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2017 Source Workshop

WORKSHOP AGENDA

2017 Source Workshop

November 6-8, 2017, Dublin, Ireland

Monday, November 6, 2017
(Ardmore House, UCD Campus)

5:30 - 7:00 PM  Reception and Speaker Prep

Tuesday, November 8, 2017
(George Moore Auditorium, UCD Campus, Dublin)

9:15 AM Announcements and Introductions

Welcome -2017 Source Workshop
Vivek Bakshi
EUV Litho, Inc., USA

Welcome to UCD
Orla Feely
UCD

Announcements and Introductions (Intro-1)
Padraig Dunne
UCD

9:40 AM  Session 1: Keynote Session -1

Session Chair: Padraig Dunne (UCD)

**EUV Source for High Volume Manufacturing: Performance at 250 W and Key Technologies for Power Scaling (S1) (Keynote Presentation)**
Igor Fomenkov
Cymer LLC, An ASML Company, San Diego, CA 92127, USA
2017 Source Workshop

10:40 AM  Session 2: Fundamental Data

Session Chairs: Ronnie Hoekstra (ARCNL) and James Colgan (LANL)

Tin Ion Spectroscopy on Plasma Sources of EUV Light (S14) (Invited)
Ronnie Hoekstra
Advanced Research Center for Nanolithography (ARCNL), Science Park 110, 1098 XG Amsterdam, the Netherlands and
Zernike Institute for Advanced Materials, University of Groningen, 9747 AG Groningen, the Netherlands

Atomic Data of Low-charged Sn ions for Lithography Applications (S11) (Invited)
J. Colgan, D. P. Kilcrease, J. Abdallah, Jr., M. E. Sherrill, C. J. Fontes, and P. Hakel
Los Alamos National Laboratory, Los Alamos, NM 87545

EUV Spectra of Highly Charged-ions Observed with a Compact Electron Beam Ion Trap (S12) (Invited)
Nobuyuki Nakamura¹, Safdar Ali¹, Hiroyuki Kato¹, and Emma Sokell²
¹Institute for Laser Science, the University of Electro-Communications, Tokyo 182-8585, Japan
²School of Physics, University College Dublin, Belfield, Dublin 4, Ireland

Fundamental Studies of Sn⁷⁺-Sn¹⁴⁺ Ions with Applications for Laser Produced Plasma Sources (S13) (Invited)
H. Bekker (1), F. Torretti (2, 3), A. Windberger (1, 2), A. Borschevsky (4), A. Ryabtsev (5, 6), S. Dobrodey (1), E. Eliav (7), U. Kaldor (7), E. V. Kahl (8), J. C. Berengut (8), W. Ubachs (2, 3), R. Hoekstra (2, 9), J. R. Crespo Lopez-Urrutia (1), and O. O. Versolato (2)
1 Max-Planck-Institut fur Kernphysik, Heidelberg, Germany
2 Advanced Research Center for Nanolithography, Amsterdam, The Netherlands
3 Department of Physics and Astronomy, and LaserLaB, Vrije Universiteit, Amsterdam, The Netherlands
4 Van Swinderen Institute, University of Groningen, Groningen, The Netherlands
5 Institute of Spectroscopy, Russian Academy of Sciences, Troitsk, Moscow, Russia
6 EUV Labs, Ltd., Troitsk, Moscow, Russia
7 School of Chemistry, Tel Aviv University, Tel Aviv, Israel
8 School of Physics, University of New South Wales, Sydney, Australia
9 Zernike Institute for Advanced Materials, University of Groningen, Groningen, The Netherlands

11:40 AM  Break (20 Minutes)
12:00 PM  Session 3: Lasers

**Session Chairs:** Thomas Metzger (Trumpf) and Akira Endo (HiLase)

**High Average Power and High Energy Ultrafast Thin-Disk Amplifiers (S31)**
Thomas Metzger
TRUMPF Scientific Lasers GmbH & Co. KG, Feringastr. 10a, 85774 Unterföhring, Germany

**High-harmonic Generation for Metrology Applications (S32) (Invited)**
Johannes Weitenberg [1,2], Ioachim Pupeza [1,3], Akira Ozawa [1], Tobias Saule [3], Jan Schulte [2], Hans-Dieter Hoffmann [2], Thomas Udem [1], Peter Rußbüldt [2], Reinhart Poprawe [2,4], Theodor W. Hänsch [1,5]
[1] Max-Planck Institute of Quantum Optics, Hans-Kopfermann-Str. 1, 85748 Garching, Germany
[2] Fraunhofer Institute for Laser Technology, Steinbachstr. 15, 52074 Aachen, Germany
[3] Ludwig-Maximilian University Munich, Faculty of Physics, Chair of Experimental Physics - Laser Physics, Am Coulombwall 1, 85748 Garching, Germany
[4] RWTH Aachen University, Chair for Laser Technology, Steinbachstr. 15, 52074 Aachen, Germany
[5] Ludwig-Maximilian University Munich, Faculty of Physics, Chair of Experimental Physics, Schellingstr. 4/III, 80799 München, Germany

**Development of kW-level Picosecond Thin-disk Pre-pulse Laser for High-power EUV Sources (S33)**
J. Mužík, M. Smrž, M. Chyla, O. Novák, A. Endo, T. Mocek
HiLASE Centre, Institute of Physics CAS, Za Radnicí 828, 252 41 Dolní Břežany, Czech Republic

1:00 PM  Lunch (60 Minutes)
2017 Source Workshop

2:00 PM  Session 4: High Power LPP Sources for HVM

Session Chairs: Hakaru Mizoguchi (Gigaphoton) and Oscar Versolato (ARCNL)

High Power LPP-EUV Source with Long Collector Mirror Lifetime for High Volume Semiconductor Manufacturing (S41) (Invited)
Hakaru Mizoguchi, Hiroaki Nakarai, Tamotsu Abe, Krzysztof M Nowak, Yasufumi Kawasuji, Hiroshi Tanaka, Yukio Watanabe, Tsukasa Hori, Takeshi Kodama, Yutaka Shiraishi, Tatsuya Yanagida, Georg Soumagne, Tsuyoshi Yamada, Taku Yamazaki and Takashi Saitou
Gigaphoton Inc. Hiratsuka facility
3-25-1 Shinomiya Hiratsuka Kanagawa,254-8567, JAPAN

Two-dimensional Electron density and Temperature Profiles of EUV Light Sources with 4.0% CE (S42) (Invited)
Kentaro Tomita¹, Yuta Sato¹, Syoichi Tsukiyama¹, Raimu Fukada¹, Fumitaka Ito¹, Kiichiro Uchino¹, Kouichiro Kouge², Tatsuya Yanagida², Hiroaki Tomuro², Yasunori Wada², Masahito Kunishima², Takeshi Kodama², Hakaru Mizoguchi²
¹ Interdisciplinary Graduate School of Engineering and Sciences, Kyushu University, 6-1, Kasugakoen, Kasuga, Fukuoka 816-8580, JAPAN
² Gigaphoton Inc., 400 Yokokurashinden Oyama,Tochigi, 323-8558, JAPAN

Short-wavelength Out-of-band EUV emission from Sn Laser-produced Plasma (S43)
Francesco Torretti
EUV Plasma Processes group, Advanced Research Center for Nanolithography (ARCNL), Science Park 110, 1098XG Amsterdam

Vapor shielding of tin under intense plasma bombardment (S45) (Invited)
T.W. Morgan, G.G. van Eden, D.U.B. Aussem, V. Kvon, M.A. van den Berg, K. Bystrov, M.C.M. van de Sanden
DIFFER—Dutch Institute for Fundamental Energy Research, De Zaale 20, 5612 AJ Eindhoven, The Netherlands

ARCNL Source Project Update (S46) (Invited)
Oscar Versolato
ARCNL

3:40 PM  Break and Group Photograph (20 Minutes)
4:00 PM  Session 5: EUV Source Modeling

Session Chair: Howard Scott (LLNL) and Padraig Dunne (UCD)

Towards High-Fidelity Simulations of EUV Production from Laser-Produced Plasma (S22) (Invited)
Howard Scott
Lawrence Livermore National Laboratory, Livermore, CA, USA

Modeling of Particle Debris from the Target of Laser Produced Plasma EUV Sources (S24)
Akira Sasaki
Kansai Photon Science Institute, National Institutes for Quantum and Radiological Science and Technology, 8-1 Umemidai, Kizugawa-shi, Kyoto 619-0215, Japan

Atomic and Radiative Processes in High-Z Plasmas and their Applications in EUV Lithography and “Water Window” Imaging (S21)
Bowen Li¹, Takeshi Higashiguchi², Takamitsu Otsuka²,⁵, Hayato Ohashi³, Chihiro Suzuki⁴, Emma Sokell⁵, Padraig Dunne⁵, Yang li¹, Xiaokai Xu¹, Ximeng Chen¹, and Gerry O’Sullivan⁵
¹ School of Nuclear Science and Technology, Lanzhou University, Lanzhou 730000, China
² Department of Advanced Interdisciplinary Sciences, Center for Optical Research & Education (CORE), and Optical Technology Innovation Center (OpTIC), Utsunomiya University, Yoto 7-1-2, Utsunomiya, Tochigi 321-8585 Japan
³ Graduate School of Science and Engineering for Research, University of Toyama, Toyama, Toyama 930-8555, Japan
⁴ National Institute for Fusion Science (NIFS), Toki, Gifu 509-5292, Japan
⁵ School of Physics, University College Dublin, Belfield, Dublin 4, Ireland

Soft X-ray Spectroscopy of Dy, Er and Tm Ions Excited in Laser-Produced Plasmas (S23)
John Sheil¹, Takeshi Higashiguchi², Domagoj Kos¹, Takanori Miyazaki¹,², Fergal O’Reilly¹, Gerry O’Sullivan¹, Paul Sheridan¹, Emma Sokell¹, Chihiro Suzuki³ and Deirdre Kilbane¹
¹ School of Physics, University College Dublin, Belfield, Dublin 4, Ireland
² Department of Electrical and Electronic Engineering, Faculty of Engineering and Center for Optical Research and Education (CORE), Utsunomiya University, Yoto 7-1-2, Utsunomiya, Tochigi 321-8585, Japan
³ National Institute for Fusion Science, 322-6 Oroshi-cho, Toki 509-5292, Japan
Break (20 Minutes)

Session 6: Poster Session

Session Chair:

**Measurements and Numerical Simulations of Sn ion Stopping in Low-pressure H₂ Atmosphere (S25)**
D. B. Abramenko¹, D. I. Astakhov²,³, P. V. Kraynov¹,⁴, V. M. Krivtsun¹,², V. Medvedev¹,²,³, and K. N. Koshelev¹,²

¹ RnD-ISAN/EUV Labs, Sirenevy Bulevard Str. 1, Troitsk, Moscow 108840, Russia.
² Institute for Spectroscopy RAS, Fizicheskaya str. 5, Troitsk, Moscow 108840, Russia
³ ISTEQ BV, High Tech Campus 9, Eindhoven, The Netherlands
⁴ Moscow Institute of Physics and Technology (State University), Institutskiy pereulok str. 9, Dolgoprudny, Moscow region 141701, Russia

**Configuration Interaction Effects in Unresolved np⁶nd⁵ⁿ⁺¹⁻np⁵nd⁴ⁿ⁺²+np⁶nd⁴ⁿf¹ Transition Arrays; Contrasting Behaviour for n=4 and n=5” (S26) (Withdrawn)**
Luning Liu, Deirdre Kilbane, Padraig Dunne, John Sheil, Xinbing Wang and Gerry O’Sullivan

**Modelling of hybrid pumping of nitrogen recombination laser (S34) (Withdrawn)**
P. Vrba¹, M. Vrbova²

¹ Institute of Plasma Physics, Czech Academy of Sciences, 182 00 Prague 8, CR,
² Czech Technical University, Faculty of Biomedical Engineering, 272 01 Kladno, CR

**Expansion dynamics after laser-induced cavitation in liquid tin microdroplets (S44) First Place – Poster Session Award**
D. Kurilovich¹,², T. Pinto¹,², R. Schupp¹, F. Torretti¹,², J. Scheers¹,², A. Stodolna¹,², W. Ubachs¹,², R. Hoekstra¹,³, S. Witte¹, O.O. Versolato¹

¹ Advanced Research Center for Nanolithography (ARCNL), Science Park 110, 1098 XG Amsterdam, The Netherlands
² Department of Physics and Astronomy, and LaserLaB, Vrije Universiteit, De Boelelaan 1081, 1081 HV Amsterdam, The Netherlands
³ Zernike Institute for Advanced Materials, University of Groningen, Nijenborgh 4, 9747 AG Groningen, The Netherlands

**Development of a collective Thomson scattering system for laser-produced high-Z plasmas for soft X-ray light sources (S47)**
2017 Source Workshop

Yuta Sato¹, Syoichi Tsukiyama¹, Raimu Fukada¹, Kentaro Tomita¹, Kiichiro Uchino¹
¹Interdisciplinary Graduate School of Engineering and Sciences, Kyushu University, 6-1, Kasugakoen, Kasuga, Fukuoka 816-8580, JAPAN

Ion Stage Velocity Evolution in CO₂-generated Laser Plasma Plumes (S48)
Frank McQuillan, Emma Sokell and Padraig Dunne
UCD Physics, Dublin, Ireland

EUV/SXR Spectroscopy of Ge Laser-Produced Plasma (S57)
O. Maguire, D. Kos, E. Sokell
Atomic, Molecular and Plasma (Spec) group, School of Physics, University College Dublin, Belfield Dublin 4 Ireland

Colliding Laser Produced Plasmas Analysis: Fast Imaging and Spectroscopic Study (S58)
Domagoj Kos¹,², O. Maguire¹, F. O’Reilly¹, P. Dunne¹, E. Sokell¹
¹School of Physics, University College Dublin, Belfield, Dublin 4, Ireland
²Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Brehova 7, 511519 Praha 1, Czech Republic

High-brightness Broadband Light Source for Various Industrial Applications (S64) (Commercial Poster)
Samir Ellwi¹,²
1. RnD-ISAN/EUV Labs, Troitsk, 108840 Russia
2. ISTEQ, 5656 AG Eindhoven

Laboratory Tomographic Microscopy with Compact Plasma based Extreme ultraviolet and Soft X-ray Sources (S74)
Second Place – Poster Session Award
Daniel Vicario¹, Alexander von Wezyk², Klaus Bergmann², Larissa Juschkin¹
¹RWTH Aachen University, Chair for Experimental Physics of EUV, JARA-FIT, Steinbachstr. 15, 52074 Aachen, Germany
²Fraunhofer-Institute for Laser Technology, Steinbachstr. 15, 52074 Aachen, Germany

An Extreme Ultraviolet Monochromator for use with a Laser Produced Plasma Source (S86) (Withdrawn)
Carmen Vela Garcia, Emma Sokell, Padraig Dunne & Fergal O’Reilly
UCD School of Physics, University College Dublin, Belfield, Dublin 4, Ireland
A compact, desk-top near edge soft X-ray absorption fine structure spectroscopy system based on a laser plasma double stream gas puff target source (S77)
M. Duda², P. Wachulak¹, A. Bartnik¹, A. Sarzyński¹, Ł. Węgrzyński¹, M. Nowak¹, H. Fiedorowicz¹, L. Pina² and A. Jancarek²
¹ Institute of Optoelectronics, Military University of Technology, 2 Kaliskiego Str., 00-908 Warsaw, Poland
² Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague, Czechia

Commercial Posters

EUV Light Source Development at Energetiq (SC1)
Matthew J. Partlow, Stephen F. Horne, Donald K. Smith, Matthew M. Besen, Paul A. Blackborow, Deborah S. Gustafson
Energetiq

Laser Drive Light Source from Energetiq (SC2)
Huiling Zhu, Stephen F. Horne, Donald K. Smith, Matthew M. Besen, Paul A. Blackborow, Deborah S. Gustafson, Matthew J. Partlow
Energetiq
**Wednesday, November 8, 2017**
(George Moore Auditorium, UCD Campus, Dublin)

**9:15 AM Announcements and Introductions**

**Announcements (Intro-2)**
Padraig Dunne  
UCD

**9:20 AM Session 7: Keynote Session -2**

**Session Chair:** Padraig Dunne (UCD)  
**Imaging Biological Cells using Soft X-ray Tomography (S2) (Keynote Presentation)**
Carolyn Larabell
*University of California San Francisco School of Medicine and Lawrence Berkeley National Laboratory*

**10:00 AM Session 8: EUV Metrology Sources**

**Session Chairs:** Klaus Bergmann (ILT) and Samir Ellwi (ISTEQ)

**Plasma based XUV Sources for Metrology Applications (S53) (Invited)**
Klaus Bergmann, Alexander von Wezyk, Jochen Vieker  
*Fraunhofer Institute for Laser Technology – ILT, Steinbachstr. 15, 52074 Aachen, Germany*

**Characterization of Laser-assisted and laser-driven EUV sources for Metrology Applications (S51) (Invited)**
Yusuke Teramoto¹, Bárbara Santos¹, Guido Mertens¹, Margarete Kops¹, Ralf Kops¹, Alexander von Wezyk², Klaus Bergmann², Hironobu Yabuta³, Akihisa Nagano³, Takahiro Shirai³, Yoshihiko Sato³, Kunihiko Kasama³  
¹BLV Licht- und Vakuumtechnik GmbH, Steinbachstrasse 15, 52074 Aachen, Germany  
²Fraunhofer ILT, Steinbachstrasse 15, 52074 Aachen, Germany  
³Ushio Inc., 1-90 Komakado, Gotemba 412-0038, Japan
Actinic Light Source based on LPP for HVM Mask Inspection Applications (S55) (Invited)
Konstantin Koshelev$^{1,2}$, Alexander Vinokhodov$^1$, Oleg Yaksheev$^1$, Alexey Yakushkin$^1$, Dimitri Abramenko$^1$, Alexander Lash$^1$, Mikhail Krivokorytov$^{1,2}$, Yuri Sidelnikov$^2$, Vladimir Ivanov$^2$, Vladimir Krivtsun$^2$, Vyacheslav Medvedev$^1$, Denis Glushkov$^3$, Pavel Seroglazov$^3$, Samir Ellwi$^3$
1 – RnD-ISAN/EUV Labs, Troitsk, 108840 Russia;
2 – Institute for Spectroscopy RAS, Troitsk, 108840 Russia;
3 – ISTEQ, 5656 AG Eindhoven

Laser Induced Shockwave Droplet Breakup Dynamics (S52)
Duane Hudgins, Alex Nieland and Reza S. Abhari
Laboratory for Energy Conversion, Swiss Federal Institute of Technology Zurich (ETHZ), Switzerland

A High-brightness Accelerator-based EUV source for EUV Actinic Mask Inspection (S54) (Invited)
Y. Ekinci, T. Garvey, A. Streun, A. Wrulich and L. Rivkin
Paul Scherrer Institute, Villigen, Switzerland

Compact X-ray Sources and Applications for Semiconductor Metrology (S56) (Invited)
R. Joseph Kline
National Institute of Standards and Technology, USA

12:00 PM Break (15 Minutes)

12:15 PM Session 9: Broad-band EUV Sources

Session Chairs: Ilya Bezel (KLA-Tencor) and Stephen Horne (Energetiq)

Industry Requirements for Broad Band EUV Sources for Wafer Inspection Applications (S61)
Vivek Bakshi
EUV Litho, Inc.

High Power Laser-Sustained Plasma Light Sources for KLA-Tencor Broadband Wafer Inspection Tools (S63) (Invited)
Technology Group, WIN Division, KLA-Tencor Corp, One Technology Drive, Milpitas, CA 95035
The Electrode-less Z-Pinch as a Metrology Source in the 40-50 nm range (S62) (Invited)
Stephen F. Horne, Matthew M. Besen, Paul A. Blackborow, Deborah Gustafson, Matthew J. Partlow, Donald K. Smith
Energetiq Technology Inc., 7 Constitution Way, Woburn MA 01801

1:00 Lunch (90 Minutes)

2:30 PM Session 10: EUV and XUV Applications

Session Chairs: Fergal O’Reilly (UCD) and Larissa Juschkin (RWTH Aachen University)

Soft X-ray Microscopes for Biology: The Source (S71) (Invited)
Gerry McDermott, Ph.D.
Department of Anatomy, UCSF and Lawrence Berkeley National Laboratory

Chromatin Reorganization during Viral Infection (S72) (Invited)
Vesa Aho1, Markko Myllys1, Carolyn A. Larabell2,3 and Maija Vihinen-Ranta4
1. Department of Physics and Nanoscience Center, University of Jyvaskyla, Jyvaskyla, Finland
2. Department of Anatomy, University of California San Francisco, San Francisco, California, USA
3. Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, California, USA
4. Department of Biological and Environmental Science, University of Jyvaskyla, Jyvaskyla, Finland

Exploring the Soft X-ray Radiance of Laser Plasmas (S73) (Invited)
Fergal O’Reilly and Gladson Joseph
UCD School of Physics, University College Dublin, Belfield, Dublin 4, Ireland.

Relativistic Plasma Control using Two-colour Fields (S75) (Invited)
Brendan Dromey1, Mark Yeung1, Sergey Rykovannov2, Jana Bierbach2,3, Lu Li1, E. Eckner3, Stephan Kuschel2,3, Abel Woldegeorgis2,3, Christian Rödel2,3,4, Alexander Sävert3, Gerhard G. Paulus2,3, Mark Coughlan1, and Matthew Zepf1,2,3
1 Department of Physics and Astronomy, Queen’s University Belfast, Belfast, UK
2 Helmholtz Institute Jena, Fröbelstieg 3, Jena, Germany
3 Institut für Optik und Quantenelektronik, Friedrich-Schiller-Universität Jena, Max-Wien-Platz 1, Jena, Germany
4 SLAC National Accelerator Laboratory, 2575 Sand Hill Road, Menlo Park, California, USA
Spectroscopic EUV reflectometry for characterization of thin films systems and determination of optical constants (S76) (Invited)

Larissa Juschkin, Maksym Tryus, Konstantin Nikolaev, Igor Makhotkin, Daniel Wilson, Lidia Kibkalo, Jürgen Schubert, Angelo Giglia, Piergiorgio Nicolosi, and Serhiy Danylyuk

1. RWTH Aachen University, Chair for Experimental Physics of EUV, JARA-FIT, Germany
2. Forschungszentrum Jülich GmbH, Peter Grünberg Institut 9, JARA-FIT, Germany
3. University of Twente, Faculty of Science and Technology, Enschede, The Netherlands
4. CNR - Istituto Officina Materiali, Trieste, Italy
5. Universita' degli Studi di Padova, Dipartimento di Ingegneria dell'Informazione, Italy
6. RWTH Aachen University, Chair for Technology of Optical Systems, JARA-FIT, Germany

4:10 PM Break (20 Minutes)

4:30 PM Session 11: Optics and Metrology

Session Chairs: Eric Louis (Univ. Twente) and V V Medvedev (ISAN)

REFURBISHMENT OF COLLECTOR MIRRORS FOR WATER WINDOW MICROSCOPY (S81) (Withdrawn)

T. Feigl, H. Pauer, M. Perske, T. Fiedler, P. Naujok
optiX fab GmbH, Hans-Knöll-Str. 6, 07745 Jena, Germany
F. Scholze, C. Laubis
Physikalisch-Technische Bundesanstalt, Abbestr. 2-12, 10587 Berlin, Germany

EUVL Optics for Free Electron Laser Sources: Damage Threshold Studies and the Use of Adjusted Wavelengths (S82) (Invited)

Eric Louis
MESA+ Institute for Nanotechnology, University of Twente, P.O. Box 217, 7500 AE, Enschede, The Netherlands

Novel Spectrometers for Broad-band Characterization of EUV-Emitting Plasmas (S83)

V V Medvedev
RnD-ISAN, Promyshlennaya 1A, Troitsk, Moscow, Russia
EUV Labs, Sirenevy bulevard 1, Troitsk, Moscow, Russia
ISTEQ BV, High Tech Campus 9, Eindhoven, The Netherlands
Broadband Spectral Characterization of EUV light Sources with a Transmission Grating Spectrometer (S85)
Muharrem Bayraktar¹*, Fei Liu², Bert Bastiaens³, Caspar Bruineman⁴ and Fred Bijkerk¹
1 Industrial Focus Group XUV Optics, MESA + Institute for Nanotechnology, University of Twente, The Netherlands
2 ASML Netherlands B.V., De Run 6501, 5504 DR Veldhoven, The Netherlands
3 Laser Physics and Nonlinear Optics, MESA + Institute for Nanotechnology, University of Twente, The Netherlands
4 Scientec Engineering, The Netherlands

5:50 PM Announcements

2017 Source Workshop Summary
Vivek Bakshi
EUV Litho, Inc.

Workshop Adjourned and Depart for off-site Dinner