or poster not available in soft copy please contact:

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MEETING ATTENDEES
(click in this space to see a listing of the workshop meeting attendees)